## NEW CHALLENGES TO

Adjustment of Firms, Policies, and

# INTERNATIONAL

**Organizations to Global Competition** 

## COOPERATION

*edited by* Peter Gourevitch and Paolo Guerrieri

## NEW CHALLANGES TO INTERNATIONAL COOPERATION

Adjustment of Firms, Policies and Organizations to Global Competition

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Edited by Peter Gourevitch and Paolo Guerrieri

University of California, San Diego International Relations & Pacific Studies

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PREFACE

The papers for this volume were presented at the conference "Adjustment of Policies, Organization to Global Competition: Seeking New Forms of International Cooperation," which was organized by the Graduate School of International Relations and Pacific Studies (IR/PS, U.S.), the Istituto Affari Internazionali (IAI, Italy), and the National Institute for Research Advancement (NIRA, Japan), in San Diego 2-3 October 1992. The program committee was comprised of Peter Gourevitch, Paolo Guerrieri, Pier Carlo Padoan, and John Zysman. The meeting was the fourth in a series involving European, Japanese, and American participants to the Forum on International Cooperation. Previous conferences were held in Andover, Massachusetts, November 1987 on "The Political Economy of Macroeconomic Cooperation"; in Trento, Italy, April 1989 on "Domestic and International Aspects of International Cooperation"; and in Hakone, Japan, January 1991, on "Global Coordination Issues in a Tripolar World." There was some overlap of participants in these meetings, as well as some newcomers to each. In addition to help from NIRA, IAI, and IR/PS, funding for the San Diego meeting was provided by The German Marshall Fund of the United States, the Center for German and European Studies (University of California), the Institute on Global Conflict and Cooperation (University of California), the Los Alamos National Laboratory, the Institute for International Studies (UC Berkeley), and the Berkeley Roundtable on the International Economy (UC Berkeley).

In preparation of this volume thanks to John Rivett, whose skills at desktop publishing are worthy of envy, to Helyn Wohlwend for editorial help, and to Terri Kurek for assistance with staff work. Special thanks for meeting logistics to Barbara Zimmerman, and to two students aids, Keri Kubakawa and Andrea Ponzi.

The meetings leading to this volume have involved experts from three areas: the European Community, the United States, and Japan. The issues are multilateral and need to be comprehended in that manner. We should express our gratitude to the participants at the conference, whose contributions to the debate and stimulating comments helped to make the conference and volume so successful.

> Peter Gourevitch, San Diego, USA

Paolo Guerrieri, Rome, Italy

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## INTRODUCTION: GLOBAL REGIONALISM AND THE PROSPECTS FOR COOPERATION

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Over the past decade, the European Community, the United States, and Japan have become more interdependent in trade, production, and finance through increased trade flows and, more importantly, through the internationalization of production. This multinationalization of firms, particularly in sectors of high technology, has been achieved primarily through foreign direct investments and international agreements. As the market for many products has taken on a global dimension, large industrial groups have attempted to maximize their competitive advantages on a world scale through strategies of production concentration and specialization in strong sectors of the world market.

These changes stem largely from the profound changes in the systems of production around the world. Rapid development of technology, innovation in the organization of manufacturing, policies toward investment and education, these and other factors have all contributed to a major restructuring of world industries. This in turn has accentuated the relative decline of U.S. leadership in technology and has speeded up the process of convergence of the U.S., the EC, and Japan in this field. Within this general pattern, however, the competitive positions of the three major areas have changed considerably, leading toward structural imbalances in their mutual relations. Substantial divergences in trade balances, capital flows, unemployment, interest rates, and macroeconomic policy have all contributed to recurring tensions among the major industrial countries and to new forms of government intervention in trade, industry, and technology at both the national and regional levels.

As tensions have grown, so has the trend toward polarization around the three major geo-economic areas constituted by Europe, North America, and East Asia. In Europe, regional integration has long been firmly established at the Community level. The completion of the internal market has given new impetus to create a "European space" destined to include the emerging market economies of Eastern Europe. In North America, the free trade area comprising the United States and Canada is soon to be extended to Mexico under the North American Free Trade Agreement. In a broad sense, this agreement may be considered a first step toward the creation of a large American market paralleling the one in Europe. In East Asia during the 1980s, rapid economic growth and the restructuring of the Japanese economy have generated a powerful process of regional economic integration.

The dynamics of EC–U.S.–Japan relations thus increasingly appear to be characterized by two fundamental, and conflicting, trends: more intense competition among the three major geo-economic poles for control of key technologies and market dominance, accompanied by widespread government policies and pressures for regional integration; and increased internationalization of production processes and firms in light of the globalization of production and markets. These double trends of regionalization and globalization express the interaction between market forces (firms) and structures (policies) at the national, regional, and international level.

The analytical challenge to comprehending these developments is quite profound. Global economic change breaks barriers. It undermines national boundaries, often even strong ones. It also knocks down analytic distinctions. Macro and micro, international and domestic — these labels do not separate, very well, crucial fields of policy and analysis in the fields of economics and politics. Modern trade disputes go to the heart of the internal organization of the firm. Macropolicy cannot be sorted out from the microinstitutions that structure markets, incentives and firms. Economic performance involves government policy toward education, research, financial systems, employment compensation, labor laws — issue areas which used not to be on the table of valid disputes between countries.

With the spread of efficient industrial economies around the world, fascinating issues of comparison have emerged. Instead of a single uniform practice of capitalist economies, we have different kinds of markets, divergent versions of capitalism. Policies differ: countries follow different practices in macroeconomic policy, in the internal organization of firms, in finance, industrial policy and all these issues areas. Trade frictions have increased. With that has come attention to the interaction of different levels of analysis, and the breakdown of older distinctions, within disciplines and between them.

The trade regime between countries and the industrial regime within countries need to be understood together as part of an effort to grasp the opportunities, and constraints, of international cooperation. In planning this meeting, our efforts were to explore the crossing of boundaries and the interplay of different literatures. We wish to link together the specialists on international trade and finance, with the specialists on the internal organization of firms; the specialists on domestic policy choices with the specialists on international regimes.

Several important themes arose during our meetings and are discussed in the papers published in this volume. All of them confront a general question: "Are there universal principles of economic organization and policy which can be agreed upon as "best" and uniformly applied?" A science of economics would like to think so. We ought, it supposes, to be able to derive from basic assumptions some principles of optimality which would guide trade disputes. These principles ought to tell us what is and is not acceptable. There is, however, considerable evidence that countries are not likely to agree upon such rules, and perhaps even some support, of the notion that certain issues remain unresolvable, since they enter the realm of values and politics.

In policy terms, it is clear enough that these national preferences represent a serious impediment to global cooperation. In the field of finance, as de Cecco's contribution to the volume notes, international financial markets are characterized by cycles of deregulation and reregulation according to the frequency and intensity of financial crises. De Cecco distinguishes between two models of national financial systems ---the "continental model," based mainly on credit financing, and the Anglo-Saxon model, based mainly on equity financing --- and argues that the latter is more conducive to financial instability than the former. Differences among nations in the productive process are seen quite strongly in Borrus' concept of "regional architecture," which consists of the linkages, both static and dynamic, among the different components of the innovation system. This regional cast to the organization of production is crucial to understanding the industrial and trade policy implications of regional blocs.

Another issue central to conflicts among the advanced industrial countries has to do with the institutional arrangements of the market economy. The internal organization of firms and industries, as well as their linkage to many aspects of society and government policy, clearly influence national efficiency and competitiveness between countries. As a result, countries challenge each others' institutional arrangements, while at the same time, learning from each other and adapting various practices to their own conditions.

Several papers deal with these themes. Prior to the classic economic prescription of "getting prices right," McMillan argues, is the need to "get institutions right." He uses new development in incentive theory to provide arguments of general relevance in analyzing situations in which markets are being created and in which institutional transformations may be appropriate. Yakushiji provides a detailed description of the industrial model now prevailing in the Japanese economy confronting it with other important models such as the German and the American ones. Cowhey, using the telecommunications industry as a case study, introduces the notion of "market access" as opposed to useless traditional trade liberalization concepts and instruments. Therefore, new forms of industrial intervention are needed when competition must be assured at the global level.

To prescribe, or proscribe, practices of industrial policy thus to coordinate them — presupposes the existence of concepts from which clear guidelines can be drawn as to what is or is not proper. Instead, as already noted, countries have divergent views of efficient capitalism. Trade conflicts become inseparable from industrial policy conflicts. Sekiguchi explores these issues in connection with the Structural Impediments Initiative between Japan and the United States, both from a macroeconomic and a structural point of view. Sharp argues that the most effective way to enhance competitiveness is to promote institutional transformation conducive to innovation and diffusion efforts. International cooperation in such a perspective, she adds, requires a long run approach and adjustment of national institutions to supranational perspectives. This is a very difficult task, as Saccomani notes in reviewing current processes in the construction of European Monetary Institutions. He highlights the difficulties encountered in merging into supranational institutions various national structures which present different operational and other characteristics. Iwami explores the threat to international cooperation posed by the growing foreign indebtedness of the United States, the world's former hegemon. Hufbauer explores the role of regional blocs in international trade negotiations. He argues that such blocs are more likely to promote more free trade at the global level than to become the foundations of new forms of regional protectionism.

This volume represents only a small step towards the complete analysis of these vital and vast subjects. Our efforts represent a commitment to international discussion, under the conviction that most of these issues will grow in importance to policy makers, to businessmen, to employees, and to social science.

## NEW FORMS OF FINANCIAL REGULATION AND THE EVOLUTION OF FINANCIAL FIRMS

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#### **SECTION I**

Recently, three important financial regulators have issued warnings of impending systemic crisis for the international financial system. They are the Federal Reserve Bank of New York (FRBNY), the Bank for International Settlements (BIS), and the International Monetary Fund (IMF). The warnings concern the present structural characteristics of the world payments system, which has reached, through the inter-bank deposit market, a size so huge that it is even difficult to be able to envisage it, and which is largely made of interconnected computerized networks spanning the whole world.

In addition to this, which seems to be principally the worry of the IMF, the other two mentioned institutions have, through their CEOs, pointed an accusing finger to the phenomenal growth of banks' off-balance-sheet transactions, which has in the past decade been the indirect result of the BIS and national central banks' increasing worry about the fast decreasing capital adequacy of banks. Much higher capital requirements for banks were enforced by national central banks and banks found a way around them through recourse to off-balance-sheet transactions, which do not engage any bank capital as they are not written in the banks' balance sheets. It is mainly the fear that one of the important agents through which these transactions come into existence may fail (as was recently the case with the Bank of New England, which was engaged in the derivatives market) that motivates the FRBNY and the BIS, and induces them to advocate the need for more control.

The IMF, however, seems to be animated by a completely different weltanschaaung, although it also warns about systemic crisis. In a recent IMF working paper and in a Conference volume article, Dr. Folkerts-Landau and Peter Garber, both members of the IMF research staff, explain that the natural course of technical and economic innovation has led the U.S. and U.K. banking systems to experience greater and greater doses of securitization, which have radically increased the leverage of those huge financial systems on their reserves. Through securitization, financial intermediaries radically economize on reserves, with the important consequence that the U.S. and U.K. financial systems are now structurally strapped for cash. The probability that a market participant may not have the funds it has to send through the on-line international payments system thus increases manifold, and central banks, especially the Fed, have become accustomed to intervene as a matter of habit, to supply the system with the missing funds, thus averting a payments crisis from coming about and ricocheting through the international payments system at lightning speed.

The authors seem convinced of the progressive nature of securitization, and therefore of its inevitability. They notice, however, that this phenomenon has proceeded mainly in the Anglo-Saxon countries, while it is far less advanced in the European continent and in Japan. They also note that, as a result, banks are, especially in Germany, much less leveraged than banks in the U.S. and U.K.; that they are not used to the Bundesbank playing the role of lender of last resort; and that therefore they keep a sufficient reserve of funds to operate their payments system. They fear that the joining up of the U.S. and European payments systems, now that the Bundesbank will become for all practical purposes the reference model for the European Central Bank, will make it possible that the two different central banking philosophies and the different degrees of securitization of the two halves of the Euro-American payments system may lead to systemic crisis.

Even from the very sketchy summary I have provided one can detect that problems are indeed plaguing the international financial system and in particular the international payments system. Folkerts-Landau and Garber have correctly perceived that these problems derive from the different mode of development of the European and Japanese financial systems with respect to that of the Anglo-Saxon one, and from the different central banking philosophies that have thus far prevailed in the two halves of the international financial svstem. They seem, however, to believe that the Anglo-Saxon financial system, where in their opinion markets have come to dominate over institutions, is the model which all other systems will inevitably come to resemble ever more closely as they advance on the road of financial development. According to the authors the latter must necessarily entail a weakening of financial repression and an increase of financial liberalization. In other words, they seem to be convinced that there can be only one path of financial development, along which the Anglo-Saxon countries are further advanced, and which will necessarily be followed by all other countries as they become more developed and mature.

Folkerts-Landau and Garber may be justified for their uncritical belief that financial development coincides with a progressive waning of intermediaries and a progressive growth of bigger competitive and specialized financial markets. This opinion coincides with what in the Anglo-Saxon world has for a long time been identified as not just a theory of financial development but as the only theory of financial development consistent with neoclassical first principles. It will be useful to go over the main tenets of this theory before proceeding to note, as we shall do, that there certainly is no reason for its being the only sound theory of financial development, and furthermore that the countries that have in the recent and not so recent past developed fastest seem to have done so in total defiance of it. We shall then have to consider whether there are any alternative theories of financial development available whose adoption might better serve to explain the actual financial development paths of many, perhaps even most, advanced countries. It will in fact be on the basis of an alternative theory that we shall have to construct rules of financial regulation that may prove useful to managing the threatening reality of the present international financial system.

#### SECTION II

The mainstream theory of financial development is based on the monetary theory which has prevailed since the war and until the early eighties, when it began to be replaced by new theoretical developments based on concepts like asymmetric information and adverse selection, which also permitted the development of an alternative theory of financial development. The latter is still in its infancy, but it has allowed us to reconcile theoretical progress with institutional and historical relevance. We shall return to it later.

Mainstream monetary theory, if we want to describe it very summarily, oscillates between an ambiguous and reluctant acceptance that in a general equilibrium system there is no general theorem proving the existence of an equilibrium in which money has a positive value, and an inclination to follow Marshall's own solution, treating money as a good like any other — a capital good preferably — whose demand and supply conditions can be determined, even if they present peculiarities whose description and analysis are modern monetary theory. Theoreticians as diverse as Hicks, Keynes, Patinkin, and Friedman all give the limelight in their analysis of money to the demand side, to the individual's demand for money as a store of value (de Cecco & Fitoussi, 1987).

This way of dealing with money leaves aside the problem that, in order to be a universal store of value, money has to be a means of exchange. Without this feature money cannot be a universal store of value, but is simply one among many stores of value, in no way superior to them. On the other hand, in order to be a medium of exchange, money has to possess an intertemporal quality. Otherwise it can at most serve as a unit of account. Thus money is only reasonably conceived of in a sequential economy, one with past, present, and future. Moreover, in order to construct a meaningful monetary theory we must have a system in which money accomplishes some useful function not only for its user but also for its producer. This is perhaps the core of the monetary story, but it is largely overlooked by mainstream monetary theory, in spite of the fact that money is essentially a macrophenomenon which needs a macrofoundation that must be derived from the institutional world. Microeconomic explanations of money, like

the one devised by Marshall and accepted by most modern monetary theorists, necessarily end up begging the question as cases of circular reasoning.

A more fruitful approach to monetary theory should concentrate on what could be called a theory of monetary production. The point of departure could be the realization, of which the Austro-German socioeconomic school has been aware for over a century, that money is a social institution and quite meaningless if restricted to one individual (Simmel, 1978). A meaningful theory of monetary production should necessarily concentrate on banks as the main money producers. This has been a feature of developed monetary systems since the late nineteenth century.

Mainstream monetary theory, however, has chosen to virtually ignore this glaring fact, and still pretends that money is created by the state, as indeed was the case since the invention of money and until the astonishing commercial banking revolution of over a century ago. If banks' monetary production had the same characteristics of money produced by the state, this would not be a serious problem. Banks, however, create money by lending to their customers, i.e. by creating deposits. They thus mix two activities that hitherto had remained separate. In addition banks also intermediate between savers and borrowers, something the sovereign never did. In the economic life of modern countries, banks have thus become the real planning centers.

Studying what exactly are the powers banks wield over the economy and how they use them ought to constitute the subject matter of modern monetary theory, but is largely ignored by traditional monetary theory. A large part of modern monetary theory should be dedicated to the unique phenomenon of financial intermediation (which often involves maturity transformation) conducted via money creation. An equally important part should be dedicated to the study of the uneasy but basic mix of industry and banking, and of the possibility that exists of starting a process of industrial development by mobilizing capital through banks. While studying a bank-centered process of monetary production, we must remember that also in the case of banks we are in the presence of a macrophenomenon. Studying, as mainstream theory does, the single bank as if it were a single firm leads to almost completely overlooking the most important features of a modern banking system. It is as if we studied telephones one by one, ignoring that the vital element is the telephone network.

Several of the shortcomings of mainstream monetary theory stem from this failure to realize that banking is a relevant phenomenon only if banks are studied as a macrostructure, a system. But what for some economists is myopia, for other economists is a subtle normative stand. A whole school of monetary economists, from James Tobin, to Edward Shaw and John Gurley, to Ronald McKinnon have developed a monetary theory whose main role is that of negating the peculiar functions that banking performs as a macrostructure. All money, including bank deposits, is taken to be somebody's debt and somebody else's credit. No special social or economic functions are attributed by this theory to money, so that every act of money production must by definition, other things being equal, diminish the borrowing capacity of either the state or the banking system. The "inside money" school's solution to bring money into the microeconomic fold is only the last attempt to exorcise the demonic features of money, a man-made phenomenon which has played havoc with the economic theorists' attempt to give economic life a unitary explanation based on natural law and individual behavior, to construct economic life from the bottom up as a sum of individual atoms.

#### SECTION III

The mainstream theory of financial development issues directly from mainstream monetary theory. It is based on the idea that an economic world which becomes more and more complex will have more and more specialized functions to be performed by more and more specialized institutions. Adam Smith's dictum "the division of labor is limited by the extent of the market" has been interpreted by mainstream financial theorists to mean that as countries proceed to develop, financial functions become so many and so complex as to allow the creation of a plurality of specialized agents to perform them with greater efficiency of allocation of available financial resources. This financial weltanschauung, first expounded by Walter Bagehot in the second half of the nineteenth century, and more recently by Gurley and Shaw and by McKinnon, has been reiterated in the last decade by Tad Rybczynsky, a distinguished economist and successful financial practitioner. He has written a series of articles attempting to reformulate this theory.

"Domestic financial systems," Rybczynsky writes, "pass through three different stages; the bank-oriented phase, the market-oriented phase, and the strongly market-oriented phase. In the bank-oriented phase the bulk of savings an economy generates is transferred to those wishing to use them through banks. They channel the savings they collect mostly in the form of short term loans to business. Risk capital is obtained from retained profits and direct recourse to savers who are few in number. The market-oriented phase is characterized by the increasing reliance of firms on external funds, including risk capital raised from ultimate savers through the capital markets rather than through financial intermediaries. In the strongly market-oriented phase the financial intermediaries also rely on the funds raised through the financial and capital markets, and there come into existence new financial risk-hedging markets. The world financial system is now in the bank-oriented phase but is moving into a strongly marketoriented phase now beginning to characterize the U.S. and the U.K., while the major European countries and Japan are entering the market-oriented phase."

If we compare this view of the evolution of financial systems with what has gone on in the main developed countries in the last hundred years, we are struck by its highly normative nature. The evolution from banks to markets, the devolution of powers from few very strong all purpose institutions to the anonymous and therefore democratic auction markets is what economists of the mainstream Ricardian-Marshallian tradition would have liked to happen. Money and finance ought to have become more and more a veil which cannot influence the work of "real" economic forces. Financial development in the main industrial countries, on the contrary, seems to have begun with banks and to continue with banks. Even Rybczynsky must admit that this has been the case in the most successful industrial countries, Germany, France, and Japan. But his view is that they are in an intermediate stage of financial development, which inevitably will give way to the market-oriented, and then to the strongly market-oriented phase in which the early developers, the U.K. and U.S., are already finding themselves, together with the international financial system.

A more realistic reading of the financial history, both recent and more remote, of these two early developers is that in both of them large banks were prevented from reaching the phase of universal banking by strong institutional factors, be it laws promoted by strong interest groups as in the U.S. or the power of traditional financial elites linked to organized financial markets, merchant banks and the Bank of England, in the case of the U.K. Thus universal banking has not prevailed, in a stable and permanent way, in the U.K. and U.S. because of the political power of other organized financial and industrial groups. These groups felt threatened by the emergence of great universal banks and were strong enough to retard this development.

In fact, until the Great Depression, universal banking and finance capitalism had prevailed in the U.S. This phase, ignored by Rybczynsky, coincided with the most innovative period of American industry, and was brought to an artificial end by the Roosevelt reforms, which tried to send the world backwards by separating industry from banking and by heavily penalizing the growth of large commercial banks.

In other, recently more successful, developed countries the sociopolitical structure did not cause such financial pluralism to come about or to linger on. Banks could develop, unfettered by opposition, and achieve greater and greater concentration (in the Hirschman-Herfindahl sense) and deeper links with industry. Traditional economic analysis, however, cannot accept the persistence of monopoly power, or even that there exist reasons why economic power tends to become concentrated. This is the whole philosophy behind the Tobin -Shaw monetary theory and the Rybczynsky model of financial development which we have just examined. It is their firm belief that all monopoly power will generate its own undoing at the national or international level, if there are no institutional factors at play that artificially blunt competition. The gradual erosion of monopoly power by competition, together with the growing complexity of economic life, requiring ever more specialized functions performed by separate agents, is what leads to the gradual fading of intermediaries and the gradual establishment of more and more perfect markets. according to traditional theory.

#### SECTION IV

This is the theoretical background to the Folkerts-Landau and Garber paper, but also to decades of IMF policy prescriptions to the countries it is called to help with finance and advice. Countries where banks do not fade into markets as development takes place must then be countries were sociopolitical forces are at work to preserve the banks' privileges, to prevent financial repression from naturally giving way to financial liberalization. And correct policy prescriptions must therefore prevent the continuation of inefficient banking privileges. It is obvious that Rybczynsky as well as the IMF see recent financial history in the U.S. and U.K. as the outcome of correct financial reforms which favored the reestablishment of the natural trend towards markets, by removing entrenched privileges which had engendered financial repression.

"Competition and credit control" in the U.K. and "deregulation" in the U.S., as well as "Big Bang" in the U.K. can, however, be given a radically different interpretation. That series of "liberalization" measures in the two countries signaled a change in the balance of financial power. Large banks were at the root of them and have indeed managed to get rid of most of the obstacles to universal banking. In the U.K. the process is virtually completed. U.K. banks today can do more or less what they want subject to prudential supervision from a Bank of England which resembles less and less a bank and more and more a government department. In the U.S. the picture is not yet completely clear, but it appears that in future a small number of very large banks will operate across state boundaries. This group will be composed of large money center banks and of a number of successful regional banks and money market institutions.

The continuous attempt by large banks in the U.S. to get rid of the fetters that had been imposed on them by successive waves of legislation and especially by New Deal laws can be considered to be at the root of most of the changes the U.S. and also the international financial structure have undergone since the second World War. Large New York banks were instrumental in calling for the rediscovery of monetary policy in the Republican fifties, in order to re-acquire the inter-bank

deposit market which they had lost to Treasury Bills and Bonds during the War. That market had traditionally been their main source of funds to lend to their own customers. It was the First National City Bank to invent Certificates of Deposit in the Kennedy years to compete with Treasury paper and to allow large banks to introduce the hazy era of liability management. Again they were motivated by the legal segmentation of the U.S. deposit market, which penalized them. And it was their urge to grow that led them to flaunt regulation Q by developing the Eurodollar market and to circumvent the foreign exchange controls established by the Democrats in the mid-sixties to bring back funds from that market to carry on lending in spite of a restrictive monetary policy. It was again the large U.S. banks' desire to grow at all costs that led them to lend to developing countries when they were entrusted with the deposits of OPEC countries in the seventies. Oil money wanted to be placed at short term with banks large enough to be trusted not to be allowed to fail by the U.S. government. But there were not enough short term borrowers. Thus large U.S. banks developed the syndicated loans that permitted them to transform the maturity of the oil funds and to recycle them to developing countries (de Cecco 1987, 1993, Pierce 1991).

Finally, in the last decade, it was the U.S. large banks' urge to grow that induced them to evade the new rules on capital adequacy imposed by the BIS (at the Bank of England's and Fed's instigation) by developing derivatives and off-balancesheet transactions. To be more precise, these capital adequacy rules had been concocted by the Anglo-Saxon regulators in order to decrease the competitive power of the Japanese large banks, which had ended up with most of the payments surplus of Japan to recycle in the 1980s. Lest they use the huge resources that had been made available to them to drastically expand their scale of operations and conquer market shares from the Anglo-Saxon market leaders, the clever idea was hatched to burden them with capital requirements which would make it difficult for them to expand their operations, as they were notoriously undercapitalized. But the plan backfired because of the request which U.S. and U.K. political authorities successfully made, at the same time, to the Japanese, to radically liberalize their financial system to allow a greater share of Japanese share capital to be owned abroad.

The Japanese reluctantly obliged, and the meteoric ascent of the Tokyo Stock Exchange followed. This allowed large Japanese banks to issue new capital generously, and thus build themselves a capital base big enough to allow them to become the largest banks in the world. At the same time, in the post-October 1987 slumped condition of the American stock exchange, U.S. banks found it difficult to issue enough shares to strengthen their capital base in order to expand operations.

#### SECTION V

This extremely compressed list of examples from recent financial history ought to be sufficient to show that even in the Anglo-Saxon world large banks have been the protagonists of financial life, and that it is largely through their actions, motivated by their desire to increase profits and market share, that most of what traditional financial theory would proudly identify as the emergence of new, greater, and more perfect markets has come about. As in the other developed countries the expansion of large banks was in no way prevented by legal and institutional fetters, the result of several decades of postwar financial development has been the emergence of a universe of about one hundred giant banks, whose huge mass is in itself evidence of a long and unbroken trend towards the progressive reprivatization of the international financial system.

As I said above, we need a new theory to explain this phenomenon, because traditional theory points in the opposite direction as the likely outcome of financial development. It is true that huge international markets have developed, but they are the preserve of large universal banks and not of specialized financial intermediaries. And without a theory which seems to be reasonably borne out by facts we certainly cannot find secure footings on which to build the regulatory apparatus which the new reality of national and international finance requires.

It is clear that the theory which constitutes the foundation for the present regulatory framework in the Anglo-Saxon countries is completely inadequate. Traditional economic analysis either predicts the inevitable fading of monopoly power because of the work of competition or at most recognizes that institutional factors will prevent monopolies from fading and thus requires the establishment of rules which will foster competition. At the bottom of it all is the unshakable belief that even if technical progress will reinforce concentration, institutions will progressively lose out to more numerous, and more efficient, markets.

#### SECTION VI

We referred above to new developments in monetary theory. We also said that a monetary theory, to be useful, ought to explain money and banking as macrophenomena and markets as social constructions where states play a continuous and fundamental role.

Recent developments in monetary theory allow economists to come to better terms with the reality of financial development. They are based on modern information theory, which starts from the consideration that information is costly, that it is a resource in whose gathering there exist important economies of scale. It then proceeds to note that for these reasons information is asymmetrically distributed and tends to accumulate and concentrate. Applying the concept to the phenomenon of credit the new monetary theorists show how it explains very well the reasons why banks exist and tend to become larger and larger, and to perform more and more functions. Asymmetric information also serves to explain why bank-client relationships tend to be of a long term contractual nature and why the interest rate spread can in no way be used by banks to select clients to whom they lend according to their riskiness, as it can give rise to adverse selection.

It concludes that to survive banks must operate equilibrium credit rationing, a behavior which ill accords with the traditional view of how the price mechanism works to achieve equilibrium. Credit markets are therefore peculiarly structured, in the sense that there prevail long term relationships based on trust, and a relationship can only with great difficulty be transformed into a commodity. This is, however, exactly what banks tend to do, when they come to the limit of their lending limits, fixed by legally enforced capital requirements. They tend to transform credit relationships into commodities which can be sold on auction markets, without directly engaging their capital. This is the essence of the "securitization" process.

John Hicks wrote in 1935 that capitalism requires for its progress that a large part of economic relations be allowed to remain of a long-term-contractual, customary nature. Only a top layer of economic relations must be allowed to be of a short-term, arm's length nature. If this layer becomes thicker, because of ill conceived or ill inspired government intervention, the shocks which short-term auction markets, by their working, communicate to the rest of the economy (which works to its best advantage on a long-term-contractual basis) will result in deep and continuous fluctuations in investment and employment, which will in turn cause continuous intervention by governments with economic policies that, by superimposing themselves on the already existing fluctuations, will very often achieve results opposite to those desired.

The new monetary theory strongly reinforces Hicks' intuition. It points to the emergence of arm's length, auction type financial markets as the outcome of ill guided and ill inspired attempts to control the growth, concentration and universalization of banks, to which large banks respond by creating open markets where they can acquire the funds which government induced market segmentation has denied them. In this new light we can see the unfreezing of the institutional set up in the financial system of the U.S. which occurred in the last forty years, and which has given rise to successive waves of financial "innovations," as originated by a diminution of the political power of the financial sectors protected by the regulatory freeze of the 1930s and by the corresponding increase in the political power of their competitors, the large money center banks.

This has not been a bloodless fight, as it can be called responsible for the most important episodes of system instability that have occurred in the same period. That is because for the groups penalized by the Roosevelt and wartime reforms to reacquire the market share they desired, what had become a mainly fixed price system because of legal impediments, had to be transformed into a mainly flex price one, that is to say, it had to go against the nature of the credit relationship. But monetary policy had adapted itself to being managed in a fixed price environment and with the new move into flex-pricing it lost its bearings. It still works to some extent because there still remains a core of fixed price relations. As Stiglitz and Blinder have observed, open market operations transmit a message from the FED to the economy only because banks still give credit according to equilibrium credit rationing. Once lending takes place through securitized operations, sold in auction markets, which large banks have fostered in order to reacquire the market share and the scope of operations denied them by laws, policy messages to the economy become very difficult to calibrate. They have to become exceedingly forceful to be at all effective. Interest rate changes become so deep that their oscillations perturb the working of the economy and increase its instability.

It was noted above, however, that this is a necessary phase through which specialized financial systems must go once the fetters of regulation are removed and a new competitive structure prevails, which entails a drastic redistribution of market shares in favor of the more powerful agents. The fixed price system must become a flex price system for a time long enough to allow the reshuffle of market shares which will give enough power concentration to allow it to become a fixed price system again. The danger of course is that in the intermediate phase instability may become so great and interest rates may have to oscillate so much that the system may get out of control altogether, and cause severe welfare losses to the countries involved in the transformation, before a new fixed price phase is reached.

#### SECTION VII

As we noted above, American policy of financial regulation in the last thirty to forty years can be interpreted as being driven by the large banks' utter determination to regain the market share and freedom of action they had lost in the thirties and forties. Sometimes the regulators seemed to succumb to this desire, sometimes they tried to oppose it; in those instances large banks adopted evasive action, by creating auction markets where they could acquire reserves to expand and compete. In the late seventies and early eighties deregulation became open government policy. As large banks circumvented regulations, the Government thought it might as well get rid of them altogether. But it also adopted deregulation because it genuinely believed that markets ought to prevail over institutions, that competition would reduce concentration and bring about a better deal for consumers and citizens in general.

As the BIS Annual Report for 1992 aptly notes, this sudden deregulation, coming to a hitherto highly regulated system, made it become unstable. The Savings and Loans, and housing credit episodes are quoted as powerful examples of that instability. The gradient between the initial conditions of heavy regulation and the new competitive freedom was too steep and the system stumbled upon it and fell ruinously.

We noted above that a large part of the explanation of why some international financial markets have come about in the last thirty years is to be found in American regulation and deregulation. Their state of semi-total anarchy is a result of the strange market segmentation imposed by politically strong interest groups in the U.S. and U.K., and of the large banks' protracted fight against it.

#### SECTION VIII

If we agree with the new monetary theory on the inevitability of financial power concentration, based on the powerful action of asymmetric information, we must conclude that regulation must be based on a completely different philosophy from the one which seems to have informed the action of U.S. and British regulators. We suggested that their guiding light was neoclassical theory and it is precisely the absence of that theory from the minds of continental European and Japanese regulators, as well as some Federal Reserve officials, which can explain the stern warnings issuing from the BIS and FRBNY. It can also explain why in continental Europe and Japan large banks' growth has not been seriously limited. When it was, as in Italy or Japan, it could be explained by the political power of local financial institutions (Italy) or by American early post-war or more recent (1980s) economic diktats.

As we noted above, however, the neoclassical message that informs U.S. and British regulators seems to have conquered the IMF altogether, even now that U.S. regulators are rethinking their philosophy, in view of domestic disasters and German–Japanese successes. Undeterred, the IMF marches to the neoclassical tune. It imposed financial liberalization to Latin America, with great welfare loss and is now busy doing the same in Eastern Europe and the CIS, with welfare losses which are daily becoming clearer.

#### SECTION IX

Recognizing that financial development starts with banks and continues with larger and larger banks involved in more and more functions over a wider and wider area has helped European and Japanese regulators to establish close longterm ties to their large banks. Governments and Central Banks have always tried to operate through their help and not against them and have always worked on the principle that governments and Central Banks are a permanent and essential part of the financial market which, like all markets, is a social body requiring organization and leadership. Adversarial attitudes among market participants, or at least arm's length relations are not the mode of control adopted by the European and lapanese regulators. In this attitude they had to persevere, however, with great difficulty, as in the other half of the world financial market the "Anglo-Saxon attitudes" of deregulation and flex pricing were prevailing, and before their inception folkloric market segmentation had led to the creation of massive offshore markets by U.S. and British large banks.

This division of the world's financial market into two mutually heterogeneous halves, which are however deeply connected to one another, has now reached a critical stage, as the BIS Report indicates. Regulating the world financial market requires agreement on ground rules among regulators, which can then enforce them on market participants. But the Anglo-Saxon regulators still stick to their strange but politically safe underhand way of allowing large banks to grow and compete while appearing to do the opposite. This has directly caused domestic financial turmoil and the anarchic growth of off-shore markets which daily threaten world financial stability. Moreover, in the non-Anglo-Saxon half of the financial world regulators know, because of many bitter experiences, that their power over their own large banks has drastically diminished because of the state of affairs which has come about owing to the Anglo-Saxon regulators' behavior. The BIS 1992 Report was greeted with acid comments in

the Anglo-Saxon financial press. Open innuendoes were made about the BIS managing director's strange attitude to market freedom and innovation, calling him a Bundesbank inspired retarder of financial progress.

As long as the growth of large financial institutions in the U.S. is not openly recognized as inevitable and even perhaps as a positive development by U.S. regulators, and steps are taken to allow it to take place in a steady and orderly fashion, the present division of the world financial market into the two halves we have described will continue, generating instability and dangerous uncertainty. It is an Anglo-Saxon problem which cannot, unfortunately, find a vicarious solution. Other regulators can only indicate the dangers and make suggestions, but it is up to the U.S. and British authorities to enforce the solutions.

A very important step forward would be a conversion of the British authorities and large financial market operators to the continental and Japanese view of financial organization. This would leave the U.S. as the only market which is still regulated according to neoclassical principles. Unfortunately, while, as we already said, large banks in Britain have absorbed other financial intermediaries, the expansion of London as the main off-shore market of the world in the 1980s has created enormous interests in its continuation as the place where American and Japanese large banks do what they are not allowed to do at home (the Japanese because of the McArthur Banking Law, which now seems destined to disappear in 1993). It is very difficult for those who have prospered by those activities to suddenly turn against them. It could only happen if British large banks thought they had more to gain by taking a leading role in the unification of the European financial market than by remaining the largest off-shore market in the world. British participation in the EMU ought to be a good omen in this direction, but one can still detect in British attitudes a desire to keep the other option open, especially after German reunification has seriously tilted the postwar European power balance. Britain may still lift anchor and sail away from Europe and towards the high seas, or at least the off-shore, which she knows so well.

Carter Golembe and Sidney Holland have recently thought of another deus ex machina. They suggest that since European financial unification is based on the principle of one license and of mutual recognition, the same regime will start being demanded, in reciprocity, of the U.S. authorities, when the problem will come up of U.S. banks operating in Europe. European banks, in other words, will ask to be allowed to operate in the U.S. according to EEC Banking Law, which allows branching and universal banking. A contradiction will then arise between what European banks can do in the U.S. (and U.S. banks in Europe) and what U.S. banks can do in the U.S. This ought to accelerate reform of financial institutions and regulations in the U.S.

#### SECTION X

A few concluding remarks are in order. The world financial system has become thoroughly interconnected as far as transactions are concerned, but it is still divided into two precise halves as far as regulatory principles, rules, and methods are applied. The dividing line separates the Anglo-Saxon countries and the rest of the world. We have shown that the Anglo-Saxon concept of regulation starts from the principle that market concentration is unnatural, and ought to be eradicated, and that the world ought to develop towards ever freer and larger markets, where small competitors operate without prevailing over one another.

All other countries seem to have adopted the regulatory principle that size is a natural consequence of technical progress and information asymmetries, that large institutions are a result of economic development and ought to be helped to generate welfare, rather than being hindered just because they are large. In the non-Anglo-Saxon half of the world financial market, therefore, the growth of large banks has traditionally been encouraged as a means to acquire national economic power and as a way of helping industrial and commercial development. Markets are thus seen as being naturally composed of larger and larger operators.

From the straightforward acceptance of economies of scale and scope in financial organization as a natural and beneficial state of the world comes a view of regulation as the midwife of ever more efficient large banks. Regulation is thus designed to help banks to grow in a steady and orderly fashion, rather than to stunt their growth.

At the bottom of it all there is a view of economic life as consisting of cooperative rather than adversarial relations. This view is founded on the persuasion that nationalism is a force strong enough to impose cooperation on the economic agents of a country, and that internationalism is just an extension of nationalism first to one continent, then to the whole world. What we can describe as transnational behavior has, however, been forced upon the large banks and companies of Anglo-Saxon countries by the anticoncentration philosophy of their national regulators. This has been especially true of U.S. regulators since the 1930s and has pushed American large banks and companies to create larger and larger offshore markets to satisfy their growth needs, which were stunted by U.S. laws and policies. It was this peculiar political philosophy, which sees power concentration as inherently bad and dangerous, that compelled the U.S. financial market to experience extremely peculiar institutional changes, and a degree of structural instability which has spread to the world financial market. The deregulation phase of U.S. financial policy has been based on the view that government intervention is bad per se; the difference with the previous phase has been that the policy to reduce size in financial institutions was that of compelling institutions to engage in price competition, in the hope that consumers would benefit and institutions would fade into freer and larger markets.

It is very difficult to envisage how this fundamental difference in regulatory philosophies can be bridged, in order to achieve the cooperation among regulators which the globalization of financial markets requires. The much propagandized international agreement to establish capital adequacy rules was obtained only because the U.S. authorities imposed it and the Japanese, whose financial institutions it was meant to restrain, could not refuse, as they had a gigantic trade surplus with the U.S. to be forgiven for.

It was typical of U.S. regulators, however, to think that in capital adequacy rules they had found a way to prevent Japanese large banks from monopolizing the financial resources that Japan had acquired because of its huge surpluses. They also compelled Japan to open its capital market to foreigners. As we saw earlier, the result was that Japanese banks used the phenomenal rise in the Tokyo stock exchange which financial liberalization induced to recapitalize themselves and enormously expand the size and scope of their international operations. The orderly growth of Japanese financial institutions was, however, seriously disrupted by the U.S. imposed reforms, and relations among market operators and between them and the Japanese financial authorities were severely harmed by the disorderly development imposed by the Americans.

The financial bubble to which Japan has been subjected will in the end be seen as the useless and dangerous phenomenon that it was. While it unsettled, probably for a long time if not for good, a well tried and immensely successful mode of financial and economic regulation, it certainly did not add at all to the welfare of the American citizens, and not even to that of the U.S. financial system, or of single parts of it. It was just one of the more painful cases of the U.S. trying to force its regulatory philosophy and its view of financial development on the rest of the world. While these "Anglo-Saxon Attitudes" remain, there can be little hope of greater world financial stability. The unreal calm which prevailed in the international financial markets in the last three years can be explained by U.S. transnational financial institutions' need to retrench and keep a low profile, because of their previous gigantic losses. In the last six months, however, the reacquired health of their balance sheets has made them bold again and the growing turmoil on world financial markets is the result. It is perhaps the fear of what havoc this new boldness can wreak on the world financial system that has prompted two usually quiet and restrained gentlemen like Messrs. Corrigan and Lamfalussy to utter their bluntly worded messages.
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### THE REGIONAL ARCHITECTURE OF GLOBAL ELECTRONICS: TRAJECTORIES, LINKAGES AND ACCESS TO TECHNOLOGY

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Does technology diffuse automatically across national boundaries in an open, ever more global world economy? Are the arrangements like GATT — that served to maintain reasonable access to national markets for trade and investment — up to the task of enabling access to the technologies vital to economic development in the next century? The latter answer turns on the former, and the former is not as obvious as suggested by the conventional image of mobile technology and footloose multinationals.

Much, perhaps even most technology can eventually diffuse from one economy to another under the right set of conditions. But over what time frame and at what cost? If the time frame is too long relative to successful exploitation, or the costs too high relative to those of the originator, then real economic opportunities and benefits will be sacrificed by the receptor economy. Europe's struggles to build a viable position in computers and semiconductors, and to apply those technologies at a pace competitive with the U.S. and Japan, suggest how imperfect diffusion can be a significant competitive constraint that is very difficult to lift.

This paper explores the prospects for open access to important technologies, using recent developments in electron-

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ics as the case in point. Over the last decade a fundamental competitive dynamic has emerged in that industry: driven by Japanese success, hardware technology and manufacturing activities have migrated to Asia while soft technologies — from design and architecture to software and systems integration — have concentrated in the U.S. The industry's "globalization" has assumed a distinctly regional cast. Effective access to each region's technologies has become the sine qua non of competitive success.

Not surprisingly, the logic of reciprocal access lies behind the recent surge in cooperative deals between U.S., Japanese and European firms, as well as the backdrop of bilateral political disputes. While individual companies may solve the puzzle by cooperating, regional concentrations of technology are not symmetrically accessible. Asymmetrical access creates the possibility for distinctly different economic growth paths in each region — i.e., regional technological trajectories — and the potential for enduring conflict between them. Reform of existing rules and institutions will be necessary to deal with the resulting problems.

This paper is organized into three sections. Part I explores technology trajectories and introduces the ideas of a technology's "supply base" and "architecture" of supply. The supply base mediates the international diffusion of technology, shaping the terms on which critical technical inputs reach producers. The architecture of supply matters because it shapes both foreign access and the domestic capability to exploit technology effectively. It creates the possibility for distinctive national or regional technology trajectories.

Part II then examines how Japan's technological capabilities have altered the terms of competition in electronics. It describes Japanese industry's capacity to exploit electronics technology with "lean" and "post-lean" production, details the competitive shifts in electronics, and analyzes the impacts on the architecture of supply. Part III describes a new regional division of labor in electronics emerging within Asia as a consequence, and surveys the prospects for coping with the problems of asymmetrical access.

#### I. THE ARCHITECTURE OF SUPPLY AND THE TRAJECTORY OF TECHNOLOGY

Technological change is marked by broad uncertainty within defined constraints. The constraints are set by the "natural" limits of the operative scientific paradigm and of the production capabilities available to exploit it. The uncertainty stems from cost/performance/functionality trade-offs, customer preferences given alternatives, and changing general business conditions which broadly affect the capacity to produce and consume innovations.<sup>1</sup>

For example, under physical laws as currently grasped, the theoretically fastest silicon transistors can never be made to switch as fast as gallium arsenide (GaAs) transistors. Faster computers ought in principle to be built from GaAs and that has been predicted for some time. But after four decades, sunk investment has pushed silicon production capabilities — that is, the ability to produce silicon microelectronics with high performance at low cost — far beyond those for GaAs. There is far less uncertainty in pushing silicon toward its theoretical performance limits than in attempting to move GaAs into low-cost production. Certain production capabilities negate uncertain theoretical performance advantages (i.e., the performance advantage comes at too high a current cost). The predicted displacement of silicon by GaAs in computers has never occurred.

By contrast, GaAs responds to photonic impulses by releasing electrons while silicon does not (under current understandings).<sup>2</sup> Despite the uncertainty associated with exploitation of GaAs, that physical constraint means that optical communications systems are built using essential GaAs rather than silicon components to translate optical into electronic signals for processing. The same overall levels of constraint and uncertainty thus play out differently in different contexts.

In that sense, technology development is a path-dependent process of learning in which tomorrow's opportunities grow out of product, process, and applications activities undertaken today.<sup>3</sup> In the example above, had GaAs been studied, produced and used as thoroughly over four decades as silicon, it might today be widely applied even in computing. But the semiconductor industry instead went down the silicon development path, accrued 40 years of cumulative learning, and, in the process, effectively foreclosed alternatives except for uses where silicon is inadequate.

As the example indicates, such development paths are not dictated alone by scientific and technical knowledge. Rather, technical progress involves additional, often subtler insights that coalesce only in conjunction with experience in development, production and use. The process is simultaneously cyclical, incremental, and highly interactive — rather than a dramatic breakthrough, a leap up to the next rung in the ladder of technological progress, advances are driven through iteration and cumulative learning-by-doing in production, learning-by-using in consumption.<sup>4</sup> This iterative, cumulative activity helps to produce ordered development paths within the broad patterns of constraint and uncertainty that mark all industrial innovation.

Technology development paths are thus crucially contingent upon the actions of developers, producers and users, as they perform their respective roles, interact, and accrue different kinds of know-how over time. Their choices always involve trade-offs given the constraints, uncertainties, and opportunities they face. Differently positioned actors can make different choices and establish different lines of progress. They can evaluate the attendant risks and uncertainties differently, apply different capabilities to their technological effort, receive different signals from customers (and financial markets) in response, and go down different development paths. They can, in other words, mount differing technological trajectories — that is, differing progressions along the economic and technological trade-offs available within the broad fabric of constraint and uncertainty.<sup>5</sup>

That is how Sony and JVC/Philips developed two quite distinct formats, Betamax and VHS, for the VCR. That is why firms other than the developers often establish the successful lines of technical advance. Consider Xerox's famous Palo Alto Research Center (PARC). Xerox–PARC pioneered many of the major innovations of desktop computing, including workstations, the use of icons for user interface (featured on the Apple Macintosh and now widely emulated by everyone else in the industry), and the ubiquitous 'mouse' pointing device. Yet, it was others who successfully exploited the Xerox innovations, just as it was Japanese firms who successfully commercialized the U.S.-developed technologies underlying VCRs, Camcorders, and miniature flat displays.

These ideas about technological progress can be extended, with care, to the modern industrial economies which rely upon the generation and adoption of industrial innovation for growth.<sup>6</sup> Their development is characterized by the ability to effectively exploit technology within given patterns of constraint and uncertainty. And again, the capacity to exploit technology varies with context — in this case, the community and market context of the economy within which technology evolves. The context helps to define the patterns of constraint and uncertainty facing domestic industries. For example, a highly literate and technically trained work force has more opportunities for technical progress than a less skilled population. In effect, a high quality work force removes a particular production capability constraint and reduces the risks (the uncertainty) associated with some kinds of investments.

As the example implies, domestic capacity to exploit a technology lies in the particular capabilities for production and use of the technology resident in an economy. Broadly speaking, an economy's particular mix of capabilities embodies that economy's potential for the learning-by-doing and by-using that underlie technical progress. In turn, the exercise of the available capabilities determines how much of the potential for technical progress is actualized. Since capability differs from economy to economy so does the potential for learning and technical progress, and so ultimately does the actual realization of technology development paths.<sup>7</sup>

In short, different national mixes of production capabilities — i.e., different national capability sets — carry with them the potential for very different national technology trajectories. Although technologies and the capabilities they embody diffuse across national boarders in a relatively open world economy, divergent national trajectories can persist under two conditions: if cumulative learning and progress down a particular development path can accrue and be retained locally for extended periods, or if local capabilities to absorb technology from abroad differ significantly.

If diffusion was perfect and the ability to absorb new capabilities instantaneous, then development paths would not diverge for long. But of course, diffusion is not perfect because not all relevant know-how is internationally accessible through market and nonmarket mechanisms. Neither is diffusion instantaneous because the ability to absorb new capabilities depends in part on the available mix of old capabilities. Diffusion, like development, is path dependent.

For example, the task of fully integrating a new Nikon stepper (a specific kind of semiconductor manufacturing equipment) into an existing fabrication line is highly complex. The machine can be bought in Japan. Not all of the relevant knowhow is embodied in the machine. On-site, vendor-supplied technical support is essential to timely and cost-effective integration. Nikon's capacity and willingness to supply that support is much greater in Japan, where most of its engineering resources are, then in the U.S. A U.S.-based firm has far less ability than a Japanese-based counterpart to absorb the new technology in a timely fashion and at lowest cost — even though it is available on the market — because existing domestic capabilities are different (i.e., the domestic economy lacks Nikon's know-how).

The speed and degree to which technical know-how flows across national boundaries thus depends crucially upon the character of local capabilities. In the U.S., for example, employee mobility is very high, firms can be purchased outright, and short-term capital market constraints often push firms to license proprietary technologies. In general, U.S. technology accrues locally but diffuses rapidly even across national boundaries. By contrast, in a country like Japan, skilled labor mobility is low, acquisitions are virtually impossible, patient capital is available, and relevant networks (i.e., the supplier network in the Nikon example above) and national institutions are extremely difficult to access. As a result, considerable accrued technological know-how is retained locally in Japan and never diffuses as readily or rapidly across national boundaries.

In other words, successful diffusion of technologies from one economy to another is not automatic even in an open world economy. National technology trajectories can either converge or diverge depending upon whether or not the relevant national capabilities underlying them are effectively accessible. In this context, "effective access" exists when technological capabilities are available in the required amount and quality, in a timely fashion, and at a competitive cost. Conversely, the capabilities are not effectively accessible when unavailable at the appropriate quantity, quality, timing, or price.

#### A. THE ARCHITECTURE OF SUPPLY

As electronics pervades the modern economy, industrial innovation depends centrally on the component, materials, machinery and control technologies (i.e., software in digital electronics) that are combined to create new products and processes. Effective access for a domestic economy to those technological capabilities is a function of the resident "supply base" and, to use a spatial metaphor, the "architecture of supply." The supply base is the resident domestic capability to supply the component, machinery, materials and control technologies, and the associated know-how, that producers use to develop and manufacture products.8 The architecture of supply is the structure of the markets and other organized interactions (e.g., joint development) through which the underlying technologies reach producers --- i.e. for our purposes in particular, the international arrangements (e.g., open markets or direct investment) that permit producers in one country access to capabilities that reside in foreign supply bases. The supply base and architecture of supply can be thought of as economic infrastructure, in the sense that they are external to any particular firm but broadly support the firm's competitive position by helping to delimit the range of its possibilities in global markets, while providing collective gains (e.g., technological spillovers) for an economy as a whole.9

The supply base shapes the possibilities confronting producers in two ways. First, different architectures of supply can either **enable** or **deter** access to appropriate technologies in a timely fashion at a reasonable price. Second, different architectures of supply imply different opportunities to engage in the interaction and support (between suppliers and producers) that are necessary to effectively exploit the technologies that are accessible.<sup>10</sup> These points are worth a closer look.

The architecture of the supply base helps to structure technology access, timeliness to market, cost and opportunities for interaction between suppliers and producers. To see how, consider a supply architecture in which suppliers of all relevant components, machinery and materials are domestically based, with their production capabilities local. Further, they are numerous and highly competitive. They interact with their customers through arm's length transactions in markets that are cleared by prices, and have the local capability to provide high levels of service and support on demand. They do not compete with their customers, and have no other strategic imperative than to make their products (i.e., machinery, components, materials) available to as wide a customer base as possible.

This kind of supply architecture would ensure domestic producers easy access through the market to all relevant technologies, in a timely fashion, and at a reasonable cost. Moreover, it offers extensive opportunities for suppliers and producers to interact effectively. Know-how that is held by suppliers and is essential to effective use of the technology, but is not directly embedded in the technology offered (i.e., in the components or machinery) - the know-how embodied in technical personnel and the routines of the supplier organization — is still potentially available to customers. Conversely, know-how held by producers — e.g., about how the supplier's technology works most effectively in production, or about evolutionary requirements for the next generation - is potentially available to suppliers. If desired, each can request, and each has the local capabilities to provide, high levels of support to the other's activities. This kind of architecture creates opportunities for shared know-how and generates a third type of in-practice learning (besides learning-by-doing and by-using), learning-by-interaction."

Indeed, since all relevant production and interaction is local with this supply architecture, the domestic economy is supported by a fully capable supply base. Learning-by-doing, by-interaction, and by-using cumulate indigenously. Technological spillovers and other external economies accrue locally to the benefit of the domestic economy. In fact, this architecture is a quite accurate description of both the electronics supply base of the U.S. economy through the mid-1970s, and the economic benefits that accrued to the U.S. economy as a result.

Consider a slightly different supply architecture, albeit one with equal historical relevance. Here, there is only modest local supply capability. Rather, domestic-based producers are significantly reliant upon a foreign supply base (i.e., on imports of key inputs and on know-how that resides abroad). Luckily, however, the markets for the necessary technologies and know-how are quite open internationally, with low barriers to trade and to foreign direct investment. There is high mobility of supplier employees who can be hired away when that is necessary. Again, there are numerous foreign suppliers, highly competitive markets, and some degree of geographic deconcentration involving adequate local service and support in major markets. Moreover, sufficient numbers of the foreign suppliers do not compete against their customers. This kind of supply architecture permits reasonable, timely and cost-effective access to most relevant technologies. There are also some opportunities for learning by interaction between suppliers and producers, albeit fewer than with the previous architecture.

This was essentially the supply architecture for European electronics systems producers from the 1950s to the 1980s: they relied primarily on U.S. components suppliers, who were themselves competitive, numerous, located in Europe and the U.S., usually not in competition with their customers, and accessible through relatively open markets for trade and investment. Because many supplier development and production activities were not carried on in Europe, there were some constraints on European systems producers, particularly on their abilities to advance at the same pace as their U.S. counterparts through close interaction with suppliers. Nevertheless, there were sufficient interactions to permit the local economy to capture many spillovers and externalities. Europe benefited through timely use despite having only a handful of competitive electronics producers. Indeed, it was not until the competitive problems of U.S. suppliers threatened a much more constraining architecture of supply for Europe in the 1980s, that European companies (and governments) moved at great cost to recreate a locally controlled supply base in some important technologies.<sup>12</sup>

Now consider a starkly contrasting supply architecture, one in which domestic producers are similarly dependent on access to foreign sources for supply of technology, but the foreign markets are relatively closed to trade and investment. They are simultaneously oligopolistic and geographically concentrated. Moreover, the few major suppliers compete directly with their customers — that is, they supply components but also produce the electronic systems that incorporate the components. Here, most of the relevant supplier know-how is geographically concentrated. Opportunities for support and learning by interaction are available only to customers with a significant local presence in the supplier's heartland, and on terms largely dictated by the supplier.

This kind of architecture permits suppliers great strategic leverage. They have the ability to exercise market power or to act in concert to control technology flows. They can begin to dictate access to relevant technologies, the timing with which their customers can incorporate the technologies into new products, and the price the customers pay for the privilege. The suppliers can set the level of support and interaction with customers to emphasize their own learning rather than that of their customers. Such strategic leverage can be very consequential. For example, it can result in subtle pressures that delay a customer's new product introduction: studies estimate that a new electronics product that is only six months late to market can sacrifice up to one-third of its potential revenue stream.<sup>13</sup> Reduced revenues retard R&D, further delaving new products, and resulting in a downward competitive spiral for the customer. Indeed, the nature of this supply base - involving oligopoly, economies of scale and learning, first mover advantages, and the potential to dictate downward spirals to competitors — tempts established suppliers to engage in strategic policies and practices to preserve their leverage.14

This kind of supply architecture would significantly constrain producers abroad who were dependent on it, and would have great potential to eliminate opportunities for the dependent foreign economy to capture spillovers and other externalities. From the perspective of the distant economy, most of the relevant production activities lie abroad, as do all of the leading edge activities that generate most of the spillovers. The pace of domestic technical progress — the ability effectively to exploit the machinery, materials and component technologies which underlie all electronics — is effectively controlled from outside the domestic economy. Opportunities to capture externalities are reduced.

Nor, realistically, is the creation of a different and more accessible supply architecture an option for the dependent economy. The relevant skills are now concentrated elsewhere and can not be easily created except at great expense over long periods of time. The huge entry barriers are beyond the competence of most domestic firms to surmount. They require concerted government efforts to overcome. Such an architecture can be a significant constraint on development. Such an architecture may well be emerging today in electronics. We will examine why in Part II.<sup>15</sup>

#### B. THE SUPPLY BASE AND DOMESTIC CAPABILITIES

The architecture of supply delimits the capacity of a given economy or set of producers to access technologies and to interact with the related embedded know-how. More simply put, a given supply architecture determines whether and how technology diffuses internationally at a given moment in time. A highly restrictive architecture, as in the third example above, offers a domestic economy less latitude to explore different development paths, fewer opportunities for cumulative learning, and fewer chances to board the best technological development trajectories.

Of course, the architecture itself does not determine the local capacity to exploit the technologies and know-how it makes available. It does not by itself determine a technological trajectory. Exploitation depends on local productive capabilities that range from organizational competencies in development and manufacturing to the availability of capital for investment. Together, the capability of the domestic economy to exploit technology and the architecture of the supply base supporting that capability, ultimately shape the possibilities for national economic growth that are inherent in an economy's given distribution of industries.

While a given supply architecture thus does not determine local capacities to exploit technology, it can have a profound cumulative impact on them. To see how, recall that productive activities in a given industry tend to agglomerate spatially, something Marshall observed a century ago of the cutlery industry in Sheffield. The concentration of much of the American electronics industry in Silicon Valley is a good example of this tendency for particular industries to concentrate in particular locations.

That particular industries tend to be spatially concentrated is strong evidence of so-called "local externalities."<sup>16</sup> Such externalities (or external economies) provide localized social benefits greater than appropriable private gains, as in R&D spillovers. They can take several forms, including the availability of a pool of labor with the necessary specialized skills, of specialized networks of suppliers of inputs and supporting services, of a common knowledge pool through which firms can learn from each other. Local externalities tend to have a self-reinforcing effect — regions or nations that have a strong presence in a particular industry tend to generate the specialized inputs and networks of information that in turn make the industry even more competitive over time. In my view, such local capabilities are the probable basis for product differentiation and new technology generation in a given industry.

Next, consider that a given architecture of supply represents a spatial distribution of much of the skilled labor, supplier networks, and technological know-how that comprise a given industry's technology capability. To the extent the supply base is locally concentrated, it will be a principal source of the local externalities that underlie the spatial agglomeration of a particular industry. To the extent the supply base is locally absent, or spatially concentrated abroad, the local externalities are being provided elsewhere. Local productive activities in the industry will then likely tend to follow the supply base abroad to benefit from the externalities it provides there. When Apple goes to Sony to develop the portable Macintosh Powerbook, when Compaq goes to Citizen Watch for the LTE notebook, when IBM moves microsystem development out of the U.S. to Japan, they are seeking access to precisely such specialized local Japanese assets --- in this case, know-how in components and microsystems' design and integration — embodied in an electronics supply base that is resident in Asia.

Thus, a given supply architecture can either reinforce domestic capabilities to exploit technology or undermine them (when the relevant domestic activities move abroad). By altering the locational logic of industrial investment, the architecture of supply is, in effect, dynamically allocating national (or regional) opportunities to exploit technology over time. This is a second and distinct impact from its effect on technology diffusion: a given supply architecture could permit technology to diffuse internationally at any moment in time, but still bias new investment over time to the locations where it is spatially concentrated. In that way, a given supply architecture also represents a spatial distribution of opportunities for long-term economic performance associated with the effective exploitation of technology.<sup>17</sup>

Within the global electronics industry, regionally distinctive supply bases appear to be emerging in Asia, America and Europe. They are supporting highly variable national capacities to exploit the available technological opportunities in each region. The regional and national differences could well culminate in equally distinctive development trajectories. The next section explores Japan's distinctive trajectory and its impacts on international competition in electronics and the architecture of supply.

## II. HIGH VOLUME ELECTRONICS AND THE ARCHITECTURE OF SUPPLY

Domestic development trajectories are distinctive national progressions along the economic and technological trade-offs available to an economy. As Section I suggested, they depend upon domestic capabilities to exploit particular technologies, the cumulative industrial trek down unique development paths for those technologies, and the degree to which related relevant technologies diffuse through the architecture of supply and become available for domestic use. Japan's emerging trajectory in electronics is characterized by quite distinctive production capabilities to exploit the technology, a unique development path and a Japan-centered supply architecture.<sup>18</sup>

Genealogy matters in delimiting these variables: the emerging trajectory rests partly on the past development trajectory from which it is evolving. Indeed, the capacity to continue to exploit technology rests on available production capabilities and accumulated know-how from past development paths. For Japan, this has been set by the terms of rapid economic development over the last four to five decades. Post-war growth and the innovations in policy and production which supported it set the context and establish the capability to move down newer trajectories.

In the post-war period, Japan chose to emphasize investment in production over consumption, creating macroeconomic conditions for rapid growth. Governing elites encouraged the rapid adoption and widespread diffusion of technology acquired abroad, and helped to provide the skilled work force necessary to adoption. Policy helped to stimulate new investment through a variety of incentive schemes and reserved the growth in domestic demand for Japanese producers by formally closing the domestic market to foreign firms. As technology followers, Japanese firms borrowed, implemented, and improved foreign technologies through continuous rounds of reinvestment in the rapidly growing domestic economy. In essence, Japanese firms faced conditions in quite traditional industries that Americans associate with high technology industries — rapid growth and technological development forcing dynamic adaptation through investment and learning. Dynamic scale economies dominated, making the pursuit of market share a necessity to sustain short term profits.<sup>19</sup>

#### A. LEAN AND POST-LEAN PRODUCTION

As a result of these developments, real innovations in production, production organization and technology development were generated and entrenched in Japan. The hypothesis is that these breakthroughs are of sufficient scope and power to greatly expand the potential for new technology development paths and new performance trajectories.<sup>20</sup> What is emerging is not incremental or even radical improvement in the older production systems still entrenched in the U.S. and Europe, but a new approach, a new paradigm. Elements of these breakthroughs are found in the United States, but the evidence is that the new approaches are not well established or broadly diffused there.<sup>21</sup>

The detailed character of this production revolution is increasingly understood and documented.<sup>22</sup> The central codewords of the new manufacturing are flexibility, speed, and quality. The popular notions of quality circles, just-in-time delivery, and automation — slogans of the new approach are simply organizational or technological elements of the whole. Though implemented in a variety of forms, the most powerful involve flexible volume production (labeled variously as flexible automation, flexible mass production, and lean production).<sup>23</sup> Until recently, high-volume production has been dominated by the rigidities of scale economies expensive equipment dedicated to specific tasks in which the costs could only be recouped by large production runs of the same items. Variety could be very costly because it disrupted long production runs and incurred significant costs in long set-ups and substantial down time. Now, organizational innovation, reinforced by the application of computing resources, has removed the past constraints. The new approach creates the capability of producing a variety of tailored products with costs, quality, and market responsiveness far superior to mass production.

Principle features of the new approach include shorter production runs manned by smaller teams of multiskilled workers operating less expensive general purpose machinery that can be rapidly changed-over for new production setup with minimal downtime.24 The production organization's primary emphasis is placed on intensive process control to systematically eliminate variability in manufacture (the major source of defects). In turn, elimination of defects and rapid changeovers eliminate the need for carrying inventory and permit parts to be delivered as needed, "just-in-time" for production, further reducing costly inventories. Tight process control and the multiskilled work team also eliminate the costly layers of supervisory, maintenance, housekeeping, and quality control personnel that characterize mass production. In a variety of ways that tend to speed up design and production cycles, the new system extends beyond the shop floor into product development and to suppliers.<sup>25</sup>

Overall, significant gains in product quality and variety result, without increased costs, but with great flexibility in production and greatly reduced total cycle times, thus enabling superior market responsiveness. Indeed, the flexible, speedy production capability permits the leading firms to do their market research by introducing new products and then accommodating to customer reaction, fine-tuning product configurations and volumes to actual demand.<sup>26</sup> Conjoined with the policy innovations described earlier, the new practices are already transforming traditional industries, generating vertical disintegration in many cases, new entry in others, and prying open established industrial structures.<sup>27</sup> The observed forms of new production suggest a sharp break from practices dominant in the middle part of this century and pave the way for realizing the huge gains in productivity that have been promised but not yet delivered by the application of information technology to production.<sup>28</sup>

This production system is continuing to evolve toward what might be called post-lean production. The aim is an even more dynamic manufacturing capability in terms of process accuracy, quality control, maintainability, reliability, and reduced cycle and changeover times.<sup>29</sup> Systematic documentation and rigorous specification of the production process and all associated contingencies will be necessary, and will only be achieved through the pervasive use of information technology. Sufficient rigor in documentation and specification would permit production changes and problems to be anticipated before they occur, and to be planned for in advance, enabling a kind of predictive manufacturing capability with problem prevention in the analogous sense of preventative medicine.

The post-lean system is the subject of ongoing debate and discussion in Japan even though it may be somewhat beyond current technical and organizational capacities.<sup>30</sup> Its realization will require truly intelligent and fully integrated systems of computer controlled manufacturing, support logistics, design-development, and customer interface and support. The goal would be to "make only the products wanted in only the quantities wanted," — in essence, to produce customer-tailored batches of high-value products.<sup>31</sup> The post-lean system would be supported by a less integrated, more virtual production organization, one that relied on network supported interactions between suppliers, producers and users.<sup>32</sup> Overall, post-lean capability promises near real time adaptation to market changes with extraordinary levels of flexibility, productivity, value-added and quality.

Realizing those goals will require that Japanese industry master an ever broader and deeper range of technologies, while integrating them into new combinations in the manner of mechatronics (i.e., a fusion of mechanical and electronic component/machinery skills). That appears to be a principal reason why Japanese high-tech companies are now investing more in R&D than in plant and equipment — up to 80% more on average.<sup>33</sup> Partly as a consequence, the post-lean system may well have the potential to generate discontinuous leaps in the capacity to exploit new technologies. Distinctive competitive advantages will accrue for firms and nations that master the new system — just as in the past with the rise of conventional mass production.<sup>34</sup>

#### B. HIGH-VOLUME HIGH-TECHNOLOGY

The concentration of new manufacturing know-how in Japan is creating a distinct technology trajectory there that will increasingly set the terms by which industrial and even perhaps military hardware technologies evolve in other countries. The development and application of a broad range of subsystem, component, machinery and materials technologies are increasingly being driven by high-volume commercial applications that boast leading-edge sophistication and extremely high quality at remarkably low costs.

The case is clearest in electronics, an industry Japanese data classify according to the application market for the electronic system in question — consumer, industrial (comprising computers and data processing, office automation, telecommunications, industrial/professional systems like instruments and robotics), and military. The following tables present data on the evolution of the Japanese electronics industry over the past decade, showing its remarkable growth and shifts in the composition of production despite currency shocks and unstable markets. Note, in particular, the relatively stagnant consumer segment and the simultaneous, dramatic growth in components and industrial electronics (i.e., not consumer and not military). Note also how the changing composition of exports only partly mirrors the shift in domestic production, with the export of parts and components really driving foreign market penetration — a strong indication that Japan's emerging electronics strength is supply-base led.

While the aggregate market data are impressive, they actually disguise an underlying dynamic in which the fastest growing products across the traditional categories share specific characteristics. Consider the following product set: laptop, note-book, and hand-held computers, optical disk mass storage systems, smartcards, portable faxes, copiers printers and electronic datebooks, portable and cellular telephones and pagers, camcorders, electronic still cameras, compact disc players, hand-held televisions, controllers for machine tools, robots and other industrial machinery, and embedded automotive systems like those for anti-skid braking, engine, transmission and suspension control, and navigation.



Table 1.





These fastest growing products are miniaturized systems built around embedded, often dedicated microprocessors (or microcontrollers) with embedded software for control and applications. They are multifunctional, combining computing functionality with communications, consumer with office, etc. By virtue of their size, such products are increasingly portable. They are also networkable, that is, their capabilities are significantly enhanced by being networked together into larger information systems.

The most distinguishing characteristic of these products, however, is that they comprise sophisticated, industrially significant technologies, that are manufactured in volumes and at costs traditionally associated with consumer demand. Taken together, these products define a new electronics industry segment, being generated in Japan with only limited participation by firms outside Japanese industry — high-volume digital electronics. Because of the push to produce high performance at the lowest possible price points, this high-volume electronics industry is — as Table 2 suggests — beginning to drive the development, costs, quality, and manufacture of technological inputs critical to all electronics, and to industries like automotive being transformed by the application of electronics. At stake is a breathtaking range of essential technologies from semiconductors and storage devices to packaging, optics, interfaces, machinery, and materials.

The new product set contains, for example, a wealth of silicon chip technology, ranging from memory and microprocessors to charge-coupled devices (CCDs). These products have been a principal factor behind the drive for Japanese semiconductor dominance. Over the past decade, emerging high-volume digital products have grown from 5% to over 45% of Japanese electronics production, accounting for virtually all of the growth in domestic Japanese consumption of ICs.<sup>35</sup> With this segment continuing to expand at 22-24% per year, more than twice as fast as the approximate 10% per year average growth rate of the electronics industry as a whole, high-volume electronics will constitute an ever larger part of the electronics industry of the next century. Its impact on the component technologies that all electronics systems share is just beginning to be felt.

Aside from silicon-integrated circuits, optoelectronic components like laser diodes and detectors, LCD shutters, scanners, and filters are also present in the new high-volume products. For example, the semiconductor lasers that, at different wavelengths, will become the heart of optical communications systems, are currently produced in volumes of millions per month, largely for compact disk applications. Displays and other computer interface technologies provide yet another significant overlap between high-volume and other electronics markets.<sup>36</sup> Miniature televisions from Japan are the leading edge users of the flat-panel, active matrix, liquid crystal display technology that is vital to the future of the computer industry. Similarly, map navigation systems already appearing in domestic Japanese automobiles are the functional equivalent of military digital map generators.

Optical storage was refined for consumer compact and laser discs, but is beginning to spread into industrial data applications, as are the latest miniature commercial power technologies like rechargeable battery packs for portable phones and computers. High-volume requirements are also driving a wealth of imaginative packaging technologies that range from tape automated bonding and chip-on-board to multichip modules. Producers of handheld LCD televisions already use packaging technology as sophisticated as that being used in advanced U.S. defense systems. The new electronics products are driving similar innovations in precision mechanical and ferromagnetic components like motors, gears and switch assemblies, and recording heads, transformers and magnets. Ball bearings used in video cameras, for example, are now of equal precision to those required for missile guidance systems.

Successful production for high-volume markets also requires mastery of several different kinds of highly responsive product development, materials and manufacturing skills. For example, Japanese consumer producers like Matsushita now supply the most advanced manufacturing equipment for IC board-insertion, a capability essential for most electronic systems assembly. Japanese materials suppliers like Kyocera have become virtual sole suppliers of ceramic packaging and other advanced materials for mass market applications. Similarly, because elaborate repair and maintenance is not costeffective in consumer markets, high-volume producers deliver product reliability levels that usually surpass industrial products at far less cost. Indeed, the most advanced highvolume electronics suppliers do their market research by introducing products and fine-tuning product configurations and volumes to actual demand.<sup>37</sup> They are masters of the new manufacturing — utilizing an extremely short and efficient development cycle, and flexible, low-inventory manufacturing.

As high-volume electronics production begins to use the sophisticated technological inputs that industrial systems share, it begins to drive common technological development.

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By spreading the huge development costs across many more sales, high-volume markets can support the development of advanced technologies previously initiated only by public spending. Simultaneously, such markets demand much lower costs, and deliver them through rapid attainment of economies of scale, learning, and the other attributes of the new manufacturing. The associated product development and process skills permit the technology to be cycled much more rapidly. Cost-savings and rapid cycle times permit expanded R&D, broader experimentation, and the capturing of new opportunities for additional technological learning. The final result is a new technological development trajectory — new generations of cheaper but sophisticated technologies emerging from high-volume commercial applications but applicable across the board, and therefore essential to the success of all other industries that produce or use electronics.

#### C. A NEW SUPPLY ARCHITECTURE

One impact of the new trajectory is dramatically to shift the character of the architecture of supply of component, materials, and machinery technologies in electronics. From a supply architecture that used to be characterized by relatively open markets for trade and investment, multiple competitive suppliers, geographical dispersal, and widespread opportunities for interaction between suppliers and producers, almost the reverse is emerging. A few large, vertically integrated or vertically-affiliated Japanese firms increasingly are the predominant suppliers of the major component, materials, and machinery technologies.<sup>38</sup> Their production activities from R&D through assembly are concentrated in Japan.<sup>39</sup> Moreover, while the domestic Japanese economy is more open in a trade sense than historically, it remains relatively closed in an investment sense, especially to acquisitions and controlling equity investment from abroad in suppliers of major technologies.<sup>40</sup> Similarly closed are the relevant technology institutions including corporate and governmental laboratories and the social networks of technical peers.

The following tables suggest how Japan's unique trajectory, high-volume electronics, has affected the electronics supply base for the U.S., eliminating major parts (Table 3) and eviscerating domestic capability in semiconductor manufacturing materials and equipment (Table 4).

| Table 3:   |
|--|
| Gaps in the U.S. Technology  |
| Supply Architecture for Components   |
| Precision—mechanical<br>Motors—flat, high torque, sub-miniature<br>Gears—sub-miniature, precision machining<br>Switch assemblies—sub-miniature |
| Packaging<br>surface mount, plastic, TAB, COB  |
| Media<br>optical disk  |
| Displays<br>LCD, Color LCD, LCD shutter<br>CRT-large, square, flat<br>LED-arrays<br>Projection systems   |
| Optical<br>Lens<br>Scanners<br>Laser Diodes  |
| Ferromagnetic<br>Video and audio heads<br>Miniature transformer cores  |
| Copier-printer<br>Small engines for laser printers   |

Source: National Advisory Committee on Semiconductors, 1990

| Table 4.                                 |
|--|
| U.S. Dependence on Foreign Semiconductor |
| Equipment and Materials                  |
| (percent imported, 1988)                 |

| Equipment:                    |    |
|-------------------------------|----|
| Stepping Aligners             | 68 |
| Resist Processing             | 69 |
| Scanning Electron Microscopes | 80 |
| Wafer Saws                    | 75 |
| Die Bonders                   | 80 |
| Tape Automated Bonders        |    |
| Mold/Sealing Equipment        | 65 |
| Molding Presses               | 75 |
| Lead Trim and Form            | 80 |
|                               |    |
| Materials:                    |    |
| Silicon Wafers                | 97 |
| Mask Blanks                   | 91 |
| Sputter Targets               | 96 |
| Lead Frames                   | 95 |
| TAB Tapes                     | 85 |
| Molding Compounds             | 78 |
| Ceramic Packages              | 96 |
| Ceramic Substrates            | 97 |
| Hybrid Packages               | 80 |
| Bonding Wire                  | 95 |

Source: National Advisory Committee on Semiconductors, VLSI Research, Inc.

Almost all of the above component, machinery, and materials technologies are sourced now from Japan, often exclusively. These dependencies in U.S. supply are, of course, the opposite side of the coin to a hardware electronics supply architecture increasingly concentrated in Japan and Asia.

As Part I suggested, the emerging supply architecture boasts great opportunities for firms who can effectively access it to interact and develop along new technological trajectories. Correspondingly, however, it offers significant constraints to those outside of Japan who are dependent on closed, concentrated competitors for access to technological inputs and opportunities. As the architecture has changed, differently situated firms outside Japan have responded in different ways to deal with their pending competitive dependence.

At one extreme for example, IBM and Philips have moved key aspects of micro-systems development and production out of the U.S. and Europe and into Japan - to where the relevant skills and technology suppliers are. At the other extreme, as in the U.S. consumer electronics industry, major producers like GE and RCA have simply exited the business. Their dependency on competitors for key component technologies and associated know-how eventually eliminated their ability to competitively progress from one product generation to the next. In between these extremes are a range of other responses from expensive national attempts to construct supply alternatives (e.g., Sematech, the government-supported entry of Korean producers in memory chips, Europe's JESSI project) to strategic alliances with Japanese companies aimed at accessing the necessary technology and know-how (e.g., Apple-Sony, H-P-Canon, Motorola-Toshiba, Compag-Citizen Watch, Hitachi-Gold Star, Bull-NEC, Daimler-Mitsubishi).

While such alliances are possible, indeed unavoidable, they come at a price wherever there is a significant asymmetry in bargaining leverage: the foreign partner is often more exposed to a loss of autonomy and control over his own business. This is obvious from the experience of Korean consumer electronics and Taiwanese PC firms.<sup>41</sup> They can progress up-market to challenge Japanese firms at the leading edge of the palmcorder or color-notebook PC markets, only to the extent their Japanese competitors are willing to supply them with the essential component technologies like CCDs and color LCDs — that is, at a pace and price dictated by the competitor.

Where bargaining leverage is more symmetrical, highly effective responses have taken two forms. On the one hand, firms like Hewlett-Packard and Motorola have made a renewed commitment to domestic manufacturing and to maintaining position in key component technologies like printer heads and semiconductors, even as they consummate international deals to manage access to technologies and know-how abroad. On the other hand, firms like Sun and Apple have attempted to commodify hardware manufacture by seeding multiple suppliers and controlling the evolution of interfaces and architectures — in effect, fostering continued supply architecture openness while using their 'soft' strengths (e.g., standards-creation, architecture control, new product definition) to shape the evolution of their markets.

Indeed, on the whole, the concentration of 'hard' technologies in Japan, has forced U.S. firms to protect and leverage more fully the 'soft' technologies (design, architectures, software) which are still under their control and which comprise the non-hardware control technologies of the electronics supply base. Thus, for example, Intel has ruthlessly protected its effective monopoly position in microprocessor architectures for PCs as has Microsoft in operating systems software. U.S. workstation vendors have retained control over the evolution of RISC processor architectures. Companies like Apple with its user-interface technology, H-P with its laser printer driver technology (essentially: the operating system software), and Novell with its network operations software, have similarly used proprietary positions to reshape the terms of technology access. Note that most of those positions rest on the creation of de facto standards that are safeguarded by intellectual property protection.42

These strategies, and a number of others, appear to have been exceedingly successful since the late 1980s, as a broad variety of non-Japanese firms — from Taiwanese and U.S. PC makers to U.S. workstation vendors — have been gaining market share in recent competition despite dependence upon their Japanese competitors for component, machinery, and materials technologies. Why hasn't a more restrictive supply architecture in electronics translated into overwhelming competitive leverage for Japanese producers?

First, U.S. and other firms have benefited from the recession-like problems in the domestic Japanese economy. In particular, with the collapse of the asset bubble, Japanese firms are extremely sensitive to return on investment considerations. Under these conditions, Japanese companies have been extremely willing to deal internationally, both to earn higher returns and to develop risk-reducing joint activities, one cost of which has been access to their hardware capabilities technologies.

Second, governments outside Japan have helped indirectly to maintain an open and accessible supply architecture in component technologies. The U.S. government's policies supporting Sematech, the U.S. chip industry's cooperative manufacturing technology development vehicle, and establishing the U.S.–Japan Semiconductor trade agreement (with its emphasis on Japanese market access) have been complemented by domestic policies in Korea, Taiwan, and Europe which have fostered new competitive entry in component markets. While none of these policies have directly addressed the supply architecture in other hardware technologies, they have provided a powerful signal and demonstration effect for Japanese producers who realize that their competitive behavior in other technologies is likely to be as closely scrutinized as in chips.

Third, as indicated above, after a decade of being beat up in the market, non-Japanese electronics firms have developed several effective responses. They have been fleeter afoot in responding to unpredictably shifting market opportunities in electronic systems — something the consensus-oriented, slower-moving Japanese firms have found difficult to manage successfully. In other words, the resources and manufacturing/engineering strengths of Japanese firms have been less of an advantage in markets whose line of technical advance is neither certain nor incremental in the manner of most component technologies like memory chips or displays. U.S. firms have been able to use their 'soft' skills - product definition design, architecture, software, systems integration, marketing - to set the terms of market competition (e.g., through the architecture control examined earlier or through new distribution arrangements like Dell's mail-order approach in PCs). Japanese firms have found that those market-defining 'soft' skills are much harder to acquire successfully than the hardware capabilities they mastered in the 1980s.

The significant question, of course, is will these circumstances endure? Will they continue to prevent or moderate the emergence of a restrictive supply architecture in electronics? There is good reason to believe that the existing beneficial situation will not long endure: there will eventually be a shakeout among Japanese producers with a few players coming to dominate component production. Indeed, the current turmoil in the domestic economy appears likely to hasten that shakeout. Eventually, too, the domestic Japanese market will recover and is likely again to act as a launch market for the survivors. Japanese firms are also likely to adjust eventually to the most successful of the new American strategies just as U.S. firms did to Japanese strategies — that is, after all, the perpetual dance of market competition.

For those reasons alone, the current situation is not a stable competitive equilibrium. Shifts in government policies toward trade and technology are likely to make it even more unstable. Foreign industrial policies might continue to push toward supply base openness, but they also might reach accommodations which sacrificed openness for preferential access. Certainly, U.S. policy in these areas has rarely displayed much consistency — more often a hostage to the crisis of the moment than a considered long-term design. If supply base openness is to be maintained into the future, U.S. policy may have to pursue that as a self-conscious end (a subject addressed in the last section).

Equally important, even if several major firms remain able to deal effectively for access to a generally more restrictive electronics supply architecture, there is no guarantee that their domestic economies will retain the hardware know-how and production activities necessary to assure that competitive lines of technological advance can be pursued locally to capture the related potentials for long term growth. Accomplishing that would require an open architecture of supply characterized by symmetrical accessibility between domestic supply bases.

On that score, it is plausible that the 'soft' supply base residing in the U.S. is likely to be more open and accessible than its Japan-centered hardware cousin, because on the whole it is more open to trade and investment, less oligopolistic and geographically concentrated, and less vertically integrated. Moreover, soft skills like design and marketing, and even soft technologies like software, can be more appropriable than the manufacturing and components know-how embedded in a Japanese firm's production organization and practices.43 Indeed, easier appropriability for Japanese firms is a byproduct of the relative asymmetries of access to market, technology, and investment opportunities that characterize the emerging supply architecture --- except, as we have seen, where intellectual property rights (IPR) protect against appropriation. Indeed, the increased U.S. emphasis on IPR (and its linking of IPR to trade issues in the Uruguay GATT round) is at least in part a sub-rosa attempt to make technology access more symmetrical by increasing the leverage of "soft" U.S. assets.

It is the relative asymmetries of access inherent in the new supply architecture that create the potential for Japan's emerging technological trajectory — high-volume high-technology — to endure. As Part I argued, supply architectures are vehicles of diffusion. If diffusion is fast and widespread internationally, there are few opportunities for distinctive national technology trajectories to last. Where, as here, asymmetries make diffusion slower and more narrow, a distinctive trajectory might continue for some time. It's likely persistence is permitting Japanese industry to shape a new production architecture for the broader Asian region.

## III. JAPAN'S TRAJECTORY AND THE REGIONAL DIVISION OF LABOR IN ASIA

Partly by virtue of politics and partly because of economic ties, three distinct, though interconnected, regional economies appear to be emerging in the developed world.<sup>44</sup> A North American region built around the United States and Canada accounts for about 25% of world GDP. A Western European region also represents about 25% of global GDP. An Asia region, led by Japan and the NICs, weighs in at about 18%-20% of world GDP, and is growing the fastest by a considerable margin.<sup>45</sup> Despite talk of the expansion of global interdependence, each regional grouping appears to be increasingly focused inward. This is obvious from the Free Trade Agreements in North America and the latest moves toward European integration (the 1992 program). Moreover, for Europe and Asia, trade outside the region is a guite limited part of the GDP of each. Since 1986, trade within each region has been growing more rapidly than interregional trade.

The regionalizing view of Asia has recently been questioned in several prize winning essays.<sup>46</sup> In Frankel's words, "the statistics do not bear out a movement toward intraregional bias of trade and direct investment flows."<sup>47</sup> In essence, Frankel and others explain the pattern of intraregional trade and investment as a function of market forces (proximity, size and growth rates) and use that to dismiss 'bias' as an explanatory variable — by which they mean intentionality

(through policy or perhaps business strategy) that runs counter to "natural" market forces. Then, by summing exports and imports, they demonstrate that the Asian region trades extensively with the rest of the world and thus does not act like a trading bloc in the conventional sense. O.E.D.: Asia represents nothing more than natural market forces at work in a globalizing world economy. There are at least two problems with the argument.<sup>48</sup> First, summing imports and exports disguises the region's most distinguishing characteristic, its whopping and persistent export surplus in manufactures with the rest of the world (one seemingly immune to currency shifts). Second, the argument entirely begs the question of whether "natural" market forces, perhaps reinforced (rather than countered) by policy and corporate strategy, can result in a different, but nonetheless special, kind of regional arrangement than a conventional trading bloc — one which is responsible for the trade surplus. Indeed, I read the existing data to suggest not that Asia is becoming a bloc in the traditional sense, but rather a highly organized and increasingly integrated production economy, the intent of which is to access the markets of other regions via exports. Consider what is known.

Over the last decade, Asia has progressively become a Japan-centered trade and investment region. By almost any significant measure Japan, rather than the U.S., is now the dominant economic player in Asia. Japan is the region's technology leader, its primary supplier of capital goods, its dominant exporter, its largest annual foreign direct investor and foreign aid supplier, and increasingly, a vital market for imports (though the U.S. remains the largest single import market for Asian manufacturers). Japan's own economy is decreasingly dependent on other world markets for growth. Japan's export dependency has dropped from a high point of 13.5% of GNP to 9.5% in 1990, thereby reverting to its historical pattern of domestic demand-led growth.<sup>49</sup> Despite this, Japan's trade with Asia in 1989 surpassed her trade with the United States, more than doubling since 1982 to over \$126 billion.<sup>50</sup> Indeed, by the end of 1992, Asian markets accounted for 41% of Japan's total trade, while North America accounted for only 30%, significant changes from the 35% share each region held only five years before.<sup>51</sup>

Trade within Asia as a whole has grown faster than trade between Asia and other regions since 1985.52 By 1988, intra-Pacific Basin trade had risen to almost 66% of the region's total trade, from about 54% only eight years earlier.<sup>53</sup> The major source of imports for each Asian economy is usually another Asian economy, most often Japan. In the late 1980's, for example, Japan supplied on average about one-quarter of the NICs' imports (vs. the U.S.'s 16-17%). Indeed, Japan supplied well over 50% of Korea's and Taiwan's total imports of technology products in the late 1980s, more than double the U.S. share. Conversely, the NICs are increasing their share of Japan's imports of manufactured products, from 14% to 19% between 1985 and 1989.54 Over that time frame, increased intra-Asian trade has permitted the NICs to reduce their dependence on the U.S. market, with U.S. bound exports falling from one-half to one-third of their total exports.55

Financial ties further reinforce intra-Asian trade trends. By 1990, Japanese industry was investing about twice as much as American industry in Asia as a whole, and over three times as much in the eight fastest growing Asian economies.<sup>56</sup> From 1984-1989, there was as much direct Japanese investment in Asia as in the previous thirty-three years, thus doubling the cumulative total.<sup>57</sup> Japanese investment in the Asian NICs grew by about 50% per year, and by about 100% per year in the ASEAN nations. From 1988-1990, Japan's direct investment in Taiwan, Hong Kong, Thailand, Malaysia, Singapore, and Indonesia reached \$17.6 billion vs. only \$4.6 Billion by U.S. industry.58 Most significantly, Japan's FDI in Asia has remained steady in the early 1990s, growing significantly in China, Indonesia and Vietnam, even as it declined precipitously elsewhere in the world (by 27% during Fiscal 1991).59 Perhaps even more indicative of regionalization, in several emerging Asian economies cumulative NICs' direct investment in the second half of the 1980s surpassed the cumulative U.S. total (by as much as five times greater in Malaysia).<sup>60</sup> Finally, even the dollar's traditional preeminence as the trading currency of choice in Asia is under threat from the yen. Driven by the proliferation of Japanese products and investment, the use in Asia of the yen as a reserve currency has expanded sharply, with 42% of Japan's Asian exports yendenominated in 1991, up from 33% in 1987, and with yendenominated imports into Japan growing at 50% per year since 1988.<sup>61</sup>

The result of such trade and investment trends is a network of component and production companies that make Asia an enormously attractive production location. That regional production network appears to be hierarchically structured and dominated by Japan. The Japan-controlled supply architecture lies at the heart of an increasingly complementary relationship between Japan and its major Asian trading partners. Japanese companies supply technology-intensive components, subsystems, parts, materials, and capital equipment, to their affiliates, subcontractors and independent producers in other Asian countries, for assembly into products that are sold via export in third country markets (primarily in the U.S. and other Asian countries).62 Conversely, nonaffiliated labor-intensive manufactures, and affiliated low-tech parts and components, flow back into Japan from other Asian producers. Summarizing these trends, MITI noted in 1987 the "growing tendency for Japanese industry, especially the electrical machinery industry, to view the Pacific region as a single market from which to pursue a global corporate strategy."63

As noted above, Japanese investment seems to be pursuing that strategy with a vengeance. In high technology industries there appear to be two key elements to the strategy. One is to spread subsystems' assembly throughout Asia, while persuading local governments to treat subsystems originating in other Asian countries as being of "domestic origin."<sup>64</sup> The second element is to keep tight control over the underlying component, machinery and materials technologies by regulating their availability to independent Asian producers and keeping advanced production at home.

Thus, by the end of 1990, Japanese producers had moved most of their low-end electronics production offshore into the NICs and Southeast Asia — including most audio systems (cassette recorders, headphones, low-end tuners, etc.), undertwenty-inch televisions, low-end cameras, calculators and lowend appliances like microwave ovens. Different Asian producers were concentrating on production of different systems and subsystems. Local Asian content had risen to over 60%, but key technological inputs — e.g., magnetrons in microwave ovens, advanced semiconductor logic chips, precision mechanical components — were exclusively sourced from Japan. Indeed, even where local sourcing was significant, Japanese affiliates were the "local" source most of the time.<sup>65</sup>

Overall, the regional architecture appears to ensure that leading edge production know-how and technology will remain localized in Japan, while selected production and technology know-how will diffuse asymmetrically throughout the rest of Asia. This would tend to deter too rapid catch-up by independent producers to the competitive level of leading Japanese producers, while simultaneously developing Asia as a production base for Japanese exports to the U.S. and Europe to avoid bilateral trade disputes.

It appears, in short, that high volume high technology can be localized as an autonomous development trajectory in Japan, fueled by Asian markets and, where advantageous, by Asian skills, but without diffusing the trajectory too rapidly. That outcome will be further reinforced by the asymmetrical access to trade and investment opportunities that characterizes the domestic Japanese economy — even for the other countries in the Asian yen bloc.

In trade, for example, Japan still tends not to import in sectors in which it exports and, despite progress, its overall level of manufactures' imports are still quite low. Although manufactures have doubled to account for about 50% of Japan's imports, that figure is still far below the U.S. and Germany, each with 75-80%.<sup>66</sup> Moreover, the recent upsurge in imports is at least as much a story of the regional adjustment of Japanese industry to the yen shock as of the opening of the Japanese economy. Quantitative studies of Japanese imports suggest that in technology intensive sectors imports are tied to Japanese firms, a point backed up by MITI surveys indicating that perhaps half of manufactured imports reflect intrafirm transfers between Japanese companies and their affiliates in foreign countries.<sup>67</sup>

Nor is Japan much open to direct foreign investment from its neighbors in Asia. Though Japan is an increasingly prolific foreign investor, it has not permitted comparable foreign ownership of its domestic economy. Restrictions on takeovers, while serving important domestic purposes of maintaining social peace and order, are still enormous barriers to foreign investment. Though direct investment into Japan has increased substantially over the past decade, by the late 1980s, foreign direct investment in manufacturing accounted for less than one percent of Japanese manufacturing sales, employment and assets.<sup>68</sup> The comparable figures for the U.S. and Germany were 7-10% and 13-18% respectively.

The asymmetry of access to domestic Japanese market and investment opportunities, and the asymmetries inherent in the emerging supply architecture, are real — whatever the mix of causes among policy, market structure, business practice, or consumer preference. Asymmetrical access provides, in the end, the strongest inference that Japan's distinctive technology trajectory is likely to endure, once again setting the stage for trade conflict among the advanced economies.

#### A. NEGOTIATING TECHNOLOGY ACCESS

Symmetrical access to technology will not emerge automatically between the regions, if it emerges at all. Instead, to avoid trade conflict, the three regions need: (1) to agree on a set of principles that endorse reciprocal access to regional markets, investment opportunities, and supply base technologies; (2) to negotiate for tangible results that mitigate the disruptive impacts of domestic practices that violate agreed norms of behavior; and (3) to develop new multilateral institutions for coordinating bilateral regional moves.<sup>69</sup> Each is worth a brief look.

Reciprocal access to markets, investment opportunities, and underlying technologies is the only reasonable principle that can avoid enduring disputes. When know-how and markets for new technology cluster regionally, and progress is driven by scale and learning, whoever has the broadest access to the relevant supply architecture resident in all three regions will likely end up dominant. Or, to put it another way, if I have access to three-thirds of the world's storehouse of technologies relevant to my industry and you have access only to two-thirds, I am more likely to win over time. Reciprocity of access permits as much openness as each regional economy can tolerate politically, and forces compromises in domestic practices that impede access whenever domestic industries seek foreign market opportunities.

Second, however, where foreign practices violate these (or other agreed) norms of behavior, the U.S. should negotiate to eliminate the impacts of the disruptive foreign practices. For example, to deal with the problem of asymmetrical access to investment opportunities in Japan, the U.S. and Japan might negotiate inward investment targets, modeled after the market access provisions of the semiconductor trade agreement. Similarly, in cases where access impediments have led to the threat of a dominant position in a significant supply base technology, the resulting market shares of the advantaged industry might be limited by agreement. For example, an agreed rule of thumb might mandate that at least one-third of local consumption must be produced (without regard to ownership) within the disadvantaged region (with full local value added). Foreign direct investment would be the vehicle to adjust national market shares. This would bring significant local production back into the economy that had been disadvantaged by access-impeding practices of its trading partner, would still reward innovating industries, but would simultaneously help to achieve real symmetrical technology access among the regional economies.

The complex negotiations necessary to achieve the above goals are going to be very difficult to hold on a multilateral basis. It is hard enough, as in the Structural Impediments Initiative talks with Japan, to bargain over the practices and impacts of two (let alone three) regional economic systems. This means that trade talks will have to proceed on a bilateral basis among Europe, Japan, and America. The task will not be to end these bilaterals, but to put them into a multilateral context with rules of procedure and sufficient transparency to assure that those who are not direct participants can still make their needs and interests felt. GATT could act as such a forum if ongoing bilateral negotiations could be monitored and a limited number of selective interventions exercised by individual countries or regions. GATT might also be the forum to adapt the system of General and Special Preferences to the new reciprocal paradigm to help promote economic development abroad.

#### **ENDNOTES**

1. See the discussion in Christopher Freeman, *Economics of Industrial Innovation* (Cambridge, MA: MIT Press, 1982), at Part Two.

2. Demonstrating how rapidly technological certainties can be undone, researchers have recently suggested that silicon can respond optically under certain extreme conditions. In common practice and for the moment, however, the point in the text is still valid.

3. On the concept of path-dependence, see W. Brian Arthur, "Competing Technologies and Lock-in by Historical Events: The Dynamics of Allocation Under Increasing Returns," *CEPR Publication* #43 (Stanford: Center for Economic Policy Research, September 1985).

4. The concepts of learning-by-doing and -by-using are drawn from Nathan Rosenberg, *Inside the Black Box: Technology and Economics* (Cambridge, MA: Cambridge University Press, 1982).

5. This notion of trajectory is drawn from Richard Nelson and Sidney Winter, An Evolutionary Theory of Economic Change (Cambridge, MA: Belknap, 1982), and from Giovanni Dosi and Luigi Orsenigo, Chapter 2 in Gerald Silverberg, Giovanni Dosi, et. al., Technical Change and Economic Theory, (London; New York: Pinter Publishers, 1988), p. 16, and the sources cited there. See Christopher Freeman, Technology Policy and Economic Performance: Lessons from Japan (London: Pinter, 1987), for the concept applied to Japan's development.

6. Technology, in the forms of commercially exploitable science and new techniques (including new organizational forms and new production and management capabilities), is the principle exogenous variable used to account for longterm economic growth. See, e.g., Edward Denison, "Why Growth Rates Differ: Post-War Experience" in *Nine Western Countries* (Washington, DC: Brookings Institution, 1967). The extension of ideas about industrial innovation and technology development to the national economy is the subject of the "National Systems of Innovation" literature. See, e.g., Silverberg, Dosi, et. al, *ibid.*, Part V. By and large, however, that work is focused on the development of technology rather than, as here, on the dynamics underlying diffusion.

7. Indeed, over some period of time in the evolution of any given technology, different development paths befitting their different capabilities usually are realized by different economies. For example, as numerical control (essentially computer control) technology evolved in the machine tool industry, it was developed in very different directions by U.S., German, and Japanese industry. U.S. firms developed very expensive and sophisticated controls for complex machining tasks (e.g., airplane wings), German firms specialized control tailored for precision machining, and Japanese firms very simple controls for long production runs. Each technology had different potential in the market, and as they diffused across national borders, the U.S. technology was effectively displaced by the German and Japanese variants.

8. Related notions, though developed very differently, can be found, among others, in the work of Theodore Moran, "The Globalization of America's Defense Industries: Managing the Threat of Foreign Dependence," *International Security*, vol. 15, no. 1 (Summer 1990); Bo Carlsson and Staffan Jacobsson, "What Makes the Automation Industry Strategic?" *Economics of Innovation and New Technologies*, vol. 1, no. 4 (1991), and Esben Sloth Anderson, "Approaching National Systems of Innovation from the Production and Linkage Structure," chapter 3 in B. A. Lundvall, ed., *National Systems of Innovation and Interactive Learning* (London: Pinter Publishers, August 1992). Though my "architecture of supply" notion is independently developed, I have benefited from their provocative analyses.

9. The economics of infrastructure is quite underdeveloped. In general, infrastructure is defined as being outside any individual firm, ubiquitously avail-
able, indivisible, and, as generating broad externalities (social gains that are not fully capturable by private firms). By this definition, our supply base notion (especially given technological spillovers in advanced sectors like electronics) qualifies as an infrastructure with the caveat that the open question remains of precisely how nationally 'indivisible' it is. This is, of course, precisely the issue we examine in the text.

10. Supplier-producer relations may be seen as a specific variant of user-producer interaction, the importance of which has been broadly explored by several authors. See, e.g., Eric Von Hippel, *The Sources of Innovation* (New York: Oxford University Press, 1988); Bengt-Ake Lundvall, *Product Innovation and User-Producer Interaction* (Aalborg: Aalborg University Press, 1985); and Carlsson and Jacobsson, op. cit., supra.

11. See the discussion in Yasunori Baba and Ken-Ichi Imai, "Systematic Innovation and Cross-Border Networks: The Case of the Evolution of the VCR Systems," April 1990, paper prepared for the Schumpeter Society Conference on Entrepreneurship, Technological Innovation, and Economic Growth: International Perspectives, Airlie House, VA, June 3-5, 1990.

12. For example, Siemens executives confirm that the danger of dependence on Japanese competitors was one of the explicit rationales for Siemens' expensive move into memory chip production in the early 1980s.

13. See the discussion in Don G. Reinertsen, "Whodunit? The Search for New Product Killers," *Electronic Business*, July 1983. More generally, on the importance of rapid cycle times in business, see George Stalk and Thomas M. Hout, Competing Against Time (New York: Free Press, 1990).

14. In particular, subsidized, sunk investment by the oligopolists creates overcapacity and raises huge barriers to new entry, thereby preserving the supply base for those who control it.

15. As suggested below, the more sophisticated multinational firms are often able to overcome many — though often not all — of the constraints inherent in a particular supply architecture through creative strategies. This is especially true for leading edge multinational producers since as creative 'first-users' they have much to contribute to the technical advance of their suppliers. By contrast, small, medium-sized, and less leading-edge firms are much more constrained by the existing architecture, more dependent on national channels of technology flow.

16. See the recent discussion in Paul Krugman, *Geography and Trade* (Cambridge, MA: MIT Press, 1991), who formalizes a line of research originating with economic geographers like Nicholas Kaldor.

17. Recent work by Guerrieri hints that such changes in supplier linkages are associated with deteriorating U.S. trade performance vs. both Japan in high-tech and Germany in mechanical industries. Presentation at BRIE by Paolo Guerrieri, September 9, 1992, based on Paolo Guerrieri and Carlo Milana, "Technological and Trade Competition in High-Tech Products," *BRIE Working Paper 54* (Berkeley, CA: BRIE, October 1991), and forthcoming work.

18. Arguably, underpinning these is a fourth variable — one made essential by the information intensive character of modern industrial activity. That is an emerging infrastructure of communication networks that support continued effective industrial reorganization and delivery of the data and information flows that are essential to the evolution of a modern industrial economy. On this issue, see Michael Borrus and Francois Bar with Benjamin Coriat, "Information Networks and Competitive Advantage: The Issues for Government Policy and Business Strategy," *Final Report* of the BRIE-OECD Telecommunications User Group Project (Brussels: EEC, 1990).

19. For a more complete version of this argument see Laura Tyson and John Zysman, "Developmental Strategy and Production Innovation in Japan," in Chalmers Johnson, Tyson, and Zysman, eds., *Politics and Productivity* (Cambridge, MA: Ballinger, 1989).

20. Detailed analyses of Japanese production innovations in the automotive industry hint at similar conclusions. See, e.g., Daniel Roos, James Womack, and Daniel Jones, *The Machine That Changed the World* (New York: Rawson Associates, 1990).

21. See the chapter by Borrus and Zysman in Sandholz, Borrus, et. al., *The Highest Stakes: Industrial Competitiveness and National Security*, from which the following is drawn.

22. There is a broad literature from which what follows is derived. See, e.g., from Europe, Benjamin Coriat, L'Atelier et le Robot (Paris: Christian Bourgeois, 1990); from the U.S., Robert H. Hayes, Steven C. Wheelwright, and Kim B. Clark, Dynamic Manufacturing: Creating the Learning Organization (New York: The Free Press, 1988); Ramchandran Jaikumar, "From Filing and Fitting to Flexible Manufacturing: A Study in the Evolution of Process Control," HBS Working Paper (Cambridge, MA: Harvard Business School, 1988); and Roos, Jones, and Womack, op. cit., supra; from Japan, Yasuhiro Monden, The Toyota Production System (Norcross, GA: Industrial Engineering and Management Press, Institute of Industrial Engineers, 1983); and from the business press, e.g., Peter Drucker, "The Emerging Theory of Manufacturing," Harvard Business Review, May/June 1990, pp. 94-102.

23. Manufacturing flexibility consists of two important capabilities: static flexibility is the capacity to vary product mix on a single production line or to automate batch production; dynamic flexibility is the capacity to introduce new production methods and wholly new products without significant disruptions to existing set-ups and practices.

The organizational and technological innovations that permit flexibility have actually been implemented in a variety of forms. One form in evidence in Northern Italy and parts of Germany is so-called "flexible specialization." This model involves an attack by smaller firms on niche markets. It is built on craft skills and on local community infrastructures that permit shifting ties between firms that compete one day, collaborate the next. Michael Piore and Charles Sabel, *The Second Industrial Divide* (New York: Basic Books, 1984) first elaborated this model in English, emphasizing Italian variants. For the German vision, see Gary Herrigel, "Industrial Order and the Politics of Industrial Change: Mechanical Engineering," in Peter Katzenstein, ed., *Industry and Politics in West Germany* (Ithaca: Cornell University Press, 1989). As a global production system, this variant is probably less significant than the largely Japanese model described below.

24. Rapid, cheap change-over is accomplished in a multitude of clever, relatively modest ways that include simple jigs, easy recalibration, and innovations in tool transport that increase mobility.

25. On the design-development link, see Kim B. Clark and Takahiro Fujimoto, Product Development Performance: Strategy, Organization and Management in the World Auto Industry (Boston: Harvard Business School Press, 1991).

26. This characterization comes from a lecture by IBM's Director of Technology, James McGroddy, at Cornell University's Graduate School of Engineering, Distinguished Lecturer Series, May 1, 1989.

27. See, e.g., the discussion in Patrizio Bianchi, Industrial Reorganization and Structural Change in the Automobile Industry, (Bologna, Italy: Collona di Economia Applicata Editrice, 1989). Bianchi cites Stiglitz to remind us that vertical integration is a characteristic of mature industries that is open to change as those industries change. On the possibilities for such 'de-maturity,' see William J. Abernathy, Kim Clark, and Alan Kantrow, Industrial Renaissance (New York: Basic Books, 1983).

28. The latter potential is strongly underlined in the remarkable work of Ramchandran Jaikumar, depicting the historical evolution of the technology and management of process control. Ramchandran Jaikumar, "From Filing and Fitting," op. cit., supra. On the application of information networks in both

manufacturing and services, see Francois Bar and Michael Borrus, with Benjamin Coriat, Information Networks and Competitive Advantage, *op. cit.*, supra, and the entire range of studies done under the auspices of the OECD-BRIE Telecommunications User Group Study. For an excellent appraisal of the "productivity paradox" that puts the problem in historical perspective, see Paul David, "Computer and Dynamo: The Modern Productivity Paradox in Historical Perspective," *CEPR Publication* #172 (Stanford: Center for Economic Policy Research, 1989).

29. For a discussion of the anticipated evolution in several of these capabilities, see Fumio Kodama, Yoshinari Kagita, Yoshiki Morino, Yasunori Baba, and Fumihiko Kakizaki, "Paradigm Shift in a Manufacturing Company: From a Producing to a Thinking Organization," paper presented to the second NISTEP Conference on Science and Technology Policy Research, January 24-26, 1991, Oiso, Japan.

30. See Manufacturing 21 Report: The Future of Japanese Manufacturing (Association for Manufacturing Excellence, 1990), translated from articles in Communications of the Operations Research Society of Japan, #12, v. 34. For a parallel U.S. view that sees manufacturing evolving in similar terms, see Roger Nagle, et. al., The Coming of the Agile Age: 21st Century Manufacturing Enterprise Strategy (Lehigh University: Iacocca Institute, December 1991).

31. Manufacturing 21 Report, ibid., p. 8.

32. In short, the emerging production organization would mix traditional aspects of markets and hierarchies for strategic leverage rather than for reasons of minimizing transactions costs. For a sophisticated European view, see Klaus Semlinger, "New Developments in Subcontracting: Mixing Market and Hierarchy," in A. Amin and M. Dietrich, eds., *Towards a New Europe: Structural Change in the European Economy* (Aldershot: Edward Elgar, 1991)

33. Kodama, et. al., op. cit., supra.

34. There are significant potential constraints on the continued efficacy of a postlean model in Japan. These include: social, quality-of-life constraints like the impacts on workers and families of overly long work years, urban congestion, and deferred consumption; and competitive and political limits including the geographic dispersion of a system built on close spatial ties, skilled labor shortages, too rapid product cycles, and the political reactions abroad to Japanese success. On-going BRIE work is exploring these limits in greater detail.

35. See Dataquest Incorporated and Quick, Finan, and Associates, *The Drive for Dominance: Strategic Options for Japan's Semiconductor Industry* (Dataquest, 1988), p. 4-7, citing Electronics Industry Association of Japan (EIAJ) data.

36. For a thorough analysis of the display industry in these terms, see Michael Borrus and Jeffrey Hart, "Displays the Thing: The Real Stakes in the Conflict over High Resolution Displays," *BRIE Working Papers* #52, (Berkeley: BRIE, 1992).

37. McGroddy, op. cit., supra.

38. In this context, "affiliation" refers to the characteristic vertical enterprise groups of major Japanese assemblers (in autos or electronics) and their tiers of related sub-contractors.

39. BRIE's Tim Sturgeon is creating a data base on direct investment in electronics, which indicates preliminarily that, relative to Japan-based production, very few leading-edge component, machinery or materials activities by Japanese firms are occurring outside of Japan.

40. As Robert Lawrence has recently affirmed, the keiretsu structure remains a formidable trade barrier despite improvement in Japan's trade openness. See, Robert Z. Lawrence, "Efficient or Exclusionist? The Import Behavior of Japanese Corporate Groups," *Brookings Papers on Economic Activity*, #1, 1991.

Based on industry conversation.

42. For an insightful analysis of computer competition that emphasizes the competitive strategy of establishing de facto standards through maintenance of

an 'architectural franchise,' see Charles H. Ferguson and Charles R. Morris, *Computer Wars: How the West Can Win in a Post-IBM World* (New York: Time Books, 1993).

43. This is not to suggest that the foreign partner can not effectively manage an alliance to his own advantage — as with HP–Canon, the foreign partner often does. Rather, the constraints that exist must be planned for and accommodated, something that some firms are better positioned to accomplish than others.

44. This section is drawn in part from Borrus and Zysman in Sandholz, Borrus, et. al., *op. cit.*, supra.

45. Based on data in Bureau d'Information et Prevision Economique, Europe in 1992 (Paris: BIPE, October 1987).

46. See Jeffrey A. Frankel, "Is a Yen Bloc Forming in Pacific Asia?" and Robert Z. Lawrence, "Emerging Regional Arrangements: Building Blocks or Stumbling Blocs?" in Richard O'Brien, *Finance and the International Economy*, AMEX Bank Review Prize Essays (New York: Oxford University Press, 1991). For a lucid contrary view, especially on political grounds, see Kent E. Calder, *Japan's Chang-ing Role in Asia: Emerging Co-Prosperity*? (New York: Japan Society, 1991).

47. Frankel, ibid., p. 17.

48. I am indebted to conversations with my colleagues, Steve Cohen and Paolo Guerrieri, for the critique which follows.

49. Figures from a presentation by the Keidanren's Kazuo Nukazawa in a presentation in the U.K. at the Royal Institute of International Affairs, July 27, 1990.

50. "The Rising Tide: Japan in Asia," special supplement, Japan Economic Journal, p. 4.

51. MITI and Ministry of Finance data, cited in Robert Thomson, "Japan Covets Lead Role in Asia," *Financial Times*, January 11, 1993, p.11.

52. Ibid. See also Takashi Inoguchi, "Shaping and Sharing Pacific Dynamism," in Peter Gourevitch, ed. The Pacific Region: Challenges to Policy and Theory, The Annals of the American Academy of Political and Social Sciences, Vol. 505, September 1989.

53. Data calculated from various sources by Lawrence Krause, in "Pacific Economic Regionalism and the United State," paper prepared for the Symposium on Impact of Recent Economic Developments on U.S.-Korea Relations and the Pacific Basin, University of California, San Diego, November 9-10, 1990.

54. There has been a considerable rise in the manufactured products share of total Japanese imports, from 31% in 1985 to about 50% in 1989. As the Table below suggests, Japan has increased its imported manufactures from all major global sources, but the U.S. has lost relative position while Europe and Asian economies have gained, with Asian NICs gaining fastest.

| Japan's Imports of Manufactured Products by Major Supplier<br>1985-89 (millions of dollars, c.i.f.) |              |             |          |             |  |  |
|---|--------------|-------------|----------|-------------|--|--|
|   | <u>Total</u> | <u>U.S.</u> | EC Asian | <u>NICs</u> |  |  |
| 1985  | 40,157       | 14,243      | 7,691    | 5,689       |  |  |
| 1986  | 52,781       | 17,645      | 11,956   | 7,803       |  |  |
| 1987  | 65,961       | 17,672      | 15,146   | 12,456      |  |  |
| 1988  | 91,838       | 23,540      | 20,770   | 18,234      |  |  |
| 1989  | 106,11       | 28,119      | 24,193   | 20,495      |  |  |

Source: Japanese Ministry of Finance, Japan Economic Institute

55. Yung Chul Park and Won Am Park, "Changing Japanese Trade Patterns and the East Asian NICs," paper prepared for an NBER Conference, October 19-20, 1989.

56. Intra-Asian fdi data from the Export-Import Bank of Japan.

57. Data from the Export-Import Bank of Japan, 1990.

58. Data from Japanese Ministry of Finance, cited in "Sayonara, America," *Newsweek*, August 19, 1991, p. 32.

59. Thomson, Financial Times, op. cit., supra. Generally, see "Asia: Integration of the World's Most Dynamic Economies," *Tokyo Business Today*, June 1992, p. 26ff.

60. Malaysian data from Malaysian Industrial Development Authority.

61. MITI data as cited in Rodeny Nutt, "Yen threatens U.S. dollar as Asia's trade currency," *Vancouver Sun*, February 21, 1992.

62. See the discussion and data in Yung Chul Park and Won Am Park, op. cit., supra.

63. MITI, 1987 White Paper on International Trade and Investment (Tokyo: MITI, 1987), as cited in "Economic Regionalism," *JEI Report*, #25A (Washington, DC: Japan Economic Institute, June 29, 1990).

64. See David E. Sanger, "Behind Thai Boom: The Japanese," New York Times, May 9, 1990, p. C1; and Far East Economic Review, February 15, 1990.

65. Data documenting this pattern is provided for TVs and cameras in Takao Kiba and Fumio Kodama, "Measurement and Analysis of the Progress of International technology Transfer," *NISTEP Report* #18 (Japan: National Institute of Science and Technology Policy, Science and Technology Agency, April 1991). 66. *JEI Report* #22A, June 14, 1991.

67. On the MITI surveys, see the discussion in K. Iwata, "Changes of Economic and Trade Structure in the Pacific Basin Area," FAIR, Tokyo, Japan, June 1989; and Yung Chul Park and Won Am Park, *op. cit.*, supra.

68. See Edward M. Graham and Paul R. Krugman, Foreign Direct Investment in the United States (Washington, DC: IIE, 1989).

69. This is drawn from Borrus, Sandholz, and Zysman, "Epilogue," in Sandholz, Borrus, et. al., op. cit., supra.

# **GETTING INCENTIVES RIGHT**

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A few months before the collapse of the Soviet Union ended the cold war, a Russian academic said in a speech at the University of California, San Diego, "In the first half of this century, the currency of power was territory, arms, and a strong state. Those countries that could mobilize these three factors would be more powerful and have greater influence." He went on to argue that the new currency of power is different: it lies in the ability to create incentives for people to work hard.<sup>1</sup>

Implicit in this view are two propositions. First, a leading role in international relations is assigned to economics: a nation's power depends on its economic success. Second, within economics, a leading role is assigned to microeconomics: economic success depends on how well individuals are motivated. The first of these propositions, that international relations follow economics, with a stronger link now than before, has been much discussed. ("The cold war is over, and Japan has won," as Chalmers Johnson says.) The second proposition is the subject of this paper.

"God is in the details," as Mies van der Rohe famously said. As in architecture, in photography: Robert Capa\* said, "If your pictures are no good, you are not in close enough."

<sup>\*</sup>For their comments, I thank the participants in the conference on Adjustment of Policies, Organizations, and Firms to Global Competition: Seeking New Forms of International Cooperation, La Jolla, October 2–3, 1992.

Economics is, in this respect, like art: we must get in close and look at the details. Macroeconomic variables (savings rates, capital-labor ratios, etc.) can only partially explain a nation's economic success. Aggregate accounting must be supplemented by detailed, microeconomic analysis. A nation's economic success depends on how well its market institutions coordinate exchanges between individuals. Low productivity in the Soviet Union was not the result of low savings rates or too little physical or human capital. The fault lay in poor organization and weak incentives.

In what follows I explore what can be learned from three complementary sources — modern economic theory, empirical analysis of the varieties of successful market economies, and observation of the transition of the formerly planned economies — about the microstructure of successful economies.

#### I. MARKETS AND FIRMS

The catchphrase "getting prices right" summarizes much of the economic advice that is routinely offered to developing countries. To a large extent this is good advice. In African countries such as Ghana and Nigeria, for example, the political power of urban dwellers means that agricultural prices are held at artificially low levels. As a result, farmers receive small returns, and too little food is produced. Poor countries are poor, in part, because they have gotten prices wrong. But, important as it is to get prices right, there is more to economic success than that.

A market is not an abstraction in which a demand curve spontaneously intersects a supply curve. A market is an institution, which needs rules and customs in order to operate. Given the disparate goals of the participants and the uneven distribution of information among them, the rules of exchange must be craftily structured for a market to work smoothly. There must be laws of contract and secure property rights, which can only be provided by government action. But markets, in order to function, need more than this state-imposed infrastructure. In addition, there is a wide range of market institutions that cannot effectively be imposed by the government, but must evolve of their own accord. These market

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institutions serve to permit the flow of information among market participants, and to create appropriate incentives for market participants (as will be further discussed in the next section). Getting prices right will be useless if the market institutions are inadequate.

Furthermore, even in the most market-oriented economies, many transactions are not arm's-length exchanges mediated by prices. Herbert Simon, economics Nobel laureate and polymath, recently reiterated a point he has been making throughout his professional life by imagining that a mythical visitor from Mars "approaches the Earth from space, equipped with a telescope that reveals social structures. The firms reveal themselves, say, as solid green areas. . . . Market transactions show as red lines connecting firms, forming a network in the spaces between them. . . . [T]he greater part of the space below it would be within the green areas, for almost all of the inhabitants would be employees, hence inside the firm boundaries. Organizations would be the dominant features of the landscape. A message sent back home, describing the scene, would speak of 'large green areas interconnected by red lines.' It would not likely speak of 'a network of red lines connecting green spots.'... When our visitor came to know that the green masses were organizations and the red lines connecting them were market transactions, it might be surprised to hear the structure called a market economy." (Simon, 1991, pp. 27-28.)

Getting incentives right is at least as important for economic success as getting prices right. Incentives must be set right both for transactions via the market and for transactions within organizations.<sup>2</sup>

### **II. INCENTIVES IN MARKETS**

The uneven distribution of information is the friction that impedes market transactions. The market needs mechanisms to correct the perverse incentives that imperfect information generates. One development economist assigns to imperfect information a crucial role in causing poverty. "Information and knowledge are at the heart of development; underdevelopment is bound up with ignorance and uncertainty. More concretely, individuals and societies with the lowest levels of information and of information-processing capabilities will likely also be the poorest" (Klitgaard, 1991 p. xviii). Unevenly distributed information requires that market institutions must be adapted in various different ways to allow the market to operate smoothly. Institutions that in affluent economies we take for granted and even regard as trivial, such as brand names, have to be developed. Without them markets may be unable to function.

For purposes of illustration, let us consider one particular kind of informational imperfection. A pervasive problem in markets is that the quality of the item being exchanged may not be immediately apparent to the buyer. This is the wellknown "lemons" problem identified by George Akerlof (1970), who showed that, in extreme instances, quality uncertainty can mean that no trade takes place, even though mutually gainful deals could in principle be constructed. The bad drives out the good.

Signaling is a way of overcoming such market frictions (Kreps and Sobel, 1992). Signaling can occur if there is some action available to sellers that is more costly for low-quality sellers to take than for high-quality sellers, so that taking this action might lend credibility to the seller's claim to be offering a high-quality item. Sellers' actions speak louder than their words. Modern economies have developed a variety of devices that serve to signal product quality — warranties, brand names, bonds, seller reputation, credentials. But an important lesson that emerges from the signaling models is that there is no assurance that, even if some signaling device exists, signaling will take place in a cost-effective way: the signaling convention to which the market evolves might require larger expenditures on signaling than would be ideal. Worse than that, the signaling models have equilibria in which no signaling takes place, even though the means for signaling exist. This means that markets with informational imperfections can be stuck in low-level equilibria. A move from a no-signaling equilibrium to a preferable signaling equilibrium would require a coordinated change of actions and expectations by all of the market participants: no individual is able to make such a change alone. Furthermore, for signaling to work, the market must be sufficiently evolved and stable for the participants to have acquired a shared set of beliefs about how signals are to be read. A newly formed market cannot develop signaling mechanisms instantaneously.

The developing countries provide many examples of markets that lack information transmission mechanisms, with the result that potentially gainful exchanges fail to be made, or only low-quality goods get produced, as Klitgaard (1991) shows. The market for milk in Pakistan, for example, was plagued by informational imperfections, and functioned poorly. Sellers could — and did — water down the milk; and buyers could not judge the milk's butterfat content. There were many small vendors, each selling low-quality milk. "There were no grades, no brand names, no minimum levels of quality. There was only one market price for milk" (Klitgaard, 1991, p. 30). In India, these problems had been overcome. The quality of the milk was measured at each stage of the distribution chain and at the final, consumer stage, brand names existed to signal quality. As a result the milk was of high quality and much was sold.

Search costs are a further symptom of informational imperfections (McMillan and Rothschild, 1992). Market participants may be motivated to spend considerable sums on information acquisition. To the extent that this search activity is duplicative — each searcher is looking for the same pieces of information — it is socially wasteful. Over time, markets evolve institutions for reducing search costs (such as market intermediaries, centralized marketplaces, repeated purchasing, etc.).

Relatively low-cost government actions can in some cases reduce search costs. For example, the European Community runs the Business Cooperation Network, which does electronic matchmaking for small- and medium-sized companies. At a company's request, it will identify a potential partner company, so that an alliance can be set up for marketing, manufacturing, distribution, research and development, or direct investment.<sup>3</sup> Sometimes, on the other hand, procedures to reduce search costs are prevented from developing. The Tanzanian government, for example, imposed price controls on many consumer goods, from essentials like salt, rice, and soap to relative luxuries like radios and bicycles. These price controls produced shortages, and black markets arose. But the black markets did not function well, according to Bevan, Collier, and Gunning (1991). The need for exchanges to be covert prevented product information from being transmitted to potential buyers. As a result, there were shortages in the

black markets, just as in the legitimate markets: many potential buyers were unable to make purchases despite being willing to pay the black-market price.

When an exchange consists not of a simple purchase, but of an agreement that some work be done or some action be taken, further informational problems arise. The contract, to be effective, should link pay to performance in some way. But for various reasons (principal and agent are differentially averse to risk, or have unequal information about either performance possibilities or outcomes) the pay-performance link often is weak (McMillan, 1992, Chapter 9; Milgrom and Roberts, 1992). Market institutions that share risk or increase the amount of information available to all (competition is one such information-revealing device) are needed to make such deals reasonably efficient.

#### **III. INCENTIVES IN FIRMS**

Any organization bigger than a small family-run firm faces problems of incentive design. People within a firm do not automatically adopt the firm's goals, and so must be motivated to take actions that are in the interest of the firm. The success of a firm depends on its employees' making decisions that are consistent with the firm's operating efficiently. People must see a clear link between their own efforts and their rewards (the rewards may be delayed, and need not be monetary).

The forces that promote firm-level efficiency can be classified (following Holmstrom and Tirole, 1989) as internal discipline and external discipline. Internal discipline includes executive compensation schemes and the various kinds of worker incentives, such as piece-rate or bonus payments and promotion prospects. External market discipline has three components. First, financial-market discipline: poor firm performance, such as low profits, will be followed by some sort of response from equity-holders or debt-holders that will harm the decision-makers within the firm, such as a takeover raid. Second, labor-market discipline: a manager may promote the firm's objectives at the expense of his or her own immediate goals if the manager's long-term career — his or her prospects of being hired away to a bigger, more prestigious, and better paying firm — depend on how well the current firm is seen to be performing. Third, product-market discipline: in order to survive, the firm must be efficient enough to produce outputs at a low enough cost and with a high enough quality to induce customers to buy from it rather than from its competitors. Even a monopolist must keep itself lean enough to forestall the arrival of competitors with new technologies.

To these market-based sources of external discipline on firms can be added government discipline (Wade, 1992). In principle, the government can coerce a firm into operating efficiently. In Korea and other late-industrializing countries of East Asia, governments have offered and withheld access to capital and technology to reward and punish firms; and this government discipline has produced some firms that are efficient enough to be notably successful in international competition.

With any kind of incentive device there is the danger that the incentives will be misdirected. Paying workers according to their output might encourage quantity at the expense of quality. Capital-market disciplines might be such as to induce managers to make short-term decisions, boosting current profits at the expense of long-term investments. Governments that take it upon themselves to intervene in firms' decisions often succumb to efficiency-destroying rent-seeking. The mere existence of an incentive device does not guarantee its success.

The efficacy of incentives within firms varies with the circumstances. For example, according to the model of McAfee and McMillan (1992), one of the reasons for inefficiency of large-scale production is that, when there is a long managerial hierarchy, the inefficiencies generated by game-playing among the different layers of the hierarchy result in the incentives that are offered to workers at the bottom of the hierarchy being weak. According to the model of Esfahani and Mookherjee (1992), firms in poor countries rationally impose weaker performance incentives on their employees than firms in rich countries. This is because, in a poor country, the low cost of labor induces the employer to opt for socially inefficient monitoring, hiring extra supervisors, rather than the more efficient approach of inducing effort by means of output-based payments. Thus the model explains the common observation that productivity levels are lower in poor countries than in rich countries.

## IV. THE VARIETIES OF MARKET ECONOMY

According to Albert Hirschman, "There is and always has been a large variety of 'really existing' market societies. This diversity helps to account for the shifting leadership of advanced industrial countries" (Hirschman, 1992, p. 2).

Japan is different. At the microeconomic level, Japan's system of incentives differs in many ways from that of the United States. The differences between the Japanese and the U.S. incentive systems are well known, but worth listing.

First, internal discipline: Japanese firms are typically smaller than U.S. firms; this is achieved by the extensive use of subcontracting rather than vertically integrated production, and by horizontal links among separate firms to achieve the advantages of diversification that in the United States are achieved by the conglomerate form of organization. To the extent that the long hierarchies needed to run large firms cause difficulties for the design of internal incentive systems, Japanese firms have the easier task in designing internal incentives.

For workers' incentives, Japanese firms, in comparison with U.S. firms, tend to rely more on long-term employment relationships; have a weak link between pay and performance in the short run; use delayed promotion as a long-term incentive; delegate responsibility to relatively low levels of the hierarchy; and encourage the flow of information up the hierarchy from the production floor (Itoh, 1991). Managers' pay, as everyone knows, is much lower in Japan than in the United States. Contrary to general belief, however, a recent study shows that Japanese managers' pay does reflect firm performance, and the nature of this incentive link is similar to U.S. managers' incentives. A Japanese manager's pay rises when the company's sales or stock price rises. And there is a significant negative relationship in both countries between managerial turnover and measures of financial performance: stock price, sales, and earnings (Kaplan, 1992).

Second, external discipline: financial-market disciplines differ fundamentally between the United States and Japan. In the United States, managers have an incentive to organize production efficiently so as to keep stock market value high. If they fail to do this, there is the possibility of a takeover raid, resulting in the likely loss of jobs for the managers. In Japan, financial-market discipline on managers comes in the form of monitoring by banks which have large stakes in the firm, both as creditors and equity holders (Hoshi, Kashyap, and Loveman, 1992). Managers' career concerns differ in the two systems: regressing a chief executive's pay on the number of years spent working for another firm gives a positive coefficient with U.S. data and a negative coefficient with Japanese data: U.S. managers are rewarded for job changes, Japanese managers are penalized (Kato and Rockell, 1992). Finally, in terms of product-market discipline, there seems to be little difference between the two systems, in that in both there is considerable product-market competition (although anecdotal evidence suggests it may be more intense in Japan).

When we compare the United States to Japan and find that Japan is different, we should not jump to the conclusion that it is Japan that is unusual. In many respects, Japan is more like the rest of the market economies than the United States is. Close ties between banks and industrial companies are not unique to the Japanese main-bank system: similar relationships can be seen in Germany. Horizontal and vertical linkages among separate firms are not unique to Japan's keiretsu; they occur also in France's corporate groupings and Italy's industrial districts.

As well as differing across countries, firm organization changes over time. U. S. firms have become smaller. Average output per firm (measured as GNP in 1982 dollars divided by the total number of firms in the economy), after rising from \$150,000 in 1947 to \$245,000 in 1980, fell — despite the much publicized takeover wave — to \$210,000 in 1987. This shrinkage of firms in the aggregate was mirrored at the level of individual sectors: average output per firm fell in the 1980s in every industry except farming and retailing. The number employed in Fortune 500 industrial companies fell between the mid-1970s and the mid-1980s both in absolute terms and relative to total manufacturing employment.<sup>4</sup>

In addition, large firms have been restructuring to try to mimic the advantages of being small. Firms have sold off some of their activities; work has increasingly been subcontracted rather than done in-house; large firms have become more decentralized. Companies have been reorganized, with

management layers being reduced and decision-making being pushed down the hierarchy. General Electric, for example, has cut the number of management layers between the factory floor and the chief executive from nine to as few as four. Responsibilities have been divided: Johnson and Johnson has 166 independent business units, and Hewlett-Packard fifty, each unit being responsible for its own profits and losses and for its own planning. In Japan also, hierarchy has been reduced in several companies. Toyota, for example, in 1989 eliminated two levels of middle management, the positions of chief clerk (kakaricho) and section chief (kacho), so that decisions could be taken lower down in the hierarchy. Described as the biggest change in Toyota's management structure since it was founded in 1937, this was an attempt to stem the breakdowns in communication that had arisen as decisions moved up through seven layers of management.<sup>5</sup>

### V. THE PRICE SYSTEM IS A SYSTEM

One of the most used and least remarked phrases in economics is "the price system." It is important to note that the price system is, indeed, a *system*. As Lenin said in another context, "Everything is connected to everything else." The Japanese and U.S. methods of structuring incentives do not differ from each other in random ways: each is a system. The various incentive devices used within an economy are often mutually complementary.<sup>6</sup> Imagine a social engineer designing an ideal market economy: for the sake of topicality, we can think of the social engineer as working on behalf of a formerly socialist economy. Our social engineer is not able to pick and choose freely some desirable pieces from the Japanese system and some other desirable pieces from the U.S. system. Choices in one area dictate choices in another: you have to take the package.

Exactly what the pattern of complementarities among the various pieces of a market system looks like is an empirical question that has not been much investigated. But we might speculate, for example, that the relative absence of a takeover market in Japan aids — perhaps is necessary for — the work-ability of Japan's subcontracting system. The subcontracting system relies on on-going relationships between procuring

firms and supplying firms. U.S.-style takeovers replace the incumbent managerial team with a new managerial team from outside the firm. Perhaps the supplier relationships, relying on personal contacts, are too delicate and subjective to be transferable to a new set of managers. If this is correct, then it may not be possible to change one part of the U.S.-style system (the use of vertically integrated production rather than subcontracting) without simultaneously changing another part of the system (financial discipline based on stock market monitoring rather than bank monitoring).

To talk of a social engineer designing an ideal economy is, however, to overstate what is possible. The price system is sufficiently complicated, and knowledge about the components of the economy sufficiently limited, that it cannot be designed. As Robert Solow said, "There is not some glorious theoretical synthesis of capitalism that you can write down in a book and follow. You have to grope your way."<sup>7</sup> A price system can only evolve: there is some role for designing and guiding the process, but trial and error is inescapable.

A social engineer in charge of the reform of a formerly planned economy would have to decide in what sequence prices should be freed, enterprises privatized, trade barriers removed, and the financial system revamped. Decisions would have to be made about whether to introduce a Japanese-style or a U.S.-style financial system; how to design a law of contract; what kinds of taxation to introduce; and so on. Good decisions would require knowledge not only of how each of these components of the system works in isolation, but also how they interact with each other. That is an impossibly large amount of empirical knowledge, for two reasons. First, the sheer volume of knowledge is huge. Second, there is, yet again, an incentive problem. Information relevant to understanding how the economy works is widely dispersed. The information has to be collected from people within the economy. Holders of information, realizing that what they say will be used in some way, might distort the information to try to get some personal advantage.

Japan's impressively successful institutions did not emerge from a unified grand plan. In the period immediately after the Second World War, there was little agreement among the Japanese about what sort of economic system to build. "[A]s the decade [of the 1950s] dawned, in poverty and an overriding sense of helplessness, no one knew what would work. No one had a plan for meshing these pieces into a working whole. There was no accepted notion of what sort of economic structure should or could be put together. . . . Arguments and pitched battles raged both within and among the various economic institutions. Only years later, when they discovered that the creation [of their economic system] worked rather well, did Japanese and foreigners begin to marvel at its cohesiveness and to invent a mythical past to explain it all" (Chapman, 1991, pp. 92, 97).

The institutions that we observe in any successful market economy have in part been designed by government or private actors. But in large measure they are the end point of a lengthy process of experimentation; of survival in a process of Darwinian selection among alternative institutions.

### VI. THE TRANSITION OF PLANNED ECONOMIES

The transitions of the once-planned economies of the former Soviet Union, Eastern Europe, and Asia represent a natural experiment in institutional design. Markets are being created where none existed before. The transition is, of necessity, a trial-and-error process. As the then-Prime Minister of Poland, Jan Olszewski, said in early 1992, "We are dealing here with quite a different system, a system where there was no free market at all. It was annihilated, and one has to recreate it from the ground. This requires a new look, and a very pragmatic one in which there is analysis of concrete results of each move and readiness to correct it if it turns out the results are not what we expected."8 The transition enables us to watch institutional evolution as it is taking place. The experiences of the transition economies are instructive about how market institutions arise - sometimes with government assistance, sometimes without --- to solve problems of information and incentives.

#### A. COMMUNITY-OWNED FIRMS

In China's economic reforms, much of the dynamism has come from non-state-owned industrial firms. The entry of these new firms illustrates the vitality of market forces. Despite impressive impediments — little law of contract, weak property rights, underdeveloped capital markets — when the restrictions on the activities of non-state firms were loosened, a huge amount of entrepreneurial investment occurred. The non-state sector grew between 1978 and 1990 at an annual rate of 17.6 per cent, such that by 1990 it accounted for a striking 45 per cent of China's industrial output (McMillan and Naughton, 1992).

The non-state firms have unusual ownership forms and organizational structures, as Byrd and Lin (1990) describe. These firms are mostly located in rural areas. Some are private, in roughly the Western sense. But most are publicly owned: they are run by local communities of a few hundred or a few thousand people. (Community ownership served to mobilize capital when there was no financial system to which the fledgling firms could go for funds.) Why are these firms not subject to the perverse incentives normally associated with publicly owned firms (in particular, China's giant stateowned firms)? The answer lies, in part, in the smallness of the ownership unit. The product-market and capital-market disciplines facing these firms are strong enough to induce efficient operation, even with community ownership.

Product-market discipline comes in the standard form: most firms compete with other non-state firms, and in some cases state firms, to sell their outputs, and the competition is often fierce. The financial-market discipline is unusual. Most of the investment capital in established firms comes from the firm's own retained earnings and, to a lesser extent, loans from other firms. The other main source of capital is the community government. The community government monitors its investments in firms. Operating on a local scale, it is better informed about a firm's potential than a provincial or national industrial bureau controlling a state firm would be, and so has more effective control. Since the community government's resources are limited, and most of its revenue (needed, among other things, to pay the salaries of the community-government officials) comes from these enterprises, it is motivated to protect its investment by inducing the firm to maximize its profits (Byrd and Lin, 1990, Chapters 9, 17).

Workers' wages depend on their own output, via piece rates; and remuneration rates and employment levels follow the firm's profits up and down. The manager's pay is linked to the firm's profit and sales; a successful manager also enjoys the perquisites that come from managing a large firm. The internal and external disciplines work effectively enough that the productive efficiency of these community-owned firms, it has been estimated (Byrd and Lin, 1990, Chapter 11), is as high as the productive efficiency of those rural firms that are privately owned.

### B. MANAGER AUCTIONS

Of the myriad of novel institutions being invented as the formerly planned economies grope their way toward capitalism, one of the most intriguing has emerged in China: managerial jobs in state-owned firms are put up for auction.

In the Chinese manager auctions, potential managers bid for the right to be the firm's top manager for a specified period of time — typically three to five years. Each bid consists of a promise of the amount of profits the firm will deliver to the government in each year of the contract. Bids are made meaningful by requiring the successful bidder to post a security deposit — on average about 50% of the manager's annual income — to be forfeited in whole or part if the promised profits are not forthcoming. The winning bidder is chosen not only by how much profit he offers but also by an evaluation of his competence, his plans for the firm, and so on. The new manager receives a contract that makes his pay vary with the firm's financial performance.

The bidders often include the firm's current top manager; lower-level employees of the firm; officials from the ministry that regulates the firm; and outsiders who believe they can do a better job than the incumbent. Before the bidding, the firm's accounts are opened to anyone who might decide to bid. The winner is often the previous manager: one survey found that the incumbent won 55% of the auctions. It is not surprising that the incumbent has an advantage in the bidding and often wins; what is noteworthy is that this is not an overwhelming advantage, and the incumbent loses almost half of the time. Thus the auctions produce considerable turnover of management.

Why use auctions? Auctions, in general, are fundamentally devices for revealing information. An auction is used when there is considerable uncertainty about the market value of the item for sale. If the seller of, say, a Picasso knew exactly how much each potential buyer were willing to pay for it, he would not need to hold an auction, but instead could simply negotiate a price with the person who will pay the most. The purpose of an auction is to reveal information about willingness to pay. Manager auctions reveal two sorts of information to the industrial bureau: about the self-assessed skills of alternative potential managers; and about the hidden capabilities of the firm.

In a market economy, long-term observation of performance in mid-level managerial positions provides information about a potential manager's abilities. In the transition economy, observed performance is suspect, as it was not attained in a genuinely market setting. Anecdotal evidence has it that the bidding process has served to identify competent managers who were previously unknown to the industrial bureau; thus the auctions have succeeded in putting better people into management jobs.

The auctions also reveal information about the firm's potentialities. Post-auction productivity, according to a recent study (Groves, et. al., 1992), significantly exceeds pre-auction productivity. And the increase is larger when the incumbent manager wins the auction than when someone else wins. This may look paradoxical; but it reflects the information-revealing role of the auctions. Suppose a firm's performance is only partly under the control of the manager; a firm may simply be inherently either a good or a poor performer. The incumbent manager of a firm that is performing poorly, having inside information, knows how much scope there is for improving its performance. Outside bidders cannot infer from the information available to them whether the firm's poor performance is the result of its inherently low productivity or slack management. Outside bidders therefore submit moderately high bids, to allow for the possibility that the firm may have either a high or a low potential. The incumbent manager will bid high if the firm has a good potential, and low if it has a poor potential. Thus incumbent managers tend to win the bidding for those firms that have good potential but have been underperforming; outside bidders tend to win those firms that have poor potential. Given that the post-auction managerial incentives are stronger than the pre-auction managerial incentives, all firms do better after the auction. But the

biggest improvements will come in the firms with the highest potential; and these tend to be won by incumbent managers. Hence we observe that productivity increases most in those firms that incumbent managers win. The auction, therefore, reveals information about the firm's inherent productivity.

The success of manager auctions in China suggests they could be useful in other reforming economies. As Eastern Europe and the former Soviet Union have discovered, privatization of state-owned firms is very difficult. In most countries it will take many years to transfer all state firms into private hands. The difficulties of privatization are well known. Who is able to pay for the large firms? What are they worth? Who will manage them? Who will monitor the managers? The slow pace of privatization in most such economies means that firms must remain regulated by government agencies for a number of years through the transition. Major impediments both to efficient regulation while the firm is still state-owned and to its privatization are the lack of skilled managers and the lack of information about the firm's inherent value. The Chinese experience suggests that manager auctions can promote more effective regulation and smooth the path toward privatization by revealing information about the inherent productivity of the firm and by identifying hitherto unrecognized competent managers.

#### C. IMPLICIT CONTRACTS

In post-Soviet Russia, the market system began to develop in advance of the legal institutions. The legal system that existed just after the origin of the Commonwealth of Independent States was appropriate not to a market economy but to a centrally planned economy. Contractual provisions in the planned economy had been insecure, often being overridden by orders from the center. But in the transition economy deals had to be made and were being made, even though the contracts on which they were based were often impossible to enforce. "Russian businessmen have gone ahead of the law, but goods have to move," said a broker working in Moscow's newly formed commodities exchange. The deals relied on trust. The sanction against buyers reneging on payment was, as in the theory of repeated games, exclusion from future deals. "There is already a blacklist of people with whom we don't deal anymore," according to the commodities broker.9

The lending by banks in Ukraine similarly proceeded in advance of the legal framework (according to Johnson, Kroll, and Horton, 1992). In the West, banks deal at arm's length with their borrowers, and require the borrower to put up collateral. This is not feasible in Ukraine in 1992, as there is no law on collateral; moreover, the ownership of most assets that would be suitable as collateral is unclear. Borrowers make a written pledge to repay, but this pledge has little status in law. Nevertheless, loans are repaid. The banks choose carefully to whom they lend: the borrower usually has personal contacts with bank owners. Loans are short-term. The borrower's incentive to repay is that default would preclude future loans.

"Contracts" that work despite not being legally enforceable are not peculiar to the transition economy: any successful market economy relies on trust. Ronald Dore (1983) argues that the reason the complex Japanese subcontracting system works is the ongoing nature of the trading relationships, "goodwill and 'give-and-take' are expected to temper the pursuit of self-interest." But this is not unique to Japan. U.S. businesspeople often eschew written contracts, relying instead on exchange relationships, even when considerable risks are involved. When a written contract is used, it is often deliberately vague, with much left to be resolved later by mutual consent (Macauley, 1963; Heide and Miner, 1992). Markets rely, in other words, on the incentives for cooperative behavior that are generated when a game is played repeatedly.

Trust and reputation, while necessary for a market system to work, are not enough by themselves. There must also be property rights and a law of contract. For repeated-game incentives to generate cooperative behavior, the long-term gains from cooperation must exceed the short-term gains from opportunistic behavior. This requires that the gains for both parties are not long delayed. Extralegal enforcement of contracts turned out to be inadequate in the Russian case cited above for deals in which one party would commit a large sum of money on the expectation of a return that would only come a year or more in the future, for then the other party had too strong a temptation to renege. Repeated-game incentives for cooperation also fail if there is a lot of uncertainty in the environment, making it hard for one party to assess whether the other has lived up to the agreement. In the absence of a well functioning law of contract, certain kinds of deals, including many deals with a large social return, cannot be consummated. In market economies, agreements are based on a combination of trust and legal enforcement. Relational contracting has developed spontaneously in the transition economies; the legal basis for formal contracting obviously must be designed and implemented by the government.

### VII. GOVERNMENT AND MARKET

A Mississippi congressman is reported, perhaps apocryphally, to have said, "The free enterprise system is too important to this country to be left in the hands of private individuals." If markets are complex and subtle institutions, and information is unevenly distributed, what is the scope for government interventions?

The intellectual basis of the case for laissez-faire lies in the two fundamental theorems of welfare economics (Debreu, 1959): a freely operating market system will reach an outcome that is Pareto optimal (it would not be possible to rearrange things so as to make some people better off without harming some other people); and any desired distribution of the economy's output can be achieved as a market equilibrium provided the initial ownership of resources is suitably allocated. These theorems, which are one of the high points of twentieth-century economics, show the remarkable role of the price system in coordinating the independent decisions of millions of people. The axioms on which these theorems are based, however, deny the existence of the informational problems discussed above. Thus informational imperfections remove the presumption that the invisible hand of unfettered markets will always promote the social good. Admitting the existence of unevenly distributed information opens a potential role for government intervention.

On the other hand, the very informational imperfections that create market frictions also complicate the task of a government trying to improve upon the market. As everyone now understands, and as Hayek pointed out half a century ago, this is the reason for the failure of the planned communist economies. The government may be better informed than

the market participants over some issues (in particular, about its own future policies or the overall state of the economy); but about many issues government officials are likely to know less than the market participants (about, for example, the details of production processes). Successful intervention must be informed intervention. The knowledge of the details of how the market works that comes from day-to-day experience can only be acquired by asking the specialists. If the market participants believe that what they say will affect how the government intervenes, then they may report distorted information. There is a limit, therefore, to how well informed government officials can be about the workings of a market. To the extent that the government is operating under an informational handicap, its interventions will necessarily generate social inefficiencies; and these inefficiencies will be larger the bigger the informational shortfall (Baron and Myerson, 1982). The social inefficiencies of intervention may well be smaller than the social inefficiencies of nonintervention: but frictionless intervention is impossible in a world of imperfect information.

The volume of knowledge needed for successful government intervention is often huge. As noted, any complicated social institution that works has arisen by trial and error: it has evolved, and only partly been designed. What looks like a well-designed institution is probably the result of natural selection: of a Darwinian process operating among alternative operating procedures. The result is a complex system. If the interlinkages among the components of the system are only imperfectly understood, then intervention will produce unpredictable indirect effects. Because of the comple-mentarities among different incentive devices, a particular reform may be ineffective unless it is introduced in combination with some other reform. For these reasons, copying incentive devices from one economy to another is difficult: an evolved system is likely to be more complicated than it appears. When we try to transfer some institution across countries, we may leave out some crucial part, causing failure. Even successful transfers will often require a lengthy period of evolutionary adjustment.

The self-interest of the government officials also limits what intervention can achieve. Successful intervention requires that rent-seeking temptations be overcome. The lessdeveloped countries provide innumerable examples of government being the problem rather than the cure. This has been exhaustively discussed and little needs to be added.

The role of government vis-a-vis markets can be established only case by case. The big, classic questions about the role of the government in the economy come down, at this level, to mundane questions about the facts of the situation. A choice between an imperfect free market and imperfect guided market can be resolved only by empirical analysis. The ideal market arrangements vary sensitively with the information structure of the particular market. Theory informs the empirical analysis, but cannot give the answers. No overall conclusion is possible except a negative one: any simple, sweeping statement about the virtues of unfettered markets versus government intervention is likely to be false.

China's transition provides lessons about the role of the government — large in some areas, small or nonexistent in others — in creating markets. Arguably the single most important achievement in the Chinese economy in the 1980s was, as discussed earlier, the growth of non-state industry. This occurred with almost no aid from the central or provincial governments, beyond the removal of the pre-existing restrictions on non-state firms' activities: it was classical laissezfaire economics at work. (It did, however, take several years to develop the market institutions necessary for large-scale non-state production.) There remains, nevertheless, an inescapable role for the government elsewhere in the Chinese economy. The giant firms from the planning era are still government-owned. They must be regulated to foster efficient decision-making by managers who have no direct stake in their performance. Even if they were to be privatized immediately, there would remain a need for government oversight. One of the main forces ensuring efficient firm performance in well-functioning market economies, as noted earlier, is financial-market discipline. In a transition economy, a complete set of financial markets will take many years to develop (Tirole, 1991). The only available substitute for financial markets is the state. Can government officials be relied on to regulate these large firms efficiently during the transition?

In China, through a fortunate set of circumstances, the reform process itself generated appropriate incentives for the government officials.<sup>10</sup> During the 1980s, China's industrial bureaus increasingly gave incentives to the state firms to improve their productivity; in consequence, the productivity of the state firms rose significantly. Before 1980, by contrast, government supervision had produced notoriously inefficient firms. What motivated the officials to begin regulating for efficiency? Two of the initial reforms had the effect of creating product-market competition for the state firms. Some of the new non-state firms that emerged following the removal of restrictions on the activities of non-state firms competed with the state firms. Further competitive pressure came from a reform that allowed state firms to sell not only to the state, in compliance with the plan, but also on free markets in competition with each other. The increased competition meant that the state firms' profits were squeezed; as a result, remittances from the state firms to the government fell. State firms were the main source of government revenue. To slow the drop in government revenue, the industrial bureaus were impelled to spur the state firms to become more efficient and therefore more profitable. This involved giving managers more autonomy; paying the managers according to the firm's financial performance; allowing the use of bonus payments and more flexible job categorization for workers; and moving toward contracts that gave each firm a stringent lump-sum profit-delivery obligation, but let it retain any profits that it generated in excess of the target. China's reforms therefore proceeded by a series of feedback loops: reform begat further reform. A microeconomic reform (resulting in increased competition for state firms) created a macroeconomic problem (a squeeze on government revenue), which impelled the state to make further microeconomic reforms (increasingly profit-oriented regulation of the state firms).

### VIII. CONCLUSION

Getting prices right does not, by itself, promise economic success. The economy's microstructure must provide people with appropriate incentives. The variations in market forms that occur across countries and across time, and the new forms that are evolving in the reforming formerly planned economies, show that there exists no uniquely optimal market system. Markets are subtle and complex institutions, which have evolved so as to enable transactions to be made efficiently in the presence of unevenly distributed information.

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#### **ENDNOTES**

1. Sergei Plekhanov of Moscow's Institute for the Study of the United States and Canada, quoted in UCSD Guardian, November 14, 1990, p. 1.

2. For more on modern research into the interaction between information and incentives than is given in what follows, see Wilson (1987), Aoki (1992), McMillan (1992), Milgrom and Roberts (1992), and the references therein.

3. Australian Business News, April 3, 1992, p. 4.

4. Brock and Evans (1989), Carlsson (1989), *Economist*, October 14, 1989, pp. 87-88.

5. Business Week, March 27, 1989, pp. 84-94; Far Eastern Economic Review, August 17, 1988, p. 80; Japan Times, June 8, p. 7.

6. Techniques for analyzing complementarities among incentive variables have been developed by Milgrom and Roberts (1990), Milgrom and Shannon (1991), and Holmstrom and Milgrom (1992). For more on the implications for economic systems of incentive complementarities, see Aoki (1992).

7. New York Times, September 29, 1991, p. E1.

8. New York Times, March 2, 1992, p. A4.

9. New York Times, January 17, 1992, pp. A1, A6.

10. The following comes from McMillan and Naughton (1992).

## BEYOND COMPETITIVENESS: THE CHANGING ENVIRONMENT FOR INTRA/INTER-FIRM HIGH TECHNOLOGY COOPERATIONS IN JAPAN

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### I. STARTING WITH THE CASE: AN EXAMPLE OF THE JAPANESE CAMERA INDUSTRY

German cameras enjoyed, for many decades, the world's highest reputation for their perfection and robustness. Although there are many professional photographers today who still love the classical German cameras, the global camera market has been virtually occupied by Japanese products which, in the mid-1980s, hit the market with computerized automatic-focusing cameras. Recently, most Japanese camera producers have gone through a metamorphosis into the OA (office-automation) area, such as copiers, laser printers, faxes, steppers (lithographers for semiconductors), personal computers, etc.

The swift takeover of the world's camera and OA markets by Japanese products is often seen as a big symbol of Japan's high tech power based on a unique organizational approach of intra- or interfirm cooperation. On the other hand, it is somehow difficult for most American firms to form intra- or interfirm joint-works because American firms are more or less bureaucratically separated by inflexible independent divisions, or because, until recently, antitrust regulations precluded crosscompany cooperation. Hence, American firms are increasingly concerned that they have so far no effective measure to defend themselves against the Japanese strength other than a political solution, i.e., of attacking them on the ground of unfair business practices of dumping, *"keiretsu"* relations, and illegal patent violations, etc. Recently, unsuccessful attempts of Sematech, a Pentagon-backed interfirm semiconductor consortium, exacerbates such American worries about Japanese might. In Europe, the fear of Japanese high technologies is more or less the same as American's in both tone and seriousness.

Given such growing international concerns about the excessive strength of particular Japanese high tech products, this paper will address the peculiar "macro properties" of Japan that facilitate the development of high tech hybrids through intra- or interfirm cooperation in Japan. Before we embark on a full discussion, let us sketch how the Japanese camera industry, as an example, became the world's "mechatronic" (mechanic plus electronic) giant in the 1980s.

Today, a camera is one of the most popular consumer durables, and there must be at least one camera in every household. However, before it became a popular mass product, a camera was a luxurious commodity for the higher income echelon. For example, in Japan, the average price of a camera in the 1960s was at least three times higher than the average one month salary of white collar workers. In addition, what hampered mass popularization of cameras was the difficulty of operation due to their complicated mechanical structure. Since the German camera industry did not think of a camera as a mass consumer product, and since it was rightly proud of German perfection of mechanical precision and the quality of lenses, it did not feel it necessary to change the existing operating procedure of a camera despite its clumsiness. But Japanese industry thought differently, and regarded a camera as something that could slip into the Japanese life-style.

As Table 1 shows, the Japanese camera market had been exceedingly competitive among seven or eight producers and the size of the market was small, so that the market would be easily saturated. Therefore, all the Japanese camera manufacturers knew that unless they constantly introduced something new, they would soon enter a recession. This was another reason for them to try to expand the market into a larger mass market. Here they found the simplification of operating procedures of a camera indispensable. However, there already existed simply structured, cheap, and easy to operate cameras for use by children or non-camera-maniacs, so that the simplification of operating procedures should be done without damaging the brand image. An alternative approach was sought, and it was electronization.

| Table | 1. |
|-------|----|
|-------|----|

|         | (single-reflex camera market, by sales) |      |      |      |      |      |      |      |
|---------|---|------|------|------|------|------|------|------|
| ,       | 1971                                    | 1973 | 1974 | 1976 | 1977 | 1979 | 1981 | 1983 |
| Canon   | 28                                      | 19   | 11   | 17   | 31   | 23   | 31   | 30   |
| Asahi   | 21                                      | 19   | 17   | 11   | 13   | 9    | 11   | 12   |
| Nikon   | 14                                      | 16   | 15   | 16   | 13   | 20   | 20   | 27   |
| Minolta | 11                                      | 18   | 13   | 28   | 17   | 13   | 1    | 10   |
| Olympus | n/a                                     | n/a  | 7    | 11   | 12   | 7    | 9    | 11   |

| Market Shares | (% | ) of | Japanese | Camera | Manufacturers |
|---------------|----|------|----------|--------|---------------|
|---------------|----|------|----------|--------|---------------|

Source: The Yano Economic Institute, ed., Japan's Market Shares, 1971-1983.

The first attempt was made by one company in 1961 to automate the setting of light exposure (called AE) with analog devices. Since the market was highly competitive, other companies soon introduced similar products, and the market was saturated by 1971. This is clearly shown in Figure 1. However, since 1972 the market has been revitalized because at about the same time in this year three companies introduced the ICused models. All three had joint R&D with major electronics manufacturers. The digitalization of the camera added a new niche to the market which was about to saturate again in the late 1970s. Then, in 1976, a fully electronized single-eve reflex camera triggered a new market expansion which has lasted till today. The 1976's market expansion is seen in Figure 1 as a change of the slope of the production curve in 1977. The reason for the prolonged market expansion is due to the introduction of a new AF (automatic focusing) single-eye reflex camera in 1981.

A camera company is traditionally a sacred place for mechanical/precision mechanical engineers. This means that electrical/electronics engineers suffer from lower political prestige with a lower voice. However, the electronization of the Japanese camera industry through interfirm cooperation reshuffled significantly the power balance between electrical/ electronics engineers within a firm. As shown in Figure 2, the slope of the growth curve of the number of electrical/electronics engineers in the camera industry changed twice, first in 1973, and second in 1979. These two years correspond to the times when Japanese cameras were radically innovated. It is worth noting that the Japanese camera industry went through first an interfirm cooperation stage and later an intrafirm cooperation stage.

### **II. THE PREMISES ON TWO MACRO FACTORS**

If a product has an established market position for a relatively long period, there is no need for a radical change in the current production system. Some routinely incremental improvements are sufficient to maintain market share. Such improvements are nothing more than radical, and thus, organizationally speaking, a division which has produced a successful product becomes very rigid and conservative. Since the division has been profitable and hence made a significant contribution to the prosperity of a firm, no one can effectively ameliorate its ongoing organizational rigidity and conservatism.

However, if an existing product is threatened by an innovative product made by a competitor, there needs to be a radical change in both the obsolete product image and in organizational conservatism unless a firm resignedly gives up on its current market share. In order to implement both, only two choices are possible. The first approach is to internally conceive a competitive product by reshuffling the existing organization within the same firm. The second approach is to externally conceive a competitive product by asking for help from a different firm in a different business field. The first approach means an "intrafirm" cooperation, and the second approach means an "interfirm" cooperation.



Figure 1. The Production of the Japanese Camera Industry




#### Figure 2. The Number of Electrical/Electronics Engineers in Japanese Camera Industry

Source: Keiko Teraguchi, Strategy for Cooperation, R/D, 1980.

Although what has been described above is a basic logic of product changes accompanied by the intra- or interfirm's cooperation, firms behave differently around this logic, depending on the business environment of a particular country. For example, it is widely believed that the strength of Japanese high technology sectors lies in cooperative efforts to develop new high tech products. The classical example is the VLSI (very large sized IC's) Consortium, a case of interfirm cooperation, which was formed with MITI's guidance. Upon the success of the VLSI Consortium, Japan's IC producers began intrafirm mingling of the electronic and chemical divisions and built the world's most advanced "IC clean rooms" to manufacture large megabits DRAM's.

Not only the VLSI Consortium but also many other Japanese successes in intra- or interfirm cooperation, such as NCmachines, digital watches, and "mechatronics" products, all of which convinced researchers, at home and abroad, to model Japanese successes. Those models can be classified into two types, a spiral or a cascade model. The first in Figure 3 is the spiral model to indicate that a higher product is conceived through cyclical contacts among the R&D, production, and sales divisions within a firm. When one of those four divisions form a joint project with outside companies, the different spiral models overlap each other.

The second model is a cascade type, called the chainlinked model. Although the model looks complicated, its meaning is simple and trivial. It depicts that there are two main divisions to link others; first the research division to the rest, and second the distribution and sales divisions to the rest. These two models emphasize feedback interactions among different divisions, so that both reject a simple "linear" model in Figure 3 which contains no feedback.

These two models are the so-called "rational models" which can be adopted only by the "rational managers" who do not care about politics of organization or behavioral problems of a firm. In reality, there exists no such superrational manager, and most successful managers are often good politicians able to mobilize mutually competing and sometimes hostile divisions into cooperative work, or often good diplomats skillful in negotiating with outside companies to obtain interfirm cooperation. If one tries to elucidate the dynamics of







Source: Stephen J. Kline: Innovation is not a Linear Process (Research Management 28 (4), 1985).



intra- or interfirm high tech cooperation for a particular case, politics and diplomacy in the business arena should not be dismissed.

As is the case with politics and diplomacy in the political arena, there are two perspectives for looking at "business politics" or "business diplomacy," i.e., a micro perspective and a macro perspective. The micro perspective focuses more on how managers behave under what conditions in dealing with intra- or interfirm cooperation, and it needs in-depth interviews with individual managers. The macro perspective, on the other hand, focuses on the macrobusiness environment, such as the mode of competition in a respective country or general consumer predispositions. This micro/macro difference in perspective can be easily understood if one may compare it with an analogy in politics. For example, a micro perspective of politics is employed in analyzing how politicians or voters individually act in a particular political setting like an election. On the other hand, a macro perspective of politics is used for analyzing a voting pattern of a particular country or studying political ideology, such as liberal democracy, totalitarianism, or communism.

Of these two perspectives, this paper employs a macro one, and tries to explain why Japanese firms are more prone to engage in inter- or intrafirm high tech cooperation than others. The question of what the macro aspects are is related to the logic of product changes we mentioned above. First, if a product has a short replacement cycle, it means that the degree of competition is very high. In the meantime, it also implies that market competition is performed by multiple firms which have similar technical levels and hold more or less similar market shares. Second, therefore, they often emulate others. Third, since no firm can deal with such a shorter product cycle by reshuffling its internal organization all the time, it should often be the case that external cooperation is sought to conceive a high tech hybrid. Fourth, there must be consumers who prefer such a hybrid product. The first three points are related to market competition, and the last point has something to do with the predispositions of consumers' choices of technology. Thus, we first look at the Japanese mode of competition in a trilateral context and ask whether it is conducive for intra- or interfirm competition, and then we focus on why Japanese consumers have peculiar predispositions to accept high tech hybrids.

# III. CHARACTERIZING JAPANESE MODES OF COMPETITION BY TRILATERAL COMPARISON

One cannot deny that market competition is a key support of liberal economic activity. More specifically, competition would be an indispensable factor that drives economic development, and it does more so for technological development in business. It is frequently felt by industrialists that technological innovation is possible only when healthy competition is guaranteed. At least, it is written so in standard textbooks of economics or business management. However, does every one know the true meaning of competition? Can it be universally perceived? Or, to put it differently, is it implicitly or explicitly well defined? In this section, we will argue that the differences in the patterns of technological innovation partially hinge on the mode of economic competition.

All countries have, in one way or another, depending on their socioeconomic and political history, distinct styles of market competition. For example, U.S. market competition is more or less a battle for acquiring a monopolistic position in a market. In order to become a market champion, American firms have to develop a very innovative product and protect it with high patent barriers for not letting the challengers emulate an innovation. Thomas Edison's GE, William Whitney's automobile consortium, AT&T's telephone monopoly, RCA's radio monopoly, IBM's mainframe monopoly, Bob Noyce's Fairchild were all cases of becoming a market champion with a radically innovative product.

Since challengers always try to topple the existing market order by bringing an alternative innovation, the market champions have to maintain their positions by enhancing their current technologies and attacking the challengers by way of legal litigation. The personal computer business is a good example in this regard. After an embryonic stage of the personal computer market in the U.S., Apple Computer brought an innovative model that would give the Apple Computer a more or less monopolistic position until the time when IBM entered with its own brand name. Despite its mediocre technology, the IBM machine quickly monopolized the market for its comparative advantage of software availability. After IBM failed to legally protect one of the key CPU programs, IBM clones flourished in the market with lower prices and more add-on features. Most of them were Japanese OEM's, and later Asian products replaced them. In return, Japanese machines moved to value-added models such as lap-tops or color LCD display versions. Why are Japanese producers so good at making a better product once an innovative model is introduced elsewhere? It is perhaps because the Japanese mode of competition is uniquely different from that of American.

If market competition is quite intense and the order of market hierarchy is very fluid in the sense that there are many players who competitively defend their current market shares against competitors and new challengers, firms tend to develop a product which would distinguish itself from existing products in the market. This is the heart of Japanese competition. In the case of the Japanese auto market, eleven auto firms introduce new models within a shorter model-change cycle than American counterparts, say, four-year cycles rather than normal seven-year cycles. In the case of Japanese consumer electronics, seven or eight major players compete with each other by introducing new products every six months or less. The shorter product cycle of Japanese products reflects the extreme intensity of Japanese market competition.

Such a high degree of market competition implies that there are more than the optimal number of economic players so that once a new product is introduced into the market by one firm, many other firms will immediately emulate them and soon introduce a slightly different product in order not to infringe on patents or design rights if protected. Then, when all the players are aligned with a more or less similar product but with different additional features, what they can compete for is nothing but sheer market share.

The German style of competition is rather opposite to its Japanese counterpart. In Germany, market competition is a limited number of firms simply making a better thing in limited quantities and putting a higher price on it. A standard economics text book says that if a limited number of firms control a market with their "discretionary" prices, such a market is not competitive but monopolistic or, at best, oligopolistic. One good example of oligopoly is the auto quota agreement between the U.S. and Japan. When Japanese automakers complied with MITI's decision setting an auto export quota of 1.68 million units per year in 1981, American consumers got angry. They criticized, not Japanese exporters, but their domestic producers, because the auto quota was made at the request of the U.S. government through political pressure from American automakers at the cost of American consumers.

In Germany, there is even a law to regulate competition. This law is called the *Gesetz gegen Wettbewerbsbeschraenkungen* (GWB) (The Law Against Unfair Competition) which allows a firm to sue another firm if the former firm sees a business of the latter disturb fair competition so far attempted. There are a number of federal supervisory agencies for specific industries, such as bank and insurance supervisory agencies and the Federal Cartels Office. In addition, airliners and airports are supervised by an agency in Brunswick. But, ironically, in Germany there is only one flag carrier, Lufthansa, and German banks are given a status of universal banking, that is, they can engage in virtually everything, even security business.

From the point of view of the so-called liberal economy, what Germans define as a fair competition by the GWB is rather obscure. It seems that their meaning of fairness is only applied to firms, and not to customers. Furthermore, German concepts of competition in GWB repulses an entry of a new venture business. Suppose that there are only three companies producing a certain product in Germany, and consumers feel very uncomfortable with the price of the existing products and anticipate a new entry with a new price setting. If the three companies have been running business competitively from the perspective of the GWB, they can sue against a new entry firm as a violator of currently ongoing fair competition. Such a new firm would be prosecuted easily.

Another example of the German way of regulating competition is the *Ladenshlussgesetz* (The Shop Opening Hours Law). The strong guild power of retailers in Germany results in a code to institute a common rule to close all stores on weekends. Retailers do not like competitors to open during weekends while they close their shops. Political pressure was exerted to promulgate this law. It is often argued that because of this law the establishment of new business in Germany is difficult.

# IV. JAPANESE PATTERN OF CHOOSING TECHNOLOGY BY TRILATERAL COMPARISON

Technologists as well as modern industrialists often argue that a high tech product will always be accepted by the market. This may be true, but it is only true in a special type of market where people choose it in that way, and logically, it is equally true that in another type of market economy, people even reject it. Why should all of us accept high tech products? Yes, we need certain kinds of high quality products, but someone else may not want everything as high tech. We should know that there are different modes of a market economy, and there are different types of customers who stick to their own life-styles.

In the history of international technological development, every country copied every other country. There is no exception. When a time comes for improvement, people's life-styles predominantly shape the pattern of improvement. Of course, life-style can also be influenced by technology; however, since a foreign life-style has flown in when a foreign advanced technology is copied, the causal path is more from the indigenous life-style of the emulating country to the copied technologies, rather than the other way around.

The American way of life has been created by technologies. Thomas Edison did not invent electric light bulbs, but improved on European bulbs with new carbon filaments and developed the most efficient high-voltage electricity transport system, by which the American life-style was completely altered — every room in American households could be lighted and people could stay up late. Henry Ford's new inexpensive automobile, the Model T Ford, completely changed the American way of life, too — every middle income American could own a car and live away from city centers. In Europe at that time, an automobile was still a luxurious commodity only for the rich, who drove cars to enjoy motor sport. In the new automobile life-style, Americans treated the car as a means of transportation. There are many American products, such as telephones, radios, electrical refrigerators, vacuum cleaners, TV's, video recorders, and many more, which created the distinct pattern of the American way of life.

In Japan, it has become a new fashion among college students to have a "cordless telephone," an FM telephone, mobile within a 100m radius. Such a telephone is usually equipped with an answering machine. These students already have a private video recorder or a "Disc-Man." Some students even have a "home fax" for private communication with friends. Extracurricular prep-schools now extensively use faxes for giving problems and correcting them for primary school children who are preparing for entrance examinations to middle schools. Many households have Japanese word processors for writing letters. Pupils at the middle school enjoy electronic mail. Of course, they have already graduated from "Gameboy." Technology has slipped into daily life in Japan today. The first graph in Figure 4 clearly indicates that the Japanese public treats technology as something to improve its life-style.





Source: Prime Minister's Office Survey, 1989.



Source: R. Geissler, "Technikfeindlich und leistungsscheu?," Aus Politik und Zeitgeschihit, 1985.

In contrast, technology has never slipped into the life-style in Germany. There is even a strong German word, technikfeindlichkeit (hatred for technology). The second graph of Figure 4 indicates this. Interestingly enough, although they admit that technological development has some positive impact, the German people see technological development not as something that improves their lives or prosperity, but rather as a weapon of competitiveness. Young German workers are rather cynical toward technological development, perhaps because they fear the loss of their jobs to the technological progress. As they become old, people are increasingly hostile toward technological development. As is more or less true elsewhere, senior people are rather inflexible in using new technologies. As Figure 4 shows, technology cannot slip into German life-style. It stays only at the edge of their lives and is never allowed to move inside. In Japan, we easily let it in.

German technology is really awkward, unfriendly, and too mechanically-oriented but simple, and above all, maintenance-free or at least maintenance-minimal. Therefore, it helps trainers write simple manuals for teaching trainees how to maintain it during their vocational training. Simplicity and ease of maintenance are two important concepts in Germany's technological choices, and they are sometimes in opposition to rapid technological innovation or high technology itself.



In short, there are distinctive characteristics in German technology. Their products are very much *Dauer*- (endurance in English) oriented or *dauerhaftigkeit* (durability). In other words, Germans prefer a product that lasts longer. Their rationale is quite simple: it minimizes maintenance costs for an

individual or a household. The implication of the *Dauer*-oriented choice of technology is worth noticing. Since Germans put more emphasis on endurance, it was a perfectly rational choice when Siemens decided not to engage in chip research in the seventies. This Siemens' decision has become very controversial today and it is severely criticized even by German policy-makers on the grounds that it would be so difficult today for Germany to catch up with Japan or the U.S. in the chip business. They contend that Siemens' decision was a total mistake.

But some Germans argue differently. They contend that at that time the reliability of chips was uncertain, so that no one in Germany envisioned that it would become a key component for a product which would last longer. Then, it was rational for Siemens not to engage in chip research on the grounds that they were not *dauerhaftig*. The company thought that Germany had to wait until the time that they became reliable.

# V. THE CHANGING ENVIRONMENT AND THE SEARCH FOR THE NEW MODE OF COMPETITION

Richard Koo, a Hong Kong-born American economist at the Nomura Research Institute, criticizes the business behavior of Japanese manufactures. His argument is based on the decline of stock values in the Japanese stock market since the beginning of 1990. The mid-1991 political scandals related to the security industry in Japan showed the end of Japanese affluence. He writes:

In reality, the message from domestic investors is that holding the stocks of these supposedly super-competitive Japanese corporations may not be such a good idea after all. So why have large Japanese corporations been rejected in this way? The answer can be found in their low profitability. In the 1980s, Japanese enterprises strove hard to sell high-quality products at low prices in a headlong rush for size and market share . . . Corporations with profits so low that they would never be able to produce funds in Europe and the U.S. raised money in Tokyo that, combined with a lot of hard work on the part of their workforce, led to their present levels of market share.<sup>1</sup> As he pointed out, it is true that Japanese corporations could raise funds at an extremely low cost in Japan, so that a drive for size and size alone was often regarded as the most appropriate strategy. Koo stood firmly on the side of stock holders. He further wrote: "What does the raising of profitability entail? It almost certainly means higher prices." In order to raise profitability, he suggests that companies have to specialize in areas where their competitiveness is solid.

Koo's argument looks like a typical American one. He looks at a Japanese way of running a business from the liberal economic ideology which is very much American. His thought is that: (1) stock holders seek more dividend returns so that they invest in only profitable companies; (2) making a quality product and putting a low price on it are against the welfare of stock holders; (3) in order to ameliorate these irrational economic activities, a company should specialize in a certain area; and (4) if things are not improved, a political intervention is needed.

Perhaps the best counter argument against Koo can be found in the arguments by the technologists. Robert Hayes and the late William Abernathy of the Harvard Business School, for example, once warned that the short-sighted behavior of stock holders who only saw short-time returns ruined American technological supremacy (recently, a similar argument is made by Made in America, MIT's book on American competitiveness). MIT people see that the economic-rational managers took over American corporate headquarters and applied the "management orthodoxy" for raising profits in a short time span by cutting now-unprofitable but maybe-later-important technological divisions. In so doing, the book concludes that American technological supremacy is threatened.

Japanese stock holders are not Americans, so that they may not shift to more profitable American companies from less profitable Japanese companies, as Koo forecast in his paper. Japanese stock holders are not terrible profit-seekers like Americans. Putting it differently, before they are rational economic animals, they are social animals, somewhat like Germans, who are more concerned with the security within the "company corporatism" (*Kaisha-shugi* in Japanese).

Although Koo misjudges the behavioral mode of Japanese stockholders, what he describes about the problems Japanese firms face today is quite correct. Japanese industries, except for the shipbuilding and utility industries, all face a most serious economic slump at present. For example, Toyota lost 4% of annual domestic sales in June 1992. As of mid-1992, Nissan's profits went into the red for the first time since the end of World War II. The consumer electronics industry, too, squeezes production at a 80% level. They also suffer from sharp decreases in domestic sales since the beginning of this year.

These current economic recessions are caused by two factors, namely (1) the sharp decline of land prices which were the major mortgage source for borrowing bank money, and (2) the imbalance between diminishing demands and overstrengthened supplies. With respect to the first factor, both land price and stock price increased 230% during the bubble period from 1986 to 1989, but later the land price declined at 30-40% and the stock went down 60% as well in the period from 1990 to 1992. With respect to the second factor, between 1987 and 1990 most manufacturing sectors increased equipment investment annually at a 15% level. As Koo pointed out, they could borrow capital money from banks or non-banks (the security and trustee companies) who expanded lending capacity in order to meet the BIS criteria. Only expensive land could become mortgages to support this low-interest money transaction.

However, the sudden decline in land price lowered immovable asset values both of firms and households, thereby exacerbating the balance sheets of firms and the purchasing power of households. In order to ameliorate such stock deflation and demand shortage, the Japanese government announced the ten-trillion-yen economic rescue package on August 28, 1992. Despite this government "life-boat" package, each manufacturing sector must indigenously solve its own over-capacity problem. It is ironic indeed that though Japanese manufacturers became number one in the world with the "lean production system," they are now suffering from the opposite, i.e., the "fat production" system, while foreign competitors are quickly learning Japan's "lean production."

In order to survive, the current overproduction and overcompetition, Japanese manufacturers have to go through a new metamorphosis, i.e., changing the current corporate style. One possibility is to adopt an American corporate style. However, almost all Japanese companies know why American corporations decayed in technological supremacy. Therefore, what Japanese companies should search for in the midst of the current post-bubble economic hardship is not an American alternative. How about adopting a German model? There are two obstacles to adopting a German model. The first is the difference in size, and the second is the difference in the mode of competition. With respect to size, most profitable German companies are small- and medium-sized, and they are well protected by the state. Their capital acquisition is local, often family-based, and most companies do not put stocks on a stock market. Thus, it would be impossible for larger Japanese companies to emulate a German model on these grounds.

With respect to the difference in the mode of competition, the situation is rather complicated. As already hinted above, German competition is rather "vertical." Let us visually explain this with the following two illustrations, Figures 6 and 7.

Take the example of the automobile industry. In Germany, cars are classified by performance and price. They reflect different social status, as not everybody can drive a Mercedes. One must be successful in life to drive a Mercedes. On the other hand, almost everybody can drive a VW, and it is a real "peoples' car." Opel and German Ford are struggling for their solid niches, but their efforts have not been rewarded well. Porche, as is widely known, is a specialty car with a specific market niche. BMW is an expensive yuppie-type car. In order to drive it, one must pretend to be a young elite, or an old elite with a young yuppie mentality. In Germany, the segmentation of the automobile market is largely well done,



Figure 6. German Mode of Competition

| Japa         | nsese Mode of Compe                    | tition |
|--------------|--|--------|
|              | Toyota                                 |        |
| Lexus        | Corona                                 | Corola |
|              | Nissan                                 |        |
| <br>Infiniti | Blue Bird                              | Sunny  |
|              | Mazda<br> <br>Honda<br> <br>Mitsubishi |        |

except for boundaries. In other words, as the above illustration shows, German automobile companies are fiercely competitive with each other, not for overall market niches, but within the boundaries. For example, a couple of years ago BMW waged a war against Mercedes by introducing a large "seven-series." Mercedes-Benz struck back by introducing a small 190-type. Therefore, the mode of competition among German automakers is "vertical." Since it is, each maker has to make endless effort to defend its own market niche. Technological excellence of German cars is maintained in this way. They also face hard competition from foreign manufacturers. The same thing is true for other German industrial sectors. The German market is orderly-made but very competitive. To foreigners, these two things look very contradictory, but they are not in Germany.

In contrast, the Japanese mode of competition is "horizontal," as shown in the Figure 7. Toyota, Nissan, Honda, Mazda, etc., all produce a wide range of products. Their competition is a business war in all directions. This horizontal nature is also applied to other sectors in Japan, such as electronics and machine tools. The horizontal competition is particularly fierce over lowering prices and enhancing quality. As Koo criticizes, it is very difficult for Japanese companies to set a price higher than their competitors. The only way to raise a price is to simultaneously enhance quality, so that, in international competition, Japanese producers become more and more competitive. The defect in this horizontal competition is obvious, i.e., overproduction leads to recession. Although every company knows that overcompetition is stupid, they cannot stop it. Even if one company stops it and specializes in a limited market segment, there is no guarantee they will win in that specialized segment. What may happen is that they will lose both the previous segments and the specialized one at the same time, thereby withdrawing completely from the race. The only conceivable chance to transfer the Japanese mode of competition from horizontal to vertical is when a new technological innovation is brought by an entirely new company which monopolizes it by strong protective measures. If such protection is weak, the existing powerful companies will immediately copy and improve it and stand in a better position. We should note in foreign markets, people feel increasingly uneasy about the way Japanese companies operate.

# VI. THE NEW JAPANESE MODEL AND THE ROLE OF GOVERNMENT

Neither the American model and the German model is a good alternative for Japanese companies to emulate, so that Japanese companies have to find an entirely new model in order to get out of the current post-bubble recession. Giving a hint of what a new model looks like, let us summarize the trilateral models in terms of criteria of technological choice, namely the *dauerhaftigkeit* (endurance) and uniformity.

For example, the Japanese model produces technological products with a short product cycle (i.e., non-enduring) and in many varieties (non-uniform). These two characteristics have resulted from Japan's peculiar mode of competition, namely horizontal competition by many equal firms in terms of technological capabilities that leads to a tense competition

|                | dauerhaftigkeit | uniformity  |
|----------------|-----------------|-------------|
| Japanese Model | non-enduring    | non-uniform |
| American Model | non-enduring    | uniform     |
| German Model   | enduring        | uniform     |
|                |                 |             |

to defend their own market share. Therefore, Japanese firms are prone to copy each other and add an incremental change to disguise a new product. When such an incremental change exceeds a firm's current capacity, a new interfirm cooperation is sought, thereby introducing a new hybrid product. In the next cycle, other competitors will copy this, and add again an incremental change . . . and this process is repeated as many times as possible.

The American model implies that American technological products have also a short product cycle (non-enduring) reflecting high intensity of market competition, but when a new champion is born to monopolize the market, a new production system makes a mass-produced product (uniformity). The German model has been already discussed above, and it produces an enduring and uniform product.

A new Japanese model would be hinted from the above table. It is one that distinguishes itself from either of the current three models, so that the new model would be "enduring" but still "non-uniform."

| Figure | 9. |
|--------|----|
|--------|----|

| New Japanese Model  | enduring | non-uniform |
|---------------------|----------|-------------|
| nen espenieee meaer | ondannig |             |

The implications of the new model are significant. Since Japanese consumers will maintain their peculiar predisposition to treating a new technological commodity as a means of "showing-off" himself or herself, the property of "non-uniformity" should be maintained for satisfying such national mentality. But, in the meantime, we should not forget that excessive competition forced product cycles to be too short, and made Japanese consumers increasingly frustrated with unnecessary functions or too complicated operating procedures of a new product. In sum, what made Japan the world's number one high tech country, namely copy and improvement, is not functioning properly today. It works superficially, with worthless incremental add-on's, but no real improvement. This might be a natural consequence of Japan's particular model of competition when the stage of technological development faces an innovation deadlock. Therefore, we should discard the current system that created Japan's high

tech competitiveness and, instead, switch to a future survival system that will produce a *dauerhaftig* (enduring) product. Figure 10 shows how a new system looks different from the current system.

The current system is typical of the developmental models. In order to accomplish swift catch-up, every nation, including today's industrially-advanced European countries and the U.S. started with copying and improving (i.e., industrial emulation). A developmental model is legitimate only if a country has inferior industries, so that it can also be applicable to an industrially-hollowing nation. However, once a country succeeds in emulation, it has to discard this model, otherwise, it inevitably creates serious international conflicts. As pointed out above, a developmental model leads to overproduction if it is kept in an industrially advanced country, and the only solution for overproduction is the expansion of the market by infiltrating into foreign markets.

On the other hand, the new system creates an enduring product without various copying and incremental changes, while maintaining the current mode of competition. Consumers are also satisfied with the varieties of products which are not copied. Instead of copying, non-uniform but enduring products must be very innovative in the beginning. Otherwise, they cannot last long. Therefore, a firm has to mobilize the best and brightest to conceive such highly innovative products, and the firm has to improve it, not by copying others but, by comparing with them. In choosing one of those, consumers have to become very "partisan" in selecting their most satisfying discrete products sticking to them for a long time. This is very similar to the situation where voters select their own political parties and support them for the long term.

Since Japanese firms have been too much obsessed with a copy-plus-increment mentality, unless the government institutes an incentive policy to reorient this predisposition, no firm will follow the new model. In 1971, the *Kishin-ho* (The Temporal Law for Promotion of Special Mechanical Industries of 1956) and the *Denshinho* (The Temporal Law of Promotion of Special Electronics Industries of 1957) were merged into the new *Denki-ho* (The Temporal Law for Promotion of Special Electronics and Mechanical Industries). Because of this 1971 law, intra- or interfirm cooperation in the mechanical industry and the electronics industry was accelerated. The



Figure 10. The Current and New Japanese Models

case of the electronization of Japanese cameras we looked at earlier in this paper is a symbol of the success under this *Denki-ho*. Later, in 1958, a new law called the *Kijo-ho* (The Temporal Law for Promotion of Special Mechanical and Information Industries) was enacted to update the previous *Denki-ho*. However, since we should switch to a new system, the government, particularly MITI, has to put an end to the *Kijo-ho* and promulgate a new law to encourage firms to produce non-uniform but enduring products.

#### **ENDNOTES**

1. See, for example, Philippe Delmas, *Le Maitre des Horloges*, Editions Odile Jacob, 1991, and Konrad Seitz, *Die japanisch-amerikanishe Herausforderung*, Akquel, 1991.

2. The following account is based on The Economic Institute, Japan Association for Promotion of Mechanical Industry, Tokyo, ed., *The Cooperative Development for the New Age of Technological Innovation*, 1986. (in Japanese)

3. If a flow value grows in a bell-shape or mountain-shape, its stock (cumulative) saturates in an S-curve. If a flow value is production, then its stock value is the degree of market saturation. Figure 1 indicates that the production curve went in a bell-shape until 1971, and a new bell-shape started since then, which means that the once saturated market was re-activated in 1972.

4. See Konrad Seitz, op.cit.

See Richard C. Koo, High-Quality Products but Low Profitability: Why Japanese Investors Are Increasingly Rejecting This Time-Honored Formula, mimeo, 1991.
See Robert W. Hayes and William J. Abernathy, "Managing Our Way to Economic Decline," Harvard Business Review, 58, 1980, pp. 67-77.

7. See Michael L. Dertouzos et al., Made in America, MIT Press, 1989.

8. On this see Taizo Yakushiji, "The Dynamics of Techno-Industrial Emulation," *BRIE Working Paper #15*, Institute of International Affairs, University of California, Berkeley, 1985.

# TELECOMMUNICATIONS: MARKET ACCESS REGIMES IN SERVICES AND EQUIPMENT

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Many analysts predict fragmentation of the world economy into trading blocks, narrow bilateral trade deals, and managed markets marked by growing conflict and decreased integration of world commerce. They argue that it is harder to coordinate and enforce agreements among dispersed power centers. This problem is more acute because differences in U.S., German, and Japanese styles of capitalism are more salient as power diffuses.<sup>1</sup> In addition, industries featuring such strategic trade conditions as economies of scale and scope, and externalities among producers and consumers are more central to world commerce.<sup>2</sup> These conditions may reward government efforts to manipulate world markets.

This paper acknowledges the problems but challenges the predicted consequences. A market access regime for world commerce can reconcile industrial policies with global economic integration and competition. The restructuring of international competition rules for telecommunications services and equipment illustrates the shift to market access. Traditionally a very mercantilist market, telecommunications is politically sensitive, critical to the world information revolution, and marked by significant competitive imperfections.

<sup>\*</sup>I thank Jonathan Aronson for his permission to draw materials from our latest book, and the Berkeley Roundtable on International Economy for its support of my work on European policy.

Yet major liberalization and industrial restructuring have increased the integration of world telecommunications markets.

This paper shows how and why the traditional telecommunications regime departed from the system of free trade, and why the trading and telecommunications regimes are now converging (Parts I and II). Monopoly once was a politically attractive solution to problems posed by the international cooperation needed to provide telecommunications services. However, in the 1980s technology and domestic politics eroded the international telecommunications regime by triggering greater competition. Parts III and IV show how trade negotiators have sorted out the problems of governing a mixed global system of monopoly and competition. Their efforts have eased the immediate dilemmas, but left the ultimate approach to organizing world competition unresolved. Part V examines three competitive strategies for global telecommunications in order to define the problems of governing the emerging market. Part VI argues that the alternatives are neither neomercantilism nor classic free trade. Instead, telecommunications is part of the emerging market access regime for international commerce.

## I. THE CHANGING TRADE REGIME

International regimes are the principles, norms, and procedures created by governments to guide international cooperation by solving common strategic dilemmas. A classic national dilemma is the choice between arming more heavily or trusting uncertain defense alliances. Another is between an idiosyncratic computer standard that fits your national preferences but make your systems incompatible with the rest of the world. Understanding a regime's politics and economics requires realistic analysis of how its principles and norms solve the strategic dilemmas posed by cooperation.<sup>3</sup>

#### A. THE POST-1945 REGIME

The free trade regime since 1945 rested on the principle of comparative advantage for free trade while accommodating countries' social welfare commitments.<sup>4</sup> The General Agreement on Tariffs and Trade (GATT) solved three strategic di-

lemmas. The first was a classic one: how to expedite negotiations while making sure that concessions were reciprocated and did not disappear in hard times. "Binding" meant trade concessions could not be retracted except for limited special circumstances; the rules of nondiscrimination (through the "most favored nation" clauses) and progressive liberalization of barriers at the border expedited gradual liberalization; and equivalence of concessions required comparable contributions to the trade bargain.<sup>5</sup> Informally, diffuse reciprocity on concessions eased bargaining woes. Deals balanced benefits over many different markets and often even over time (e.g., concessions only were implemented gradually).

There were two less recognized strategic bets. The regime gambled that domestic policies and nontariff barriers largely did not matter because the relationship between the U.S. government and its firms defined the key competitive contours of the world economy. Some countries had extensive industrial policies; but so long as the U.S. did not, and the U.S. was the pivot of world markets, then industrial policies were not vital to the conduct of world commerce. The regime also bet that liberalizing the fastest growing segment of the world economy, manufactured goods, was easier and sufficed to integrate the world economy. Many agricultural products and raw materials were subject to only weak GATT coverage. Services were too politically sensitive for trade authorities to have any jurisdiction. Governments largely exempted domestic regulations from international oversight.

#### B. THE EMERGING MARKET ACCESS REGIME

The strategic context of the free trade regime has unraveled. U.S. commercial policies (e.g., antitrust, industrial policy) are changing as other countries' practices grow in strategic importance. Europe and Japan embrace proactive policies to create comparative advantages through national, regional, or even global initiatives. This means that the implicit ground rules governing relations among firms and between firms and governments are uncertain.

At the same time, firms are less parochial.<sup>6</sup> Firms are tapping and creating new competitive assets on a global scale. International corporate alliances are a prominent part of globalization. These alliances are particularly risky and diffi-

cult ventures, but for successful firms they permit specialized sharing of resources with other companies that opens new competitive opportunities.<sup>7</sup> Alliances encourage global economic integration. Global alliances do not preclude proactive national policies; firms also support the creation of advantages at home as complements to their global efforts

Global companies still want open markets, but many now favor contingent liberalization assuring timely reciprocal market access.<sup>8</sup> They also still prefer a common global framework of rules for two reasons. First, many firms run operations across two or three regions of the "triad" plus some number of industrializing countries. So, they fear a cross fire of conflicting regional policies, as in the case of U.S. producers caught in European moves against Japanese interests. Second, trade flows dominate investment flows (by about ten to one in recent years) internationally, but between 30 to 40 percent of trade flows are intracorporate transactions in multinationals.<sup>9</sup> This means multinationals require considerable flexibility in trade.<sup>10</sup>

Political leaders in major countries also have incentives to keep world markets open. Even allowing for strategic trade problems, increased economic integration enhances growth. The experience of the 1970s has also left most countries skeptical of classic forms of market management even though they remain dedicated to selective intervention in the economy. The political trick is to organize foreign economic policy so as to permit specialized payoffs for losers (or losers absent other policy innovations) while letting economic integration proceed. This has yielded policies to speed shifts in comparative advantage by R&D, improving the domestic "supply base" in key industries (e.g., specialized equipment suppliers for semiconductors), and upgrading the skills of workers.

Governments have embraced the doctrine of *evolving comparative advantage* while streamlining social welfare policies.<sup>11</sup> This has forced a reordering of regime norms to reconcile activist policies with international commercial obligations. The new situation poses three strategic dilemmas. The initiatives to promote national industrial adjustment can overlap with strategic trade policies that can harm other countries. This has forced attention to the international consequences of domestic commercial policies.<sup>12</sup> Moreover, the norm of gradual progressive liberalization may be too slow because temporary advantages can become permanent. Finally, networking problems have become more ubiquitous for major global firms in all industries. Networks imply significant coordination of global operations involving major economies of scale and scope.

These dilemmas are propelling a *market access regime*. The regime will give equal weighting to foreign investment and trade as methods of market access, internationalize domestic regulations by emphasizing national obligations of transparency (fully disclosed and available rules) and timely review about their effects on international commerce, embrace industry specific trade pacts creating specialized rights and duties, and sometimes create rules governing the timing of market access.<sup>13</sup> Diffuse reciprocity becomes more specific in individual industry bargains as careful quid pro quos about access with clear time guidelines emerge. This study of telecommunications negotiations illustrates its dynamics.

# II. THE OLD TELECOMMUNICATIONS REGIME

GATT and trade officials did not address telecommunications services until the early 1980s.<sup>14</sup> Government agencies largely procured telecommunications equipment so it, too, was effectively exempt from trade rules until the 1980s.

#### A. THE REGIME'S FEATURES

The rationale for a domestic monopoly in telephone services was three-fold. First, monopoly increased reliability in tasks central to the public order (such as the provision of communications). Second, monopolies tapped economies of scale or scope in the provision of services. Third, monopolies facilitated the welfare goal of "universal service."

Most countries had a single monopolist and made no distinction between the telephone company and the government. They had no separate regulators for communications.

An international regime organized by the International Telecommunication Union (ITU) governed telecommunications. "The telecommunications regime rested on the *principle* that monopolies of services and equipment were the most efficient and equitable way of providing public service both domestically and internationally. This principle assumed state control over international communications. The prin-

ciple led to *three major norms* for the regime: jointly provided services, national control over network standards and equipment in order to build a reliable national network so long as networks could be interconnected at crossborder gateways, and organized global commons (the broadcast spectrum and satellite orbital slots)."<sup>15</sup> Thus, there was no principle of competition conforming to comparative advantage.

International telephone services were a shared monopoly of the national monopolists. International calls were jointly provided services.<sup>16</sup> In theory, the messages carried over the cables were handed off at the midway point between the sending and receiving country. The telephone monopolists assumed collective responsibility for investments necessary to permit the network to work (each received a portion of ownership based on prospective use).

The regime rules permitted each monopolist to charge whatever it wanted for originating an international call while paying a fixed fee to the receiving country.<sup>17</sup> This simplified accounting for revenue splits. The rules implicitly banned all equivalents to the "group charter system" in the travel industry. Telephone companies could not route international calls through circuitous but cheaper routes, as often happens in air travel, nor could they sell services en bloc to a single purchaser at discount, who could then resell them to other parties (as in group charters on scheduled airline flights). Together, these rules made international services very lucrative, and allowed easy monitoring and negotiations for the cartel because marketing deals were largely bilateral.

The regime left the design of national networks up to states so long as they could interconnect at reasonable costs at specified gateways to provide international services.<sup>18</sup> Major variations in domestic services and equipment standards were permissible. Even more significantly, countries made equipment supply into local monopolies so as to maximize local economies of scale. If a country could not sustain its own equipment company, it insisted on local operations by one of the few multinational equipment manufacturers. These multinationals operated as franchised local monopolies.

The regime purportedly maximized network efficiencies, but it was also a system of shared monopoly. Telecommunications was a politically attractive monopoly because technical innovation and some networking economies could permit improved performance while allowing government to support ample cross-subsidies.<sup>19</sup> As a rule, telephone operations subsidized national postal operations; long distance services subsidized local phone services and the post office; large business users subsidized residential and small business users; and the telephone company subsidized national producers of telephone equipment. In addition, labor enjoyed job security and attractive wages. Profits from international long distance gilded this game of cross-subsidy.<sup>20</sup>

The international regime of shared monopoly, however appealing, opened any individual member to three types of "blackmail." First, an international transmission facility was a dedicated asset. If one side shut it down, it was a dead loss. The practice of jointly owned facilities and services assured good faith with these assets. If France defaulted on a cable with Germany, France lost its investment stake and it lost services to Germany because the rules prohibited unilateral rerouting of French calls to Germany via a mutual link in Belgium. Second, high profit margins on international services were vital to most countries but monopoly profits are always ripe for attack. The hope was that as long as each country was a monopoly and international rules made it hard to encourage price competition, few incentives existed for any carrier to lower prices significantly. (The consequence of competition in one country for international rates is discussed shortly.) Third, a country's customers could suffer if other nations failed to invest sufficiently in international facilities. Lucrative international monopoly profits induced all countries to build their networks.

In short, while competitive solutions to these dilemmas were possible, shared monopoly was a politically attractive solution.<sup>21</sup> The telecommunications industry did not fit the postwar free trade system. Firms were national, not global. Even the equipment industry was largely local or a series of monopoly franchises for multinationals with limited global integration.<sup>22</sup>

### **B. FORCES BREAKING UP NATIONAL MONOPOLIES**

Monopoly collapsed in the most important market, the United States by 1982. Increased competition soon spread to other countries. The forces favoring competition included new equipment suppliers, major customers, and the political transformation created by stagflation in the 1970s. This coalition's success in the U.S. spurred major changes in the U.K. and Japan. This triad had enough market power to force global competition.

#### The Digital Revolution, Large Users, and Stagflation

The advent of digital electronics technologies altered incentives for both the equipment and services markets. Electromechanical equipment for telecommunications gave way to equipment based on digital electronics and software. This technological turmoil was strongest in the countries with the largest and most diverse electronics industries, the U.S. and Japan.

Telecommunications equipment has three market segments. Central office switching equipment is the largest segment and is the most expensive to develop and produce. Transmission equipment was traditionally the most traded equipment because phone companies purchased it in a "one shot" procurement package. Terminal equipment (a fax machine, for example) was the easiest segment to enter, but long remained a telephone company monopoly.

Rising R&D costs and increasing economies of scale needed to cover the costs of switching systems made it harder for the manufacturers to maintain business as usual. Today, the only "first tier" suppliers of network equipment left globally are AT&T, Northern Telecom, Ericsson, Alcatel, Siemens, and the NTT supply family (Fujitsu, NEC, Hitachi, and Oki). This number will shrink.

Virtually all advanced countries have now opened the terminal equipment market to competition. This was no accident. The first cost effective alternatives to monopoly equipment came in terminal equipment. Customers could quietly evade rules to use telephone company equipment, and regulators shied from the odious task of policing customer premises. Especially in the U.S. and Japan, new equipment suppliers pushed for liberalization in order to open up the market.<sup>23</sup> The newcomers rightly calculated that new entrants in services and large corporate users would be promising customers.

Network equipment still is subject to local preferences for traditional suppliers. However, no phone company can afford to subsidize the costs of an equipment supplier that has not become more cost effective. As a result, second sourcing from foreign firms has become more important to stimulate better performance by all companies.

These were the short term effects of the digital revolution. The long term may be equally disconcerting. The revolution threatens to redefine the cost and competitive structure of both equipment suppliers and networks. For example, adaptations of mainframe computers can rival telephone switches (whose next generation could cost \$1 billion in R&D) for driving corporate communications networks. In some cases desktop computers can do the same. The value added in video and broadband digital networking may well come from software and specialized electronics firms, not traditional telecommunications giants. As wireless communications, video, and digital data streams intersect, new entrants with specialized network architectures may design much cheaper and effective infrastructures than adaptation of traditional networks. Thus, just as network and equipment giants face off more squarely, they may collectively face a giant shift that fuels increased entry by wholly different kinds of companies. A similar process occurred when new semiconductor companies challenged traditional electronics giants who championed vacuum tubes, or when mainframes confronted desktops.

Technological innovations also fueled a second element of the political equation, the strategies of large users of the communications networks. Existing systems could not meet their desired cost or performance standards for global phone and data networks. So, large users became customers of new specialized carriers, such as computer networks. Some users also offered communication services to enhance the value of their traditional products, as in the remarkable Sabre reservation system of American Airlines.<sup>24</sup> The experience of large users in the U.S. converted them into disciples of competition for global networks. These large customers had concentrated purchasing power. Less than 5 percent of all customers accounts for about one half of the use of the long distance network. Small numbers and intense interest make it easy to organize large users on behalf of regulatory reform. Technology reinforced their claims because digitalization made it clear that large users could win significant freedoms to meet their special needs without hurting the economics of the basic phone network.

The third factor favoring competition was the stagflation crisis of the 1970s. The strong waves of inflation, soaring government deficits, and sagging growth lead most industrial countries to look for new mechanisms to control prices, boost productivity, and lower strains on the government budget. Privatization and more competition in regulated industries were two common answers, even if they did not mean the same thing in all countries.

Telephone companies were a lucrative asset for privatization, and a major demand on governments' limited ability to back capital investment. Moreover, the United States' experience showed that even the wide ranging price competition created by rival phone systems would not hurt universal service. This had a powerful impact on the Westminster democracies (those based on the U.K. model), and virtually all of them moved eventually to major competition and privatization.<sup>25</sup> Other industrial countries also experimented cautiously with competition. U.S. trade demands often provided a focal point for national discussions on reform. In many countries, political leaders encouraged economists to reexamine the engineering assumptions about monopoly that traditionally guided policy.<sup>26</sup>

#### The Dilemma of the Public Network

The development of electronic data interchange (EDI) illustrates the dilemma facing the public network. Benetton, a largely hollow corporation, has three strategic assets — its brand name, its designers and a leading EDI network. Its sales of \$1.2 billion per year of clothing products flow from a company that owns virtually no manufacturing capacity. Instead, it spends almost \$13 million a year on information systems to tie together its supplier mills, headquarters, 73 world-wide agents and 50,000 stores in 80 countries (many of which have point-of-sales terminals). Benetton developed a new set of standards to describe the colors of textile fabrics so that it could mix and match suppliers as needed. Its EDI system provides virtually all of the paperwork, ordering, and logistics of its network of suppliers and distributors. The daily sales information permits almost instantaneous ordering of new supplies and adaptation to the market. As a result, Benetton responds quickly to market conditions and saves money by faster delivery, lower inventory costs, and customized delivery services that can preclear customs.

Who supplies the EDI system for Benetton? The General Electric Information Services (GEIS), which some analysts estimate has over one-third of the global EDI market, assembled and delivered the network. GEIS exemplifies the emerging specialized network. Instead of relying solely on the standardized technical industry protocols, GEIS opts for specialized protocols when necessary. Although software is the most important part of the cost structure, GEIS works to reduce costs for the communications component because volume increases are sensitive to per message charges.<sup>27</sup>

The established public carriers have three problems. First, data transmission is growing much faster than voice. In recent years international telecommunications traffic expanded rapidly as globalizing companies and international corporate alliances worked to integrate their far flung operations. International revenues from corporate traffic could rise from about \$5 billion in 1991 to about \$14 billion by the end of the decade.<sup>28</sup> Second, the traffic of the sophisticated users is the most profitable market. Any diversion of a few points of network traffic measured by volume almost always has a multiplier of two to four in its impact on cash flow of the major carrier. Third, technology is disaggregating the capabilities and intelligence of the network that creates competition among service providers to collect fees for providing a particular element of a service package.

# C. PUBLIC POLICY STRATEGIES FOR THE INFORMATION AGE

What strategy for public policy can produce the best combination of efficiency and innovation? To simplify, there are three options: encourage new entrants into the market, encourage rapid growth in use by cutting prices, or encourage new forms of technical cooperation among suppliers.<sup>29</sup> It is useful to compare the strategies of U.S., European and Japanese firms in light of these options. Table 1 stylizes the comparison by scaling the three regions on a scale of 1 to 10, representing least to most entry, price competition and sharing of technology.



U.S. companies wanted to lower the costs of networking and rapidly diversify the range of technological experiments by many new entrants.<sup>30</sup> U.S. customers accumulated a great deal of expertise that worked to their advantage with new systems of technology. At the same time, the U.S. approach fragmented the range of competitive, diversified suppliers and the learning of customers, particularly private corporate networks. This created problems for companies trying to introduce innovative systems of technology that required integration of the pieces to optimize the use of the technology. It also hurt producers of standard terminal equipment and suppliers of network equipment as they faced new imports without promptly receiving access to foreign markets.

In contrast to the U.S. approach, the politics of European policy precluded stronger support for lower prices and new entrants. Instead, the European Community (EC) tried to encourage greater sharing and integration of know how of the suppliers of services and equipment along with incremental efforts at more competition.

The EC could not easily agree on how to liberalize.<sup>31</sup> Its reforms left the option of network facilities and basic public voice services as monopolies but liberalized such services as advanced computer networking. The combination of voice services with call–forwarding and voice message systems (or data exchange) probably fell in the category of competitive services. Most importantly, the EC accepted the principle of multiple carriers for new wireless services, such as cellular telephones, which involved selective new infrastructure for the network. The EC also liberalized competition in equipment while backing a massive common R&D program for telecommunications equipment and services in order to rationalize cooperation among suppliers.

This was a strategy of "back door liberalization."<sup>32</sup> Over the coming decade the market for telecommunications equipment will grow steadily, but lag the growth rates of computing equipment. Telecommunication services will still dwarf the equipment markets, but the EC predicted that the critical growth in services will occur in the more competitive segments, not the traditional voice monopoly. In short, the explosive focus of the European market is at the intersection of new services and computing equipment, such as bridgers and routers for wide area networking by companies. Competition will dominate these markets, even though monopolies will continue to dominate a substantial chunk of the market. The conduct of the remaining monopoly services will be more responsive because dissatisfied customers can more easily leave their networks.<sup>33</sup>

By 1992 the EC Commission suspected that back door liberalization would fail to spur growth of new services, cut prices and induce the new mix of new equipment. It had miscalculated. Many had used their continued monopoly over network facilities to forbid access to the network for services. (In a digital age, software blurs distinctions between services and facilities.) Therefore the Commission pondered new EC rules to permit freedom for providers of private networks to lay their own network facilities and to choose their routes over existing networks. Perhaps it may even allow competition in the crossborder provision of long distance voice services.<sup>34</sup>

Japan has a hybrid strategy with detailed regulation of new capacity, authorized services and price cutting among new phone companies. The dominant phone company, NTT, still cannot provide international services. Newcomers cannot provide both long distance and local phone services, and they cannot compete with each other on price. This regulatory strategy of carefully segmenting and managing new market entrants let newcomers score significant wins in several prized segments of the market, but it slowed the total growth of their market share. This in turn retarded the expansion of market share for foreign equipment suppliers because the newcomers were their best potential market. However, the regulations also caused NTT to make some significant miscalculations about key network technologies.<sup>35</sup> Japanese companies and government officials expect a further reorganization of the market.

In sum, the industrial countries have greater competition, but the form of competition and the underlying economic strategy differ substantially. The old telecommunications regime was dead. The big question is what comes next?

# **III. THE NEW STRATEGIC CONTEXT**

By the 1982 breakup of AT&T, U.S. markets for equipment and services had opened unilaterally to foreign competition; U.S. firms did not gain equivalent access overseas. To obtain new opportunities abroad for U.S. firms, the United States had to redraw the contours of the international landscape.

Luckily for U.S. firms, liberalization had proponents in other countries, and the U.S. had great clout in the commercial marketplace for international services. Five of the seven international routes with the largest volume of international traffic involve the United States.<sup>36</sup> Moreover, the U.S. represented the great prize for firms in the equipment market. The U.S. price for access to its market became the transformation of the telecommunications regime.<sup>37</sup>

The strategic context of the regime changed in three respects. First, investors did not need joint monopoly to safeguard dedicated assets and encourage investment. The advent of large private corporate networks (and new carriers like Sprint) made it possible to target and presell international capacity to global customers independent of traditional phone companies, as rapidly happened in new ventures to launch communications satellites and lay transoceanic fiber optic cables. The strategic risk was that traditional phone companies would block the investments or penalize the customers. The solution was safeguards for new entrants, not monopoly.<sup>38</sup>

Second, foreign monopolies penalized countries with domestic competition. If one country lowered its international rates due to domestic competition, and the other country remained a monopoly, then traffic flows would be distorted. The low-priced country would send more messages than it received because lower prices stimulate demand. If the other country resisted substantial reductions in the accounting rate, it could reap enormous profits and increasing surpluses over time.

When competition exists on only one side of an international connection, the individual competitive carrier also has a problem. For instance, if AT&T sends 75 percent of all calls from the United States to France, it expects France Telecom to send 75 percent of its call back to AT&T. However, if, for some reason, France Telecom wished to punish AT&T, France
Telecom might induce France Telecom to switch discretionary traffic away from AT&T, including nontelephone services, and effectively drop AT&T to a 50 percent share of return traffic.<sup>39</sup> AT&T could not easily retaliate unless assisted by the U.S. government.<sup>40</sup>

The above explains why the United States experienced an annual balance-of-payments' deficit on telecommunications services by 1990 approaching \$3 billion and growing pressure from AT&T to change the system. The Federal Communications Commission, the State Department, the Commerce Department and the Congress suddenly became interested in revamping the accounting and settlements process.<sup>41</sup>

The third risk concerns timing of market access for services and equipment, particularly the networking of these resources. Lags in achieving equivalent access to foreign markets produce problems in any industry characterized by significant entry costs, as is certainly true of network equipment and new telephone networks. It is a special problem in telecommunications and the information industry because of the battle over technical standards. Narrowly defined, this is the question of whether code or time division multiplexing of cellular calls, for example, will prevail. The fundamental issue, however, is which philosophy of architecture for the information technology of the future will prevail. Will it be, for example, the U.S. approach of decentralized computing with flexible standards on custom tailored networks? Timing is critical to having the resources and the window of opportunity to do well in this global competition. The race can have more than one winner, but it will certainly have a generation of major losers.

The special problems for suppliers and customers involving networking deserves special mention. As noted above, while technology is an enemy of monopoly, it is not an invincible foe of all tactics to strengthen the hands of incumbents. The current EC debate shows that numerous opportunities exist to use pricing, control over access to network facilities, and technical standards to limit flexible effective networking by customers or new entrants. Indeed, these tactics are more valuable because the disaggregation of network value added (e.g., which company provides which specific function on a cellular long distance call) means each piece of the transaction has specialized profit potential.<sup>42</sup> This is forcing demands for international oversight of domestic regulations and commercial practices so that foreign companies have redress against such tactics.

# IV. TRADE NEGOTIATIONS AND THE CHANGING REGIME

Trade negotiations accelerated changes. Major firms wanted to modernize their global networks. They asked the U.S. Trade Representative (USTR) for help with recalcitrant foreign telephone companies that refused to rent them leased circuits or charged exorbitantly for them.

Traditionally, trade rules did not govern such issues. However, unilateral liberalization had thrown the United States into a significant telecommunications equipment trade deficit.<sup>43</sup>

USTR saw an opportunity for good trade policy and good politics. It argued that the United States had to liberalize foreign telecommunications services markets in order to assist U.S. equipment sales overseas. Competition in services would boost competition in equipment, and vice versa. At the same time, U.S. competitiveness would grow if U.S. banks, for example, could reap the benefits of new communications technology globally. Moreover, national telephone monopolies were cash cows to finance government programs to bolster the electronics competitors of the United States. If the USTR could crack open national phone monopolies, it could undercut the industrial policies of America's economic competitors.<sup>44</sup>

At a minimum, by the mid-1980s the United States wanted to secure four objectives: (1) total freedom to sell terminal equipment overseas; (2) equal access for bidding on the provision of network equipment; (3) freedom for international valueadded data network suppliers to compete effectively; (4) freedom for U.S. businesses to operate their own enterprise-wide communications systems globally.

The first two objectives required the latter two because service monopolies constituted an insurmountable nontariff barrier. The third and fourth objectives required a revolution in trade negotiations. They required international scrutiny of domestic regulations, ending the separation of trade and regulatory authorities and introducing the functional equivalent to rights of foreign investment. For example, before competition in services could occur, foreign firms needed rights to lease transmission circuits for a flat fee closely related to the real cost of the circuit. American firms also needed effective access to the standard-setting process for local telephone networks.

This ambitious agenda posed diplomatic problems. There was no timely solution available from the GATT. Bilateral talks are not a problem if there are clear GATT rules to apply; they didn't in this case. The legal status of the bilateral talks was in limbo and any resort to sanctions was arguably illegal under the GATT.

Nonetheless, the bilaterals had virtues. They were timely and far more likely to find ways to provide meaningful guides to competition than global multilaterals. The complexity of the issues virtually precluded a meaningful multilateral agreement made from whole cloth. The bilateral precedents made subsequent multilaterals much easier.

# A. BILATERAL TRADE TALKS

The bilateral negotiations with Japan on telecommunications equipment and value added networks were very tendentious. Europe's program for 1992 provoked tortuous, if less acrimonious, negotiations.<sup>45</sup> This section reviews the bilateral talks on equipment sales, technical standards, and competition in network facilities.

#### Equipment Negotiations

In 1979, Japan agreed to extend the GATT Procurement code to cover Nippon Telegraph and Telephone (NTT), the Japanese government monopoly for domestic telecommunications.<sup>46</sup> NTT was at the heart of Japanese industrial policy for electronics.

U.S. and European firms (such as Siecor, a joint venture of Corning and Siemens for fiber optics) still complained that they could not bid for NTT contracts because they could not obtain written specifications. After months of negotiations, NTT agreed to document specifications instead of setting them by "osmosis." This marginally eroded the advantages enjoyed by NTT's "family" of long-term suppliers.

The next hurdle, foreign companies quickly learned, was that NTT demanded that foreign products meet its precise design specifications, which just happened to mesh exactly with what NTT family members produced. The United States therefore negotiated to persuade Japan to adhere to GATT procurement code rules that specifications should require performance standards, not design or appearance. U.S. providers of telecommunications equipment and value added services proposed a standard of "no harm to the network."<sup>47</sup> This put trade negotiators into the business of setting technical standards, a messy albeit necessary business.

After Japan announced that it would partially privatize NTT on April 1, 1985, U.S. firms worried that Japan would exempt NTT from the procurement code. U.S. negotiators pressed Japan to acknowledge that NTT was still a quasiofficial agency that should abide by government procurement codes.

Today, foreign suppliers provide less than 5 percent of NTT procurement, and that includes paper towels for the washrooms. Many U.S. sales are to the new Japanese phone carriers that are too price sensitive to bypass American technology.<sup>48</sup> Still, these firms remain minnows; selling to them does not fuel large scale sales. For example, Motorola has done well selling its cellular network equipment to the newcomers, but American trade negotiators had to intervene to challenge the allocation of territorial rights for carriers in Japan because the chief American supplier found itself cut off from the best market.

Still, the U.S. has recently bided its time with Japan. The complex U.S. negotiation with Europe over procurement has slowed any response to Japan.

The European Community faced a dilemma when deciding how to determine coverage under the GATT Procurement code. Some newly private phone companies retained special licenses that grant them quasi-monopolistic powers. Yet the European Commission included them in order to maintain effective surveillance over internal market liberalization. However, the Europeans added, if they were to bind these carriers to procurement regulations, so should their trade partners. Europe wanted to make the Regional Bell Operating Companies (RBOCs) and AT&T subject to the procurement code. The EC offered to give equivalent access to foreign firms whose countries adopt similar obligations about procurement.<sup>49</sup>

So far, the United States has rejected the coverage demand because the RBOCs say that it is an unfair and unnecessary burden. Yet the U.S. position in Japan depends on how it answers in Europe. If it should bind the RBOCs, then NTT's argument for exemption would weaken.

The deeper questions posed by this history are what constitutes effective market access and harm from lack of access? Foreign firms now have significant shares of every part of the U.S. home market. American companies run a trade surplus with Europe in telecommunications equipment; sales have increased significantly in Japan but still remain low. The American competitive advantage in several critical parts of the industry has arguably increased vis-a-vis Japan because of more dynamic innovation in its home market for services, but can it remain, absent higher sales in Japan? A simple global rule cannot resolve the problems. Industry specific and bilateral talks must supplement multilateral obligations.

# Network Facilities and Network Access

Telecommunications services require a network for delivery. Yet gaining effective and economic access to the market is very hard to do. This soon led the U.S. into the business of championing new competitive network facilities and rules about access to facilities.

By 1985 the U.S. agenda expanded to encompass the rights of new competitors to provide specialized international network facilities. The United States pressed for new satellite systems to competitively provide transmission for global corporate networks. It also argued that U.S. companies should be able to invest in new cellular telephone networks overseas, just as foreign firms could buy (minority) shares of cellular carriers in the United States.

Meanwhile, the bilaterals over the rights of U.S. firms to establish specialized networks or create internal private networks in foreign countries dragged trade negotiators into the most intimate details of foreign regulation. These campaigns also led the U.S. to challenge the ITU rules that upheld the traditional telecommunications regime.

The United States wanted fundamental changes in major ITU rules, such as an end on its prohibition of shared use or resale of extra circuit capacity among several customers. The U.S. also wanted permission for more flexible routing of transmission paths among countries (thus opening the way to shopping and arbitrage). Furthermore, foreign service providers wanted to service the links between their customers' plants in, say, Paris and Marseilles (to handle their local national network for data) and to establish local groups for programming and customer support in local markets.

The U.S. used bilaterals with the U.K. and Japan to hollow out the existing rules. When the ITU finally convened one last attempt to fortify the traditional regime (the so-called WATT-C conference) enough key countries had defected, that defense of the old system was pointless. The ITU created the equivalent of a "consenting adults' clause" — countries could abandon existing rules by mutual consent — in order to accommodate the defectors while still leaving a streamlined version of the old rules as the default rule. *Thus, the future of how to conduct the networks of the world is open* — *monopoly is not practical but the precise rules governing networks are indeterminate*.

At the same time, the U.S. permitted the growth of arbitrage, the nemesis of monopolies. Two small organizations, the International Discount Telecommunications Corporation and Viatel, are offering substantial savings at the expense of high-priced monopolies. They let customers calling from overseas connect calls as if they were calling from the United States.<sup>50</sup> Even more significantly, AT&T and MCI now promote plans to route international calls to third countries through the U.S. (London to Caracas via the U.S.) in order to lower costs.

Many of the major remaining issues involve network access. Large customers insist on such innovations as open network architecture (ONA). ONA is a U.S. regulatory design to assure that all the major functions of the U.S. public network are available to specialized services companies that use the public network to deliver parts of their specialized services. (ONP is the EC counterpart.) Regulators, network providers, large customers, and major competitors to the phone companies negotiate the terms for using the network (including pricing and physical access). ONA represents the partial privatization of regulation by letting customers bargain directly about future network design and pricing.<sup>51</sup> Most strikingly, ONA and its equivalents have become a key trade issue related to telecommunication services.

The details of the ONA/ONP debates are not crucial. The larger story is. These negotiations have accelerated the decentralization of standards setting to regional fora, many of which cover both computing and communications.<sup>52</sup> The desire to speed up standards has lead every big firm interested in standards to look for new international commercial alliances to propagate standards and demonstrate support in the global market place.

#### B. THE MULTILATERAL TRADE PROCESS

The revolution in trade diplomacy spilled onto the GATT agenda when the United States made services into a priority for the Uruguay Round. The framework code for services combined free trade disciplines — such as most favored nation, non-discrimination, transparency, and national treatment — with specialized annexes tailored to individual industries. The enforcement mechanism ties goods to services. Market access was an explicit benchmark for progress. Countries had to liberalize non-basic services (e.g., other than voice) in conformance to trade guidelines. The rights conferred to foreign firms applied to both would-be producers and foreign commercial users of the national communications network. The accord conformed to three elements of market access regimes discussed in Part One.

- 1. Trade in services was very difficult to define, and in practice dictated flexibility in how to establish access to the market. The accord included a specialized form of *rights of foreign investment* (ingeniously called the rights of commercial establishment and nonestablishment) for both suppliers and customers.
- 2. The draft agreements imposed *innovative obligations concerning domestic regulations*, including transparency, rights of review, and limits on the conduct of local monopoly

phone companies. Many rules focused on rights of access to the local network and equal treatment of foreign competitors and businesses of the national phone company.

3. It allowed for *specialized agreements within the agreements* for countries wanting more detailed and ambitious agreements on liberalization. The only restriction was a requirement that such pacts be available to all GATT (the services code) members.

The U.S. tolerated the ambiguity of these norms because bilateral negotiations had already worked out the practical applications! However, dealing with the frontiers of competition — attitudes towards traditional phone services — presented a problem. All the contradictions between the traditional free trade system and the logic of market access systems moved to the forefront. The chief problem was the *speed of market access*.

The GATT talks on telecommunications deadlocked over basic voice services. The United States, under fierce pressure from its carriers (read AT&T), declared that it would take a "reservation" (officially notifying that it would not fulfill implementation on one front as a matter of principle) on binding itself to coverage of basic voice services.<sup>53</sup> AT&T feared that unconditional acceptance of the services code would allow foreign firms to establish their own long distance networks in the United States without obtaining comparable rights for American firms. If the U.S. accepted the code and then took a "reservation" it would have to offer compensation to other nations. U.S. phone companies feared that the compensation would come at their expense.

The USTR finally offered a temporary derogation until a preagreed, subsequent, minilateral negotiation established rules for opening telephone services on a reciprocal basis. The European Community argued that the U.S. approach would undermine the most favored nation clause of GATT (which requires nondiscrimination and unconditional reciprocity) and violate equal treatment of foreign and local firms. Nonetheless, the GATT codes of 1979 had established precedents for such specialized agreements. Moreover, U.S.–U.K. bilaterals will have already worked out de facto prototypes for a GATT accord.

In short, the GATT process worked best when it built on the groundwork of bilateral negotiations, even those that had yielded imperfect results. The GATT process was too cumbersome to allow satisfactory crafting of hard, original solutions. It also did not easily manage questions about the timing of market access. Still, the services framework (and its linkage to bargaining on goods) shows that global talks can still facilitate global integration, especially if supplemented by more specialized pacts on individual industries.

The international negotiations have not concluded. The future of the regime depends on the transformation of the interests of the firms operating under the evolving regime. Firms once were largely national, and the principle of comparative advantage was seldom evident. Now, firms are experimenting with new global strategies. Each strategy implies different ways to organize the global network and rules to govern competition. The next section discusses three alternative strategies and their consequences.

# V. ALLIANCES AND NETWORKS

Three alternatives have emerged for organizing global services: global cooperation strategies, global overlay and portfolio strategies, and global carrier strategies. Each strategy requires globalization of leading carriers; all involve international corporate alliances. However, each approach changes prospective winners and losers and the pattern of global competition for communications networks.

#### A. GLOBAL COOPERATION

Global cooperation strategies emphasize new forms of coordination among the major national telephone companies to speed up the simultaneous roll-out of new services. The established carriers were particularly eager to retain dominance in the fast-growing markets for new services. A representative example was the 1985 effort by AT&T, KDD, and British Telecom to jointly offer global information movement and management (GIMM).

A typical GIMM package coordinated the development of new services and their technical specifications, while assuring that attractive price structures were harmonious (but not necessarily identical). It was also a streamlined cross-referral service that called for "one-stop shopping" so international firms could go to one partner to order communications services from the others and receive a single unified bill.

A global cooperation strategy is a form of détente among the established telephone companies.<sup>54</sup> They feared one another, but they shared worries about their new competitors. BT, AT&T, and KDD feared each other because of possible losses of return traffic flows on international services, especially from private networks, or even by competitive crossentry into each other's market. Still, the "old boys' club" could see benefits from cooperating to develop advanced services jointly, fend off interlopers, and nurture return traffic flows.

Experience has shown that coordination strategies often stumble. It is hard to coordinate rewriting service and billing software on a timely basis. Many countries also remain rigid on prices, circuit routing, and technical details of services.<sup>55</sup> So customers may prefer to shop and bargain with each provider individually instead of relying on a telephone company which itself is a member of "the carriers' club."<sup>56</sup> Nonetheless, to the extent that cooperation strategies prevail in the market, established carriers and their equipment suppliers will continue to dominate. Current international competition rules would not have to change appreciably to manage this market.

#### B. GLOBAL OVERLAY AND PORTFOLIO STRATEGIES

Many communications companies are expanding globally but are hedging their bets. Their strategies resemble the assembly of a portfolio of specialized global boutique services and such domestic licenses in assorted countries as cellular phone systems (much like a real estate developer operates). Frequently, they invest in facilities that "overlay" the existing network infrastructure, such as new satellites.<sup>57</sup> Finally, firms may buy national telephone companies. For example, Southwestern Bell and France Telecom bought 51 percent of Telmex's common voting shares for \$458 million in 1990. They bought another 5 percent in 1991 for another \$467 million.<sup>58</sup> For all of their diverse options companies must decide whether they are simply portfolio investors or builders of an integrated global network.

# Specialized Global Services

Ownership of a specialized global service under a single management is one portfolio strategy. For example, one response to coordination problems was the purchase by European telephone companies of U.S. data networks that had integrated global networks under a single management. British Telecom bought Tymnet. A group of European telephone companies plus NTT bought Infonet from the Computer Sciences Corporation. (The Computer Sciences Corporation was a minority share owner and network operator.) Infonet is a global, packet-switched network.<sup>59</sup>

Some companies may put together a single specialized global network even if individual pieces are co-owned with others. AT&T created the JENS data network in Japan in partnership with Japanese trading houses and banks. Then it purchased Britain's ISTEL network which is deploying switching centers around Europe. AT&T could link these two subsidiaries together through its own U.S. network. This means that AT&T could control more of the value added on the growing numbers of global virtual private networks that provide major customers with circuits and services on demand (as opposed to leasing full time use of their capabilities) according to customized pricing agreements.<sup>60</sup> As noted earlier, the ability to disaggregate the functions of the network is a major technological trend.

#### Purchase Overlay Facilities and Franchises

A second approach purchases licenses for specialized overlay services, especially cellular telephones, paging systems or cable television systems.<sup>61</sup> Countries typically offer two licenses, one of which goes to the incumbent telephone company.<sup>62</sup> These services are growing rapidly. Digital technology will soon allow more service over the same amount of radio spectrum, radically reduce the cost of the equipment, and permit new service combinations. For example, wireless data networks capable of handling large data flows will emerge in the 1990s. Computers will incorporate a cellular phone plus a wireless data and fax modem. Indeed, overlay services collectively will soon pose a challenge to a significant percentage of the capacity of core telephone monopolies. Significantly, many governments have licensed consortia of local and foreign companies in order to improve competition and import new telecoms expertise.<sup>63</sup> Pacific Telesis owns a share of Mannesmann Mobilfunk, the second German cellular franchise, and U.S. West owns a ten percent share in Lyonnaise Communications, a major French venture. Numerous firms are rushing into Eastern Europe and the former Soviet Union.

What will happen if digital cellular franchisees truly challenge regular phone systems? So far, public authorities have responded in an ad hoc manner. Some countries told bidders for cellular telephone licenses to de-emphasize price competition.

New international overlay facilities compound the uncertainties. For example, new transoceanic, fiber optic cables provide new entrants with an opportunity to collect ownership profits and be first in line to reserve transmission capacity to carry international services. The huge volume of new capacity also increases everyone's incentive to discount prices and offer new services to fill the cable. Universal telephone numbers for use anywhere will accelerate the growth of customized global networks.<sup>64</sup>

# Buying the National Phone Company

A final portfolio alternative arises when foreign firms can buy part or all of national telephone companies. The purchasers have been alliances of firms from more than one country, not single firms. Such groups have already purchased all or part of the national telephone companies of Chile, Argentina, Venezuela, Mexico, New Zealand, and Gibraltar. Others will follow.

In most cases the purchase of these national telecommunications carriers will improve local services. Yet one perverse incentive is their impact on trade liberalization. The revenue plans of foreign investors depend heavily on stimulating profitable international traffic to finance their heavy new investments in the network. (Most purchase agreements set minimum investment and performance targets.) Thus, some of the new owners became alarmed when the Uruguay Round service talks introduced the possibility of competition in international voice services.<sup>65</sup> (Buying national telephone company purchases also permits new forms of global networking discussed in the next section.)

To summarize, the accumulation of portfolios of specialized global services, national licenses, and overlay facilities is the most visible part of the global market turmoil. It is a natural response to a market with changing technological opportunities and an uncertain regulatory framework. Ironically, it encourages market and regulatory segmentation reguiring complex negotiations to reconcile rules for different pieces of the market. Some governments and firms will encourage rules that build profits by allowing managed competition in each market segment, but not vigorous competition across segments. One justification for this ploy will be assuring a favorable investment climate for network modernization and expansion, a pressing need in many countries. However, it is not clear that managed competition is a better approach than using direct government investments to complement private network investments driven by a very competitive market.

The global picture would approximate the Japanese practice of blending managed entry and specialized competition. If this approach dominated the world market it might favor Japanese and European equipment makers more than those of the United States. The traditional network equipment market would not be fully rationalized due to the remaining significant impediments on competition. This would ease the problems of European and Japanese producers who are still used to much higher prices (and profit margins) on sales in their home markets than in the United States. Moreover, it may penalize American producers of distributed computing and intelligent networking equipment (e.g., equipment capable of selecting the lowest cost route for a call) by slowing the competitive interconnection of various communications market segments.

The political advantage of this market structure is that it allows governments to collect regulatory "rents." When there are lots of specialized market licenses and regulatory rules, companies have to court governments assiduously to maintain detailed favorable rules. The political drawback is instability. It is not clear that regulators can deliver on any promises to maintain separation of market segments, for example. Britain tried an elaborate scheme to distinguish among new wireless technologies, and it collapsed in less than two years.

#### C. GLOBAL CARRIERS

A few companies hope to provide comprehensive services to their customers on a worldwide basis under a single management structure. Global carriers cannot operate exclusively through their own facilities. They will operate through a mix of local joint ventures and alliances with other global firms for common infrastructure to supplement their own network. This is similar to the way international airlines provide global service. They do not fly everywhere, but they try to offer, under their own management, route structures that cover the key international business destination. They coordinate computer codes, marketing, and pricing with local carriers where national regulations and limited business volume discourage a direct presence. However, these limited alliances are inadequate for the critical markets.<sup>66</sup>

A new generation of wholesale and resale companies plans to provide integrated global services for private corporate networks. One tiny newcomer, Espirit, operates a North American–European business for store and forward fax, plus dedicated voice and data circuits. Customers call from New York to London on a leased circuit; in London, Espirit computers switch the call to leased fiber optic circuits to the rest of Europe. Espirit is cheaper due to wholesale purchases and resale of circuits plus incredibly low overheads for equipment and personnel. It substitutes computers for traditional phone switches, offers highly customized billing, and implements requested service features much faster than big phone companies. Companies like Espirit may also scramble the equipment market because they use a different mix of equipment than traditional phone companies.

More ambitious yet are the efforts to create full-scale networks around the world. Cable & Wireless has the most explicit strategy. It controls major telephone companies in the United Kingdom and Hong Kong, is a partner in the Australian telephone entrant, has extensive fiber holdings in the United States, and runs telecommunications in many former British colonies in the Caribbean and the Middle East. It also is a partner in one of Japan's international phone companies and the AsiaSat system covering Indonesia to China. In 1992 it agreed to sell 20 percent of its British subsidiary, Mercury, to BCE, the parent company to Canada's dominant phone carrier and the equipment supplier, Northern Telecom. This move replenished its balance sheet and strengthened its alliance structure in North America.<sup>67</sup>

Cable & Wireless upgrades local facilities of its national franchises. This allows local customers to connect with advanced international facilities that make it easy and affordable to call relatives or headquarters in the United Kingdom and the United States. Profits flow from expanded volumes of traffic, not from high prices. A global fiber network gives Cable & Wireless and its partners first calls on this nearly "global digital highway."

The launch of new global facilities expands the options for global interconnection and increases the incentives for arbitrage for customers. As the number of new systems proliferates, conflicts will rise among rival carriers over how to divide revenues. For example, public networks have assumed that most mobile services will rely on them for switching, billing, and/or the completion of many local telephone calls. However, new technologies may feed a significant share of mobile traffic directly through satellite systems or cellular networks with vastly expanded capacity that can bypass the local public network. That is the significance of AT&T's purchase of the U.S.'s largest cellular network. For example, Germany has allowed Mannesman the right to build its own microwave and fiber optic facilities to interconnect its cellular network, and all competitors in Germany may install their own switches. The German license also permits direct interconnection with any other licensee for wireless in Europe, just when the capacity of these systems will expand dramatically.

This scenario will require the most sweeping advances beyond current global rules. For example, true global networks will have to gain access to customers through local national networks. They will have to pay fees for using the local network in many cases; so, the greater the number of their local service nodes (points where they can gather local traffic on their global network), the lower their costs because leased local facilities charge according to the distance of the connection. What constitutes parity between countries in granting numbers of service nodes?

The competitive consequences, at first glance, may favor American service and equipment providers. Rapid innovation and novel forms of systems integration for specialized networks are their forte. The big questions center around how modernization of the network and rapid sharing of knowhow among network providers play out in this scenario. Every major country still has some freedom about the pace of modernization because its core network market remains shielded. A carrier's model would weaken the shield. Moreover, as Part II noted, technology sharing is not an American priority. Even such institutions as Bellcore, the common research facility of the regional phone companies, may weaken as the companies start to become direct competitors.

A carriers' model opens the question of whether public investment expenditures (or fast investment write-offs) to speed up comprehensive fiber optic networks become more vital. It also raises the demands for comprehensive internetworking as networks of networks emerge globally. This requires systems integration of a different type than the American specialty. So far, the U.S. has not done especially well on these fronts although the Clinton administration claims that this will change. On balance, the carriers' model carries the most promise for American firms, but may require innovations in U.S. policies if other countries are not to seize leadership.

# VI. THE NEW REGIME

The international telecommunications services market underwent a profound technological and competitive revolution. For decades national telephone companies were partners in a restricted international market arrangement. The equipment industry largely followed this monopoly profile.

Recent changes require reformulating the rules governing the global market. The most significant sign of changing rules was the entry of trade authorities into the domain of communications regulators and monopolists. The ITU belatedly reformulated its rules to accommodate greater competition and supported greater coordination with the GATT.<sup>68</sup> The ITU wanted to remain the primary vehicle for regulating global telecommunications markets, but implicitly agreed that trade authorities might assume a role equivalent to national antitrust authorities. (The EC's antitrust directorate, for example, has the right to review the decisions of member states with regard to telecommunications to guarantee minimum standards of competition.)

The new international telecommunications regime is becoming one part of the emerging market access regime for trade. The social welfare goal of universal service still obtains, but its second principle is new: in the absence of strong evidence of natural monopoly, competition should prevail. Countries still have freedom to promote network growth, but these measures should not hamper access by foreign suppliers or users. For now the default rule for interpreting this principle is that monopoly in traditional voice services is not ordinarily subject to challenge. This may change. There are four new norms for the regime:

- 1. National and international rules should permit flexible organization of cross-border networks and guarantees of rights of global users. Subject to permissible limits on competition, there is no preordained format for services (e.g., jointly provided services). Foreign investment is one form of delivery.
- 2. National control over network architecture may not interfere with interconnect at all levels of network or the freedom to compete in equipment. This implies detailed negotiations over technical standards, terms of access to the network, pricing, and procurement.
- 3. Policies for the global commons (e.g., spectrum) should facilitate interconnections of global services. Countries have an affirmative duty to consider the consequences of their choices for the ability to create new forms of global networking.
- 4. There is diffuse reciprocity in services where there are universal obligations to permit competition. There is specific reciprocity in services defined in special agreements in services where there are no universal obligations because questions about the timing of market ac-

cess are important. There is a presumption of diffuse reciprocity in terminal equipment markets. Conditional reciprocity is the rule in network equipment although there is a minimum standard of conduct for all countries.

How does the emerging international regime for telecommunications services conform with a market access regime? In brief, industrial policies still apply to telecommunications services but domestic and international services, as well as equipment markets, are far more competitive than they were a decade ago.

"Market access" is not a magic mantra. Difficult bilateral negotiations remain to fill in the gaps in any GATT agreement. Any agreement could quickly become obsolete as a practical guide to policy. Complex portfolio strategies may lead to significant international carriers. If competition in international voice and facilities becomes the norm, it will also accelerate competition in the telecommunications and information equipment markets. If this hastens the advent of global multimedia networks that flexibly mix computing, voice, and video, weary trade negotiators will again be looking for global formats to reconcile ad hoc experiments.

#### ENDNOTES

1. Peter F. Cowhey, "The Agenda of the Leading Nations for the World Economy: A Theory of International Economic Regimes," in Gunter Heidek and Kozo Yamamura, eds., *Technological Competition and Interdependence* (Seattle: University of Washington Press, 1990).

2. Beth V. Yarbrough and Robert M. Yarbrough, *Cooperation and Governance in International Trade* — *The Strategic Organizational Approach* (Princeton: Princeton University Press, 1992).

3. Stephen Krasner argues that international telecommunications are a coordination game where all countries would prefer to converge on a common solution. Nonetheless, regimes may rest on power (not just mutually enhancing agreements to achieve Pareto optimality) because (in a so-called "battle of the sexes" game) countries may differ on the best convergence point and the most influential countries may define the agenda of relevant alternatives: "Global Communications and National Power: Life on the Pareto Frontier," *World Politics*, April 1991. Lisa Martin distinguishes coordination problems from free trade; the latter is a collaboration game where the equilibrium solution is sub optimal (as in prisoners' dilemma). Her approach is powerful, but market problems often change stripes — services regimes involve coordination and collaboration issues, as this paper shows. Lisa Martin, "Interests, Power, and Multilateralism," *International Organization*, Autumn 1992, pp. 765-792.

4. This paper draws extensively on Peter F. Cowhey and Jonathan David Aronson, Managing the World Economy: The Consequences of International Corporate Alliances (New York: Council on Foreign Relations Press, 1992).

5. Implementing rules for the regime included no quotas (tariffs were easier to bargain about), national treatment (once allowed in, a firm had to be treated like local firms) and transparency (governments had to disclose trade barriers). Michael Gilligan, "The Institutionalization of International Trade Policy: Laying the Micro-Foundations of International Cooperation," paper presented to the American Political Science Association, 1991.

6. Most multinationals lacked integrated global strategies until the 1970s. Cowhey and Aronson, Chapter 2.

7. Alliances are the equivalent of intraindustry trade that fueled much of the post-war expansion. Intraindustry trade (a country exports brakes and imports mufflers) permitted greater specialization among countries but it eased the political pain of free trade because a country usually did not lose across the board in a manufacturing industry. Arguably, the biggest adverse impact of Japanese export strategies is the disruption of intra-industry trade. Edward Lincoln, *Japan's Unequal Trade* (Brookings Institution Press, 1990).

8. Firms also have interests as global consumers which create cross-cutting interests about any strategy of protection. Two good efforts to differentiate the interests of producers according to their global scope, economies of scale, and technological sophistication are: Helen V. Milner and David B. Yoffie, "Between Free Trade and Protectionism: Trade Policy and a Theory of Corporate Trade Demands," *International Organization* 43 (Spring 1989), pp. 239-272; and Vinod K. Aggerwal, Robert O. Keohane, and David B. Yoffie, "The Dynamics of Negotiated Protectionism," *American Political Science Review*, 81 (June 1987), pp. 345-366.

9. Multinationals prosper from efficient coping with irreducible transaction costs and sharing joint inputs, such as R&D or market information, across flexibly organized networks of production and distribution. Wilfred J. Ethier, "National and International Returns to Scale in the Modern Theory of International Trade" in Gene M. Grossman (ed.), *Imperfect Competition and International Trade* (Cambridge: MIT Press, 1992).

10. Cowhey and Aronson, Chapter 3, reviews the special characteristics of Japanese multinationals.

11. There are many disputes about how easy it is to create competitive advantages in individual industries. There is more agreement that national advantages can evolve rapidly and government policies contribute significantly to the changes. Many of these advantages relate to the development and use of technological innovation.

12. Gene M. Grossman, "Explaining Japan's Innovation and Trade Advantage: A Model of Quality Competition and Dynamic Comparative Advantage" in G. Grossman, ed., *Imperfect Competition*.

13. The regime's rules will feature universal membership, universal organizing principles, the fungibility of concessions across industries, and third party accountability. All members should participate in talks that work out general trade principles, and all specialized sectorial pacts should incorporate general trade norms. Moreover, GATT members who do not belong to a specialized regional or sectorial pact have a right to demand review of its features under GATT principles. And concessions/penalties may be linked across sectors (e.g., a violation on a services agreement can lead to penalties on manufactured goods). In addition, traditional tariff talks will continue along the old lines. Cowhey and Aronson, Chapter 4.

14. William J. Drake and Kalypso Nicolaides, "Ideas, Interests, and Institutionalization: "Trade in Services' and the Uruguay Round," *International Organization* 46:1 (Winter 1992), pp. 37-100.

15. Peter F. Cowhey, "The International Telecommunications Regime: The Political Roots of Regimes for High Technology," *International Organization*, Spring 1990, p. 177 (emphasis added).

16. Telecommunications services supposedly did not constitute trade; rather, they were the product of a joint investment by two or more countries in a common infrastructure (such as transoceanic cables) connecting the countries.

17. Each national telephone company charged its own senders, and the two monopolies settled among themselves if the traffic in both directions did not balance. The two carriers establish an "accounting rate" to be used as the basis for international settlements. The agreement entails the carrier sending the traffic reimbursing the carrier receiving the traffic by a fixed proportion of the accounting rate. This amount, known as the "settlement rate," usually is 50 percent of the accounting rate. By contrast, the "collection rate" is the amount that each carrier charges it own customers. It may, or may not, be tied to the accounting rate.

18. The work of international standards organizations was dominated by the national telephone companies within the ITU's International Consultative Committee for Telephones and Telegraph (CCITT). Philipp Genschel and Raymund Werle, From National Hierarchies to International Standardization: Historical and Modal Changes in the Coordination of Telecommunications, Max-Planck-Institut fur Gessellschaftsforschung, Koln, MPIFG Discussion Paper 92/1 (February 1992). 19. See Leonard Waverman, "U.S. Inter-exchange Competition," in Robert W. Crandall and Kenneth Flamm, eds., Changing the Rules: Technological Change, International Competition and Regulation in Communications (Washington, DC: Brookings Institution Press, 1989) on why the economic impact of networking economies was real, but perhaps available without a single monopoly even at an early date.

20. While the regime acknowledged obligations to provide low rates, engineers designed in light of their ideal plans for the technology, implicitly accepted whatever baggage of cross-subsidies was necessary, and then calculated a bill for the package. Optimal use of resources in light of consumer preferences never entered the picture.

21. Other solutions included ownership of the facilities by a single company or regulation to permit a monopolist in one country from playing off competitors in another. Even when communications satellite technology opened up alternative ways of organizing the delivery of some services the solution was to create

a single global system owned jointly by the world's telephone monopolies.

22. Although subject to special FCC controls, AT&T was a fully cooperative partner in the global regime. The only major carrier that sold both equipment and services, AT&T did not sell equipment abroad until the mid-1970s.

23. Major shifts in terminal equipment trade account for most shifts in telecommunications equipment trade balances. Thus, fax machines, key telephone sets and cellular telephone equipment account for the bulk of the large Japanese trade surplus on telecommunications equipment. For a detailed analysis of the equipment market see Peter F. Cowhey, "Telecommunications," in Gary Hufbauer, ed., Europe 1992: An American Perspective (Washington, DC: The Brookings Institution, 1990), pp. 217-218.

24. The Sabre airline reservation system makes about \$150 million annually. Today if American Airlines sold Sabre, it would receive about \$2 billion. Sabre usually is more profitable than the airline. *New York Times*, April 23, 1992, pp. C1, C6.

25. Frances Castles argues that their political structures favor this package. "The Dynamics of Policy Change: What happened to the English-speaking Nations in the 1980s," *European Journal of Political Science* 18 (1990), pp. 491-514.

26. Cowhey, "The International Telecommunications Regime."

27. Although pricing is less important to its customers than reliability and security, use is sensitive to price.

28. Estimates are by Michael Kennedy of Arthur D. Little as cited in *Wall Street Journal*, October 4, 1991, p. R1.

29. For a historical analogy see Paul A. David, "The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox," American Economic Review 80:2 (May 1990), pp. 355-362.

30. Although they often used a phase-in period where only a limited number of new phone companies got licenses, most Westminster democracies followed this path.

31. The European approach made an important innovation that monopoly in services now requires a positive policy decision (a reservation). In the past it was competition that required positive policy decision.

32. For example, the EC markets in 1986 communication services were significantly larger than the total of computing and telecommunications equipment (\$84 billion vs. \$25 billion for telecommunications equipment and \$30 billion for computer equipment). But telecommunication services largely consisted of monopoly voice services.

33. This resembles energy utilities. Electricity and natural gas are partial substitutes. Each may be a monopoly, but the monopolies compete with each other.

34. Peter Cowhey and John Zysman, "Telecom Policy at A Crossroads; Stalemate or Starting Point," draft, April 2, 1992.

35. Most significantly, NTT retreated from its targets for nation-wide fiber optic networks.

36. According to data published by the International Institute of Communications in London in 1990.

37. This change in preferences about network strategy was the analytic equivalent of "the battle of sexes" variant of coordination games. Everyone wants a common solution, but there are divisions over which one. Unilateral defection by one partner may switch the equilibrium point. Lisa Martin, "Interests."

38. Leland Johnson, "International Telecommunications Regulation," pp. 92-122 in Paula Newberg, ed., New Direct*ions in Communications Policy* (Durham: Duke University Press, 1989), Volume I.

39. When MCI or Sprint establishes direct telephone service with other countries, the contract includes some guarantee that the national telephone operator will return traffic in proportion to what it receives. Technically, France Telecom cannot demand better terms from AT&T for returning traffic to it. The FCC forbids U.S. companies from acquiescing to such "whipsawing." But the rules are ambiguous with regard to rapidly growing "private voice" networks. 40. If this occurred with British Telecom or Japan's KDD, AT&T might retaliate by sending more traffic to their British or Japanese competitors.

41. Leonard Waverman, "Pricing Principles and International Telecommunications," a discussion paper presented to the OECD Working Party on Telecommunications and Information Services Policies of the Committee for Information, Computers and Communications Policy of the OECD, April 1991. In 1991 Study Group III of the CCITT in the ITU discussed ways to reduce accounting rates slowly. The United States government, however, pushed for more transparency and for more rapid change. The CCITT in June 1992 made changes that will make accounting rates far more transparent and tariffs will fall more rapidly.

42. If a customer could abandon a phone network using these tactics then the buyer's power of exit would constrain such maneuvers. In most countries complete exit is still difficult.

43. Japanese exports of terminal equipment quickly constituted almost 70 percent of a ballooning U.S. trade deficit in telecoms equipment. (The U.S. went from a trade surplus of about \$300 million in 1980 to a \$2 billion deficit today.)
44. Nothing is quite this seamless in Washington, but this logic clearly emerged from various ad hoc initiatives.

45. J. D. Aronson and P. F. Cowhey, "Bilateral Telecommunications Negotiations," in Albert Bressand and Kalypso Nicolaidis, eds., Strategic Trends in Services: An Inquiry into the Global Service Economy (New York: Harper & Row, 1989), pp. 207-222; J. D. Aronson & P. F. Cowhey, When Countries Talk: International Trade in Telecommunications Services (Cambridge: Ballinger, 1988).

46. NTT was the only public telecommunication authority that became a signatory to the Procurement code negotiated during the Tokyo round of GATT talks. It did so only because the United States brought massive pressure to bear on Japan. Everyone understood this simply opened the way to systematic follow up.

47. For example, IBM was working with Mitsubishi to provide computer network services in Japan. The venture wanted the "no harm" standard.

48. The most spectacular example involved communications satellites. The Japanese government instructed NTT to develop Japanese technology as long as it was owned in part by the Government. The U.S. Government protested that this cut off any chance of sales of U.S. satellites. The market only opened initially (in 1985) when the government licensed new carriers who promptly bought less expensive American equipment. Michael Mastanduno, "Do Relative Gains Matter? America's Response to Japanese Industrial Policy?" International Security 16 (Summer 1991).

49. Except for their coverage of private phone carriers, the EC codes mirror those of the United States. Cowhey, in Hufbauer.

50. For example, if a customer in Rome is calling Tokyo, it can call a number in the United States instead and has the call forwarded to the Japanese number. Instead of paying the rate for a call from Italy to Japan, the caller is charged, in effect the sum of the wholesale rates for calls from the United States to Italy and from the United States to Japan. This total is much less than the direct dial retail cost. "Rome to Bonn via New Jersey," Business Week, April 13, 1992, pp. 84-85. "The Privateers," *The Economist*, September 12, 1992, p. 79.

51. Critics of ONA point to the problems of relying on quasi-private bargaining when one participant can subsidize its participation by charging the costs to its guaranteed rate base. The phone companies, critics argue, overwhelm the process by sheer numbers and endless rounds of meetings. Interview with representatives of large customers. Washington DC, February 1991.

52. Stanley Besen and Joseph Farrell, The Role of the ITU in Standardization: Preeminence, Impotence or Rubber Stamp? Rand Corporation, 1991.

53. Technically, the U.S. wanted to reserve on several other service items, but

they were all ways of packaging the objection to voice services.

54. There are striking parallels to the burst of arms control and political cooperation agreements that emerged between the United States and the Soviet Union after 1985. Although each side still was viewed as the main threat to the other, they wanted to reduce bilateral tensions so resources could be freed to deal with new competitors.

55. These may seem like trivial matters to non-specialists. A crude analogy is the "kludge" in software programs (ad hoc fixes that are not well integrated into the main program). If there are too many kludges, the program loses cost and performance advantages. The same is true for networking when customers are not free to optimize routing or buy the precise services they need.

56. Many telephone companies resist working through middle men.

57. Motorola's Iridium is the most talked about new low earth orbit satellite, as of March 1992 ten rival consortia all want to build satellite systems that cover continents or the entire globe. Iridium would be operated as an international alliance with national telephone companies as shareholders. The *Economist*, March 28, 1992, p. 69.

58. Telephony, November 18, 1991, p. 3 and April 27, 1992, pp. 16-17.

59. MCI later bought out Computer Sciences. Infonet was less successful in introducing a related venture for taking control of management of large customers' complete international data network services because of the complexity of programming the network collectively and because the partners disagreed about commercial strategy. Customers were never able to get a single bill for services from the joint venture.

60. Most key customers still retain enough newly learned expertise to improve their bargaining leverage. Most users retain control over some network control functions.

61. For example, PacTel Cable, Southwestern Bell and U.S. West have interests in cable television in the United Kingdom. Bell South is involved in cable television in France. U.S. West is in ventures in Sweden and Norway and Southwestern Bell is involved in Israel.

62. However, many countries do not permit their telephone company to own cable television systems.

63. For example, Bell South has cellular operations in Mexico, Argentina, Uruguay, Venezuela, Chile, and New Zealand. On the European situation see: John Williamson, "European Mobile Communications is Hot, Hot, Hot," *Telephony*, May 28, 1990, pp. 32-38 and OECD, "Mobile and PSTN Communications Services," Paris, November 1991.

64. AT&T is experimenting with individual global "700" numbers that could be kept for a lifetime. When the owner of the number dials her location into the network, incoming calls are forwarded to her anywhere in the world. Richard Karpinski, "AT&T Unveils Number-for-life," *Telephony*, May 4, 1992, pp. 9, 12. 65. Interview with a senior planner at a regional Bell operating company. January 1992.

66. The merger of KLM and Northwest Airlines shows why single ownership is important in key markets with heavy volume. It was too inefficient to rely on simple coordination to pull off their integrated strategy.

67. It is trying to expand into Hungary and Russia. "Cable & Wireless in Russian Joint Venture," Fin*ancial Times*, April 15, 1992, p. 18.

68. Pekka J. Tarjanne, "Open Frameworks for Telecommunications in the 1990s: Access to Networks and Markets," Telecommunications, April 1990, pp. 22-24, 48. Tarjanne is the Secretary General of the ITU.

# THE STRUCTURAL IMPEDIMENT INITIATIVE AND RECENT JAPAN–U.S. RELATIONS

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# I. INTRODUCTION

The "Structural Impediment Initiative" (abbreviated as SII hereafter) talks were initiated by President Bush of the United States and then–Prime Minister Uno of Japan in July 1989. There was a strange discrepancy in the title in English and Japanese. "SII" sounds as if the two administrations will take initiatives to destroy structural impediments that hinder freer trade and investment between Japan and the United States, whereas the Japanese title, "Nichibei Kozo Kyogi" only means that the two governments consult on structural problems in two countries. It has been said that Tokyo made it a formal Japanese title to wipe out the possible allusion that "impediments" on the Japanese side are being targeted.

As is well known, there has existed a substantial bilateral trade imbalance between the U.S. and Japan. While economists, especially on the Japanese side, consider that the bilateral trade imbalance per se is not a problem, politics has made it an issue. If Japan's policy, institutions, and some business practices hinder the penetration of foreign goods and services into the domestic market, the huge number of current overseas accounts of Japan does matter. In this sense, the U.S.– Japan negotiations call attention from the third countries as well. American complaints seem to be shared by Western Europe and Asian countries, too.

In Japan the negotiations, however, are taken by the general public as American pressure on Japan, intervening in domestic affairs. To be more precise, producers in the industries concerned, bureaucrats, and many politicians react to the negotiations in this manner. The way mass media reports the negotiations also contributes to escalation of the confrontational mood during the negotiation.

On the other hand, the violent actions of some Americans in destroying Japanese made cars in Detroit, and "Japan bashing" arguments in journalism and Congress have thrown the Japanese into serious anxiety and irritation. The social mood of each nation has changed into more suspicion about the other. Rapidly developing mass communication media now allows nations to observe what happens in other countries on live news screens through satellite broadcasts. The confrontational mood discourages political and opinion leaders from taking significant steps to improve relations, as the political risks are enormous. Thus, the situation from the end of the 1980s up to the present is dangerous. The perceived weakening of the U.S.–Japan alliance in security affairs due to the disappearance of the super-power cleavage may be another factor that has highlighted the bilateral friction.

This short essay examines the roles of SII in adjusting the economic systems to converge, or more modestly, to increase acceptability on both sides. In Section II which follows this introduction, the background and contents of SII are discussed. Section III deals with consequences and implications of SII in the bilateral economic relations, mostly focusing on the Japanese side. Section IV speculates on the future course of bilateral economic and political relations.

# II. BACKGROUND AND CONTENTS OF SII

As was mentioned earlier, the Japanese title of SII dilutes the targets of the negotiation between two governments. The major purpose of the negotiations was clear: the United States was concerned about its increasing trade deficits, both overall and bilateral, against Japan. Tokyo, on the other hand, being embarrassed with its huge surplus in the current overseas account, argued that the U.S. macropolicy was the major cause of both the overall and bilateral trade deficits of the U.S. Washington argued that administrative guidance, regulations, and private business practices in Japan prevent foreign products and enterprises from penetrating the domestic market. These hidden trade barriers, as many Americans criticized, were responsible for the bilateral trade imbalance. Tokyo and the industrial circles of Japan in general argued that informal barriers were exaggerated and the removal of such barriers, if they existed, would not improve the U.S. trade balance vis-avis Japan to any significant degree. They asserted that it was the budget deficit of Washington and the excessively high propensity to consume of American citizens that caused U.S. trade deficits against Japan.

#### A. BACKGROUND

Such debates were not new and the preceding negotiations between the two countries tackled some specific issues. In fact "MOSS" (Market-Oriented, Sector-Selective) negotiations, started in 1985 under the Reagan and Nakasone Administrations, sought specific measures to improve foreign access to the Japanese market. The industrial sectors initially covered were electric communications, electronics, medicine and medical equipment, and wood products. Automobile parts were added in 1986. The scope of the MOSS talks was limited to removing government regulations or improving their administration so that foreign products would have easier access to the Japanese market. It was natural for Washington to pick up government regulations as an important issue, because administrative guidance had been considered the major hindrance.

Deregulation, however, was only a part of the effort to improve access to the Japanese market. The allocative consequence of the closed nature of transactions within enterprise groups, "business groups," had been often examined by economists specializing in industrial organization. Some found that firms in a specific business group tend to prefer a long term benefit from the customer market at the cost of short term loss. Arm's-length market transactions may bring a higher profit in the short run, but they do not help the firm in a crisis. Furthermore, established customer markets enable firms to cooperate in R&D efforts and employment adjustment in forms of cooperation that benefit the members. Thus, firms which belong to a business group sacrifice short run profits for risk aversion and group help in time of difficulty.<sup>1</sup> Some in business sectors argue that the solidarity of business groups is exaggerated, and that the members of business groups easily change as each firm eventually seeks the highest profits. The old "*zaibatsu*" image does not apply to present business groups.

Overall, it seems that the ties of business groups maintain the customers' market in which the entry of independent manufacturers and distributors is difficult, no matter if they be Japanese or foreign. The factors that make foreign access to the Japanese market difficult are not limited to business groups. Higher domestic prices compared with external market prices indicate less supply due to group oriented production and distribution. Some argue that quality differences explain the price gap, and that the higher cost of domestic distribution makes domestic prices higher. The former is hard to generalize. There are a number of products where Japanese consumers are willing to buy American goods at cheaper prices; personal computers, most agricultural products, and services such as insurance. The latter had been an issue within the country in the following context: the Japanese government had protected small scale retailers by a law which restricted the entry of large scale retailers. Despite much criticism in the domestic society, the government kept this policy until very recently.<sup>2</sup> Another controversial issue has been control of distributors by producers. Incidentally keiretsu, now often used without accuracy, is inherently addressed to this relationship, not "business group" in general. A third issue is exclusive contracts made by foreign suppliers and Japanese dealers under "Sole Import Agent" arrangements. The details of these issues will be discussed later.

As these examples show, the issues of dispute have now become business practices rather than government controls industry by industry and the laws that promote "fair competition." Legal frameworks do matter, however, as far as they either allow or prohibit specific conducts of private enterprises. Thus, fair trade and antimonopoly regulations have become a focal point. As to the macro level, measures to facilitate domestic consumption and investment oriented to improvement of living conditions are sought as they are thought to reduce the Japanese current overseas surplus. On the American side, measures to rectify government deficits and encourage domestic savings have been discussed, such as the relaxation of the Anti-Trust Law in order to facilitate cooperation among firms in R&D activities and manpower policies.

Turning to political processes, the SII was initiated by the Bush and Uno administrations in 1989 and the report was published in June 1990. Meanwhile the position of prime minister was taken over by Toshiki Kaifu, who was elected by the governing party where other influential faction leaders had lost their credibility because of corruption scandals. Thus, President Bush encouraged Mr. Kaifu to successfully complete the SII to strengthen the leadership of the government both in Washington and Tokyo. As the Kaifu administration was weak, essentially based on the power balance of major factions, it was difficult for him to exercise strong leadership, and he faced resistance from various sectors. It was important for the Bush administration to persuade Congress, the Senate and the American public that Japan was not bizarre, not something different from the Western society, denving what the revisionists argued, and to show that the Bush administration was leading Japan to become a cooperative partner.

The reaction of the public in Japan toward the SII varied. Some were resentful that Japan was treated as a colony of the United States, as most issues raised by Washington were perceived as domestic matters, and felt that Washington was intervening unduly in Japanese domestic affairs. They also asserted that Washington tried to shift its responsibility to Tokyo for American domestic problems such as excessive consumption and government deficits.

Other Japanese considered that the SII was constructive in that many points raised by SII should have inherently been solved by Tokyo for the Japanese citizen themselves. They believed that most informal barriers could be removed by either a stricter application of the Japanese Anti-Trust Law, or by deregulation in the same fields. They argued that excess savings of the Japanese were a reflection of poor housing, and a shortage of social capital for living environment. If Tokyo had promoted public investment in such fields, as they insisted, domestic saving and investment would have been much better balanced, and therefore, Japan's surplus in the current overseas account would have been less conspicuous. Generally speaking, consumers or those who emphasized the importance of improving consumer welfare supported the SII, even if they were not satisfied with the negotiation style.

The bureaucrats, generally speaking, were cautious and defensive as they were concerned about losing their power if deregulation went beyond a point where most administrative guidance was removed. Many industrial leaders were resentful; they had been frustrated with American "legal harassment" to their exports to the U.S. and to their businesses in the United States, and they resented criticism of their business practices, such as group-making and long-term client relations. According to an opinion poll made during the SII consultation, it turned out some 47.4 percent of the Japanese public supported the SII and 39.5 percent were negative toward the undertaking.<sup>3</sup>

# B. MAJOR CONTENTS OF SII

What the governments discussed was different from what they implemented. Implementation of policies takes time, and implementation becomes uncertain when the government changes in a short period. The report of the SII is fairly lengthy and filled with detailed action programs and/or vague statements as far as some actions are concerned. Therefore, our review of the SII report focuses on only major points which are related to Japanese problems.<sup>4</sup>

On macroeconomic issues, the report emphasizes that the Japanese government should expand public investment in social overhead capital to improve the living environment. This presumably reduces the savings-investment gap, and therefore, contracts the surplus in the current overseas account. There are a number of policy recommendations (or statements of the government will) which are related to resource allocation. They include:

1. Deregulation and revision of laws which have hindered efficient utilization of land, one of the most scarce natural resource of the country. As high land prices constrained housing construction, policies to promote land supply with capital gains tax on unused, or virtually unused, land are indispensable. The problem reflects a conflict of interests between land owners, especially farmers, in the suburbs of large cities and households who want to purchase a house. The obsolete laws on renting land and houses, designed to protect renters, are to be reviewed.

- 2. Measures to improve access of foreign products and investments to the Japanese market. These are of direct interest to Washington in the SII talks. The report includes such policy actions as: (a) strengthening infrastructure such as harbor and airport to facilitate speedy transportation of imported goods; (b) simplifying import procedures; (c) relaxing regulations that have so far restricted the entry of large scale retail distributors in order to protect small scale ones. This is considered to help direct access of foreign products to consumers as large distributors are supposed to be able to utilize their import networks. The Japanese government introduces a special preferential treatment to the floors on which they sell foreign products. Deregulations include those on advertisement and the sale of alcohol.
- 3. The Fair Trade Commission of Japan (FTCJ), in an important provision, is to have stronger powers to supervise and penalize suspected unfair business practices which include transactions with nongroup traders and manufacturers, on resale price maintenance practices and sole import agent practices that block independent imports. Preferential finance to encourage imports is also added to the list of recommendations.

Since "exclusive business practices by the members of business groups" is one of the major issues between Japan and the United States, this aspect deserves more explanation. The Japanese government decided to strengthen the FTCJ by enlarging the staff, establishing new sections, and creating more severe sanctions, not only pecuniary but also criminal, against illegal actions. However, making business groups per se is not illegal in the Japanese system, and there have been debates on the performance of a customers' market, as mentioned earlier. The FTCJ reduces the exceptions for the general prohibition of cartel actions. Administrative guidance which has not been transparent to local as well as foreign firms should be made significantly clearer. Conspiracy which has often been detected in the supposedly competitive bidding of public works should also be more severely penalized. These are the major points addressed to the Japanese government.

On the side of the United States, the report emphasizes: (1) the importance of restoring the saving-investment balance by reducing government expenditures through the Gramm-Rudman-Hollings Act on one hand; (2) augmenting government revenue through taxation on the use of public facilities, enlarging the participation of employees of state governments in various social security programs, and preventing tax evasion; (3) raising the savings rate of American citizens by such means as tax preference toward to-be-created Family Savings Accounts and making more attractive the already existing Individual Retirement Accounts. These measures are addressed to the macroimbalance between savings and investment; (4) some measures to revitalize American industries ---to revise the Anti-Trust Law so that it doesn't kill constructive joint efforts among firms to develop new technology and to produce sane goods, to unify the legal status and content of product liability which varies among states, to review legal restrictions for national security on direct foreign investment in the country to avoid suffocating business activities, to lower capital cost in order to encourage productive investment, to remove export controls for the sake of COCOM arrangements, to abandon the constraints on the exports of such specific products as energy, and to encourage R&D activities at the level of both government and private enterprises; and (5) measures for strengthening American man-power include strengthening education in such areas as natural science and foreign language, and assisting workers efforts to adjust to the changes in jobs and industries.

# III. IMPLICATIONS OF SII FOR ADJUSTMENT OF TWO ECONOMIES

Since SII talks were between two administrations, the report was not a mere recommendation such as made by the "wisemen group" under the Carter and Suzuki administrations, but a declaration of will of two administrations. This has both advantages and disadvantages. Advantages because the bureaucrats will solve problems which they have themselves pointed out. Initiatives and actions are to be taken by the same group. Disadvantages because bureaucrats tend to avoid drastic changes as risky and they are aware of political resistance from various sectors. Information to outsiders about the negotiations is limited, as they are intergovernmental. The public is only occasionally informed through mass media. Thus, how information is disseminated becomes an important issue. Biased information and misunderstanding are no surprise as access to information is limited.

As stated earlier, many points raised in the report are well taken by consumers in Japan, but provoke strong negative reaction from industrial sectors and some politicians. Because some specific actions are actually being taken, the report is better than the usual government reports in Japan which mostly end only in many ambiguous statements. The question now is how seriously the governments take action to keep their commitments.

The "impediments" attacked on the Japanese side are mostly those which obstruct freer access of outsiders (both foreign and local) to insiders of business groups. Obstacles to be removed on the U.S. side are mostly addressed to macro problems and "too strict" application of the Anti-Trust Law. If the two administrations are serious enough to keep their commitment, the two economies will move toward a convergence. There remain two problems, however. One is the capability of the governments and the other is lack of discussion on more basic questions related to economic systems, such as dealing with long term customers relations.

### A. GOVERNMENT CAPABILITY

Through various bilateral negotiations, Japanese bureaucrats have often complained that American counterparts change so frequently that they lose the continuity of negotiations. On the other hand, American negotiators may deplore that their counterparts move so slowly that they can not achieve meaningful results in due time. Here is an important difference in the government systems: in Japan the bureaucracy has established an almost autonomous organization to serve administrations. Almost all core staff are promoted within the government, though they are often transferred between various ministries. Individual bureaucrats take up negotiations from their predecessors and transfer their jobs to successors. The time limit is not a severe constraint to a negotiator, but a bad negotiation result will seriously damage a career. In the American system, most core positions in the bureaucracy are politically appointed, and the negotiations are often reoriented by the new administration. The leadership of the White House is strong and short run achievement is important.

This characterizes the difference in approach that the two administrations take in any negotiations. It is easily imagined that negotiations are frustrating to both sides: slowness on the Japanese side and quick changes in policy stance on the American side. Therefore, the Japanese are skeptical about the continuity of negotiations and policy stance of the U.S. administration.

The slowness and passive nature of Japanese movements in the negotiations largely reflect a lack of leadership in the government, but also reflect a tradition of legislation. The Diet plays only a passive role in law making, laws largely being prepared by bureaucrats. The bureaucrats, following so-called "bottom-up" procedures of decision making, though a final responsibility is taken by the higher echelon, devote themselves to consensus making among ministries and between industries. Thus, when a drastic policy innovation is needed, the Japanese government system exposes serious weakness.

Open debates on policy options are rare, especially in the Diet, as opposition parties do not offer counter proposals, partly reflecting almost no possibility of taking government office. Such a climate reduces the capability of Japanese politicians and bureaucrats to offer a grand design of future development of the country, bilateral and multilateral relations.

A question related to SII arises. Will Washington pursue policy changes in application of the Anti-Trust Law, raise tax revenue, and reduce government expenditures? Will the declaration of intent be taken over by the administration after the Presidential election of 1992?

On the Japanese side, Mr. Kaifu resigned in Autumn 1991, as the once scandal-polluted senior leaders of LDP revived and wanted stronger leadership from the prime minister. This led to the Miyazawa cabinet. Although it is difficult for a successor to maintain enthusiasm for achieving the goals that the predecessor has targeted, Mr. Miyazawa declared his willingness to accept the tasks of the preceding cabinet. The performance of the Miyazawa cabinet, however, has been extremely poor, be it in diplomacy or domestic economic policy. The Japanese public seems to be desperate.

Politically Japan is in a crisis. There is great distrust against LDP leaders because of incessant scandals, and more importantly concern that the LDP can not purge the scandal-polluted leaders. There is little trust in the opposition parties. Therefore, the capability of the administration to solve problems raised by SII seems dubious.

#### **B. UNSETTLED ISSUES**

While it is worthwhile to strengthen the power of the FTCJ and sanctions against illegal conduct of enterprises, groupmaking itself is not illegal. Long term customer markets per se are not detrimental to the economy. This has probably contributed to collaborative efforts in R&D and to stabilization of employment. It may be more difficult, at the same time, for a new entrant to compete with these firms in groups.<sup>5</sup> This may especially apply to foreign enterprises. Therefore, it is not enough for the government to merely strengthen FTCJ to obtain foreign entry in the Japanese market. On the other hand, the Japanese government argues that treating foreign enterprises as equal to domestic ones is "national treatment" and that there is no need to extend privileges to facilitate foreign entry. Another approach may be to extend special treatment to the handicapped foreign firms or to destroy exclusive arrangements made by business groups.

American negotiators seem to argue that the Japanese business environment should be made as American as possible so that American firms can enjoy opportunities equal to those Japanese firms find in the U.S. Many Japanese business representatives argue that they are exerting extraordinary effort to develop their own market in the U.S. and that their American counterparts are not. This is a repeated argument, and not fruitful. If business opportunity is more open in one country than in another, market access differs. A well known example was the much easier entry in the U.S. banking business for Japanese banks than for their U.S. counterparts in Japan because government regulations were strict in Japan. As to business groups, there is no basic agreement concerning evaluation of this system. Therefore, the problem is beyond the scope of the present Japanese law on anti-trust and fair trade.

A similar problem is found in what one calls keiretsu, control of distribution by manufacturers. Many manufacturers have invested in distribution networks not only by making their own sales offices but by buying a certain percentage of stocks of distributors and dispatching a few executives to make them cooperative sales agents. This is the original meaning of keiretsu. It has often been said that those who are successful in creating such sales networks have been the winners in the Japanese market in many consumer durable sectors. As the close ties between distributors and manufacturers are sought for mutual advantage, keiretsu making per se is not illegal. A law suit can be made only if either of the parties involved makes a case. Thus, dealers can opt for the sole agent for a specific manufacturer. Once these exclusive sales networks are established, it becomes extremely difficult for new entrants to compete with dominant manufacturers, whether foreign or local.

Sole import agents have been established in many countries especially in product differentiated sectors. For a producer, it can be rational to establish such agents in various countries so that it executes optimal pricing by markets. Sole import agency per se is not illegal in Japan, and it violates the law only if the agency hinders an independent importation. If there are independent imports directly from exporting countries and/or through a third country, such an arrangement becomes ineffective. Therefore, sole agents may be induced to penalize the retailers who sell independently imported products. Such conduct is sanctioned under Japan's Anti-Trust Law. A more sophisticated issue is whether the government should regulate which producers become sole import agents.<sup>6</sup>

Both exporters and manufacturers have incentives to conclude sole import agency contracts, as manufacturers have already invested in distribution network building. Ideally, a desirable agent is a producer of goods which are complementary to the imported goods. In actuality, however, there are many agents who produce close substitutes. While this may not be desirable for exporters, the manufacturer-import agent may consider it risk averting to deal with substitutes for their own products, and it may also serve to diversify their supply to the retailers. The exporter may consider it advantageous to utilize the goodwill of well established local manufacturers and distribution networks. At the same time, aggressive exportation may be controlled because the agent competes with the exporter in some aspects. The report drafted by the bureaucrats does not address such fundamental questions, and therefore there remain many unsettled issues.

# C. CONVERGENCE TO WHICH SYSTEM?

It is difficult to answer which system should be the norm. Each system has been deeply rooted in its own society, and institutions differ reflecting these different social environments. Through the decades after World War II, the trend has been that Japan's institutions have assimilated to the American system. The dominant trend in acculturation seems to be that Japan has received much American culture, though some elements have transferred from Japan to America as well. Japanese business circles often credit the economic success of the nation to Japanese management and business practices. Looking at the stability in employment, prices, and balance of payments, as well as the relatively high economic growth, the economy may deserve to be called a success case. If one looks at life in the nation, the credit is dubious; poor housing, expensive food, less relaxation in daily life, living apart from the family for the sake of the company, sudden death because of fatigue, etc. The lives of clerks and workers center around the company. Wealth concentrates in corporate enterprises from which people can benefit as long as they belong to a wealthy enterprise. Thus, there are many objections to making the Japanese model a norm for convergence, even among the Japanese.

On the other hand, it is difficult for other countries to assimilate American systems. High unemployment and crime, violence in some sectors, and unsafe streets in big cities seem to be American problems. Nonetheless, the society seems attractive in that it gives a chance for capable innovators to challenge their own talent and capacity. Researchers, professionals, and artists find American society stimulating.

Relations between government and industry differ in the U.S. and Japan. *Laissez-faire* and small government are the traditional philosophy of the U.S., though the government has
been heavily involved in defense-related industries. The government has played a much more significant role in Japanese economic development, though it has declined significantly through deregulation in recent years. While foreign firms often complain about intervention by local governments, the legal base for this intervention is dubious. They may remain as a legacy of earlier systems.

The question is not which system to converge to, but how to make each system more harmonious to smoother trade and investment from which all economies benefit. Whether or not SII is successful in this respect is yet to be seen. Initially it appears to aim at a convergence as the U.S. relaxes the application of its Anti-Trust Law, whereas Japan makes it stricter. It is unclear, however, how serious the two administrations are and whether such a direction is accepted by each society.

### IV. RECENT BILATERAL RELATIONS

U.S.--Japanese relations seem to be facing a critical moment, in the sense that not only politicians but the public are frustrated in one way or another. Satellite broadcasts conveyed live scenes of cars being smashed with hammers by Detroit workers. The U.S. Congress repeatedly threatens, to Japanese perceptions, that super 301 of the Trade Act should be applied to Japan. Opinion polls done in the United States often report the "economic threat" of Japan is greater than the "Russian military threat." There is a vicious cycle of negative perception and its repercussions: emotionally the Japanese tend to react that America is too self-righteous, and that the U.S. bashes Japan simply because it has grown to a level to compete with its former patron.

### A. POLITICAL DIMENSIONS

Since the Iraqi invasion of Kuwait in the summer of 1990, the major concerns of Washington and Tokyo have shifted to collaboration in Middle Eastern affairs. As the Japanese constitution prohibits any military contribution by Japan, Tokyo first subscribed U.S. \$4 billion to the multinational allies and added another U.S. \$9 billion at the request of Washington. Reportedly many American citizens were dissatisfied with the way that Japan was involved. Japan's diplomacy was criticized as "check-note diplomacy." On the other hand, the Japanese became resentful that they were criticized in such a manner, despite the fact that they accepted a tax increase for the war subscription. The American public ignored the constitutional constraint and the grave concern of Asian neighbors about Japan's military commitment.

Although two administrations have tried to calm down the frustration of the Congress and Diet, MOSS talks, SII, and continuing semi-conductor negotiations have created new stresses one after another. In the meantime, some leading politicians have made stupid mistakes in their remarks about American society. Mr. Nakasone reportedly hinted that ethnic factors made the American economy difficult. Mr. Miyazawa was reported to have commented that the work ethic was poor in the U.S. Mr. Sakurauchi, the chairman of the Upper House, was also reported to have made a similar mistake. All these misconducts were reported loudly by American journalists and provoked strong anti-Japan feelings in the U.S. The Japanese mass media also repeatedly conveyed news focusing on anti-Japan sentiments in the United States. Information about various negotiations tended to suggest that Japan was the victim of American demand. Thus, suspicion escalated.

The fall of the U.S.S.R and the end of cold war between the two super powers might have weakened U.S.-Japan relations as the security alliance loses its importance, even though there exist a number of potential conflicts in East Asia. Opinion polls done in the U.S. suggest such changes in the public perception at least. Leaders in the administrations face an unfavorable situation in which to take visible steps to improve bilateral relations as both Congress and the Diet are suspicious about the other country. Through the decades after World War II, it has been Tokyo that has sought a solution as the power relation has been asymmetric, with the U.S. as a center and Japan as one of the allies. Japanese domestic politics, however, have been miserable in that LDP, the governing party, cannot even purge law-violating leaders. Mr. Miyazawa, who replaced Mr. Kaifu has never shown any leadership nor capability not only in diplomacy but in domestic economic policy.

Another danger is observed in the attitude of industrial circles. Akio Morita, the chairman of Sony, and Shintaro Ishihara, a politician of LDP who has been involved with the ministries of transportation and environment, published a best selling book titled "No to ieru Nippon (The Japan who can say 'No')."7 Apparently the title implies Japan should say "no" to the U.S. But it also means that the Japanese government should bravely say "no" to some interest groups in the domestic society. Mr. Morita advocates his management philosophy, "enterprise as a fate-sharing boat (for executive, workers and stock holders)," and also argues that the Japanese should debate more actively outside Japan and join community activities. Mr. Ishihara argues for a Japan more independent of U.S. leadership, partly reflecting his own frustration through such negotiations on U.S.-Japan air transportation services. Reportedly the book was very poorly translated and published in the U.S. which provoked another round of antilapan debates.

Interestingly, Morita published another essay (Morita, 1992) in which he argued for a significant change of Japanese management to improve the quality of life for workers through various means. This seems to reflect his sense of crisis to live harmoniously with the U.S. and Western Europe. Thus, his preceding publication was a reaction to Japan bashing which was expressed in a misleading setting with Ishihara.

### **B. ECONOMIC RELATIONS**

U.S.–Japan economic relations have been and will be the most important for Japan in the 1980s and 1990s as well. The U.S. has been the most important single economy in Japanese foreign trade in goods, as well as in technology and capital. Although Japan is important to the U.S., the single largest partner of American foreign trade has been Canada. For the U.S., Japan has been one of the most important partners among Canada and Western Europe. There is an asymmetry, therefore, even if it is not as significant today as in earlier decades.

Japan has often been criticized by the E.C. and Australia who say that it has easily accepted American demands for concession while it has been tough against other trade partners. This complaint best applies to Australia. Every time Tokyo made concessions to Washington in the import of American agricultural products, Canberra expressed dissatisfaction. When Tokyo was forced to accept a VER (voluntary export restraint) request by Washington on Japanese exports of manufactures, the E.C. followed the U.S. in order to prevent Japanese exports from switching into Europe.

This is a view from Japan. From the U.S. side, Japan may appear to block American competitive goods entrance into the domestic market with official and/or informal means, and not take any visible steps to remove informal barriers. Lifetime employment, which fixes labor costs, tends to make Japanese firms underpriced at external market places. Tokyo and the leaders of the LDP try to avoid picking up structural impediment issues on their own initiative, because it is politically risky as they are gravely concerned about loss of votes. Thus, it is safer for the government to use "foreign pressures" to justify a policy change which risks the loss of votes of disfavored groups. In the meantime the public has been frustrated by such behavior by the government, becoming resentful toward Washington and Tokyo. In this context, Tokyo is also responsible for the deterioration of national emotions concerning bilateral relations.

### Trade Balance and Macro Adjustment

Up until the mid-1960s it was Tokyo that complained about bilateral imbalance in trade between Japan and the U.S. From an economic viewpoint, bilateral trade balance makes no sense, and even overall trade balance is not an issue, as long as excess savings over domestic investment can be effectively used by other countries to finance their savings shortage. This argument holds if there are no trade barriers on the side of Japan. Therefore, it is right to ask Japan to remove trade barriers to achieve a better balance in trade and current accounts. Tokyo, however, has argued that import tariffs and official barriers have been significantly lowered and they are lower than in other industrial countries, except in agriculture.<sup>8</sup> A counterargument is that informal barriers, based on Japanese business practices and hidden guidance by the central and/or local governments hinder access to markets.

It is suspected, then, that macrovariables, such as the exchange rate, are more effective in reducing the surplus of Japanese current overseas accounts. Sectorial issues may disappear as an appreciation of the yen may drastically increase Japanese import and reduce its exports. Figures 1 and 2 show respectively the relations between the changes in the bilateral trade imbalance (U.S. \$ billion) and the differential in real growth rates (percentage point in GDP), and those between the bilateral balance and the changes in real exchange rate of the yen against the U.S. dollar [rate of changes in exchange rate minus rate of changes in Japanese CPI (Consumer Price Index) plus that in American CPI].

Both figures clearly show negative relations between Japan's surplus in the bilateral trade, differentials in real growth, and the yen's appreciation in real exchange rates. A difference is that the growth differential almost simultaneously affects the bilateral balance, whereas the effects of exchange rate adjustment have a time lag. The two figures suggest that the yen must be appreciated significantly in real terms vis-avis the dollar under actual growth differentials. A substantial appreciation of the yen during 1985-86, seems to have reduced Japan's trade surplus against the U.S. significantly during 1987-89. Then the yen depreciated in 1989. Actually, inflation rates in Japan were lower in general than in the U.S. during these years, but a significant appreciation of the yen took place only in a few years, namely 1983, 1986, and 1987.

That the exchange rate can take care of not only the overall but the bilateral trade balance of Japan, though with some time lag, implies that macroadjustment will alleviate sectorial trade frictions. The evolution after the Plaza Accord in 1985 seems to offer a good lesson. Washington appears to have been ambivalent toward dollar depreciation. For domestic price stabilization it hoped for a stronger dollar, but for improving the balance of payments it welcomed the dollar depreciation. The easy budget and tight money strategy during the Reagan administration strengthened the U.S. dollar, which made it difficult to reduce the current account deficits, but kept domestic prices relatively stable. This strategy was not sustainable, however, and the Bush administration switched into a more balanced monetary-fiscal policy mix. The dollar became weaker and U.S. exports seem to have picked up. During the period from the Iraqi invasion of Kuwait until the end of the Gulf War, the U.S. dollar appreciated for political reasons. This would make it more difficult for the U.S. to restore the balance of payments.



Figure 1. Changes in Japan's Trade Surplus Against U.S. and Growth Rate Differentials

Notes: Bj-us: Changes in the Japan's balance of trade in US\$ Billion, Gj-us: Differences in real growth rates, in percentage point.

A problem is that the yen has been vulnerable to political disturbances, including international tension as well as warfare. In addition to this, the financial crash in the Tokyo stock market and turmoil in domestic politics due to scandals one after another kept the yen rather depreciated. In the meantime the G-7 meeting in April 1992 suggested that the major currencies be realigned so as to reflect economic fundamentals and that Japan stimulate domestic demand for a higher growth. There is a sign of the yen's appreciation just at the time of this workshop.



Figure 2. Changes in Japan's Balance of Trade Against the U.S. and Changes in Real Exchange Rates of ven/dollar

Notes: Bj-us: same as Figure 1. d(¥/\$-Pj+Pus): Changes nominal exchange rate minus changes in Japan's CPI plus those in U.S. CPI.

### Investment and Trade in Technology and Services

The U.S. has been the largest market for Japanese direct foreign investment (DFI) and for imports of foreign technology and services. In the early stage of Japanese outward DFI Asia used to be the largest market, but in the 1990s the U.S. was by far the largest single market. An asymmetry exists in the balance of DFI between the U.S. and Japan. According to official statistics, Japan had \$137 billion cumulated DFI in the U.S., whereas the U.S. had only \$10 billion in Japan.<sup>9</sup> Some Americans have made this fact a symbol of the closed nature of the Japanese market. Japanese business circles have counter argued that American businesses pay less attention to the Japanese market and less penetration of American business in Japan is nothing but a reflection of the inadequacy of their efforts. As shown in the discussions in the preceding section, however, the Japanese market organizations may be difficult for a new entrant from abroad to penetrate.

The U.S. has been the largest exporter of technology and other services to Japan. Since U.S. industries led the world in technological development, especially in the decades just after World War II, Japan has actively imported American technology and has exported its own and/or revised technology to Asia. As Japan has rapidly caught up with the U.S. in technology, however, Japan's exports of technology to America have also expanded, especially in the 1980s. It was estimated that Japan's exports of technology to North America reached Y111 billion in fiscal year 1990, and that Japan imported Y209 billion from North America.<sup>10</sup> Thus, as far as technology trade is concerned, the U.S. leads Japan, though Japan has been catching up rapidly. The U.S. also enjoys a surplus in trade in services with Japan, reflecting its advantage in international services as well as in technology. Thus, the bilateral trade balance is more balanced if service trade is taken into account. In a sense the balance in commodity trade is overemphasized. Indeed it seems an important American strategy to promote its exports of services to improve the current account balance.

### Japan and the U.S. in Asia and the Pacific Region

Many countries in East Asia seem to be concerned about a security vacuum with the possible withdrawal of the American army from the region, though they are also frustrated with the trade negotiations with the U.S. The APEC (Asia-Pacific Economic Council) has aimed at closer political and economic cooperation in Asia. The East Asians, Northeast and Southeast, perceive that NAFTA runs against the U.S. commitment to APEC and PECC.

In the meantime a proposal for the East Asian Economic Group (EAEG) was made by Mr. Mahathir, the Prime Minister of Malaysia, in his talk with the PRC's counterpart in 1990: East Asia should construct a group, including the PRC and market economies, to counter the regionalism and protectionism in Western Europe and North America.<sup>11</sup> This is the thrust of the proposal. The content of the idea remains unclear however. "Group" seemed to imply a block, but the institutional arrangements were not specified. Australia was excluded. Tokyo, and Seoul probably, were embarrassed with this proposal, as they felt it would damage the relations between the east and west coast of the Pacific Ocean. The U.S. State department intervened by requesting Tokyo and Seoul not to endorse the proposal before the APEC meeting toward the end of 1991. The ASEAN Summit meeting held in early 1992 rejected the proposal and adopted the plan for establishing the ASEAN Free Trade Area (AFTA). Considering the fairly heterogeneous composition of the East Asian economies, it was beyond feasibility to construct a free trade area. The U.S. intervention, however, provoked resentment because the U.S. itself pursues NAFTA and its objection toward East Asian integration contradicts its own conduct.

As is well known, regional integration is compatible if it maintains the degree of openness that was present before the integration. Even without any change in tariff rates applicable to outsiders' exports, NAFTA can exclude Asian exports by means of stricter application of the rules of origin. Some observers emphasize growing economic rivalry between the U.S. and Japan in Asia. As business opportunities expand rapidly in East Asia — due to the rapid growth of NIEs, ASEAN middle income countries, and China's development — an even broader cooperation is promising. New markets are created in the Russian far east, Indochina, North Korea and in Mongolia. Enclosing a regional market will provide less reward than maintaining a broader market where every economic unit can explore its business opportunities.

### V. CONCLUDING REMARKS

An optimist for the future of U.S.–Japanese bilateral relations may be criticized that he, or she, misses a serious danger that may destroy the relationship, and that ignorance of the danger has led to an unrecoverable crisis. We recognize the danger in U.S.–Japan relations, as politics is poorly prepared to solve the disputes. On the other hand, it is to be noted that a pessimist is also responsible for accelerating the vicious cycle of suspicion, and for discouraging constructive efforts.

First, what we need at this time is to maintain a stance of cautious optimism. On the side of Japan, the government should take a stronger initiative to improve foreign access to the domestic market. The steps should be visible in scale and should be taken on its own initiative. The negotiation formula with which Tokyo reacts to Washington's pressure will damage the bilateral relations to an unrecoverable degree. Second, Tokyo should cool off on the emergence of exclusive regionalism in East Asia, supporting vitalization of American industries and the improvement of economic cooperation in East Asia so that the region can maintain its excellent economic performance. Attractiveness of the East Asian markets will encourage the supporters of North America to work for Pacific Basin cooperation, avoiding a division of North America and East Asia.

It is also to be noted that there are confusing, self-contradicting signs on the side of U.S. negotiations: Washington tries to reduce intervention by the Japanese government, but tries to use them as a means to achieve a short run target. Export allocation in VER and the desire to secure a certain market share percentage of American manufactures in the Japanese market by means of administrative guidance are cases in point. Such confusing signals will make Tokyo keep a system mixed up with various implicit government controls where foreign products may face difficulties in penetrating the Japanese market. Exchange rate adjustment seems more effective to improve access of foreign products to Japan.

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#### ENDNOTES

1. To make a quick review, I skip citation of references and go through major arguments which are relevant to the present subject.

2. A beneficiary of this revision of the law was Toys "R" Us that opened a few large shops for retailing of toys.

3. See Takeshi Sasaki, "Genmetsukan wo Johseisita Nichibei Kozo kyogi" (SII that has strengthened disappointment), *Ekonomisuto* (Economist), July 17, 1990, 44-47.

4. The Japanese version of the report was published in a consecutive series of *Ekonomisuto* (Economist), a weekly magazine, from July 17 through August 21, 1990. The present review is based on this Japanese version.

5. Those who deny the importance of business groups argue that there are a number of independent firms which win the competition through bringing innovation into the market.

6.For detailed analysis, see Sueo Sekiguchi (1988).

7. Akio Morita and Shintaro Ishihara. No to ieru Nippon (Japan who can say 'No') (Tokyo: Konbusha, 1989).

8. America's trade regime in agricultural products is by no means free, as it waives the right to protect domestic agriculture in the GATT. Such a legal status makes no sense on the economics standard.

9. See Sueo Sekiguchi, *Shin-Nihon Keizairon* (A New Essay on Japanese Economy) (Tokyo: Chuo Keizaisha, 1992). The Japanese statistics may overestimate Japanese DFI, as it is based on declarations by investing enterprises, not on actual investment.

10. Unfortunately, figures for the U.S.-Japan trade are unavailable, but the majority are those between the two countries. See the JCER (Japan Center for Economic Research), *The International Economy and Japan in 2000*, Sueo Sekiguchi, ed. (Tokyo: JCER, 1991).

11. EAEG was later renamed EAEC (East Asian Economic Caucus) to erase the suspicion that they were trying to establish a block.

### INDUSTRIAL POLICY IN A GLOBAL ENVIRONMENT

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When an American buys a Pontiac le Mans from General Motors he or she unwittingly engages in an international transaction. Of the \$20,000 paid to GM about \$6,000 goes to South Korea for routine labour and assembly operations, \$3,500 goes to Japan for advanced components (engines, transaxles, electronics), \$1,500 to West Germany for styling and design engineering, \$800 to Taiwan, Singapore and Japan for small components, \$500 to Britain for advertising, \$100 to Ireland and Barbados for data processing. The rest — \$8,000 — goes to strategists in Detroit, lawyers and bankers in New York, lobbyists in Washington, insurance and health care workers all over most of whom live in the U.S. but an increasing number of whom are foreign nationals.-Robert Reich (1991, p. 113)

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### I. INTRODUCTION

This quotation from Robert Reich's *Work of Nations* aptly illustrates the dilemma facing industrial policy in the current "global environment" and the central issue to be discussed in this paper. Industrial policies have traditionally been mercantilist in intent — to promote national interests via national production in national corporations. What is the point of such policies if production is increasingly undertaken on an international — indeed global — basis? Are industrial policies of any sort any longer relevant? If so, what sorts of policy are appropriate and how may they be implemented?

The paper is divided as follows. The next section (Section II) focuses on the nature of industrial policy and its roots in market failure and considers in particular the application of such policies to new technologies. It argues that the nature of technology - the combination of skills, equipment, and organization which is embodied in people and institutions rather than in equipment and machinery - has important implications for policy. Section III examines the degree to which industrial activities are internationalized and comes to the conclusion that, although the picture Reich paints in the above quotation is an exaggeration of the extent to which "globalization" has taken hold, nevertheless there are trends toward an increasing internationalization of industrial activities which raise questions about the efficacy and appropriateness of national policies in a world of global oligopoly. Section IV pulls the two previous sections together and suggests a series of policies designed to take account of the main issues raised. National policy, it suggests, should be dedicated to maximizing national value added, while policy intervention is now needed at the international level both to constrain the ambitions of global oligopolists and to contain the scope for system friction.

### II. TECHNOLOGY AND INDUSTRIAL POLICY

Industrial policy has long been regarded with suspicion by economists. It is associated on the one hand with attempts by governments covertly to break the rules of the predominantly free trade game to which all nations are expected to adhere, and, on the other, to attribute to themselves powers of management and achievement to which they can seldom, if ever, live up. Yet industrial policy should not be seen merely as interventionism — indeed in its broadest sense it embraces areas such as competition policy, trade policy, company law, and property rights, which have long been of central interest to economists.

The economist's traditional justification for policy intervention in most of these areas has been market failure, with the main argument being about indivisibilities and externalities, public goods, and infant industries. Recently a new incarnation of the infant industry argument has emerged in the form of strategic trade theory, developed, as Krugman (1990, p.1) has said, to take account of the fact that today much trade is concerned with products such as aircraft rather than commodities such as wheat. In effect trade policy, and with it industrial policy, has had to come to terms with the fact that the main interest lies, not in the traditional areas such as textiles and steel, but in policy for new technologies where the second-best world of oligopoly and dynamic learning curves are a dominant feature. Both have important implications.

### A. TECHNOLOGY AND MARKET FAILURE

As with industrial policy generally, the traditional base for public policy toward technology has been market failure. Because basic research and its related infrastructure have been deemed to possess many characteristics of a public good (nonappropriable; non-depletable, etc.), a whole range of policies has been justified. These include public subsidies for basic research, the adoption of common technical standards for interfaces and networks, and penalties or restrictions on technologies which damage (or might damage) health, safety, and the environment.

Two further sets of policy fit this market failure framework: first, policies which are designed to improve the flows of technological information and competence to small firms in situations where information is imperfect and technology is generated exogenously, entering the sector embodied in machines and materials; second, policies which are designed to promote and maintain competition. In this case market failure embraces not only the maintenance of competition *per se* but also the whole range of issues affecting indivisibilities, natural monopolies and utilities, and the regulatory policies which ensue from these conditions.

However, market failure criteria are not as straightforward as this might imply. In this, and other areas of public policy, important unanswered questions and analytical inconsistencies remain. In particular, the market failure approach to technology policy fails to cope with two of its central features:

- 1. Dynamic efficiency: One of the paradoxes of traditional economic theory is that the promotion of dynamic (as distinct from static) efficiency has always required an element of market imperfection. A feature of real market systems, for example, is that the (endogenous) generation of technical change depends crucially on the prospect of temporary monopoly profits for successful innovators, resulting in delays and costs for imitators. Even in countries with strong laissez faire ideologies, these delays and costs are explicitly sanctioned through the patent and associated legal regimes for protecting intellectual property rights. Where imitation costs are low (e.g., fine chemicals and pharmaceuticals), these regimes are particularly important; where they are not (e.g., where learning by doing is important, as in aerospace), dynamic competitive processes themselves create prospects of temporary monopoly profits (Levin et al., 1987). In other respects, the traditional dilemma remains. While R&D is important, so too is Liebenstein's x-efficiencymanagement alert and anxious to exploit new opportunities.
- 2. Internationalism: The standard market failure approach to public technology policy also has great difficulty in coping analytically with the multinational world in which we find ourselves today. Public support for basic research, for example, has traditionally been justified because it produces information which, while economically useful, is also freely available (via publication), non-appropriable (because in general it deals with national phenomena and is not patentable) and nondepletable. Implicitly it had always assumed that in broad terms the beneficiaries were also the taxpayers —

namely that a nation benefited from supporting its own science base. This justification breaks down in a multinational world, where any country may 'free ride' on another's research, precisely because of the nonappropriable and nondepletable nature of the economic benefits that justified public support in the first place. The United States, for example, is having second thoughts on how far research funded by its National Institutes of Health should be available to all comers. Some feel that it makes it too easy for other countries to use this research to develop new products (OTA, 1991).

### B. THE NATURE OF TECHNOLOGY AND ITS IMPLICATIONS

The free-rider issue raises the question of precisely what is meant by technology. Technology may be defined as the combination of skills, equipment, and organization necessary to do useful things and make useful artifacts. Technology is not, as often assumed in economics, "manna from heaven" which is delivered free and is easily applicable and costlessly applied. On the contrary, technology is often expensive, complex, multi-dimensional, and specific to a particular firm; a large part of it is tacit (i.e., uncodifiable) knowledge that derives mainly from trial, error, and learning rather than from the systematic application of science-based knowledge. As a consequence, the same range of technologies are not readily and easily available to, or assimilated by, all firms and countries (Dosi, 1990). This view of technology has important implications for policy.

First, it means that technological development should be seen as *cumulative in nature*, because much derives from learning by doing. Firms and countries differ in their paths of technological development (often referred to as their technological trajectories) to reflect the cumulative pattern of production and skills acquired over time. In addition, *search is localized* — the inheritance of skills and capabilities itself constrains the field of choice for new opportunities. For example, Europe today reflects the skills and competencies of the countries and firms that it encompasses. Although there are intercountry variations, Europe's technological trajectories primarily reflect those of its dominant industrial economy, Germany — relative strength in chemicals, nonelectrical machinery, automobiles, and aerospace; relative weakness in electronics and raw materials. Japan, by contrast, is relatively strong in electronics and automobiles, and weak in aerospace and raw materials — precisely the fields of greatest relative strength in the U.S. (Patel and Pavitt, 1991b).

Secondly, these characteristics of technology mean that *technology transfer and imitation are costly*. R&D and related activities in firms are not only about getting ahead of the competition, but also about catching up and keeping up — and this process is not costless (Cohen and Levinthal, 1989). Business-funded R&D has been increasing as a proportion of OECD output at least for the past 25 years, reflecting the economic importance of activities dedicated to innovation and diffusion. It is notable, for example, that the two countries which, for the last decade, have been allocating most resources to civilian R&D, Japan and Sweden, both excel in applying technologies pioneered by others, as well as developing their own.

Thirdly, these characteristics of technology mean that *countries differ not only in the direction, but also in the rate of their technological development*. Contrary to expectations in the 1950s and 1960s, industry-funded R&D in OECD countries has not converged towards a notional (U.S.) best-practice level. Since 1975, there has been divergence, with the U.K. and the U.S. being overtaken and progressively left behind by Germany, Japan, Sweden, and Switzerland (Patel and Pavitt, 1991b).

Finally, it is worth noting that these characteristics of technology imply that one of the main economic *benefits from basic research* comes not from useful information embodied in papers, but *in the form of useful problem-solving skills embodied in trained researchers* (Senker and Faulkner, 1991). Since basic research skills are in general less internationally mobile than published papers, countries that finance basic research are more likely to benefit (Hicks and Hirooka, 1991; Pavitt, 1991). In other words, for both basic research and technology, the *learning* process is an important part of the benefit and cannot be ignored. Dynamic economies of scale — the cost savings that accumulate over time as experience in production increases — are real and important. We shall return to these issues in Section IV.

### **III. THE GLOBAL ENVIRONMENT**

### A. GLOBALIZATION OR INTERNATIONALIZATION?

The term "globalization" is often loosely used and illdefined. In this paper the term "internationalization" rather than globalization will be used to describe the stage now reached in "international production" - that is value-adding activities owned or controlled by firms outside their national boundaries (Dunning, 1988; Cantwell, 1989). These activities include the export and import of goods and services; outward and inward flows of direct investment and financial capital: outward and inward flows of embodied and disembodied technology and the international movement of skilled personnel and transborder information flows. In this sense, internationalization has increased throughout the last century. Large multinational companies (MNEs) operating within the world supply system (and capable of taking full advantage of the worldwide organization of financial services) have driven the process. Today, it is frequently associated also with the web of interlinking alliances and networks that have developed in the 1980s and which are seen by some to herald a new form of decentralized and flexible industrial organization (Bressand, 1990). It is, however, fallacious to see such characteristics as an inevitable part of the process of internationalization.

## B. THE THREE STAGES OF INTERNATIONALIZATION SINCE 1945

Since 1945 it is possible to identify three stages in the internationalization of production. In the immediate postwar era, when trade was the main catalyst for growth, internationalization was counted primarily in terms of export shares and import penetration. A number of important MNEs existed, many dating back to imperial links (e.g., Unilever, ICI), or to the protectionist days of the 1930s (when, for example, both Ford and GM established their European subsidiaries). Import controls, dollar shortages, and defense contracting arrangements led to the establishment of a number of new subsidiaries by major U.S. companies in the immediate postwar period (e.g., IBM, Pfizer, Hughes).

The 1960s and 1970s saw the second stage in internationalization, with foreign direct investment (FDI) beginning to play a significant role. The signing of the Treaty of Rome, the establishment of the EEC, and the ensuing fast growth of the European economies in the 1960s and early 1970s stimulated many more companies to set up European subsidiaries. The flow was predominantly from the U.S. to Europe. (There were also substantial flows, particularly in the 1960s, from the U.S. and Europe to the developing world.) Many European countries had mixed views about the benefits of U.S. capital, fearing the degree to which it would make them economically and technologically dependent on the U.S. (see Servant-Schreiber, 1968). Indeed, most European countries maintained capital controls on both inward and outward investment until the late 1970s. Japan also maintained strict controls on the activity of U.S. multinationals, preferring to license technology rather than encourage the establishment of foreign subsidiaries.

A third phase of internationalization has developed in the 1980s. It is marked by a number of distinctive features:

- 1. A very fast rise in the flow of FDI and the entry of Japan as a major source of capital as the high value of the yen, the need to reinvest trade surpluses, and the increasing threat of protectionism in foreign markets combined to encourage such a move.
- 2. The end of the one-way flow of capital from the U.S. to the rest of the world and the growth of the U.S. as a major recipient of FDI both from Japan and Europe. The major flows are now between the three main trading blocks of the world (the Triad). (See Diagram 1 and Table 1, but note that as yet Japan is not a major recipient of such flows, U.S. and European capital going to the other countries of Southeast Asia rather than Japan).
- 3. The growth also of substantial flows of FDI within each part of the Triad. Closer integration of the EC and the prospect of monetary union has led to major cross-border investments by European firms, often via merger or acquisition, which have played a substantial part in the later (from 1985 onwards) stages of this new phase of internationalization (see Table 2). Similarly many of the

newly industrializing countries of Southeast Asia now house Japanese subsidiaries as that country expands its operations within the Pacific Rim. Likewise, the U.S. has long been the major investor in Canada, and links have been tightened as a result of the free trade area, now extended to Mexico.

4. In addition to FDI, other new forms of industrial linkage have become common — joint ventures, subcontracting, licensing, cooperative research agreements, second sourcing agreements. The result has been that many firms are now involved in complex international networks covering all the main areas of operation — research, production and marketing (see below).

### C. THE FACTORS DRIVING INTERNATIONALIZATION

The factors driving this third phase of internationalization are complex and interrelated. On the one hand, the 1970s brought the re-emergence of protectionism with the development of significant nontariff barriers as countries struggled to come to terms with prolonged recession. The threat of protection, particularly toward Japan and the newly industrializing countries (NICs) of Southeast Asia, has been one of the main driving forces behind the upsurge of FDI. On the other hand, the 1970s also brought new technologies, and technology has also been an important factor behind the trend toward internationalization. With the upswing from recession in the early 1980s a new set of dominant technologies, mostly associated with electronics and information technology, emerged, superseding the technologies which had driven the long boom of the 1950s and 1960s (chemicals, plastics, steel, and autos). Among the newcomers, telematics in itself brought a revolution in communications and enabled the development of a degree of decentralization and networking that would not have been possible 20 years previously.

Last but not least of the reasons for the new phase of internationalization in the 1980s was the swing to neoliberalism and the deregulation movement, including, most importantly, the deregulation of capital markets. Indeed, it is significant that the financial services sector was in the forefront of this new internationalization, although other service sectors, for example insurance, have also played a part.

### D. THE RISE OF JAPAN

The emergence of a number of large Japanese multinationals as a major competitive force in world markets in the last two decades has had particular effect, especially since their way of doing business is so different from the previously dominant Anglo-Saxon (Fordist) model that had characterized American MNEs. Intense competition from these new entrants has made the ability to innovate a key to industrial competitiveness, with a premium on rapid innovation, customized products, and maximum flexibility. Many older MNEs have tried to copy their Japanese counterparts and in so doing forged close links with suppliers and customers.

Together these developments have served to make the 1980s a period of increased competition and increased uncertainty. Competition fueled the take-up of new technologies as firms strove to out-innovate their competitors. This in turn drove high expenditures on R&D, which led to the need to find markets across which to spread the overheads. Uncertainty, for its part, caused firms to seek ways of minimizing risk exposure. Under the circumstances, the prevalence of merger and acquisition, subcontracting and joint ventures, and the rash of collaborations and alliances is not so surprising an outcome.

### E. VARIATIONS FROM SECTOR TO SECTOR

While it is fair to say that the 1980s saw a distinct shift toward a more international style of production and competition, trends vary from sector to sector. Industries such as chemicals and food manufacturing had long used FDI as a method of opening up new markets and localizing production. The pharmaceutical industry, perhaps the world's first global industry, followed suit in the 1950s and 1960s in response to the growth of local regulatory frameworks, a side effect of which was the establishment of a large number of overseas subsidiaries and laboratories. More recently, fastrising R&D costs in pharmaceuticals have led to extensive cross-licensing of products in an attempt to extend the market base, and the same trend underlies the rash of mergers that have been taking place. But, with the exception of the vertical linkages with new biotechnology firms, the degree of networking in pharmaceuticals (or for that matter chemicals) has been very limited. In particular, unlike electronics, there have been no major horizontal R&D collaborations with competitors.

Traditionally it has been industries with an engineering base and those involved in assembly operations that have forged linkage forwards and backwards with customers and suppliers, and it is these firms *par* excellence, that have developed a complex networking form of internationalization. Electronics, telecommunications, automobiles, and machine tools have been involved, all assembling components or subassemblies from parts manufactured elsewhere. Other branches of the engineering industries, aerospace, and perhaps above all the major civil engineering firms have done things this way for a very long time.

### F. MERGERS, ACQUISITIONS, AND GLOBAL OLIGOPOLY

One clear outcome from both the increased levels of FDI and the mergers and acquisitions movement of the 1980s has been the strengthening of the position of MNEs in relation to other parts of the supply structure. Estimates put the share of home-based U.S. MNEs in total U.S. exports at approximately 30 percent and imports at 18 percent (Julius, 1990); the total for home-based and foreign MNEs combined is estimated to have amounted to as much as 40 percent of U.S. imports in 1985 (UNCTC, 1991). By any count these figures are substantial and indicate how important intracompany trade can be within the total trade figures.

More important, however, is the role of these large multinational companies within the supply structure and the degree to which they are in a position to dictate to the market. Indeed, one of the worrying features of developments during the 1980s has been the concentration of production worldwide for most R&D-intensive or "high-technology" sectors in the hands of relatively few major producers. OECD, for example, estimates that the top ten firms in computers, telecommunications, and semiconductors in 1987 contributed respectively 90, 85, and 61 per cent of the world output of those industries. In automobiles, the top seven firms in 1988 contributed 88 percent of output; in tires the top six firms contributed 85 percent of output. Even the service industries areas, such as advertising and management consultancy, have seen a major concentration of interests — in management consultancy the top four firms (all U.S.) took 54 percent of the market in 1989 (OECD, 1992, pp. 222-23).

These trends in concentration are a cause for concern in themselves. Work at MERIT on the structure and pattern of the collaborative alliances of the 1980s raise further doubts, for they show that in the main information technology sectors many of the leading firms were also involved during the 1980s in alliances with their oligopolistic rivals (Hagedoorn and Schakenrad, 1990a, 1990b). Table 3, derived from their work, indicates the extent to which leading companies in each sector were involved in alliances and the changing pattern between the two halves of the decade. This work has also identified a strong clustering element in these alliances, with a number of leading firms seemingly acting as a node within the cluster. Two features stand out. First, there is a definite "triadic" element among the clusters with companies such as Siemens, Philips, AT&T, IBM, Fujitsu, and Toshiba acting as nodal firms within European, U.S., and Japanese clusters. Second, many of these leading firms are also involved in cross-Triad linkages - for example, Siemens has strong links to IBM, Intel, and DEC; Fujitsu with Intel, Sun, and STC; Thomson with Motorola and Matsushita. What emerges is a complicated patchwork of corporate networks anchored around a number of key firms who between them currently dominate the development of the information technology sectors.

### G. THE NON-GLOBALIZATION OF R&D

The extent to which firms have been internationalizing their technological activities has recently been studied by Pari Patel and Keith Pavitt (1991a). They have used U.S. patent data, which registers patenting activity by subsidiary and country of origin, to assess the extent to which the world's 700 largest firms have been genuinely undertaking R&D in different parts of the world, picking and choosing the best locations by the availability of local talent.

Table 4 presents their conclusions. The first column, U.S. patenting by domestic-based subsidiaries, provides a good indication of the degree to which foreign MNEs have ab-

sorbed indigenous technological capabilities, whereas the second column, U.S. patenting by foreign subsidiaries of nationally-based MNEs, reflects the degree to which domestic firms are using foreign rather than domestic research capabilities. With the exception of plants in Belgium, Canada, and the U.K., foreign subsidiaries show little propensity to undertake R&D that results in patents; likewise, domestic MNEs, except for those based in the Netherlands, Sweden, the U.K., or Switzerland, show little propensity to patent outside their home base. In other words, Patel and Pavitt's findings would indicate that most multinationals prefer to use their home base for strategic, patent-creating R&D activities.

The major exception to their conclusions is the pharmaceutical industry, which, as we noted earlier, had begun to internationalize its R&D activities in the 1960s and has continued to do so. The strength of the U.S. science base in the life sciences and biotechnology is a major factor behind current trends, and many European companies have established R&D laboratories in both the U.S. and now Japan during the last decade.

It is far from clear, however, how far the pharmaceutical industry will be a precursor for other industries in establishing a more intensive pattern of internationalization of R&D. The Patel and Pavitt data quoted above relate to the earlier years of the 1980s, and there is little doubt that the mergers and collaborative trends of the latter half of the 1980 have widened information networks and opened up new options that may be leading to much higher levels of internationalization in R&D. But as Hu (1992) has pointed out, it is not just R&D that has remained home-based for MNES. Corporate headquarters, finance and strategic planning have all remained predominantly home-based. As he puts it, the modern MNE is a national firm with extensive international activities.

### H. THE CONTINUING IMPORTANCE OF NATIONAL SYSTEMS OF INNOVATION

The evidence presented by Pavitt and Patel and Hu raises doubts about the degree of internationalization among MNEs and confirms earlier suggestions that technology has developed differently within different environments. This in turn gives greater weight to the concept of the national system of

innovation — that "network of institutions in the public and private sectors whose activities and interactions initiate, import, modify, and diffuse new technologies" (Freeman, 1987, p. 1). Historical circumstance and time mean that these systems differ markedly from one another. For example, the British industrial system, rooted in the industrial revolution, is very different from the German industrial system that developed at the end of the nineteenth century under the paternal influence of Bismarck and the militaristic needs of the Prussian state. Such differences are more than just interesting differences in history. As Freeman (1987, p. 3) has shown, "The rate of technical change in any country and the effectiveness of companies in world competition depends upon the way in which the available resources are managed and organized both at enterprise and at national level." In other words, institutions and the organization of institutions matter and can have profound effects upon performance.

National systems of innovation do not always accommodate easily within an international world. This is perhaps best illustrated by the current focus of interest on the Japanese keiretsu organization, the grouping of companies, often around one or two major companies, into "family groups" with intergroup linkages through finance and supply chains. Given the demand for flexibility, such groupings have proved highly adaptable and effective in the current competitive climate. Yet, as with other international collaborative linkages which in lesser or greater part mirror these organizations, by the established tenets of the Anglo-Saxon faith in competition their role is questionable. What is fair play by one set of rules becomes unacceptable by another. Is it reasonable for members of the keiretsu to give fellow members preference in supplying new state-of-the-art chip making machinery? Or is such a practice unfair and in restraint of trade?

The continuing importance of national systems of innovation with their differing institutions and objectives means inevitable clashes of system, or "system friction" as Sylvia Ostry (1991) calls it. The danger in the uncertain but competitive world of the 1990s is that the friction flares up and destroys the very real gains the world has reaped from the process of internationalization in the postwar years.

# IV. INDUSTRIAL POLICIES FOR A GLOBAL ENVIRONMENT

The picture of globalization which emerges from the discussion in the previous section is one in which large dominant multinational firms are playing an increasingly important part in world production — in other words in many sectors, particularly high-tech sectors, what was national oligopoly has become global oligopoly — but in which these same firms are still firmly rooted in traditions of enterprise and innovation that derive from their national environments. Putting this together with the characteristics of technology discussed in Section II it is possible to suggest an outline of the sorts of policy which are appropriate in such a global environment. They fall into two distinct categories — policies to be pursued by national governments (or in the European case by the EC), and policies to be pursued through international fora.

### A. SUPPORT FOR THE SCIENCE AND TECHNOLOGY INFRASTRUCTURE

While the neoclassicals argue for support for basic research on grounds of market failure, the neo-Schumpeterian view adopted in this paper argues for it in terms of wealth creation. By this line of reasoning, it is important to recognize the largely person- and institution-embodied nature of public investment in basic research and training. Those trained to doctoral levels in science and technology are a small but essential part of competitive industry — the core of the R&D system. Unless forced to migrate, the majority prefer to remain working in their home countries. The benefits from such investments therefore tend to be localized nationally or even regionally and to be seen in higher value-added and secure jobs.

A major element of national and regional policy should therefore be geared to the maintenance of what might be called the "science and technology infrastructure." This involves, on the one hand, promoting training institutions support for high-quality secondary education; a good vocational training system for those not going on to higher education; a strong university sector; and support for the academic research base, including a major postgraduate component. On the other, it implies support for institutions whose function is concerned with the diffusion (in addition to the production of) science and technology. The latter includes the support of university/industry linkage mechanisms; support for research associations, particularly those like the Fraunhofer Institutes in Germany which support technology dissemination to smalland medium-sized business; and the encouragement of regional initiatives bringing together firms, universities, and research institutions.

The degree to which the economic benefits of basic research come in the form of problem-solving skills in trained researchers rather than useful information codified in papers or patents means that, as stressed in Section II, the benefit from support for the research infrastructure remains surprisingly localized even when it seemingly goes to support foreign enterprises. For example, European pharmaceutical companies locating biotechnology laboratories in the U.S. bring high-class, high-value-added jobs to the U.S. Equally, the biotechnology sector illustrates well the breakdown of confidence in the traditional market failure assumption that the externalities from R&D were largely localized and international spillovers mutually balanced.

Current concern focuses on the degree to which Japanese access to U.S. basic research in the life sciences via academic linkage and/or access through new biotechnology firms could be to the long-term disadvantage of the U.S. (OTA, 1991; NAS, 1992). Attention is drawn both to the uneven flow of information toward Japan and the degree to which basic research in Japan is concentrated in (private) corporate rather than in (public) academic laboratories, making reciprocity difficult. This asymmetry of the relationship (which is mirrored elsewhere, [Zysman, 1992]) complicates the issue. The knee-jerk reaction, seen for example in the clumsy attempt by the NIH to patent partial gene sequences from its human genome project, merely encourages all countries to restrict the exchange of scientific knowledge. Given the degree to which advance comes from the cross-fertilization of international exchange, such a development would be self-defeating.

The way forward lies not in mutual recrimination but in trying to find ways of opening up and balancing exchanges to mutual benefit. The onus should not be just on the U.S.: Japan needs also to acknowledge the asymmetry of the current position and seek ways of reversing the balance. There is an interesting and perhaps useful contrast with the position of the European MNEs, which are not seen to pose the same 'threat' as the Japanese investments. Their investments in new research laboratories indicate a willingness to invest longterm in the U.S., whereas the Japanese investments, primarily in the NBFs and university research laboratories, are perceived at present to be predominantly short-term.

### **B. INSTITUTIONAL FAILURE**

As stressed earlier, there are deep-seated differences among countries in the levels and trends in such activities, and these in turn have fundamental effects on economic performance, whose persistence leads to efficiency losses, international tensions, and pressures for intervention and protection. In other words, critical differences in performance can sometimes be explained not in terms of market failure, but of institutional failure (Abramovitz, 1986).

Some time ago Patel and Pavitt (1988) made the distinction between myopic and dynamic systems of innovation. Briefly stated, myopic systems treat investments in technological activities just like any conventional investment: they are undertaken in response to a well-defined market demand, and include strong discounts for risk and time. Dynamic systems, on the other hand, recognize that, in addition to tangible outcomes in the form of products, processes, and profits, technological activities also entail important but intangible by-products, above all in the form of cumulative and irreversible processes of technological, organizational, and market learning. This experience — this learning — enables them to undertake subsequent investments and to create and open up new market demands. Thus, myopic systems have a set of institutions, skills, and methods that systematically undervalue intangible, firm-specific learning (Myers, 1984; Mitchell and Hamilton, 1989).

In Europe, the archetypal dynamic national system of innovation is Germany, while the myopic system is the U.K. The essential differences between them (and among the national systems of innovation of other countries, for example, Japan and the U.S.) can be found in three sets of institutions:

- 1. *The financial system underlying business activity*: In Germany, the financial system gives greater weight to longerterm performance allowing the benefits from investment in learning to accrue; and it has both the competence and the information systems to evaluate and assess firm-specific intangible assets (Corbett and Mayer, 1991).
- 2. The methods of management, especially in large firms: In the U.K., the relatively greater power and prestige given to financial competence (as opposed to technical competence in Germany) is more likely to lead to decentralized, profit-centered divisional structures which (again) encourage emphasis on short-term performance and inhibit the exploitation of changing technological opportunities across divisional boundaries (Lawrence, 1980. See also Abernathy and Hayes, 1980, and Chandler, 1989, for similar concerns in the U.S.).
- 3. *The systems of education and training*: The German system of rigorous general and widespread vocational education and training provides a better basis for cumulative learning, especially in the engineering-based industries, than the British system which relies on employer based training programmes, and lacks incentives for the acquisition of technical competence (Prais, 1981).

The policy conclusions are that, where the failure lies in institutions rather than markets, neither minimalist policies to make good market failures, nor interventionist policies that attack the symptoms of institutional failure — such as poor R&D performance — rather than their cause, are likely to prove effective. On the contrary, interventionist policies frequently delay the adjustment process by alleviating symptoms with temporary protection/support measures. The right policy response to institutional failure is to operate at the institutional level and create, change, or adapt the institution as is appropriate. This is not an easy solution nor one that will bring instant success. Problems arise because culture and institutions are so interwoven - the one reflects, embodies, and reinforces the other. For example, German training systems reflect a culture and attitudes toward training that go back to the nineteenth century. Trying to transpose the system without simultaneously trying to "grow" the culture is doomed to

failure. Yet cultures and attitudes evolve only slowly over time. Changing institutions can help, but as a policy it needs patience and reinforcement by a strong cultural lead from government.

### C. COMPETITION POLICY

Competition policy is important, but proper weight must be given to the dynamic as well as static effects, for the former is of vital importance to competitiveness and welfare. Two conclusions emerge from a recent SPRU analysis of the largest 660 firms that perform about half the world's innovative activities (Patel and Pavitt, 1992). First, mega-mergers are unlikely to increase the volume of innovative activities. Second, in Japan and the U.S., sectoral technological strengths are found when large firms are relatively numerous rather than relatively big; in Europe they are both relatively numerous and relatively big. This gives support to Porter's (1990) recent conclusion that company innovativeness is stimulated by competitive rivalry in the home market.

Given these findings, the trends toward global oligopoly described in Section III are the more disturbing. Nationally based competition policies have long had difficulty in coping with oligopoly — in defining the borderline between smart business practice and unfair behavior. This becomes doubly difficult in dealing with multinationals which are able to switch resources and profits from one market to another within a horizontally and vertically integrated business. It is vital that such international businesses do not get lost in the complexity of their own operations or lose sight of the need to compete. This is why, in the European context, it is important that the old national champions, bred on preferential public purchasing and protected markets, are not just transformed into European champions; why the Commission is right to push the liberalizing ethos of EC 92 and the Single Market alongside the supportive measures of the Framework Budget; and why tough measures on competition and mergers are a necessary complement to the encouragement of collaboration (Sharp, 1992).

More generally trends toward international oligopoly demand that serious thought now be given to completing the Bretton Woods agenda and transforming the GATT into or the originally projected International Trade Organization, which would oversee "fair play" in both trade and competition at the international level. Such an organization would, like the GATT, be built upon the principles of mutual recognition and reciprocity and would entail agreeing at an international level a mutually recognized code of practice for multinational firms. Transgression from such a code of practice by any MNEs would then be equally reprehensible in any signatory country and sanctions mutually imposed and reinforced.

In the longer run, as with EC 92, establishing the level playing field of fair competition may require agreement on a wide range of issues outside the bounds of what is traditionally regarded as competition policy (viz., the harmonization of standards and regulatory regimes, agreement on public purchasing rules, etc.). It has also to be recognized that trade policy and competition are two sides of the same coin. If global oligopolies are to remain competitive there is little point in high levels of protection — the oligopolists have to be allowed, indeed forced, to compete with each other.

### D. SUPPORT FOR STRATEGIC TECHNOLOGIES

The justifications for public policies to support so-called strategic technologies need careful scrutiny, if only because there is no clear definition of what constitutes a strategic technology. As Teece (1991, p. 36) puts it, "The attitude of most observers is that they know a strategic industry when they see one!" Soete (1991) identifies three different definitions of the term "strategic." The first derives from military strategy, the second from strategic trade theory, and the third from the French notion of *filière* (i.e., production chain). What they share in common is the notion of a threat that a foreign country or firm could withhold the supply of equipment or know-how and thereby cause considerable economic damage. In the present context, this could happen in two sets of circumstances.

Firstly, there may be monopoly power among suppliers of key components and equipment. This is what Flamm (1992) describes as the anti-cartel reason for promoting strategic industries. Such monopoly may not last for a long time in technologies with pervasive applications, precisely because pervasive applications tend to generate a large number of independent sources of supply. It does not preclude the possibility, however, that specific firms in specific sectors may withhold technology for competitive reasons and that this action can create considerable tensions both between firms and between nations. For example, IBM's policy of refusing to sell its components to other firms reflected its power to hold its competitors for ransom. Likewise, there is much concern today at the degree to which the Japanese firm Nikon has established a monopoly position for itself in the supply of state-of-the-art wafer-making equipment for semiconductors (OTA, 1990, p. 138). U.S. firms complain that Nikon supplies the machinery to its Japanese competitors but fails to respond to their requests for access to equivalent machines.

Secondly, a country may face the danger of its firms being excluded from a technological trajectory in cases where cumulative development over time generates a high rate of technological change (in products and processes), opening up yet further possibilities for change and growth. If these characteristics are also associated with first-comer advantages (e.g., steep learning curves), latecomers may not have sufficient incentive to enter and catch up. Baldwin and Krugman (1988) have analyzed how Japan in the 1970s dealt with this difficulty in semiconductors and indeed established for themselves a lead which it is now difficult for other firms to challenge. It is a problem that Europe now faces in electronics and advanced manufacturing technology.

Learning curve advantages are essentially people- and institution-embodied. In other words, ownership is less important than the skills and capabilities associated with the plant and equipment. For example, given the major design and manufacturing capabilities in semiconductors in Britain at the plants of NEC, Motorola, Texas Instruments, and National Semiconductor, can Britain really be said to lack competence and capability in this sector? Britain (and Europe) have benefited in many different ways from the cadre of managers trained in U.S. firms such as Texas Instruments and Motorola (Hobday, 1991), a clear indication of the "leakage" of skills that takes place. Even the military argument wears thin. In extremis, the plants belonging to foreign companies with their equipment and personnel could be requisitioned, as happened to German plants in Britain and the U.S. during the 1939-45 war.

These examples suggest a number of distinct policy stances. First, support specifically to help catch up with state-of-theart technology should not be ruled out, but if granted, it should be subject to strict time limits and deliberately tapered over, say, a five-year period. Second, collaborations associated with such support should be open to foreign as well as indigenous companies, unless the foreign company has been involved in cartel-like practices which have excluded indigenous firms from market entry. (Again, what is important are the people-embodied skills and competencies and local firms may benefit from such participation.) Third, tough local content clauses for foreign direct investment make sense. Screwdriver plants bring minimal skills; what are wanted are the high-value-added jobs in R&D and management. Fourth, strategic trade theory makes sense in what it has to say about countering threats to monopoly control. If the promise of (or actual) state support forces competitors to behave more competitively, there is advantage all round. However, such support needs to be used sparingly and only in cases where there is a real risk of monopoly control.

In effect, the policy being advocated amounts to a valueadded policy. The emphasis on skills and training, support for the basic infrastructure of science and technology, the tough competition policy, limited and tapered support for strategic technologies, the open door to foreign investment with strict adherence to local content requirements add up to a policy which ensures maximum income and spillovers for the local community. The purpose of the policy is not to maximize the value of assets under national ownership but to maximize the value of the productive activities of local people. In this, we follow Reich (1991). The opening paragraph of his final chapter reads as follows:

What is the role of a nation within the emerging global economy, in which borders are ceasing to exist? Rather than increase the profitability of corporations flying the flag, or enlarge the worldwide holdings of its citizens, a nation's economic role is to improve its citizen's standard of living by enhancing the value of what they contribute to the world economy. The concern over national competitiveness is often misplaced. It is not what we own that counts; it is what we do (P. 301).

### E. TOWARD A GLOBAL SYSTEM

Competitive nationalistic policies can easily get out of hand and escalate into the sort of negative sum game of competitive counterbidding that developed between national and regional governments in the early 1980s over inward foreign direct investment. A better way to deal with the problems of system friction is, where possible, to negotiate common rules of the game. Take the issue of Nikon and the supply of wafer-making machinery referred to earlier. Judged by U.S. antitrust standards it can be held to be unfairly withholding supply from the U.S. firms, whereas by Japanese standards the firm is merely operating prudently, making sure that established clients are well served. The U.S. has put considerable pressure on the Japanese anti-trust authorities to take a tougher stance in respect to suspected collusion among Japanese suppliers, and this has been a major issue in the Structural Impediments Initiative (SII) within the Uruguay GATT talks. Agreement of a common set of rules by which to judge such actions could help dissipate much friction.

Those who advocate such a solution have in mind two different sets of global rules (Ostry, 1991). The less comprehensive has already been discussed — it is to establish a multinationals' code of practice that would be operated by countries on a reciprocal basis. Given the importance of large international companies and global oligopolies in many important sectors of technology, there is a case for a more thoroughgoing approach, which would effectively attempt to negotiate on a worldwide base, the "level playing field" that has been the focus of much EC 92 effort. In addition to competition, regulations and standards, patents, and other forms of intellectual property, even drug (pharmaceutical) regulation might with advantage be handled at the global level.

Setting international rules of the game will not solve all the problems of system friction. As noted already, the U.S. has identified the *keiretsu* system in Japan, with the cooperative relationships between firms within the *keiretsu* and the ready availability of patient money from the in-house bank, as one of the most difficult aspects of the Japanese system with which to compete (Hodder, 1991; Flamm, 1990). The *keiretsu* system certainly incorporates some elements of unfair behavior, yet it also has many efficiency-enhancing aspects. Public policy needs to keep these dynamic features in perspective. The focus of policy might have to become not so much competition among firms but the preservation of geographic pluralism so that there is effective competition between firms even if they are caught up together in collaborative networks.

It is also perhaps worth noting that competition between systems stimulates system evolution. Current concerns in countries of the Anglo-Saxon capitalist (myopic) traditions in such areas as savings ratios, training systems, quality circles, and "just-in-time" indicate already some shift toward a different, more cooperative form of capitalism that has greater compatibility with the systems of Japan or Germany. In other words, over time, convergence may eliminate many of the problems which at present cause friction (Sharp, 1992).

### V. CONCLUSION

The purpose of this paper has been to discuss the role of industrial policy in a world that is increasingly interdependent and dominated by large multinational companies. Although industrial policy in its broadest sense comprehends all industries, its focus in recent years has been almost exclusively on issues of technology and competitiveness, and this paper follows this tradition. Its theme is why and how should we seek to promote new technologies and innovation in a world of multinational companies. Is there a bona fide role for the nation state in such policies? And if so, what is it?

The paper has argued that much of the appropriate role for policy derives from the nature of technology itself. It is not, as economists so often suggest, an artifact that can be bought off the shelf. Rather it is a combination of skills, equipment, and organization, embodied in people and institutions as much as in machinery and equipment. This has important implications for policy. First, it means that dynamic economies of scale — learning-by-doing — are important; second, that institutional failure may be just as important as market failure in explaining differences in performance.

Such a view of technology has to be set alongside the changing industrial environment of the 1980s to which the term "globalization" is often applied. The paper argues that what is called globalization is in fact the third phase of a
process of internationalization of productive activities, a phase that has been marked by the rapid growth of FDI flows between developed countries, especially between and within the three Triad groups --- North America, Europe, and the Pacific Rim countries of Southeast Asia. This has been accompanied by a burgeoning of various forms of collaborative linkage — joint ventures, licensing, subcontracting — and latterly, by a substantial number of mergers and acquisitions. The result has been a substantial increase in concentration, particularly if account is taken of the collaborative networks that reinforce the position of a number of nodal dominant firms, creating a structure of global oligopoly in many of the important new technology industries. Nevertheless, the degree to which these companies operate as stateless global entities is limited. In particular, many of their important strategic functions — R&D, finance, main assets — are not globalized but retain a strong home-base linkage, and many of these companies reflect, in their methods of operations, elements of attitude and culture that stem from that home base.

A further important feature of the 1980s has been the emergence of Japan as a substantive challenger to the 60-year technological hegemony of the United States. This has led to understandable friction on issues of technology, not least because of considerable differences in the system of innovation between the two countries. It has also led to intense rivalry in technology, which itself is accelerating the pace of technological change and adding to uncertainties.

What policies are appropriate for such a global environment? In one sense it is an exciting environment, for seldom has the drive to exploit new technologies been so intense. In other respects it is frightening, for the intense rivalry can so easily and quickly spill over into foul play and bad blood witness the chip wars of the 1980s. It is also an environment currently dominated by the giants, the major multinationals, who can ride roughshod over the other small- and mediumsized players. Given these constraints the policies advocated in this paper fall into three broad categories.

- 1. Policies to promote the science and technology infrastructure and an efficient system for the diffusion of innovation on the grounds that, given increasing internationalization, the main aim of national policy must be to promote competence and capability to retain and attract high-valueadded jobs;
- 2. *Policies to promote competition and fair play* on the grounds that competitive oligopolies perform better than cartels or monopoly;
- 3. Policies to promote the global "level playing field" on the grounds that without it, system friction may become overwhelming.

The first two sets of policies look primarily to national (or, in the case of Europe, the Community) governments for implementation, for they remain the main policymakers for industrial policy. Equally, national governments alone often have little influence on large multinational companies and we need to look increasingly to international action. Given the difficulties encountered in negotiating the "level playing field" of EC 92, it may seem odd to advocate any repetition of such an exercise. Equally, it is increasingly clear that to compete amicably within the global environment of the 1990s it no longer makes sense to have a plethora of standards and regulations among and between countries. To begin to put together policies for treating such issues at a global level means inevitably a long and difficult set of negotiations, but EC 92 has shown that it is not a wholly impossible goal. To do so requires optimism as to what may be achieved through international negotiation, an optimism that is in short supply at a time when GATT and other international initiatives seem to be making so little headway. Equally, without idealism few of the institutions we now regard as natural parts of the landscape would have emerged. There is, as they say, no harm in trying. In the meantime the present is anything but ideal and much industrial policy will remain geared to playing second best games in a second best world.



|                                 | Percentage | of total OEC | D flows    |         |
|---------------------------------|------------|--------------|------------|---------|
|                                 | 1971-80    | 1981-84      | 1985-87    | 1988-89 |
| -                               |            | Outward      | l Investme | nt      |
| United States                   | 46.4       | 20.1         | 25.3       | 16.9    |
| Canada <sup>1</sup>             | 3.9        | 8.0          | 5.4        | 3.5     |
| Japan <sup>1</sup>              | 6.2        | 13.2         | 16.2       | 27.6    |
| EC <sup>2</sup>                 | 41.8       | 56.0         | 50.1       | 47.6    |
| Belgium-Luxembourg <sup>1</sup> | 1.1        | 0.4          | 1.8        | -1.0    |
| France <sup>1</sup>             | 4.8        | 8.1          | 6.5        | 10.8    |
| Germany                         | 8.6        | 9.7          | 9.4        | 8.7     |
| Italy <sup>1</sup>              | 1.2        | 4.6          | 2.7        | 2.6     |
| Netherlands <sup>1</sup>        | 6.4        | 7.8          | 5.6        | 4.9     |
| Spain <sup>1</sup>              | 0.4        | 0.9          | 0.6        | 0.9     |
| United Kingdom                  | 19.2       | 24.6         | 23.4       | 20.6    |
| Sweden <sup>1</sup>             | 1.6        | 2.7          | 3.0        | 4.4     |
| _                               |            | Inward I     | nvestment  |         |
| United States                   | 33.8       | 62.8         | 59.3       | 51.4    |
| Canada <sup>1</sup>             | 3.3        | -2.4         | 1.3        | 2.7     |
| Japan <sup>1</sup>              | 0.9        | 0.9          | 1.2        | -0.6    |
| EĈ <sup>2</sup>                 | 61.5       | 38.3         | 37.3       | 45.8    |
| Belgium <sup>1</sup>            | 5.5        | 3.6          | 2.3        | 4.6     |
| France <sup>1</sup>             | 10.1       | 6.4          | 5.7        | 6.6     |
| Germany                         | 8.4        | 2.9          | 2.2        | 2.9     |
| Italy <sup>1</sup>              | 3.4        | 3.5          | 3.0        | 3.7     |
| Netherlands <sup>1</sup>        | 5.1        | 3.0          | 3.2        | 3.9     |
| Spain <sup>1</sup>              | 4.2        | 5.7          | 5.9        | 6.1     |
| United Kingdom                  | 24.7       | 13.2         | 15.0       | 18.0    |
| Sweden <sup>1</sup>             | 0.5        | 0.5          | 0.9        | 0.7     |
| Memorandum Items:               |            |              |            |         |
| Total of above countries        |            |              |            |         |
| Outward Investment              |            |              |            |         |
| level <sup>3</sup>              | 28.9       | 36.0         | 83.0       | 142.2   |
| as a share of exports of goods  |            |              |            |         |
| and services                    | 3.6        | 2.3          | 4.4        | 5.3     |
| Inward Investment               |            |              |            |         |
| level <sup>3</sup>              | 16.7       | 30.4         | 56.2       | 127.0   |
| as a share of imports of goods  |            |              |            |         |
| and services                    | 2.1        | 2.0          | 3.0        | 4.7     |
|                                 |            |              |            |         |

## Table 1. Share of Major OECD Countries in Outward andInward Direct Investment, 1971 to 1989

1. Exclude reinvvested earnings.

2. Data for the European Community exclude flows of Denmark, Greece, Ireland, and Portugal. Data include intra-Community flows.

3. U.S. \$ billion, annual average.

Source: OECD, Technology and the Economy: The Key Relationships (OECD, 1992).

|   | Numbe   | r of Opera                             | tions and          | Geograph           | ical Break      | down <sup>1</sup> | r                    |               |
|---|---|--|--------------------|--------------------|-----------------|-------------------|----------------------|---------------|
|   | 1982/83   | 1983/84                                | 1984/85            | 1985/86            | 1986/87         | 1987/88           | 1988/89              |               |
|   |   |  | Mergers a          | nd acquisitio      | ons of majori   | ty holdings       |                      |               |
| Number of operations  | 117   | 155                                    | 208                | 227                | 303             | 383               | 492                  |               |
| National share <sup>2</sup>   | 50.4  | 65.2                                   | 70.2               | 63.9               | 69.6            | 55.9              | 47.4                 |               |
| Community share <sup>3</sup>  | 32.5  | 18.7                                   | 21.2               | 22.9               | 24.8            | 29.2              | 40.0                 |               |
| Non-Community share <sup>4</sup>  | 17.1  | 16.1                                   | 8.7                | 13.2               | 5.6             | 14.9              | 12.6                 |               |
|   |   |  | Acquis             | itions of mi       | nority holdin   | Sa                |                      |               |
| Number of operations  | 33  | 54                                     | 67                 | 130                | 117             | 181               | 159                  |               |
| National share <sup>2</sup>   | 60.6  | 68.5                                   | 67.2               | 67.7               | 71.8            | 63.5              | 64.2                 |               |
| Community share <sup>3</sup>  | 27.3  | 14.8                                   | 14.9               | 15.4               | 17.9            | 20.4              | 23.3                 |               |
| Non-Community share <sup>4</sup>  | 12.1  | 16.7                                   | 17.9               | 16.9               | 10.3            | 16.0              | 12.6                 |               |
|   |   |  | Establ             | ishment of j       | ointly-owned    | l subsidiary      |                      |               |
| Number of operations  | 46  | 69                                     | 82                 | 81                 | 96              | 111               | 129                  |               |
| National share <sup>2</sup>   | 50.0  | 46.4                                   | 48.8               | 42.0               | 32.2            | 40.5              | 43.4                 |               |
| Community share <sup>3</sup>  | 17.4  | 15.9                                   | 18.3               | 24.7               | 17.8            | 27.9              | 27.9                 |               |
| Non-Community share <sup>4</sup>  | 32.6  | 37.7                                   | 32.9               | 33.3               | 50.0            | 31.5              | 28.7                 |               |
| <ol> <li>Data collected from the specialist press</li> <li>Operations of firms from the same Com</li> <li>Operations of firms from different Com</li> </ol> | regarding operal<br>umunity member<br>munity member | tions involving a<br>state.<br>states. | it least one of th | e 1,000 largest fi | rms of the Comu | umity, ranked a   | cording to their fin | ıancial data. |
|   | ווהוותהו אמובא מוו                                  | ם תותם כאחורוש                         | אזוזמן אזוברו וזו  |                    | larket.         |                   |                      |               |
| Source: Technology and the Econc  | omy: The Key  | Relationship                           | (OECD, 199         | <u>,</u> ,         |                 |                   |                      |               |
|   |   |  |                    |                    |                 |                   |                      |               |

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|     | Inf          | ormation Tec   | hnologies      |     |
|-----|--------------|----------------|----------------|-----|
|     | 1980-84      |                | 1985-89        |     |
| 1.  | Motorola     | 53             | Siemens        | 134 |
| 2.  | Siemens      | 51             | Philips        | 127 |
| 3.  | IBM          | 48             | Olivetti       | 110 |
| 4.  | Sperry       | 47             | IBM            | 108 |
| 5.  | Fujitsu      | 46             | HP             | 96  |
| 6.  | Olivetti     | 42             | DEC            | 95  |
| 7.  | CDC          | 41             | AT&T           | 90  |
| 8.  | INTEL        | 41             | Thomson        | 83  |
| 9.  | Philips      | 40             | Fujitsu        | 78  |
| 10. | NEC          | 39             | Motorola       | 68  |
|     | h            | ndustrial Auto | omation        |     |
|     | 1980-84      |                | 1985-89        |     |
| 1.  | GM           | 8              | GM             | 20  |
| 2.  | Mitsubishi   | 8              | IBM            | 20  |
| 3.  | Dainichi     | 6              | ABB            | 13  |
| 4.  | Siemens      | 6              | Dainichi       | 11  |
| 5.  | Westinghouse | 6              | Tandem         | 11  |
| 6.  | ACME-C       | 5              | FANUC          | 10  |
| 7.  | Asea         | 5              | Rockwell       | 10  |
| 8.  | Daimier      | 5              | Siemens        | 10  |
| 9.  | FANUC        | 5              | Westinghouse   | 10  |
| 10. | IBM          | 4              | C. Milacron    | 9   |
|     | 1000.04      | Software       | 1095 90        |     |
| 1   | 1900-04      | 18             | 1965-69<br>LIP | 47  |
| 2   | NCR          | 16             | DEC            | 45  |
| 3.  | Honeywell    | 10             | Siemens        | 36  |
| 4.  | Motorola     | 14             | Bull           | 34  |
| 5.  | НР           | 13             | AT&T           | 33  |
| 6.  | Sperry       | 13             | Philips        | 32  |
| 7.  | Allied       | 12             | SUN-Micr.      | 31  |
| 8.  | AMD          | 12             | NCR            | 29  |
| 9.  | DEC          | 12             | Volmac         | 29  |
| 10. | Harris       | 12             | Olivetti       | 28  |

# Table 3. A Comparison of the Top Ten Firms in InformationTechnology by Number of Strategic Linksin 1980-84 and 1985-89

|     | ····· ··· ··· ··· ··· ··· ··· ··· ··· | Compute      | ers        |    |
|-----|---------------------------------------|--------------|------------|----|
|     | 1980-84                               |              | 1985-3     | 89 |
| 1.  | Sperry                                | 27           | Olivetti   | 22 |
| 2.  | IBM                                   | 19           | CDC        | 19 |
| 3.  | CDC                                   | 18           | Unisys     | 17 |
| 4.  | Olivetti                              | 17           | Bull       | 14 |
| 5.  | Fujitsu                               | 15           | Philips    | 13 |
| 6.  | NEC                                   | 12           | Fujitsu    | 12 |
| 7.  | Burroughs                             | 11           | NEC        | 12 |
| 8.  | Toshiba                               | 10           | SUN-Micr.  | 11 |
| 9.  | Du Pont                               | 10           | DEC        | 10 |
| 10. | 3M                                    | 10           | Hitachi    | 10 |
|     |                                       | Micro-electr | onics      |    |
|     | 1980-84                               |              | 1985-8     | 39 |
| 1.  | INTEL                                 | 34           | Thomson    | 51 |
| 2.  | Motorola                              | 23           | INTEL      | 46 |
| 3.  | Philips                               | 20           | AMD        | 42 |
| 4.  | Thomson                               | 19           | Motorola   | 40 |
| 5.  | Toshiba                               | 18           | Philips    | 39 |
| 6.  | Siemens                               | 17           | TI         | 37 |
| 7.  | Fujitsu                               | 16           | Siemens    | 36 |
| 8.  | NEC                                   | 16           | IBM        | 30 |
| 9.  | Exxon                                 | 15           | Toshiba    | 27 |
| 10. | AMD                                   | 14           | AT & T     | 26 |
|     |                                       | Telecommunic | ations     |    |
|     | 1980-84                               |              | 1985-8     | 19 |
| 1.  | Siemens                               | 17           | Siemens    | 45 |
| 2.  | AT & T                                | 15           | CGE        | 32 |
| 3.  | ITT                                   | 14           | Sumitomo   | 29 |
| 4.  | Fujitsu                               | 10           | Mitsubishi | 28 |
| 5.  | IBM                                   | 10           | Fujitsu    | 27 |
| 6.  | Plessey                               | 10           | AT & T     | 26 |
| 7.  | Hitachi                               | 9            | Philips    | 26 |
| 8.  | ANT                                   | 8            | IBM        | 24 |
| 9.  | NEC                                   | 8            | NEC        | 23 |
| 10. | Olivetti                              | 8            | Ericsson   | 20 |

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Source: MERIT, CATI database. Taken from: Technology and the Economy: The Key Relationships (OECD, 1992).

|                     | Based on U.S. patenting, 1  | 981-86   |
|---------------------|---|--|
| Home Country        | U.S. patenting<br>from domestic<br>based foreign<br>subsidiaries<br>(as % of country's<br>total U.S. patenting) | U.S. patenting<br>by foreign<br>subsidiaries of<br>domestic firms<br>(as % of countries<br>total U.S. patenting) |
| Belgium             | 45.7  | 16.5   |
| France              | 11.8  | 3.8  |
| Germany             | 11.5  | 8.5  |
| Italy               | 11.2  | 3.0  |
| Netherlands         | 9.5   | 73.4   |
| Sweden              | 5.4   | 16.7   |
| Switzerland         | 12.5  | 27.8   |
| United<br>Kingdom   | 22.3  | 24.5   |
| Europe<br>(average) | 7.4   | 9.3  |
| Canada              | 28.1  | 12.5   |
| Japan               | 1.2   | 0.5  |
| United States       | 4.2   | 4.4  |

#### Table 4. Foreign-controlled Domestic Technology Compared to Nationally-controlled Foreign Technology

Source: Patel and Pavitt (1991a).

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## SUPRANATIONAL INSTITUTION BUILDING IN A RAPIDLY CHANGING REGION:

The Case of European Monetary Unification

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#### I. INTRODUCTION

The project to establish an Economic and Monetary Union (EMU) among the member states of the European Community (EC) has been conceived, negotiated and is now being implemented against a background of rapidly changing conditions in the political and economic configuration of Europe and in the internal institutional arrangements of the Community itself. This in turn has led to an almost continuous reassessment by the EC member countries of their position on various and sometimes essential elements of the EMU project itself.

It may be useful to recall that most of the major changes that have occurred since the mid-1980s have been related to the ongoing internal debate of the Community centered on the "deepening versus widening" issue.<sup>2</sup> The accession of Spain and Portugal in 1986 led to a rethinking of the scope and the methods of economic integration, which were eventually embodied in the Single European Act of 1986 and in the program for financial market liberalization of 1987. With the Single Act, the Community introduced the principle of majority voting on a number of important areas and set the 1992 target for the elimination of all barriers in its internal market; priority was given to the removal of exchange restrictions for which the deadline was set in July 1990. These decisions in turn gave rise to a further round of "deepening and widening" activities. Within the Community, the prospect of achieving a fully integrated market without restrictions to the movement of goods, services, and capital raised concerns for the maintenance of exchange-rate stability and highlighted the need for new arrangements for the conduct of monetary policy by the Community central banks: out of this debate came the decision by the EC Heads of State and Government to set up the Delors Committee to study the EMU (Committee for the Study of EMU, 1989), which eventually led to the Maastricht Treaty on European Union.<sup>3</sup>

Outside the Community, the fear of being left out of a major integration process induced many countries to reconsider their attitude vis à vis the EC and to apply for membership. This trend accelerated in connection with the collapse of the Communist block: members of the former Comecon hastened to indicate their willingness to join the EC, while the end of the East-West polarization allowed countries like Austria, Sweden, and Switzerland to abandon their traditional neutral position in favor of greater involvement in the process of European unification.

The attitude of the EC in this juncture has been to give priority to the phase of deepening, as represented by the implementation of the Maastricht commitments, before considering any further widening of its membership. This decision has been taken despite some internal dissent, notably from the United Kingdom; it was indeed maintained that the EMU implied too narrow a concept of Europe, with too strict entry conditions, to keep open the dialogue with the Central and Eastern European countries.<sup>4</sup>

The unexpected results of the Danish referendum on the ratification of the Maastricht Treaty have added new factors of uncertainty in the "deepening-widening" saga. Even assuming that all other eleven member states ratify the Treaty (an assumption that has been reinforced due to the positive result of the French referendum on the EMU as well as the ratification by countries such as Italy and Germany, but weakened by the opposition that has surfaced in the British Parliament following the "temporary" opting out of sterling from the EMS), there would still be the problem of how to handle

the Danish "secession." Following intense negotiations, a compromise on the Danish problem was reached at the European Council Meeting in Edinburgh on December 12-13, 1992. On the basis of such compromise, the European Council will specify which aspects of the Maastricht Treaty can be regarded as nonbinding for Denmark. Denmark has agreed to submit again the question of the Treaty ratification to the Danish people in a referendum to be held in early 1993. The terms of the compromise will be examined in 1996 in the context of the general review of the constitutional setup of the Community already scheduled for that year. In Edinburgh it has been agreed to start negotiations on the enlargement of the EC immediately following the entry into force of the Maastricht Treaty by mid-1993. The brief survey of the factors that make Europe a "rapidly changing region" would not be complete without a mention of the acute episode of turbulence that has shaken the EMS after the French referendum on EMU, casting doubts about the ability of the exchange-rate mechanism to resist market pressures. A thorough investigation of the causes and implications of the EMS crisis is underway within the Council of Finance Ministers and the Committee of EC Central Bank Governors. The key issue is whether the EMS, almost by definition a transitional arrangement constrained by built-in operational limitations, needs to be fundamentally reformed. For some countries the EMS can be strengthened only by allowing for more timely realignments of parities in order to prevent the buildup of tensions in the markets. For others the only possible reform of the EMS is the acceleration of the process toward the EMU; in this connection, it is also suggested that such a move to the EMU could involve only a restricted number of countries with good economic fundamentals.

The implementation of this suggestion depends crucially on whether the Maastricht Treaty will be ratified. If, as it now seems likely, the Treaty is ratified, the transition to the EMU, which would mandatorily begin on January 1, 1994, could be shortened. Indeed, the Treaty only specifies that a review of whether the conditions for the move to the EMU exist must be undertaken *no later* than December 31, 1996. The acceleration of the EMU process could coincide with the decision to enlarge the Community, thus broadening the base of the EMU. If, on the other hand, the Treaty is not ratified, because, say, the United Kingdom would refuse to do so in present circumstances, the EC will of course survive, notably in its commitment to establish the Single Market, but will no doubt suffer a crisis that might take years to resolve. Solutions outside the Community framework may be sought, whereby some member states would enter into an agreement involving economic and monetary arrangements that would not require the approval of all Community countries. Although such solutions are theoretically feasible,<sup>5</sup> they are likely to be very difficult to implement in the economic and monetary field, basically because they would create a two-tier Community, which is regarded as politically unacceptable by all members.

In this paper, the positive EMU scenario will be taken as the starting assumption, and the analysis will focus on what is being done and what should be done to build the EMU from a "technical," operational point of view. Section II will review the main features of the institutional framework of the EMU in order to show the unique nature of the project. Section III will describe the initiatives of the Committee of EC Central Bank Governors to build the main institutional pillar of EMU, namely the European System of Central Banks (ESCB). Section IV will draw some preliminary conclusions concerning both the methodology and the content of the institution-building process of the EMU.

#### **II. MAIN FEATURES OF THE EMU**

In this section, no attempt will be made to describe the detailed features of the EMU, which will be given as known.<sup>6</sup> Rather, attention will be drawn to certain fundamental aspects of the EMU project that make it rather unusual.

#### A. EMU AS AN INSTITUTION-BASED PROJECT

The first feature that differentiates the EMU from its logical and historical antecedents is that the Treaty assigns a fundamental role in the management of the EMU to a central, supranational institution with exclusive authority for the conduct of monetary policy. Although this feature is consistent with a strict definition of monetary union, namely an arrangement in which there is *one money* and *one monetary policy* 

conducted by one institution, it must be recognized that other arrangements have been envisaged or conceived that place less emphasis on the institutional aspect. This is the case, for example, of the definition of an EMU proposed for the EC by the Werner Report of 1970. In the Werner Report the essential elements of an EMU were identified as follows: (a) total and irreversible external convertibility of currencies; (b) irrevocable fixing of the parity of currencies; (c) absence of exchange restrictions. No reference was made in the report to the need for achieving a single money in the EC, although it was recognized that over time a federal system of central banks would have to be set up. However, the report did not specify how to arrive at such a stage (Baer and Padoa-Schioppa, 1989), which justifies the suspicion that the institution envisaged by the Werner Report was more a forum for the coordination of monetary policies than a common central bank, its operational functions being restricted to the provision of finance to member states in order to help them comply with the exchange rate constraint.<sup>7</sup> Similarly, the European Council Resolution of December 1978 establishing the EMS made reference to the commitment to consolidate the EMS into a "final system" in which a European Monetary Fund would be created. Although no detailed indication was given as to the actual responsibilities and functions of this institution, which were never established, it appeared that it would be shaped more on the pattern of the IMF than that of a federal central bank.

A weak institutional base was also envisaged in the proposal presented by the U.K. Government as an alternative to the draft Treaty text elaborated by the presidency of the Inter-Governmental Conference (IGC) on EMU. According to this proposal, national central banks would retain their authority in conducting monetary policy, but a European Monetary Fund would be established, with the task of issuing and managing a "hard ECU" (Grice, 1990). It is not within the purpose of this paper to analyze the British proposal; it is mentioned here only to draw attention to the fact that the concept of a monetary union has been, until very recently, not clearly associated with the need for an institution that would manage the monetary policy of the Union.

Indeed, the concept of monetary union is frequently mistaken with arrangements that have nothing to do with it. One reference frequently made in discussions on the EMU is to the

gold standard, described as a de facto monetary union, with one money standard — gold — as the base for national currencies and no supranational institutions to manage it.<sup>8</sup> Mutatis mutandis, it is suggested that a monetary union could gradually emerge as a result of a "competition among currencies" which might select the ECU or the DM as the monetary pivot of the Union. Another misconception is that which equates a monetary union simply with exchange-rate arrangements with very small (or zero) oscillation margins. In this case it is recognized that an institution may be required for the proper functioning of the system, but its task would be simply to provide financial assistance to members in order to help them to keep their currencies within small or zero margins. Such assistance might indeed be necessary, as markets will immediately question why a number of sovereign countries would enter into a tight exchange-rate commitment with each other while still retaining their national currencies and the right to conduct autonomous monetary policies. Markets will conclude that countries have not given up such autonomy because they intend to make some use of it; this expectation will prevent interest rates from being equalized across countries, even if there was a high degree of convergence in economic performances and particularly in inflation rates. In sum, such an arrangement would be much more similar to the present EMS than to a monetary union, regardless of how tight the exchange rate constraint is.

The novelty of the EMU Treaty is that it has discarded both the "currency-competition" approach and the "ERMcum-financing" approach, adopting instead a "fundamentalist approach" (Padoa-Schioppa, 1992). The adoption of this approach, first within the Delors Committee and subsequently within the Inter-Governmental Conference on EMU, owes much to the consensus reached among the EC central bank governors on certain principles most explicitly enunciated by the Bundesbank. These principles are that in a monetary union: (a) the primary objective of monetary policy should be the achievement of price stability, and (b) there should be no confusion as to where the responsibility for the conduct of monetary policy rests (this is the so-called principle of the indivisibility of monetary policy); therefore (c) there should be only one common central bank entrusted with the task of formulating and executing monetary policy for the union, and

(d) there should be no governmental or community interference in the conduct of monetary policy, with statutory provisions guaranteeing the political independence of the ESCB and forbidding the monetary financing of budget deficits. The acceptance of this set of principles endows the EMU with a "monetary standard," the anchor of which is not a commodity like gold or a "strong" currency like the dollar or the DM, but the very institution that embodies such principles (Papadia, 1992).

From the foregoing it follows that in the EMU a fundamental function of sovereign states - monetary policy - will be performed in an exclusive manner by a supranational institution. This is also unique in the experience of international cooperation of modern nation-states. There is no lack of historical examples to support this point. The institutions created since the end of World War II (UN, IMF, World Bank, etc.) did not take away from members any sovereign prerogative in the field of foreign or economic policy; rather they implied certain rights and obligations that respectively enriched and constrained the exercise of sovereign functions. Even when really supranational institutions have been established, as in the case of the EC, the sphere of Community competence has not been extended to any of the basic functions of the sovereign state. The only significant exception is the attempt in the 1950s to establish the European Defense Community; the relevant Treaty, however, was approved by the governments of the six states that eventually gave birth to the EC, but failed to obtain ratification from parliaments.

#### B. EMU BUILDING: AN EXERCISE IN GRADUALISM

The uniqueness of EMU in terms of its functions is paralleled by the gradualist method adopted for the building of its institutional framework. This point needs to be qualified. In a way all international institutions go through a gradual process of evolution as they adopt the internal rules and procedures for the exercise of their functions; moreover time is needed to analyze the political and economic environment in which the institution is going to operate. For example the IMF, established in March 1946, did not start operating until May 1947 and gave itself a comprehensive lending policy based on the so-called standby arrangement only in 1952 (Gold, 1970).

However, in the experience of international institutions created since World War II, such gradualism merely involves operational and organizational aspects, not the very structure, functions, and organs of the institution.<sup>9</sup> In the case of EMU, on the contrary, a gradualist approach is prescribed by the verv charter of EMU, the Maastricht Treaty. In fact the Treaty indicates that the main institution of EMU, the European System of Central Banks, will come into existence only at the beginning of Stage Three of EMU. Before then, more limited monetary functions will be performed by the Committee of Central Bank Governors in Stage One (which began July 1, 1990) and by the European Monetary Institute (EMI) in Stage Two (which will start on January 1, 1994, if the Treaty is ratified). This is indeed a rather unusual form of institutional gradualism, as in each stage a different institution is envisaged with different status, functions, instruments, and organization.

The model can hardly be recommended. It is in fact, a compromise solution to a difficult negotiation, in which Germany favored the maintenance of a very low-key institutional setup until Stage Three, while Italy insisted that the ESCB should be created in Stage Two precisely to prepare the transition to EMU.<sup>10</sup> In the event, it has been possible to include in the Treaty clear provisions that specify the role and functions of the EMI with respect to the preparation for Stage Three; moreover the institute will be endowed with financial and human resources that ensure it will be functioning as a fulltime institution and not as a part-time committee. Nevertheless, the EMI, with the unprecedented label of "temporary institution," will not enjoy the credibility that the ESCB would have had, even with limited functions. This may have implications for the credibility of the entire EMU process in the delicate phase of transition to Stage three.

#### C. EMU AS A MARKET-ORIENTED PROJECT

The aspect that is perhaps most relevant in differentiating the EMU from other supranational institutions is the degree of its involvement in the working of monetary and financial markets. The ESCB, like other central banks in nation-states, will perform the traditional functions in the field of monetary policy, the payments system, and prudential supervision. Its activity will influence monetary conditions and the level of interest rates, with implications for the domestic price level, the operation of banks and financial markets and the evolution of the ECU, the money of the Union, vis à vis other major currencies. Market participants in the Union and in other countries will no doubt watch closely the behavior of the ESCB to detect indications about future policy actions and formulate expectations concerning their effect on the prices of goods, bonds, stocks, and foreign exchange.<sup>11</sup>

If the degree of market-interaction for the ESCB is likely to reach a maximum in the final stage of EMU, the progress toward the realization of EMU is also likely to be kept under constant surveillance by financial and exchange markets. This is not only the case of the current market tensions that have materialized in connection with the uncertainties about the ratification of the Maastricht Treaty. Market participants will also be very interested in knowing what would happen to the EMU in Stage Two, particularly monitoring the compliance by EC member states with the conditions for convergence set out in the Treaty. Indeed these performances will provide indications on which countries would be likely to participate in Stage Three and hence on the starting date of the EMU (1997 or 1999). In particular, tensions may arise in foreignexchange markets should it appear that a particular country may no longer be able to qualify for the EMU because of insufficient convergence. Or tensions may arise ahead of the two-year period without exchange-rate realignments, as the market may expect that candidates may avail themselves of a last opportunity to change in parity. In fact, if fundamental economic conditions in member countries appeared to diverge, markets would tend to anticipate the conditions that would lead to a realignment, as shown by the EMS crisis of September 1992. On the contrary, if convergence was very strong, markets would tend to anticipate the realization of monetary union, squeezing interest-rate differentials irrespective of current inflation rates (Bishop, 1992).

During Stage Two of the EMU, the risk that such tensions may reach large proportions is heightened by the fact that by then the Single Market Program will be realized, particularly in the area of banking and financial services, where a fully integrated system will be in operation throughout the Community. At the same time, the EC will not have an equally integrated machinery for the coordination of monetary and exchange-rate policies, as in these areas the EMI will not be allowed to perform any additional functions than those already envisaged within the EMS (i.e. the exchange-rate mechanism and its financial support facilities).

### **III. FIRST STEPS IN EMU BUILDING**

Before the signing of the Maastricht Treaty, Tommaso Padoa-Schioppa and I argued that EMU could not be achieved unless the EC adopted the method championed by Jean Monnet in the early Fifties to create the European Coal and Steel Community. This approach, which we defined as the method of institutional supranationality, consists "in the creation of legal and institutional instruments with the pinch of supranationality needed to enable a common goal to be achieved; it considers the institution not as mere fora for consultation but as the *powers* of the process that lead to the common goal."12 Our fear was motivated by the fact that until the last moment the IGC had not been able to reach a compromise on the method to be followed for the transition from Stage One to Stage Three. Because of the indivisibility of monetary policy, it was argued that no institution was needed in Stage Two and that monetary policy was to remain only a subject for mutual consultation and voluntary coordination among national central banks. This, however, left very vague how the EMU would be achieved in one stroke at the beginning of Stage Three, with the risk that the EMU might be delayed indefinitely, not for lack of economic convergence, but because of insufficient technical preparation of the institutions, instruments, and procedures needed to run a common monetary policy in Stage Three.

As already indicated in Section II, the method eventually adopted at Maastricht is the institutional one. Albeit weakened by an excessive gradualism, the method is already producing some of the expected results. This point will be argued with reference to the activity, current and prospective, of the Committee of EC Central Bank Governors.

#### A. THE COMMITTEE OF GOVERNORS

The Committee of Governors was formally established in 1964,<sup>13</sup> with the task of strengthening cooperation in the monetary policy field. Its activity has been basically that of a forum for multilateral consultation and exchanging views on monetary developments and prospects. With the creation of the EMS, the role of the Governors was strongly enhanced: indeed, the legal basis for the system is the Agreement among the EC central banks of March 1979. Even then, however, the management of the EMS has not implied any day-to-day involvement of the Committee. Within the established rules, each central bank would look after its own monetary and exchange-rate policy. Only at time of parity realignments would the Committee as a body be involved in policy discussions and decisions, although sitting together with Finance Ministers. It was only in September 1987, with the amendments of the EMS Agreement approved at Basel and Nyborg, that the Committee was entrusted with the task of containing exchange-market tensions with a coordinated management of interest-rate differentials, exchange-market intervention, and currency oscillations within the band. Even this increase in responsibilities, however, was not reflected in any significant change in the institutional arrangements of the Committee or in its working procedures. From 1964 until 1990 the Committee has continued to meet once a month (except in August and October) for about 22 hours,<sup>14</sup> operating with a skeleton secretariat kindly provided by the Bank for International Settlements (BIS), where the meetings are held. Under the aegis of the Committee, three informal "groups of experts" were established over time to review developments in foreign exchange markets, monetary conditions, and national banking systems. Again, these groups operated through periodic meetings (monthly for the foreign exchange experts, two or three times a year for the other groups), their main function being to report to the Governors on their deliberations.

This situation changed with the start of the EMU process. Following the recommendation of the Delors Committee, the European Council of Madrid in June 1989 decided to initiate Stage One of the EMU on July 1, 1990. At the same time the Council of Finance Ministers revised its 1964 decision entrusting the Committee of Governors with more specific tasks in

the field of monetary policy coordination. This led to some important changes in the organization of the Committee. First, the Chairmanship of the Committee, which had rotated every year among Governors on the basis of seniority in the Committee and in the respective central banks, would be assigned by the Governors with a formal decision for a term of three years. The Alternates of the Governors were also formally established as a Committee, with a chairman selected by the Governors and no longer coming from the central bank of the Chairman of the Governors.<sup>15</sup> The informal groups of experts were transformed into formal Subcommittees of the Committee of Governors, with written standing mandates approved by the Governors and with specific responsibilities in the coordination process.<sup>16</sup> In addition, the Governors established a formal Secretariat of the Committee with an expanded permanent staff seconded from central banks and headed by a Secretary General. Within the Secretariat, a small group of central bank economists constitutes the Economic Unit, entrusted with the task of preparing policy analysis for the Governors' meetings. As a sign of its new institutional status acquired with these reforms, the Committee published in April 1992 the first annual report on its activities.

A detailed assessment of the achievements of the Committee of Governors in the period 1964–1990 is not within the purposes of this paper. However, some general considerations may be in order. If measured against the standard of "voluntary coordination," the performance of the Committee would certainly deserve high marks. The Committee has indeed been an effective forum for consultation on a variety of issues affecting monetary policy formulation and execution; since the Basel-Nyborg Agreement, the Governors have been the body within which policy guidelines to deal with foreignexchange market tensions have been elaborated and implemented with flexibility and in a spirit of close cooperation.

If measured against the standard of "institutional supranationality," the activity of the Committee has certainly not contributed much to the realization of the prerequisites for monetary unification. A study conducted within the Banca d'Italia on central bank functions in the twelve Community countries has revealed extensive areas of discrepancy.<sup>17</sup> In fact, in each member country there appears to be a national "monetary platform," which is the set of instruments, proce-

dures, and modality for the performance of the main central bank functions in the fields of (1) monetary policy, (2) payments system, and (3) prudential supervision. The tables excerpted from the Banca d'Italia study show at a glance that there is still a long way to go to establish a "European monetary platform" within which the ESCB could operate (see Tables 1, 2, and 3). The study concludes that, in addition to the harmonization of instruments and operational procedures in each of the functions examined, additional work would have to be done to handle situations where recourse to one central bank's instruments has relevance for more than one function. or where functions are closely interconnected. For example, the extension of central bank credit to individual banks in the context of the operation of the payments system or to forestall an illiquidity crisis may have monetary policy implications, while a tight monetary stance may have implications for the settlement of interbank payments or for the liquidity and solvency of financial intermediaries. Such situations would require arrangements and procedures at the level of the ESCB to ensure that national central banks, which would continue to be the operating arms of the system, would act in a mutually compatible manner and consistently with the overall monetary policy objectives of the Union. Another example is the interconnection between monetary policy and the payments system: the impulses of a single monetary policy can be effectively transmitted throughout the Union only if there is a truly unified payment system; thus the harmonization process has to cover not only the performance of functions but also their interaction.

#### **B. PREPARING THE EMI**

The signing of the EMU Treaty at end of 1991 has given a new impulse to the activity of the Committee of Governors. The Treaty, in fact, prescribes that the Committee should cease to exist as of January 1, 1994, and devolve its functions, including those it performs as board of the EMCF, to the European Monetary Institute. Given the short time available, the Governors have moved quickly to lay down the preparatory work for the establishment of the new institution.<sup>18</sup>

Having drafted themselves the Protocol on the Statute of the EMI, the Governors had no problems in identifying the areas where preparatory work was needed in order to meet the Treaty deadline. For the completion of such work, it was decided to assign new mandates to the standing subcommittees and to set up a number of temporary working groups to address specific issues in the field of accounting, statistics, information systems, payments systems, and European banknote printing. Table 4 provides a full description of the objectives, tasks, and functions of the EMI as specified in the Treaty and the indication of the subcommittees or working groups to which the study of the subject has been assigned by the Committee of Governors. As can be seen, the network of subcommittees and working groups covers all the main aspects of the EMI's prospective activity.

The institutional implications of these decisions appear significant. As soon as the Committee of Governors has been involved in a process of institution-building, it has become an institution itself. Although the subcommittees and working groups are organized as intergovernmental bodies, their working documents and reports are prepared by the Secretariat, occasionally with the assistance of the Economic Unit, which enhances the "Community" element in the process. This will be further enhanced when, as envisaged, the activity of the subcommittees and working groups will be coordinated by a conference of the chairmen.

As regards the substance of the work, a few examples will illustrate how the objective of the EMU preparation has changed the nature of the activity of these bodies. A first example concerns the Foreign Exchange Policy Subcommittee, which will have the task of studying how the EMI would have to operate "to hold and manage foreign-exchange reserves as an agent." This is in fact an activity that has never been performed by any Community institution so far.<sup>19</sup> In the case of the EMI the issue involves a number of important technical aspects, since the management of foreign exchange reserves should not result in any implications for the conduct of monetary policies by member central banks in Stage Two. Moreover, as the EMI would eventually be taken over by the ESCB, it would be normal that its activities are planned having in mind that final objective. In other words, the EMI could be conceived as an embryo of the European Central Bank or at least as a test ground for its future operations, instruments, and procedures. A second example comes from the activities

of the Working Group on EC Payment Systems, which has been the first to be set up and has already produced a report to the Governors, to be made available to all commercial banks in the Community (Working Group on EC Payment Systems, 1992). In particular, the report addresses the question of creating a new payment system for Stage Three of the EMU as follows:

> Given the time and resources required to design and implement any new system (in order of 5 to 7 years), EC central banks need to start to prepare in the near future for Stage Three of EMU. This will become the responsibility of the EMI in 1994. However, in view of the long lead time required to implement major technical projects, there is a clear need now for EC central banks to continue the work on the requirements of an EC-wide payment system. Indeed, from the start of EMU, the ESCB will require an EC-wide system for making largevalue payments. It will be necessary to ensure an efficient operational link between the capital and the money markets of all the participants and in particular to enable from the outset that monetary policy operations in the single currency can be carried out promptly, securely, and efficiently. It will be necessary to see whether such an EC-wide system could be formed by linking existing domestic payment systems, by building on present cross-border mechanisms (such as the ECU clearing), or whether it would need to be especially constructed.

These examples prove that the Committee of Governors is in the midst of a transformation from a forum of consultation to an organ of central banking policy in the EC.

#### **IV. CONCLUSIONS**

The project of an EMU is being implemented in the context of major changes in the political configuration of Europe and against the background of economic recession and deep imbalances in the policy mix of member states. This is the case, most notably, of the "anchor country" of the EMS, Germany, where the financing of reunification with the Eastern Länder has been provided through an increase in the budget deficit, thus placing a burden on domestic monetary policy and causing strains in exchange-rate relationships within the EMS. Moreover, there is the risk that, for political considerations, the Maastricht Treaty may not be ratified and that the EMU project may have to be revised.

In analyzing the basic elements of the EMU, its strong institutional content is seen as a positive and unprecedented feature of international monetary cooperation. However, this strong institutional backbone is weakened by the excessive gradualism adopted, as a compromise solution, in the process of EMU creation; such gradualism also has no precedents in the history of international monetary cooperation. A further element of weakness in the EMU is its strong exposure to market forces particularly in the preliminary stages leading to full monetary union.

Despite these structural weaknesses, which the recent crisis of the EMS has sorely exposed, the institutional approach adopted in the process of EMU creation is already producing positive results that could not have been achieved by relying exclusively on voluntary coordination by member states. This assessment is based on the analysis of the evolving role of the Committee of Governors in the process of building a "European monetary platform," i.e., the set of institutions, instruments and procedures that are the prerequisite for the performance of a single monetary policy in Stage Three of EMU. The evidence available shows that monetary cooperation in the EC, following the signature of the EMU Treaty at Maastricht, has ceased to be based on polite "exchanges of views" and has entered the domain of technical and operational harmonization of central bank functions.

Under the present circumstances of severe strain in the EMS, the very viability and appropriateness of EMU is being questioned. There is a broad range of possible scenarios in-

volving at one extreme the indefinite shelving of EMU or at the other its early implementation possibly by a restricted group of countries, leaving the laggards in a second tier, the features of which are yet to be defined. An acceleration of the EMU process, within the guidelines set by the Maastricht Treaty, would contribute to correcting the excessive gradualism envisaged by the Treaty. This, however, would require a strong acceleration of the highly complex technical work just initiated within the Committee of Governors to establish a European monetary platform. Any attempt to set up a monetary union outside the Community framework would also not escape from this constraint, no matter how strong the economic convergence among the selected group of countries participating in the core of a two-tier EMU.

|  | æ                           | DK         | D           | GR         | щ          | щ          | IRL         | Ι          | Ĵ         | N       | Ч | UK |
|--|-----------------------------|------------|-------------|------------|------------|------------|-------------|------------|-----------|---------|---|----|
| 1. OPERATIONS  |                             |            |             |            |            |            |             |            |           |         |   |    |
| 1.1 With individual intermediaries                   | 0                           |            |             | 9          | 0          |            | 0           | 0          | 0         | Р.<br>Г | 0 | 0  |
| 1.2 In the domestic market                           |                             | 0          |             | 0          |            |            |             |            | 0         |         |   |    |
| 1.3 In the foreign-exchange market                   |                             |            |             |            |            |            |             |            |           |         |   |    |
| 1.3.1 Use of forward operations                      |                             | 0          | 0           |            | 0          | 5          | ]           |            | 0         | 0       |   |    |
| 1.3.2 Degree of sterilization                        | 0                           | 0          |             | 0          |            | Бł.        |             |            | 0         | 0       |   |    |
| 1.4 With the Treasury                                |                             |            |             |            |            |            |             |            |           |         |   |    |
| 1.4.1 Volume   | 8                           |            | 9           |            |            | 0          | ]           |            | 0         | 0       |   |    |
| 1.4.2 Interest rate                                  |                             |            |             | 0          |            |            |             | 0          | 0         |         |   |    |
| 2. REGULATIONS                                       |                             |            |             |            |            |            |             |            |           |         |   |    |
| 2.1 Compulsory reserves                              |                             |            |             |            |            |            |             |            |           |         |   |    |
| 2.1.1 Volume   |                             |            | ]           |            | 0          | 0          |             |            | 0         |         |   | 0  |
| 2.1.2 Interest rate                                  |                             |            |             | ļ          |            |            |             |            | 0         |         |   |    |
| 2.2 Quantitative controls                            |                             |            |             |            |            |            |             |            | 0         |         |   |    |
| (1) The creation of money by the Luxembourg Monetary | y Institute is <sub>1</sub> | governed b | y the agree | ement sign | ied with t | le Nationa | l Bank of l | Belgium in | 1977.     |         |   |    |
| Legend: High or extensive                            | Interm                      | lediate 🕻  | Го<br>1     | w or limi  | ted        |            | r non-exi   | stent C    | ) Not av. | ailable |   |    |

Source: Padoa-Schioppa and Saccomanni, 1992.

Table 1. Monetary Policy: Instruments and Their Intensity of Utilization



Table 2. Payment System: Activities and Competent Bodies

| e o. Daliming Super Visioni, Sub-Pulli                           |   |                        | herem     | MULU                    | CONTR                | :                |     | i  |                                |          |                  |            |          |
|--|---|------------------------|-----------|-------------------------|----------------------|------------------|-----|--|--------------------------------|----------|------------------|------------|----------|
|  | B   | DK                     | ۵         | GR                      | Е                    | щ                | IRL | I  | Г                              | ľ        | Ч                | UK         |          |
| 1. REGULATION  | 52  |                        | 53        |                         |                      | ь.               |     |  |                                |          | 1947 - 1974<br>1 |            |          |
| 2. AUTHORIZATION   |   |                        |           |                         |                      |                  |     |  |                                |          | Same No.         |            |          |
| 3. STATISTICS  | ß   |                        | 52<br>    |                         |                      | £                |     |  |                                |          |                  |            |          |
| 3.1 Central credit register                                      |   | 0                      |           | 0                       |                      |                  | 0   |  | 0                              | 0        |                  | 0          |          |
| 4. PRUDENTIAL SUPERVISION  |   |                        |           |                         |                      |                  |     |  |                                |          |                  |            |          |
| 4.1 Liquidity ratios   |   |                        | <u>st</u> |                         |                      |                  |     |  |                                |          |                  |            |          |
| 4.2 Solvency ratios  | Ř   |                        |           |                         |                      | 33               |     |  |                                |          |                  |            | _        |
| 4.3 Risk concentration   |   |                        | ¥         |                         |                      | 35               |     |  |                                |          | 184 A            |            |          |
| 5. ON-SITE CONTROLS  |   |                        |           |                         |                      | Ŗ                |     |  |                                |          | 1911 - 1         |            |          |
| 6. SANCTIONS/REVOCATION  |   |                        |           |                         |                      | Ŗ                |     |  |                                |          | e s              |            |          |
| OF AUTHORIZATION<br>7. DEPOSIT PROTECTION                        | Ø   | 0                      | 0         | 0                       |                      | 0                |     | 2  |                                | ·        | 0                |            |          |
| <u>Memorandum item</u>   |   |                        |           |                         |                      |                  |     |  |                                |          |                  |            |          |
| NON-BANK SUPERVISION   | à   |                        | 5         | 3                       |                      | 8                |     | 33   |                                |          |                  |            |          |
| Legend: Central bank <b>EEE</b> P<br>(LMI in ft<br>Luxembourg) w | ublic agency<br>rom the cent<br>vith general<br>upervisory<br>esponsibiliti | / separat<br>ral bank, |           | Other<br>bodie<br>tasks | autonon<br>s with sp | nous [<br>ecific |     | ther pers<br>/ the sup<br>athority<br>.g.: audit | ions appo<br>ervisory<br>:ors) | ointed ( |                  | n-existent | <b>⊺</b> |

Table 3. Banking Supervision: Sub-Functions and Competent Authorities

- Address an annual report to the Council on the state of preparation of Stage three Other Tasks (Art. 7) **Operational and Technical Functions**  Issue ECU against monetary reserves in the context of EMS agreement (FXP) Hold and manage foreign exchange reserves as an agent on behalf of NCB (FXP) Management of the EMCF (FXP) - Grant status of "other holder" of ECU (FXP) Table 4. Building The European Monetary Institute: Assignment of Preparatory Work (\*) (Art. 6) orientation of monetary and exchange-rate policies in EMS Make recommendations to member countries on conduct of monetary policy Formulate opinions on overall **Advisory Functions** (Årt. 5) Oversee functioning of ECU clearing system (FXP, EPS) Prepare instruments and procedures for single monetary policy (MP) - Specify regulatory, organizational and logistical framework for ESCB to perform its tasks in Stage three (INF, ACC, STAT) Prepare rules of operation for NCB in the framework of the ESCB (MP) Promote harmonization of statistics (STAT) -Supervise technical preparation of ECU bank-note (EBN) - Promote efficiency of cross-border - Monitor functioning of EMS (FXP) Hold consultation with NCB on monetary policy actions within common framework of ex ante coordination (MP) - Hold consultation with NCB on stability of financial institutions and markets (BS) - Facilitate the use of ECU (FXP) Primary Tasks (Art. 4) payments (EPS) Single Monetary Policy
 Single Currency Objectives (Art. 2) Overseeing of ECU Development Coordination of Monetary Policy Preparation of: ESCB •

indication of the Subcommittee or the Working Group to which the study of the subject has been assigned by the Committee of Governors. = European Currency Unit

 Working Group on Information Systems
 Working Group on Accounting
 Working Group on EC Payment System (\*) This table indicates the objectives, tasks and functions of the EMI as specified in EMU Treaty. For each item, when applicable, there is also the EPS CC BS = Banking Supervisory Subcommittee EBN = Working Group on European Bank-Note STAT = Working Group on Statistics Foreign Exchange Policy Subcommittee Monetary Policy Subcommittee MP PCU EMS = European Monetary System EMCF = European Monetary Cooperation Fund ESCB = European System of Central Banks = National Central Banks 2CB

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#### ENDNOTES

1. Head of the Foreign Department, Banca d'Italia. The views expressed in this article are those of the author and do not necessarily reflect the position of Banca d' Italia. A preliminary version of the paper was presented at the Conference held at San Diego on October 2-3, 1992, on "Adjustment of Policies, Organizations, and Firms to Global Competition: Seeking New Forms of International Cooperation," organized by the University of California, the Instituto Affari Internazionali and the National Institute for Research Advancement.

2. In Community parlance, "deepening" refers to steps aimed at strengthening the supranational character of Community procedures, decisions, institutions, etc. "Widening" refers to the enlargement of membership of the EC. It is maintained that a widening would necessitate a deepening in order to maintain the effectiveness of the EC decision-making process (Delors, 1990).

3. The Articles of the Treaty concerning the EMU are reproduced in Committee of Governors, 1992.

4. As it turned out, cooperation between these countries and the EC has not stopped because of the EMU, as witnessed by the creation of the European Bank for Reconstruction and Development (EBRD) and by the conclusion of several bilateral agreements. Similarly, the EC has been able to strengthen its links with the European Free Trade Association (EFTA) countries (among which are many of the applicants for admission) through the agreement on the European Economic Area. It is widely believed that such agreement will enter into force, notwithstanding the rejection of the relevant treaty by the Swiss people in a referendum held on December 6, 1992.

5. An example of such technique is the so-called Schengen Agreement covering the removal of any border controls among the signatories.

6. See Ungerer et al., 1990, and Kenen, 1992.

7. In fact, in 1973 as a follow-up to the Werner Report, the EC established the European Monetary Cooperation Fund (EMCF), an institution deprived of any central bank functions.

8. This interpretation deliberately minimizes the role played by the Bank of England in managing the gold standard.

9. The Articles of Agreement of the IMF and the World Bank, or the Treaty of Rome all gave birth to "grown-up" institutions, endowed from the very beginning with all the necessary organs and instruments to carry out their statutory functions.

10. This had in fact been agreed at the European Council meeting in Rome in October 1990, with the understanding that in Stage Two the ESCB would not perform any monetary policy function in order to comply with the principle of indivisibility of monetary policy; it would concentrate on the preparatory steps necessary to ensure that the ESCB could be fully operational as of day one of Stage Three. Eventually this compromise solution was watered down by the IGC that drafted the EMU Treaty.

11. The situation is quite different for financial institutions like the IMF and the World Bank, which interact with the market to a very limited extent and mostly in connection with their lending operations to specific countries. Their influence may be more systemic in connection with initiatives such as those undertaken to contain the Third World debt crisis in the mid-Eighties or with borrowing activity in international capital markets.

12. Padoa-Schioppa and Saccomanni, 1992, p. 5.

13. See Committee of Governors, 1992, where the historical evolution of the organ is described in detail.

14. The Governors also briefly meet as the Board of the EMCF which, however, is a mere accounting device for a network of Central Bank reciprocal credit lines. 15. See Committee of Governors, 1992, p. 69.
16. The Chairman of the Committee selected under the new procedure was K. O. Poehl of the Bundesbank. Chairman of the Alternates was J. J. Rey of the National Bank of Belgium.

17. The new bodies are the Foreign Exchange Policy, Monetary Policy, and Banking Supervisory Subcommittees.

18. See Padoa-Schioppa and Saccomanni, 1992.

19. Although not quite a central bank, the EMI is an institution in the traditional sense of the word. The Protocol on the Statute of the EMI, attached to the Maastricht Treaty, indicates that the EMI is run by a council composed of a president, appointed by the European Council, and of the governors of national central banks. The president works full-time for the EMI, is responsible for its day-to-day operations, and heads the staff of the Institute. The EMI has a legal personality, its own seat, and financial resources (See Committee of Governors, 1992).

20. A similar activity is being performed on behalf of central banks by the BIS.

## 9

#### INDEBTEDNESS AND HEGEMONY; INTERNATIONAL FINANCIAL RELATIONS AFTER THE DEBT CRISIS

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#### I. INTRODUCTION

In the past decades, financial flows seem to have replaced power politics typical of the Cold War era, in their influence on international relations. The disorganization of the East European socialist block undermines the significance of the nuclear umbrella, while these countries are in need of capital inflows from western countries. However, these international capital flows have generated another problem.

The issue at stake during the last two decades, concerning not only financial but also economic problems in general, is "market versus regulations." This is related to a "puzzling question" of the international political economy:

> "Why do states fail to act to regulate and stabilize an international financial system which is known to be vitally necessary to the 'real economy' but which all the experts in and out of government now agree is in dangerous need of regulation for its own safety?" (Strange, 1988, p. 11).

While those who believe in the market mechanism do not see any need for regulations, there is still a spectrum of opin-

<sup>\*</sup>I thank Pier Carlo Padoan, Michel Aglietta and participants of the seminar at the University of Tokyo for helpful comments on the preliminary draft.

ions between the genuine market admirers and interventionists. While the market is not omnipotent, it is necessary but very difficult, particularly in the international context, to find a solution for the trade-off between efficiency and stability or safety.

Únder the financial system dominated by the ideas of Bretton Woods, this trade-off was not widely recognized: first, because the fixed exchange-rate system was associated with capital controls in most countries; second, the necessary capital was provided by the United States, contributing to its economic decline.<sup>1</sup> The years since the 1980s witnessed both the still-worsening international positions of the United States and the expansion of the global capital flows, which prefer their own profitability to systemic stability.

This paper considers problems of the international financial system in the following two sections. To reconsider what factor generated the instability in the world economy is a key to answer the above "puzzling question" raised by Suzan Strange. We will stress the significant influence of U.S. policy on this sphere as well. Section II reviews the basic trend of the international capital flows from the late 1970s to the present, with a focus on the resulting financial instability and on the reason the international financial crisis has not taken place so far. We take note of the differences between the 1930s and the 1980s. Is it because international cooperation has achieved major contributions or because individual countries have succeeded in putting their own houses in order? Section III investigates first, to what extent the stage theory of indebtedness explains the rise and decline of a leading national economy; second, the possibilities and difficulties of the international cooperation to cope with global economic problems; and third, the policy implications for capital movements and the exchange-rate system. Finally, in Section IV the main conclusions and some prospects in the future are summarized.

#### **II. GLOBAL IMBALANCE AND CAPITAL FLOWS**

In the 1980s, the debt problems came to the surface, initiated by Mexico. A few years later, the reserve currency country, the United States, began to suffer from current account deficits. The world in the 1990s is facing, sooner or later, the potential instability of these debt problems. The prospects for the Eastern European countries are, generally speaking, more gloomy than the indebted LDCs, because there exist almost no infrastructures for the market economy.

The probable scale of imbalance in the next decade, potential as well as actual, is not easy to estimate, despite several attempts to do so. Naturally, those who praise market-based solutions tend to underestimate, and the interventionists tend to overestimate, the future imbalances. The experiences of the 1970s and 1980s,<sup>2</sup> however, tell that the market mechanism alone cannot provide a stable allocation of funds to potential borrowers. The keyword to understand this situation is debt cycles induced by the macroeconomic policy of the United States.

#### A. DEBT CYCLES INDUCED BY U.S. POLICY

The large-scale current account imbalance in the mid-1970s disappeared in a short period with the help of "oil money" recycling. The other side of this success was the risky debts left in the middle-income LDCs. Financing by multinational banks was stimulated (a) by a real shock, because oilexporting countries employed their current account surplus in the international financial market, and (b) by financial innovations — syndicated loans with floating interest rates in the Eurocurrency market, which was itself another "innovation" in the 1960s.

Since the Eurobanks badly needed profitable outlets for the "oil money," the financial innovations were a sort of byproduct of the oil shock. In this sense, the real shock facilitated private development finance, after a long stagnation of the international capital market. The revival of a boom in the 1970s took nearly fifty years after the 1920s; in the meantime, the major financial flow to the LDCs took the form of official development aid, direct investments, and other short-term trade finance.

The second oil shock of 1979 started the economic downturn of the major developed countries, which naturally cut the export income of the LDCs. Both of the two oil shocks followed the dollar depreciations from 1970 to 1973 and again from 1976 to 1978, caused by the expansionary policies of the United States. OPEC raised oil prices, in compensation for the relative decline in oil revenues denominated in dollars. The oil shocks, at least partly, resulted from U.S. policy.<sup>3</sup> The antiinflationary monetary control of the Federal Reserve Board (FRB), coupled with federal fiscal deficits, brought about a historically high level of real interest rates in the early 1980s. The floating rate of the syndicate loans shifted interest rate risk onto the borrowers. Besides, the high exchange rate of the dollar increased the debt service payments in terms of the borrowers' currency. Thus came the debt crisis. Undoubtedly, U.S. macroeconomic policy was a factor that exacerbated the debt crisis, to say the least.

After 1982, when the Mexican debt crisis broke out, the Latin American debtor countries undertook radical measures to adjust the balance of payments. The FRB cut the Bank Rate down in view of the domestic recession as well as the Mexican debt crisis. Another factor that restrained a chain effect of defaults was the debt rescheduling, with the IMF acting as an intermediary.<sup>4</sup> Indeed, the conditions imposed by the IMF are to blame in having generated critical economic conditions among the indebted LDCs, but the rescheduling with the "new money" supplied by the international banking group postponed the outbreak of a crisis. Nevertheless, the main reason to restrain the crisis was the economic recovery of the developed countries, initiated by U.S. fiscal expansion, which stimulated LDCs' exports in 1983 and 1984 and, after a twovear stagnation, helped them recover again from 1987 onward (see Table 1).5

The next result of the U.S. fiscal expansion was the "twin deficits." The macroeconomic policy of monetary tightness and fiscal easing was supported by capital inflow, which the historically high level of real interest rates in the early 1980s pulled inward (see Table 1 and Figure 1). The sustainability of the high dollar-exchange rate was a critical issue among economists until the mid-1980s. After the Plaza Agreement in September 1985, the critical situation of the "hardlanding" scenario seemed to be relaxed somewhat. But "Black Monday" in October 1987 threatened the international financial community again. Whereas the continued recovery of the developed countries contributed to avoiding the crisis, the currency risk of the U.S. dollar is not yet overcome.

| M           | Macroeconomic Data of the Developed and Developing<br>Countries (%) |        |      |           |         |          |                 |      |
|-------------|---|--------|------|-----------|---------|----------|-----------------|------|
| Year        | GDP   | Growth | GDPI | Deflators | Terms   | of Trade | Export Growth   |      |
|             |   |        |      |           | Non-oil |          | Non-oil         |      |
|             | DCs   | LDCs   | DCs  | LDCs      | DCs     | LDCs     | DCs             | LDCs |
| 1977        | 3.6   | 5.4    | 7.8  | 21.2      | -1.2    | 6.4      | 5.3             | 4.1  |
| 1978        | 4.2   | 4.1    | 7.6  | 19.3      | 2.9     | -3.9     | 6.1             | 10   |
| 1979        | 3.3   | 5      | 8    | 30.3      | -3.4    | -0.8     | 7.5             | 8    |
| 1980        | 1.1   | 4.5    | 9.1  | 33        | -6.8    | -5.3     | 3.7             | 9    |
| 1981        | 1.4   | 2      | 8.9  | 28        | -1.2    | -7       | 3.4             | 7.8  |
| 1982        | -0.2  | 1      | 7.4  | 28.2      | 1.5     | -1.7     | -2.1            | 1.7  |
| 1983        | 2.6   | 1.8    | 5.3  | 38.6      | 2       | -0.8     | 2. <del>9</del> | 6.7  |
| 1984        | 4.7   | 4.5    | 4.5  | 37.4      | -0.4    | 3.5      | 10              | 11.6 |
| 1985        | 3.5   | 4.3    | 3.5  | 36.4      | 0.6     | -2.4     | 4.4             | 3.2  |
| 1986        | 2.8   | 3.3    | 3.4  | 25.5      | 10.1    | 2.3      | 3               | 7.2  |
| 1987        | 3.3   | 4      | 2.9  | 33        | -14.4   | 0.5      | 5.2             | 15.2 |
| 1988        | 4.4   | 3.6    | 3.2  | 57.6      | 19.5    | 5.3      | 8. <del>9</del> | 10.7 |
| 1989        | 3.2   | 3.2    | 3.9  | 109.2     | -0.8    | -1.5     | 6.6             | 6.5  |
| <b>1990</b> | 2.3   |        | 3.8  |           | -0.3    |          | 5.4             | 3.5  |
|             |   |        |      |           |         |          |                 |      |

| Year         | Import Growth |         | Money Market |
|--------------|---------------|---------|--------------|
|              |               | Non-oil | Rates        |
|              | DCs           | LDCs    | USA          |
| 1977         | 4.4           | 7.7     | 5.54         |
| 1978         | 5.1           | 8.6     | 7.93         |
| 1979         | 8.6           | 10.7    | 11.2         |
| 1980         | -1.5          | 6.8     | 13.36        |
| 1981         | -1.9          | 3.1     | 16.38        |
| 1982         | -0.5          | -8.3    | 12.26        |
| 1983         | 4.5           | 1.5     | 9.09         |
| 1984         | 12.3          | 6.9     | 10.23        |
| 1985         | 4.5           | 3.3     | 8.1          |
| 1986         | 8.9           | 4.1     | 6.81         |
| 1987         | 7.2           | 10.3    | 6.66         |
| 1988         | 8.9           | 12.4    | 7.61         |
| 1 <b>989</b> | 7.5           | 8.7     | 9.22         |
| 1990         | 5.1           | 3.1     | 8.1          |

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Source: IMF, International Financial Statistics, World Economic Outlook Note: DCs=Developed Countries; LDCs=Less Developed Countries



The situation for the LDCs since the late 1980s resembles the early 1970s, naturally apart from the larger scale of accumulated debts.<sup>6</sup> The disillusionment after the debt crisis suggests that borrowers cannot solely rely on private financial markets, but need official development aid as well as foreign direct investment.

The above overview suggests that U.S. macroeconomic policy has been a decisive factor in the international financial situation since the early 1970s, in addition to the cyclical character of the debt crisis after a 50-year interval since the 1930s. This fact does not imply so much the dominance of U.S. hegemony as in the postwar years, but rather that the size of the American national economy still generates a great impact on the rest of the world.

#### B. DIFFERENCES BETWEEN THE 1930s AND THE 1980s<sup>7</sup>

In the 1930s, the world economy disintegrated through competitive devaluations and import restricting tariff barriers, in short, "beggar-thy-neighbor policy." Capital flew back to the creditor nations rather than helping indebted countries to deal with balance-of-payments difficulties. A genuine deflationary spiral continued from late 1929 to early 1933, in which real GNP and foreign trade recorded minus growth in both developed and developing countries.

In the 1980s, on the other hand, the absorptions kept on growing in the developed countries, despite a small decline in 1982, whereas the LDCs in the Western Hemisphere experienced real minus growth from 1981 to 1983. In the 1930s, the real import of the developed countries fell by 23.5% from 1929 to 1932, and its level in 1938 remained 13% below the 1929 peak (Maddison, 1985, pp. 13-14). From 1980 to 1982 their real import declined slightly, but recovered remarkably thereafter (OECD, *Historical Statistics 1960-1989*, p. 60).

The inflationary pressure in the 1970s was at last put under control, whereas the price deflation is not recorded in any country, except for a short period. We have not seen difficulties of sovereign debts comparable to the 1930s; debt rescheduling procedures have taken the place of former defaults. The tendency toward protectionism did appear, but the competitive devaluations as well as exchange controls on major currencies were avoided; in other words, exchange rates have been more or less stabilized with sustained convertibility.

What factor was most important in achieving relative stability in the 1980s compared with the 1930s? Is it because the ad hoc cooperation among the three economic powers — the United States, Japan, and Europe (Germany) — took effect? Note that the situation in the 1980s was worse than the 1930s, in the sense that the key-currency country had deficits in her current account of the balance of payments and hence was heavily dependent on capital inflows from abroad.

Factors other than international cooperation may have played a greater role, one possibility of which is the degree of initial imbalance. In the 1920s, Germany, the center of ecodevelopment continent on the before nomic World War I, had the huge burden of war reparation and was largely indebted to the United States, while the agricultural countries in the periphery relied on long-term capital from the United States and Britain. In the 1970s, on the other hand, no developed countries had so much indebtedness. Even in the late 1980s, the relative size of U.S. public indebtedness was far smaller than German reparations.<sup>8</sup>

The terms of trade for the primary products countries turned worse earlier than the stock market crash of 1929. The increasing inventory stocks and declining prices, in short, symptoms of the agricultural depression, had already appeared in the mid-1920s.<sup>9</sup> In the 1970s, on the other hand, terms of trade for the non-oil LDCs peaked in early 1977 and declined thereafter,<sup>10</sup> preceding the Mexican debt crisis. The primary products countries experienced export booms in 1919 – 1920, as well as in the early 1970s. Taking these facts into account, the LDCs were not necessarily in a better economic situation in the 1970s than the 1920s as a whole.

Naturally, we can also point out other lessons from the Great Depression, namely such safety nets as the deposit insurance system in the United States (FDIC) and the strengthened Lender of the Last Resort (LLR) function of individual central banks (Eichengreen and Portes, 1987, pp. 33, 49).

But we would like to stress that the clearest difference from the 1930s is the growing absorption on the part of the developed countries. A major component of the absorption has been naturally private consumption. Whether this is an independent variable is not yet settled among the various schools of macroeconomists. The most remarkable difference from the former period lies in the greater public share (consumption plus capital formation) in the gross national expenditure (see Table 2). Generally speaking, the governments succeeded in dealing with the management of the aggregate demand, despite the severe critiques on the Keynesian discretionary policy, particularly in the 1980s.

The Reagan administration led the expansionary fiscal policy, which can be characterized as a sort of "Military Keynesianism" (Block, 1977, p. 107), despite their rejection of the Keynesian doctrine. And the rest of the world, the lessdeveloped as well as the developed countries, benefited from the growth of American import demand. Developed countries other than the United States, notably Germany, Great Britain, and Japan, maintained a restrictive stance of fiscal policy. In short, the Reagan military expenditures rescued the world economy from the outbreak of an international financial crisis, the side effect of which was the huge deficits in the U.S. current account of the balance of payments. The next question to be discussed below is how far domestic demand management was influenced by international cooperation.

#### C. HOW DID INTERNATIONAL COOPERATION WORK?

We turn to several questions. How did cooperation against the financial crisis actually work in the 1980s? What factor was most important in leading major countries to cooperation? What role did the United States in fact play in the debt crisis?

The United States alone could not afford to rescue the indebted countries. Was this country still capable of being a "leader" or a "hegemon" in getting other creditor countries to cooperate? Or did it simply stick to its own interest? As a matter of fact, the United States was obliged to take an initiative for cooperation, due to the large number of loans American banks provided. The probable scale of the total financial loss would have been decisive in forcing other creditor countries to cooperate. As described above, the initial restraint of the debt crisis came from the indirect effects of the Reagan macroeconomic policy. How far did the Agreements among

| Private Final Consumption and Government Share in Total Expenditures<br>(relative to GDP %) |       |             |         |         |  |  |
|---|-------|-------------|---------|---------|--|--|
| Period  | 1930s | 1960-67     | 1974-79 | 1980-89 |  |  |
| United States   |       |             |         |         |  |  |
| Private final consumption   | 77.3  | 62.8        | 63.2    | 65.8    |  |  |
| General government expenditures*  | 13.7  | 21.4        | n.a.    | n.a.    |  |  |
| Government outlays**  | n.a.  | 28.3        | 32.6    | 36.0    |  |  |
| Japan   |       |             |         |         |  |  |
| Private final consumption   | 61.6  | 57.9        | 57.2    | 58.3    |  |  |
| General government expenditures*  | 18.5  | 16.0        | 9.8     | n.a.    |  |  |
| Government outlays**  | n.a.  | 18.7        | 28.4    | 33.3*** |  |  |
| Germany   |       |             |         |         |  |  |
| Private final consumption   | 68.2  | 56.5        | 56.3    | 56.3    |  |  |
| General government expenditures*  | 31.0  | 35.8        | 45.9    | n.a.    |  |  |
| Government outlays**  | n.a.  | 35.7        | 47.5    | 47.6    |  |  |
| France  |       |             |         |         |  |  |
| Private final consumption   | n.a.  | 59.6        | 56.3    | 60.5    |  |  |
| General government expenditures*  | 32.0  | <b>38.9</b> | 38.7    | n.a.    |  |  |
| Government outlays**  | n.a.  | 37.4        | 43.3    | 50.3    |  |  |
| Britain   |       |             |         |         |  |  |
| Private final consumption   | 80.2  | 65.0        | 61.2    | 61.8    |  |  |
| General government expenditures*  | 26.2  | 38.0        | 48.8    | n.a.    |  |  |
| Government outlays**  | n.a.  | 34.7        | 44.4    | 44.9    |  |  |
| Italy   |       |             |         |         |  |  |
| Private final consumption   | 76.5  | 59.6        | 60.4    | 61.4    |  |  |
| General government expenditures*  | 28.8  | 22.6        | 32.3    | n.a.    |  |  |
| Government outlays**  | n.a.  | 31.9        | 42.9    | 48.7    |  |  |

Table 2.

Source: OECD, Historical Statistics 1960-1989. Peter Flora, State, Economy and Society in Western Europe 1815-1975, Campus Verlag Frankfurt, 1987.

U.S. Department of Commerce, Historical Statistics of the United States.

Ohkawa, Kazushi, et. al., Longierm Economic Statistics: National Income, Toyo Keizai, 1974. National Statistics.

\* For the 1930s and 1970s, average of available statistics. For Italy, central government only.

\*\* Final consumption expenditures, interest on public debts, subsidies, social security transfers, gross capital formations, purchase of land and intangible assets.

\*\*\* 1980-1987.

the G-7 (G-5) contribute to the subsequent solution of the debt crisis? Did the major developed countries cooperate in maintaining absorption growth?

The benign neglect policy of the Reagan administration shifted to a more cooperative stance after the Plaza Agreement in September 1985. But since the "Locomotive Approach" at the Bonn Summit generated the side effects of fiscal deficits, efforts in the same direction remained inactive thereafter. The Plaza Agreement determined, in fact, solely the joint intervention in the foreign exchange markets, the burden-sharing of which turned out to be a matter of later confrontations. As for the fiscal and monetary policy coordinations, there remained a deep perception gap between the United States and other member countries.<sup>11</sup>

The unstable state of exchange rates, particularly anxiety about the dollar's "hardlanding," brought about another international policy coordination, namely the Louvre Agreement in February 1987, in which the United States agreed to reduce fiscal deficits and Japan and Germany agreed to pursue expansionary policies, as well as a confidential "agreement" on the reference range of exchange rates. "Black Monday" in October of the same year revealed the urgent need of further international coordination. Although "the full extent and nature of official intervention during the market break is unclear," the authorities in the United States provided liquidity through open market operation, and rules of fund-raising were relaxed in both the United States and Japan.<sup>12</sup> These measures were at least partly due to international considerations.

On the other hand, we have to note as well that the disagreement on monetary policy, particularly between the United States and Germany, was one of the factors that initiated the stock market "crash." Even thereafter, critiques on the Louvre Agreement gained momentum in the United States on the grounds that the advised tighter macroeconomic policy would deepen the American domestic recession.

Charles Kindleberger (1973, 1986) summarized the responsibilities for a "leader" to stabilize the world economy, as "(a) maintaining a relatively open market for distressed goods, (b) providing countercyclical long-term lending, (c) discounting in the crisis."<sup>13</sup> The last point can be expressed as crisis management of the LLR. Along with these we could add the following as prerequisites for financial stability: (d) macroeconomic policy coordination and surveillance, in particular over the United States, and (e) stable foreign exchange rates. In the 1980s, these "responsibilities" were not provided by a single "hegemon" but by joint efforts of the leading nations to strengthen economic stability on a global scale, contrary to the formulation by Kindleberger.<sup>14</sup>

The responsibility for "a" implies not only adopting freetrade policy but also keeping the high level of demand for the depressed exporters. As we saw above, the latter has been most important since the mid-1980s. On the other hand, the global regime of free trade has been challenged by regional trade agreements and VER (voluntary export restraint). The export growth of LDCs depends also on the prospects of the Uruguay Rounds. For "b," the question is who acted as a supplier (or suppliers) of long-term capital in the debt crisis of the LDCs, and in the case of the U.S. deficits. In the former case, no single country provided capital on its own account, but commercial banks provided new money (not necessarily long-term) under the guidance of the IMF. In the latter case, the U.S. deficits of 1984-1989 were financed mainly by Japan (52%) and Germany (28%).<sup>15</sup> The capital supply by these countries contributed indirectly, by way of maintaining U.S. domestic demand, to restraining the onset of global financial crisis. For "c," there exist already such institutions as the IMF and the "Paris Club," and for "d" and "e," the Plaza and Louvre Agreements are naturally symbolic examples.

Should these ad hoc measures be augmented with unobscured rules? One would argue that the basic difficulty for "c" lies in the moral hazard problem.<sup>16</sup> Possibly because of this recognition, the Concordat of the Basel Committee did not clearly state the responsibilities of the LLR, but only those of monitoring financial institutions. Another problem is what constitutes a basis for international cooperative actions, which we are to discuss in the next section.

### III. FINANCIAL COOPERATION AFTER HEGEMONY

In spite of the decline of the U.S. hegemony, global macroeconomic performance has been much better so far than in the 1930s. Since international cooperation has been undertaken several times, at least to a limited extent, the issues at stake are not whether a single stabilizer is a necessary precondition of cooperation, but why international cooperation was feasible and how it will be strengthened without a dominant leader (or leaders).<sup>17</sup> We would first turn to the question of whether or not the decline of the U.S. economic power was an inevitable process of an indebtedness cycle. This question is related to the prospects for countries other than the United States to rise to a hegemonic position in the near future.

#### A. THE CYCLE OF AN ECONOMIC POWER

The stage theory of the balance of payments is related to the rise and decline of an economic power. The economic power (hegemon) is doomed to decline if the surplus in the current account necessarily turns to be negative, as the stage theory predicts.

As a matter of historical facts, however, a cycle of the balance of payments does not appear so clearly. First, a prerequisite of the theory - unregulated international capital movements — did not exist for a long time in both the interwar and postwar years. In the former period, Britain regulated foreign bond issues in favor of the British Empire from the 1920s onward. In the latter period, since the Bretton Woods Agreement of 1944 excluded capital transactions from the obligation of currency convertibility, only a limited number of countries liberalized capital movements before the early 1980s. Second, the large-scale change in international financial positions resulted from the war rather than a regular cyclical pattern. The best examples are the decline of Britain on the one hand and the rise of the United States on the other during the first and second World Wars, as fluctuations of the current accounts in Figure 2 illustrate.<sup>18</sup> Japan's surplus in the current account was the largest during the First World War, and the next largest surplus was recorded during the Korean War.



**Figure 2.** Current Accounts of Britain and Japan, the Balance on Goods and Services of the United States (Ratio to GNP: %)

SOURCE:

Both the U.S. deficits and Japanese surplus in the 1980s are rather exceptional in this sense. The U.S. deficits of 2-3% relative to GNP are much smaller (the largest figure was 3.6% in 1987) than the British deficits of 6-10% during World War II. It suggests that the U.S. imbalance since the 1980s could be corrected with a relatively minor change in economic policy, not necessarily confined to the fiscal one; an industrial restructuring policy would be important as well. The feasibility of an American industrial policy is naturally influenced by the resistance of domestic vested interests.

Is the decline of the United States associated with the rise of Japan toward the end of the 20th century? While the relative size of the U.S. economy would not decline dramatically in the next decade, its international financial position depends on the possibility for the U.S. government to cut the fiscal deficits and strengthen industrial competitiveness. The largest national economy associated with net international liabilities did not exist until the mid-1980s. How can such a country sustain its leading position in the world economy?

Admittedly, international financial position is not the sole determinant of dominant status. Economic size itself provides bargaining power, as the theory of monopolistic transaction suggests. Economies of scale play an important role in international financial transactions, in particular for a vehicle currency in the foreign exchange market.<sup>19</sup> No country other than the United States can afford to provide the international financial framework the world economy needs. But in the long run, even an economically large nation, when associated with a worsening international financial position, cannot afford to sustain a "hegemonic" position in the world economy.

Shortly after World War II, the pound sterling constituted the major part of the world's reserves in foreign exchange. London provided the predominant part of the world trade finance in the 1950s.<sup>20</sup> But the vast amount of foreign borrowing during World War II and the deteriorating balance of payments in the postwar decades finally deprived the pound sterling of its prominent role in international finance. The bargaining power of the nation followed the course of its currency, in particular since the European Monetary System (EMS) gained its strength. The prospect for the dollar in the future would differ, according to whether one stresses the long process of this change or its unavoidable trend. If the leading position of the United States would last longer than in the British case, the reason would be its far larger economic size in the world and its peculiar power structure of international relations.

#### **B. INCENTIVES FOR COOPERATION**

Despite the international efforts for cooperation since the Plaza meeting, not a few number of economists and political scientists skeptically argue that the Plaza Agreement concealed the policy failure of the U.S. government and postponed a necessary implementation of fiscal discipline.<sup>21</sup> Moreover, leading economists estimate that the net gains of macroeconomic policy coordination are rather small, and that under the disagreement of the true model the result would be harmful to economic stability.<sup>22</sup> Gilpin (1987, p. 160) discussed problems of international policy coordination from the "theoretical foundation," "economic desirability," and "political feasibility." The third problem, which is related to autonomy in national economic policy, is naturally the most serious.

International policy coordination itself is not a concept based on U.S. national interests. Given the integration and globalization of capital markets, independent economic policy turned out to be impossible. Spillover effects created by externalities suggest that cooperation would be better than anarchy.

As U.S. power waned, the asymmetry in policy influence shifted in a more symmetrical direction. Does this help or hinder international cooperation?

Symmetrical power structure does not lead to cooperation unless the countries concerned have common incentives or interests. The disappearance of a superpower implies that any single country has neither the powerful "stick" nor the good "carrot" to induce others to concessions. Several factors are worth considering in asking whether international cooperation is feasible under the absence of a single hegemon.

First, Triffin (1991, pp. 409-412) argued that strategic considerations, in other words the dependence on the U.S. nuclear umbrella, induced Germany and Japan to support the U.S.based international financial system. Accordingly, the disorganization of the Soviet Union might reduce incentives for Japan and Germany to finance U.S. deficits. The personal relationship between President Reagan and Prime Minister Nakasone in the 1980s, stressed by Gilpin (1988, p. 332), is to be reviewed against this background. However, the share of the official financial transactions in international markets is quite limited. The crucial point is, therefore, in which way the government could transmit political considerations into the behavior of private financial institutions.

Table 3 shows the foreign portfolio investments by Japanese financial institutions, most of which consist of American government bonds. While banking accounts continued to be the largest investor until 1987, life insurance companies took the first position thereafter. Most remarkable is the latter's investment behavior, as they continued to increase foreign portfolio investments until 1987, almost two years later than the beginning of the dollar depreciation. The Japanese Ministry of Finance reportedly recommended the purchase of U.S. bonds, due to the considerations of further dollar depreciation and/or of the need to support the U.S.–Japanese alliance. The life insurance companies, on their part, responded to this advice, not simply in obedience to the government will but rather from their own incentives. According to one of the leading insurance companies, while they expected a favor from subsequent MOF guidance in exchange for their obedience, they had urgent need of the outlets for rapidly increasing funds.23

Second, the degree in economic interdependence is undoubtedly an important factor for a stable basis of coordination. One indicator is the share of the United States in Japanese and German trade. In the early 1980s, Reagan's fiscal expansion promoted imports from both Japan and Germany. While nearly half of the German foreign trade consists of the EC countries (much larger with other European countries included), trade with the United States amounts to no more than 10%. For Japan, however, the United States is the largest export market with a share of over one-third in the late–1980s. At the same time, the United States supplied about a quarter of the total Japanese imports, in particular agricultural products and raw materials (see Table 4). For the United States, trade with Japan is also important,<sup>24</sup> but this country has

|               |              | (0         | -/          |                 |
|---------------|--------------|------------|-------------|-----------------|
|               |              | Amounts    | (year end)  |                 |
|               | All Banks    |            |             |                 |
| Year          | Banking Acc. | Trust Acc. | Life Insur. | Non-Life Insur. |
| 1980          | 1062         | 173        | 682         | 193             |
| 1981          | 1430         | 332        | 1123        | 236             |
| 1982          | 2119         | 560        | 1902        | 336             |
| 1983          | 2722         | 944        | 2927        | 571             |
| 1984          | 4414         | 1436       | 3842        | 820             |
| 1985          | 7327         | 3461       | 4772        | 1022            |
| 1986          | 9516         | 6213       | 7307        | 1376            |
| 1987          | 10620        | 7872       | 10343       | 1745            |
| 1 <b>9</b> 88 | 11083        | 8169       | 13086       | 2045            |
| 1989          | 15207        | 10306      | 17163       | 2667            |
| 1990          | 18390        | 11146      | 17219       | 3122            |
| 1991          | 15942        | 13218      | 17428       | 3193            |
|               |              |            |             |                 |

# Table 3.Foreign Portfolio Investments byJapanese Financial Institutions<br/>(billion yen)

|      |              | Annual     | Increase    |                 |
|------|--------------|------------|-------------|-----------------|
|      | All Banks    |            |             |                 |
| Year | Banking Acc. | Trust Acc. | Life Insur. | Non-Life Insur. |
| 1981 | 368          | 159        | 441         | 42              |
| 1982 | 689          | 228        | 779         | 101             |
| 1983 | 603          | 384        | 1025        | 235             |
| 1984 | 1693         | 492        | 914         | 249             |
| 1985 | 2912         | 2025       | 930         | 203             |
| 1986 | 2189         | 2752       | 2535        | 354             |
| 1987 | 1104         | 1659       | 3036        | 369             |
| 1988 | 463          | 297        | 2743        | 300             |
| 1989 | 4125         | 2137       | 4077        | 622             |
| 1990 | 3183         | 840        | 56          | 455             |
| 1991 | -2448        | 2072       | 209         | 72              |

Source: Bank of Japan, Economic Statistics Annual, Economic Statistics Monthly.

| Trade Relations of Germany and Japan (%) |        |      |      |       |                         |      |
|--|--------|------|------|-------|-------------------------|------|
| <u>Germany</u><br>Export                 | Europe | EEC  | USA  | Japan | Developing<br>Countries | OPEC |
| 1970                                     | 67.0   | 49.8 | 9.1  | 1.6   | 13.7                    | 2.8  |
| 1975                                     | 64.2   | 43.6 | 5.7  | 1.1   | 17.0                    | 7.5  |
| 1980                                     | 69.0   | 49.2 | 5.9  | 1.1   | 14.8                    | 6.5  |
| 1985                                     | 65.4   | 47.4 | 10.0 | 1.5   | 13.9                    | 4.7  |
| 1989                                     | 71.5   | 55.1 | 7.6  | 2.4   | 11.1                    | 2.5  |
| Import                                   |        |      |      |       |                         |      |
| 1970                                     | 62.1   | 51.7 | 11.6 | 1.9   | 1 <b>7.2</b>            | 6.0  |
| 1975                                     | 61.1   | 52.3 | 7.1  | 2.4   | 21.2                    | 11.1 |
| 1980                                     | 60.5   | 49.0 | 5.4  | 3.1   | 21.2                    | 11.1 |
| 1985                                     | 63.7   | 51.0 | 6.8  | 4.5   | 16.9                    | 5.8  |
| 1989                                     | 64.6   | 51.2 | 7.3  | 6.4   | 14.2                    | 2.4  |

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|        |        |      |      |         | Developing |      |
|--------|--------|------|------|---------|------------|------|
| Export | Europe | EEC  | USA  | Germany | Countries  | OPEC |
| 1970   | 14.8   | 12.1 | 31.5 | 2.9     | 36.7       | 5.1  |
| 1975   | 14.5   | 10.2 | 20.4 | 3.0     | 49.3       | 15.1 |
| 1980   | 16.6   | 13.2 | 24.7 | 4.5     | 45.4       | 14.2 |
| 1985   | 14.2   | 11.4 | 37.5 | 4.0     | 32.1       | 7.5  |
| 1989   | 20.5   | 17.5 | 34.6 | 5.9     | 34.3       | 3.9  |
| Import |        |      |      |         |            |      |
| 1970   | 10.3   | 8.5  | 37.1 | 4.1     | 35.7       | 13.9 |
| 1975   | 7.5    | 6.1  | 23.4 | 8.8     | 52.1       | 33.6 |
| 1980   | 7.0    | 5.8  | 19.6 | 2.0     | 60.4       | 40.4 |
| 1985   | 8.5    | 6.9  | 21.9 | 2.5     | 53.1       | 28.5 |
| 1989   | 15.9   | 13.4 | 25.1 | 4.7     | 41.9       | 15.4 |

UNCTAD, Handbook of International Trade and Development Statistics, 1990, National Statistics. greater bargaining power with its trade partners because of its lesser dependence on foreign trade. Japan's economic dependence on the United States undoubtedly plays a crucial role in trade concessions to that country, against the multilateral provision of the GATT, for example in January 1992 when President Bush visited Japan.

Third, the United States sometimes make use of Japan's dependence as a means to lead other countries, in particular Germany, to make concessions. The Baker-Miyazawa Accord of stabilizing exchange rates in October 1986 set a basis for the Louvre Agreement the following February. For the Japanese minister of finance at that time, the stabilization of the yen/ dollar rate was most crucial, while the United States played with the "Japan Card" to induce Germany to cooperate. Germany, inclined to the national interests of price stability as well as the consolidation of the European Monetary System, required a coalition of the EC countries to preserve her bargaining power in the international negotiations.<sup>25</sup> Whether the future framework of the international financial arrangements would be the G-2 (the U.S. and Japan) or the G-3 (the U.S., Japan, and Germany) depends on the prospects of further EC integration, not only economic but also political.

Fourth, another example suggests a competitive aspect behind the supposed international coordination against financial instability. The Bank for International Settlements (BIS) introduced new regulations on banking capital ratios, to be effective by the end of 1992, mainly because, according to the complaints of Japanese banks, the United States and Britain were less interested in safety than in putting limits on the growth of Japanese international banking. These agreements imply that competition among countries is sometimes the cause of international accords.

Nevertheless, because of the lessons learned in the Great Depression of the 1930s, anxiety about global economic turmoil itself also should have led countries to cooperate, and would lead them to do so in the future, despite the weakening influence of the United States on the other countries. At the same time it is possible that the perception gap over critical situations would block effective cooperation. The information exchange of leading countries at various levels, such as the Summit, G-7 meeting, etc., is very important in this respect. Common perceptions at the highest levels are naturally preferable since cooperative actions need political decisions.

#### C. IMPLICATIONS FOR CAPITAL MOVEMENTS AND THE EXCHANGE-RATE SYSTEM

Financial flow in the 1980s seems to have followed genuine commercial incentives, which led to asset speculations: LBOs (leveraged buyouts) in the United States, stock exchange and real estate booms in almost every developed country.<sup>26</sup> The increase of Japanese transactions in the Eurofinance market was another side of the domestic equity finance boom and investments in U.S. Treasury bonds. Deregulation of Japanese financial markets, which facilitated massive portfolio investments in the United States, was partly a response to U.S. pressure (Yen Dollar Committee of 1984).<sup>27</sup>

The capital flows tend to amplify real imbalances, as the syndicate loan to the LDCs and foreign investments in U.S. bonds illustrate, and sometimes destabilize the floating exchange-rate system as well. But it is irrational to reduce the current capital flows back to the scale of, say, the 1960s.<sup>28</sup> The developing countries, including the Eastern Europeans, need foreign investments to realize their growth potential, while developed countries are still in need of financing for their current account deficits, at least temporarily. The supposed destabilizing effect of capital movements is rather a reflection of fundamental imbalances. Indeed, the United States has to reduce its fiscal deficits in the long run in order to stabilize the dollar exchange rate.

Free movements of capital are not always inconsistent with the fixed exchange-rate system, as the classical gold standard era clearly shows. Given the responsibility for governments to stabilize the domestic economy, flexibility in exchange rates is indispensable because it enables a macroeconomic policy independent from the rest of the world, at least in principle. However, we have to note that even in the 1960s and 1970s, when international capital movements were limited, independent monetary policy was not feasible except in the United States, whether under fixed or floating exchange rates. Other countries had no option but to follow up on the macroeconomic consequences the United States had generated, simply because the impact on their domestic economies was so great.<sup>29</sup> Ronald McKinnon (1984, 1991) stresses the asymmetrical influence of the United States' "dollar standard" on the rest of the world. If the macroeconomic policies of the major countries were coordinated according to the "nominal anchor," the free capital movements would not generate any problems, even under the fixed exchange rate system. Given the needs of free capital transactions, the question is therefore whether countries can coordinate macroeconomic policies to such an extent as to keep the exchange-rate fixed, or whether they prefer to have independent exchange rate policies. There is still room for a macroeconomic policy to solve domestic problems, and the United States, in particular, would not give up independent policy options. Contrary to the proposal by McKinnon, the flexible exchange-rate associated with free capital movements remains necessary.

Undoubtedly, the feasibility of cooperation is related to the exchange-rate system,<sup>30</sup> but still unsolved is the question of whether the former results from the latter or from a third factor, the hegemony of the key-currency country, which influences both of these. The fixed exchange rate system of Bretton Woods obliged countries to follow the "rules of the game," with the important exception of the key-currency country. The United States alone kept expansionary monetary policy, in preference of domestic considerations to external balance, and its indirect consequence was to enable other countries to supply growth money despite the balance of payments constraints.<sup>31</sup> The rules to fix exchange rates and keep currency convertibility in current accounts constituted the framework within which countries cooperate and coordinate their macroeconomic policy. In addition, such cooperation as the Gold Pool Agreement and Swaps were undertaken.

One could argue that because of declining U.S. hegemony, cooperation in the late 1960s was undertaken not so much because of U.S. leadership than because of initiative from other countries. The Bretton Woods System as a whole worked at the expense of U.S. economic decline, the best example of which is liquidity supply through balance of payments deficits (at the official settlements basis). Other countries had to cooperate in maintaining the whole system because they gained benefits out of it in the form of liquidity supply. The breakdown of the system coincided with the commencement of the

era after hegemony.<sup>32</sup> The system worked, not so much because the hegemon forced other countries to cooperate but because of their incentives to do so. Under the floating rate system, on the other hand, countries have less incentive to cooperate. The motives for individual countries not to peg lie in the desire for "independent" macroeconomic policy to cope with domestic problems, although experiences during the last two decades show that the initially supposed insulation has been quite limited. Only after floating exchange rates enlarged global imbalance enough to induce anxiety about an international crisis have the major countries begun to reconsider the basis for cooperation.

#### IV. CONCLUDING REMARKS AND PROSPECTS

In summary, international financial relations during the last decade show characteristics of the transition period in the global power structure. The difficulty to cooperate lies in the fact that the United States is neither strong enough anymore to lead international decision-making nor weak enough to take part in symmetrical cooperation. In a symmetrical relationship, other countries could have forced the United States to cut its fiscal deficits more effectively, or rules to take effective joint measures would have been more easily implemented. International policy coordinations were needed to make up for the policy "failure" by the Reagan administration. Other countries than the United States participated in the cooperation, because U.S. macroeconomic policy put a brake on the debt crisis. For the time being, to say the least, the world economy cannot expect a stable basis to coordinate individual national interests, apart from a crisis management.

The possibility for Japan to replace U.S. leadership in international finance is very small because Japan's foreign trade cannot survive without the United States, which naturally has the stronger bargaining power. The scale of the U.S. economy warrants the superiority of the international finance denominated in the U.S. dollar. In this sense, Gilpin (1987, in particular p. 340) overestimates Japan's financial potential. Germany, on the other hand, has wider scope for developing its own international finance, since it is based on the EC market independent from U.S. influence. Whether its potential actually develops depends on the question of how long it would take to solve the insufficient savings of the former East Germany.

Historically, the major shift in financial as well as economic power structure resulted from the two world wars. The expenditure of the belligerents above their fiscal capabilities radically changed net international financial positions, and the leadership in decision-making was provided by joint strategies during the war, as the case of World War II clearly illustrated (for example, the landing in Normandy). Seen from this aspect, the current lack of a cooperative framework continues to exist for a relatively long run.

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#### **ENDNOTES**

1. For the working of the Bretton Woods System, see Iwami (1992).

2. For a rather neutral analysis, see IMF (1991).

3. For example, see Kindleberger (1988, p. 57) and Ohno (1991).

4. Maddison (1985, pp. 78-82).

5. See also BIS 59th Annual Report (1989, p. 47).

6. IMF (1991, pp. 16-19).

7. For comparison of the aggregate macroeconomic data, see Maddison (1985). For comparative analyses between the two periods, there are a number of articles, notably Eichengreen and Portes (1987).

8. The U.S. government's payments on foreign owned assets were \$36.0 billion (gross) and \$30.5 billion (net) in 1989. These figures correspond to 0.7% and 0.6% of GNP, respectively. Data from *Survey of Current Business*, June and July 1990. The Dawes Plan in September 1924 determined the annual payments of the German reparation at 1 billion gold-mark for the first year, and rising to 2.5 billion gold-mark in the fifth year. Kindleberger (1973, p. 38). The actual payments were 1.06 billion RM in 1925 and 2.34 billion RM in 1929. Calculated with GNP at current prices, the reparation transfers amounted to 1.5% of GNP in 1925 and 2.6% in 1929. Data from Deutsche Bundesbank, *Deutsches Geld und Bankwesen in Zahlen*, Frankfurt 1976.

9. Kindleberger (1973, p. 86ff).

10. Eichengreen and Portes (1987, Figure 1.4). See also Table 1. The terms of trade of the developing countries deteriorated more from 1973 to 1983 than from 1929 to 1938 (Maddison, 1985, p. 50), which suggests the fall from the peak (1977 QI) was considerable.

11. Fischer (1988) provides a good survey on the problems of macroeconomic policy coordination. For the agreements in particular, including their inside stories, see Funabashi (1988).

12. IMF, International Capital Markets, Developments and Prospects (April 1989, p. 15).

13. Kindleberger (1973, p. 292). In the later version, (1986, p. 289), other factors such as "policing a relatively stable system of exchange rates" and "ensuring the coordination of macroeconomic policies" are included.

14. Kindleberger's argument is most evident: "For the world economy to be stabilized, there has to be a stabilizer, one stabilizer" (1973, p. 305). As is well known, his statement was later formulated as the "theory of hegemonic stability." See Eichengreen (1989, n3).

15. Triffin (1991, p. 409).

16. See Solow (1982).

17. Approaches other than hegemonic stability theory, namely (a) the "public choice" approach, or (b) the argument of the "particularism," conflicting domestic interests, have shortcomings in answering these questions, because both of them explain rather why the public good (international cooperation) is undersupplied, see Cohen (1988). See also Guerrieri and Padoan (1988).

18. In the United States' case, the balance on goods and services is preferable because it shows the strengthened competitiveness more clearly than the current balance, which includes huge unilateral transfers of the U.S. government during World War II.

19. For example, see Krugman (1984).

20. See Iwami (1992, p. 16).

21. Possibly because of the recognition that the United States tends to act from its own interests and demand that others follow its will, some of the leading Japanese economists are cynical about international (macroeconomic) policy coordination. See, for example, Shinkai (1990, in particular, p. 137).

22. See Fischer (1988).

23. Interview with a financial manager on June 22, 1992. He added also that they had not had any "systematic principle" in U.S. portfolio investment from 1985 through 1987.

24. For the United States, Japan is the second largest export market with 12.7% of total exports, next to Canada (17.4%), while Japan supplied 17.2% of total U.S. imports, a larger share than Canada (14.5%), in 1989. Calculated from *The Survey of Current Business* (June 1990).

25. See Funabashi (1988, p. 159ff).

26. OECD, Financial Market Trends, No. 40 (May 1988, pp. 6-8).

27. The U.S. government expected that deregulation of the Japanese market would create profitable business opportunities for American financial institutions but did not necessarily foresee the growth of Japanese investments in the home country. See, for example, Frankel (1984).

28. The proposition of "throwing some sand in the wheels of our excessively efficient international money market" (Tobin, cited in Marston, 1988, p. 120) is worth considering, though.

29. See Ohno (1991).

30. For problems and cooperation of the exchange-rate system see, for example, Marston (1988).

31. Iwami (1992).

32. Eichengreen (1989) also discusses the application of hegemonic stability theory to the dynamic aspect of the international monetary regime.

# 10

#### THE WORLD TRADE REGIME: GATT, REGIONAL COOPERATION, BILATERAL CONFRONTATION

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#### I. INTRODUCTION

As new boys in the international trading system, regional and bilateral arrangements are now competing with the General Agreement on Tariffs and Trade (GATT). It is no use arguing, as some academics would like to do, that regional and bilateral groups detract from the glories of a global system. That is yesterday's debate.<sup>1</sup> The question ahead, and the one we address, is which issues should be discussed in what group. Since there are bound to be overlaps, with more than one group covering the same issue, the trading system will get even more complicated in the 1990s than it was in the 1980s. Our modest goal in this paper is to make tentative assignments — which in turn are part forecast and part prescription — as to which group will take the lead role in particular subject areas.

The next section briefly describes the GATT system and identifies the types of issues still best discussed in the GATT framework. The third section surveys three regional groups, the European Community (EC), the U.S.-Canada Free Trade Agreement (FTA), and the MERCOSUR, and identifies their strengths. The fourth section takes a look at bilateral U.S.-Japan and EC-Japan talks. Finally, the fifth section tries to

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draw general principles, and then examines the nexus between trade and environment as a case study in assigning issues to groups.

### II. GATT: ORIGINAL VISION AND CURRENT REALITY

#### A. ORIGINAL VISION

When representatives of fourteen nations gathered at Havana in 1948 to complement the Bretton Woods financial system with an international trading system, they entertained ambitious visions. They sought to create an international body, the International Trade Organization (ITO), with broad authority to establish rules governing the flow of goods across borders, the rights and obligations of foreign investors, and the disciplines on restrictive business practices.

The United States Congress had a different vision. Fearful of losing its power over commercial policy, the Congress threatened to quash the ITO, and the Truman Administration quietly shelved the enabling treaty. Left was the General Agreement on Tariffs and Trade, an interim body originally designed to lay the groundwork for the more powerful International Trade Organization.

The GATT charter had a more limited vision than the ITO. It did not pretend to regulate investment behavior or private business practices. And the GATT had a modest Secretariat compared with the International Monetary Fund or the World Bank. Nevertheless, the vision of free trade remained intact. The short-term goal of the GATT was to manage the mercantilist system inherited from the 1930s and to prevent bad trade rules from becoming worse. The long-term goal was to preside over the progressive lowering of tariffs and relaxation of quotas erected by governments. Behind-the-border barriers were consciously put off for a later day, and private barriers were thought to be outside the jurisdiction of the GATT.

Two fundamental GATT principles were supposed to guide trade liberalization: the unconditional most-favorednation (MFN) principle, under which no GATT member would grant preferences to another GATT member unless it granted the same preferences, without conditions, to all GATT members; and the national treatment principle, under which imported goods would be treated the same as domestically produced goods.

Exceptions to the broad GATT agenda for freer trade were permitted for balance of payments difficulties, national security reasons, and health and safety standards: later added to this list were the trade-restrictive demands of agricultural producers (in the name of supporting an agrarian way of life) and of developing countries (advanced under the infant industry argument). Exceptions to the MFN rule were carved out for former colonial relationships, such as the British Commonwealth, and for future common markets and free trade areas. Countries not members of GATT, notably countries within the former Soviet empire and China, were not entitled to MFN benefits. Finally, the national treatment principle was advanced cautiously, and not used as a ramrod to batter down behind-the-border barriers. Thus, in practice, the GATT system was never global in a geographic sense, nor universal in subject matter coverage. Just as the Holy Roman Empire was neither holy, nor Roman, nor an empire, the GATT in practice fell well short of the ideals entertained at Havana.

Circumscribed by practical limitations, the GATT nonetheless embarked on its long-term agenda of reducing trade barriers through a process of reciprocal bargaining. The first six GATT rounds successfully lowered tariffs. By the end of the Kennedy Round (1963-1968), the average tariff on manufactured goods was just over 9 percent. These would be lowered further in the Tokyo Round (1973-1979) to 4.9 percent for the United States, 6.0 percent for the European Community, and 5.4 percent for Japan.<sup>2</sup> The reduction in tariff barriers, together with the dramatic fall in transportation and communications costs, helped spur the growth of merchandise trade between industrial countries at a real annual rate of 8 percent between 1950 and 1975.<sup>3</sup>

The Tokyo Round was more ambitious than the previous rounds. GATT members sought to address a multiplicity of non-tariff barriers, which, by the early 1980s, covered a substantial portion of the American and European markets in manufactured goods.<sup>4</sup> A number of codes were signed. But problems relating to agricultural subsidies, domestic subsidies for manufactured goods, dispute settlement, the proliferation of voluntary export restraints (VERs), and the quota regime for textiles and apparel went unresolved. Nevertheless, it is fair to say that, in 1979, the GATT system seemed to be traveling a high road toward the global elimination of tariffs, quotas, and other NTBs.

#### B. REALITIES OF THE URUGUAY ROUND

In 1986, backed by the United States, Japan, and many countries in the Pacific Basin, the eighth round of GATT negotiations began. The fact that the 1981-82 recession and the overvalued dollar had led to a surge of new NTBs did not daunt the aspirations of trade negotiators.<sup>5</sup> Their goal was to expand the coverage of GATT principles to previously excluded sectors (agriculture and textiles) and new areas such as services, trade-related investment measures (TRIMs), and trade-related intellectual property (TRIPs); to reform the safeguards code; and to strengthen dispute settlement mechanisms.

While EC intransigence on agriculture became the most visible stumbling block to the Uruguay Round (1986-1993?), agricultural disputes conceal many other obstacles to realization of the GATT vision of free trade in goods and services on an MFN basis and full implementation of the national treatment principle.

To begin, the GATT talks are hindered by the procedural limitations of the GATT framework. With 104 member nations, negotiations are long and arduous. The subset of members with legitimate interests in any given topic is large, and this means that years of meetings must be conducted before an inner group of countries takes control of the talks, or the GATT Secretariat itself crystallizes a shadowy consensus.

Moreover, the GATT formula for negotiating the reduction of barriers has run into difficulty. Under the reciprocity principle, each country supposedly makes overall cuts in its import barriers so as to ensure an equivalent boost in the exports of other GATT members as it receives for its own exports in terms of greater access to their markets. The idea behind reciprocity and equivalence is that each participant will "enjoy" approximately the same gain in its exports as it "pays" in imports. There are two fundamental problems with reciprocal negotiations. First, the arithmetic of equivalence is very hard to apply (especially for NTBs); second, some important countries, such as Japan and the United States, are running out of barriers to cut.

The problems with the GATT framework go beyond these procedural difficulties. Sunrise and sunset sectors, such as agriculture, textiles and apparel, telecommunications, and government procurement, are hard to reform. These sectors are dominated either by the aging industries of yesterday or by the promising industries of tomorrow. They have become litmus tests of a government's commitment to jobs, to a way of life, or to a high technology future.

Finally, GATT members are just beginning to understand that an agenda confined to reducing governmental barriers to international commerce is not enough. Countries are unwilling to surrender their control over international commerce when that means an economic marriage to other nations with fundamentally different economic systems. Differences that cause hesitation and anxiety include not only health systems, worker rights, and environmental controls. They also include private business practices, from the *keiretsu* in Japan, to the *chaebol* in Korea, to the close relations between public telephone systems and equipment suppliers in Europe.

#### C. ISSUES FOR GATT IN THE 1990s

Despite the obstacles encountered in the Uruguay Round, it is safe to bet that important areas of trade turf will remain under the GATT tent, at least during the 1990s.

*Tariffs.* Center stage in the GATT circus is the lowering of existing tariffs, the tariffication of quantitative restraints, and finally the reduction of those tariffs as well. The political arithmetic of reciprocity and equivalent cuts works tolerably well when applied to tariff barriers. And the GATT system has admirably succeeded in reducing tariffs. Average worldwide tariffs on manufactured goods have fallen from 40 percent in the 1950s to less than 5 percent today. Tariffs in some important sectors will go to zero as a result of the Uruguay Round. The goal of zero tariffs on a wide range of manufactured goods by the year 2010 is not utopian.

In order to perform the "old GATT magic" on quantitative restraints — quotas on textiles and apparel, agricultural prod-

ucts, and other goods — these quotas must first be converted into tariff equivalents, and the tariffs must then be gradually phased out.

For example, in the textile and apparel complex, countryspecific quotas should first be converted into tariff-rate quotas. Under this approach, an importing country, such as the United States, would apply different quota triggers to different suppliers, but would apply the same high surcharge rate (for a given tariff line) to all exporting nations. The surcharge would then be subject to a phased reduction over a period of years. Similarly, in agriculture, restrictions such as Japan's ban on rice imports would first be converted to tariffs ranging as high as 700 percent. These tariffs would then be phased out over ten years or longer.

While the outcome of these specific proposals is still uncertain, the tenor of negotiations establishes GATT as the forum of choice for the tariffication of quotas on sensitive products and for the gradual elimination of the resulting high tariffs.

*Managed Trade Regimes*. A second issue firmly within GATT jurisdiction, following upon its jurisdiction over tariffs and quotas, is the monitoring of managed trade regimes in sunset industries — textiles and apparel, steel, agriculture, and perhaps automobiles. Each of these sectors is characterized both by significant NTBs and by a truly global network of trade in components and finished items. In these sectors, worries about market access, fair play, trade diversion, and adjustment burdens go beyond the jurisdiction of any regional group.

Again the textile and apparel industry illustrates the future GATT role. The United States began using bilateral VERs to limit textile imports from Japan in the late 1950s. As textile manufacturing capabilities spread from Japan to Hong Kong to Korea and other countries, bilateral restraints were brought within the GATT system, and they evolved in 1974 into the Multi-Fiber Arrangement (MFA). The MFA provided an umbrella of multilateral discipline, under GATT auspices, over bilateral quotas. The multilateral discipline made enough of a difference that, at EC insistence (with U.S. collaboration), the original MFA was replaced by MFA-II in 1977 and MFA-III in 1981. Each of the successor arrangements enabled greater bilateral protection from a wider range of imports. Nevertheless, the GATT framework provided a forum for exporting nations to form alliances against protectionist interests in the United States, the European Community, and Japan.

In other words, while trade in textiles and apparel has long departed from basic GATT concepts, the system has nevertheless been subject to GATT discipline both in the negotiation of successive Multi-Fiber Arrangements and in the day-to-day work of the Textile Surveillance Body. GATT management is likely to continue for the next decade or longer, even if the Uruguay Round succeeds in pointing toward eventual abolition of the bilateral quota regime.

A similar GATT role may emerge in steel trade. The United States and the Community began negotiating VERs on steel when U.S. imports surged in the 1980s. By the end of the decade, the United States had concluded twenty-one bilateral restraint agreements covering twenty-nine countries, and the Community had established its own monitoring and restraint system. In the Uruguay Round, the United States and the Community tried to negotiate a Multilateral Steel Agreement to simplify the complex network and to lay down rules for the measurement of subsidy and dumping duty margins. These talks collapsed in March 1991, and the steel cases are likely to be resolved within the framework of U.S. countervailing and antidumping duty laws. However it is likely that the resulting duty margins will ultimately be reviewed by the GATT, applying the standards of the Tokyo Round Codes and (possibly) the Uruguay Round Codes. In addition, the GATT may well end up as the place where price undertakings and quantity agreements are lodged and reviewed. A similar GATT role, as manager both of managed trade and of unfair trade remedies, could emerge in automobiles. The GATT will certainly continue to provide the central forum for discussions on temperate agriculture.

These various sectors have in common a large number of geographically dispersed producers and a network of trade in intermediate products and components. Parallels can be found with some of the new issues, for example, intellectual property rights, and rights of establishment in banking and insurance. By contrast, in sectors with few producers concentrated in a small number of countries, and without a crisscross network of trade relations — such as tin, coffee, civilian aircraft,
telecommunications equipment, and computers — trade solutions are more likely to be sought outside the GATT framework.

#### D. DISPUTE SETTLEMENT

A major problem with the GATT system at the beginning of the Uruguay Round was its dispute settlement procedures. These procedures gave defendant nations great power to block the resolution of complaints. Both the appointment of a panel to hear a complaint, and the eventual decision of that panel had to be approved by the parties involved, including the defendant.

In Uruguay Round talks, negotiators have made significant strides toward streamlining the dispute settlement process. The GATT Secretariat would be empowered to establish panels when the concerned parties cannot agree on the members. The positive consensus process for approving panel reports would be replaced by a negative consensus system that requires concerned GATT members collectively to disagree with a panel report before it can be rejected.

These reforms would greatly enhance the application of GATT substantive rules. Forgotten rights and obligations would suddenly take on relevance to the world of commercial disputes. Even if the Uruguay Round concludes with limited progress on agriculture, a working dispute settlement mechanism would make the round a success, simply because many important commitments embodied in GATT agreements could now be effectively applied.

That said, it must be recognized that the designers of the GATT dispute settlement system can only make it efficient and fair; they cannot force the parties to bring their grievances to the GATT. For a combination of reasons, many countries are reluctant to use GATT as a forum to settle their commercial disputes. Until this reluctance fades, the GATT will not be able to bring long-standing rights and obligations to life.

# **III. THE GROWTH OF REGIONAL COOPERATION**

Frustrated by the slow pace of GATT negotiations, and anxious to apply market principles to their economies, many countries have opened talks with their neighbors to establish or strengthen free trade agreements and common markets. The small number of participating countries allows talks to proceed quickly. Moreover, these arrangements offer several substantive advantages over GATT negotiations.

First, regional groups exploit neighborhood effects — the tendency of nearby countries to trade intensively with one another. Neighboring countries often form natural trading areas, in the sense that a given quantum of barrier reduction (measured in tariff-equivalent terms) produces both a larger growth of trade and a more balanced growth in trade among neighboring countries than with the world at large. In some instances, but not all, regional partners have similar standards of living and similar economic systems, lowering adjustment costs.

Second, unlike the reciprocal bargaining formula of GATT talks, which emphasizes the equivalent reduction of trade barriers, free trade agreements start with the premise that barriers should be equalized and then eventually eliminated. In other words, the country with the higher barriers has a greater obligation to change its policies.

Third, within regional groups, countries seem more willing to discuss behind-the-border barriers, such as procurement policy, technical standards, and cabotage rules. Also, they are somewhat more willing to liberalize trade in sensitive sectors, such as agriculture and textiles and apparel.

A major impetus behind the move toward regionalism is the success of the European Community and the U.S.-Canada FTA. The next three sections survey these model arrangements and MERCOSUR, a regional Latin American group. We then draw broad conclusions as to the strengths of regional arrangements.

## A. THE EUROPEAN COMMUNITY

The initial seeds for European integration were planted in 1952 when the Benelux countries, France, Italy, and Germany signed the Treaty of Paris establishing the European Coal and Steel Community (ECSC) to facilitate a common market for coal and steel. Like subsequent regional arrangements, the starting point for a European trade area was a sectorial arrangement. In 1958, the Treaty of Rome created the European Economic Community (EEC), with the goal of eliminating trade barriers and forming a customs union within twelve years. In 1962, political cement was added to the EC in the form of the Common Agricultural Policy (CAP).

As the trade component of the EC moved forward, a monetary and fiscal component began to emerge. Starting in 1950 with the European Payments Union (EPU, a clearinghouse to facilitate European trade and payments and currency convertibility), the EC began taking gradual steps toward monetary union. In 1979, the European Monetary System (EMS) was formed. Its purpose was to create a "zone of monetary stability" outside the pervasive influence of the dollar.

Trade and monetary provisions of the EC were administered by the European Commission and the European Council, each established in 1967 by the Merger Treaty. In 1987, the powers of these administrative bodies were expanded by the Single European Act (SEA), which allowed the Council to take qualified majority decisions in four fields: most elements of the Europe 1992 agenda; research and development; economic and social cohesion; and the improvement of working conditions.

The SEA also launched the Europe 1992 program to "deepen" the internal market by ensuring the free movement of goods, services, capital, and people (the "four freedoms"). In 1988, the EC embarked on a legislative program to liberalize public procurement markets; in 1989, the European Council authorized the Delors Committee to achieve economic and monetary union (EMU) in three stages; and in 1990 Directives 90/364 and 88/361 were passed, requiring the removal of all obstacles to the free movement and residence of EC citizens throughout the Community and providing full liberalization for capital movements. The embattled Maastricht Treaty, signed in 1991, finalizes the provisions and timetable of EMU. While many provisions of the Maastricht treaty will take longer than originally anticipated to be implemented, the SEA agenda for completing the internal market will largely be realized in the next few years.

In addition, the EC is currently involved in "widening" its scope, starting with the integration of the European Free Trade Area (EFTA) into the Community structure. In May 1992, the EC and EFTA concluded the European Economic Area (EEA) agreement under which the EFTA countries will incorporate about two-thirds of Community rules into their national laws. This agreement paves the way for EC membership for four of the EFTA states by 2000 (Austria, Sweden, Finland, and Norway). The new grouping will increase the size of the Community market to 360 million people and raise the GNP of the EC from \$4.9 trillion to \$5.5 trillion.

At the same time, the reunification of Germany points to closer ties with Poland, Czechoslovakia, and Hungary. Trade agreements have already been signed, and these will be progressively expanded in the years ahead. As a way station to their full membership (probably after 2005), Eastern European nations may be allowed limited participation in the political institutions of the EC.

## B. THE U.S.-CANADA FREE TRADE AGREEMENT

The U.S.-Canada FTA is a less ambitious enterprise, but with its own significant successes. In hindsight, the first step towards an FTA occurred in 1965 when the United States and Canada signed an Automotive Trade Agreement that virtually eliminated tariffs on bilateral trade in autos and parts. Two decades later, the partners opened broader free trade talks; and after a year of discussion they concluded that a sector-by-sector approach would be unworkable.<sup>6</sup> In 1985, President Ronald Reagan and Prime Minister Brian Mulroney, meeting at the "Shamrock Summit," signed the Declaration on Trade in Goods and Services, pledging a broad free trade agreement.<sup>7</sup> Formal negotiations for an FTA began in May 1986 and finished by January 1988, when both nations signed the U.S.-Canada FTA. The FTA entered into force in January 1989.

Like the EC 1992 program, the U.S.-Canada FTA covers a wide range of issues, including trade policy, investment, and a limited degree of labor mobility. The FTA calls for the phase-out of tariffs within ten years and the elimination of many NTBs. Foreign investment between the two countries is liberalized somewhat. While existing regulations (notably in the energy sector) are grandfathered, the future regulation of foreign direct investment must respect the national treatment provisions of the FTA. The agreement also provides for the temporary entry of professional workers.<sup>8</sup>

Although there is no explicit coordination of fiscal and monetary policies, Canada has followed the U.S. lead in the reform of corporate taxation, reducing tax rates and broadening the tax base. And, like the Federal Reserve, the Bank of Canada has pursued an anti-inflation policy even in the midst of economic stagnation.

The U.S.-Canada FTA contains an innovative dispute settlement procedure. Disagreements are settled through a twotrack process. The first track deals with disputes concerning treaty interpretation, while the second handles disputes over antidumping and countervailing duty actions.<sup>9</sup>

Like the European Community, the United States and Canada have pursued a strategy of widening. In 1989, the United States and Mexico signed an Understanding Regarding Trade and Investment Facilitation Talks which initiated broad-ranging bilateral trade talks. In March 1990, Canada and Mexico signed ten accords on a series of trade and nontrade issues.<sup>10</sup> Formal negotiations over a North American Free Trade Agreement (NAFTA) began in June 1991. The three sides reached a sweeping agreement in August 1992. Assuming the accords are ratified in 1993, which seems all but certain given President Clinton's endorsement, NAFTA will enter into force in January 1994.

In broad terms, the NAFTA text covers all the issues in the FTA and adds three new topics: it breaks new ground on agricultural liberalization; it covers telecommunications and financial services; and it contains extensive environmental provisions. As a result of Clinton's reservations, voiced in the campaign, the environmental provisions will be further strengthened and stronger labor accords will be added.

## C. MERCOSUR

MERCOSUR is a prime example of regional integration among advanced developing countries. Like the EC and the U.S.-Canada FTA, MERCOSUR started out as a small-scale agreement designed to resolve a narrow problem. In 1979, Argentina, Brazil, and Paraguay signed a trilateral agreement to resolve disputes concerning the Paraná River. The agreement also provided for construction of the Itaipu e Corpus hydroelectric dam.<sup>11</sup> This agreement was followed, in 1985, by the Iguaçu Memorandum of Agreement, *Acta de Iguaçu*, which created a bilateral commission to facilitate the economic integration of Brazil and Argentina.<sup>12</sup> In 1986, Brazil and Argentina went back to the negotiating table to draft the agreement creating the Program for Economic Integration and Cooperation (PEIC), with broad objectives of commercial and industrial harmonization.<sup>13</sup>

It was not until 1988, when Argentina and Brazil signed the Treaty for Integration, Cooperation, and Development, that serious talk of a customs union began. Under this treaty, Argentina and Brazil pledged to create, within ten years, a common economic area through the elimination of tariff and non-tariff barriers for goods and services and the harmonization of macroeconomic policies. The Buenos Aires Act of 1990 accelerated the timetable. Paraguay and Uruguay joined these negotiations in August 1990; and soon afterwards, in March 1991, all four countries signed the Treaty of Asunción, forming the *Mercado Común del Sur* (MERCOSUR).

The treaty promises free circulation of goods and services within the region. Tariffs are to be reduced according to a progressive, automatic schedule. A common external tariff of 15 percent will be instituted at the start of 1995. The agreement also aims at harmonizing laws and regulations concerning rules of origin, dispute settlement, and safeguard measures.<sup>14</sup>

The Treaty establishes two administrative bodies: the Common Market Council and the Common Market Group. The Common Market Council is the executive body responsible for ensuring the timely formation of the Common Market. The Common Market Group is responsible for managing the affairs of nine subgroups: trade matters; customs matters; technical regulations; monetary and fiscal measures that affect trade; overland transport; maritime transport; industrial and technological policy; agriculture energy policy; and coordination of macroeconomic policies.<sup>15</sup> In addition, at the first ministerial meeting of MERCOSUR in Brasilia, representatives signed the Protocol on Dispute Settlement, patterned after Chapters 18 and 19 of the U.S.-Canada FTA. The process stresses the quick resolution of disputes by arbitration.<sup>16</sup> Like the EC and the U.S.-Canada FTA, MERCOSUR is taking steps to expand its geographic scope. Chile has a standing invitation to join. In June 1991, the United States and MERCOSUR signed a framework agreement on trade and investment under the Enterprise for the Americas Initiative, and President Carlos Salinas has proposed negotiations for an FTA between Mexico and MERCOSUR.

#### D. LESSONS FROM REGIONAL COOPERATION

These three arrangements illustrate the ability of regional groups to make headway in areas where GATT negotiations have stalled. In particular, regional groups seem better able to cover a wide range of issues without excessive anxiety over the pooling of national sovereignty. At Maastricht, the EC tested and perhaps exceeded the limits of supraregional cooperation, but even without Maastricht the EC has carried the process of economic integration far beyond the hopes entertained at Havana in 1948.

Each regional arrangement started out with modest sectorial accords that were relatively easy to conclude. These accords paved the way for broader accords covering general trade barriers, which in turn opened the road for negotiations for economic integration. By the time an FTA was concluded, countries found themselves negotiating away non-trade barriers. The result was somewhat greater harmonization of monetary and fiscal policy, and somewhat less restrictive immigration laws and investment regulations.

The process of gradual deepening makes regional accords particularly well suited to policy convergence on issues tangentially related to trade. These include investment rules, labor laws, health and safety standards, and environmental protection. It seems far more likely that private anticompetitive barriers to trade — the soft cartel arrangements so long a feature of the European economic landscape — will give way far faster within regional groups than within the GATT.

The convergence that results from deepening makes regional groups an appropriate forum for quicker trade liberalization than GATT can achieve in sensitive sectors such as agriculture, textiles and apparel, and transportation. Countries with similar economic systems and policies are more likely to make concessions in sensitive sectors, both because firms can more easily relocate to the other country if its economic climate is better and because the higher probability of balanced two-way trade growth makes adjustment easier. This proposition was recently illustrated by the striking liberalization of three difficult sectors within the NAFTA: textiles and apparel, agriculture, and road transportation.

Finally, there are two acid tests of the success of a regional group: First, does its economic magnetism attract applications from potential new members? Second, are the members willing to broaden the group to encompass new countries? By those tests, the European Community and the U.S.-Canada FAT are both successes. Each has attracted a number of prospective applicants. In response, the EC has progressively enlarged, while the U.S.-Canada arrangement will soon be broadened to include Mexico. In both cases, legitimate questions are now raised on the prospective speed of further arrangements. Our guess is that, following a pause for three to five years, the process of regional broadening will continue both in the Western Hemisphere and in Europe.

Larry Krause was the first to outline the probable path of ever-broader regional arrangements. At the end of the 1990s, there will be a larger European Community, with a core of perhaps sixteen members and numerous association agreements of varying depth with other countries. In addition, there will be a large and much more loosely organized Pacific Rim group, with the NAFTA core enlarged to include some Latin countries, and with extensive crisscross affiliation agreements to other Latin countries and Pacific Rim nations.

## IV. BILATERAL CONFRONTATION

The United States, the European Community, and Japan have for some years engaged in bilateral negotiations with a highly confrontational flavor. Since each nation is among the three most important trading partners for the other two,<sup>17</sup> these bilateral talks rank in importance with GATT and regional negotiations.

Of this triangle, the least problematic talks are those between the United States and the European Community. These two share similar economic systems. Disagreements between them concern idiosyncratic differences in rules, not a systemic incompatibility of policy.<sup>18</sup> On the other hand, talks with Japan are far more troublesome. U.S.-Japan and EC-Japan negotiations reflect frictions arising from fundamentally different economic systems. The "Atlantic" and "Pacific" brands of capitalism differ in the roles they assign to the state and in the importance they accord to unfettered competition.<sup>19</sup> Under the Atlantic system, government plays a minimalist role in industrial policy and tries to ensure that firms do not collude;<sup>20</sup> in the Pacific system, especially as practiced by Japan and Korea, government plays an active role in guiding the composition of economic activity and is more tolerant of ties between private firms.

When the broad principles that guide Japan are translated into concrete policies, it becomes clear which parts of the Pacific model, as practiced by Japan, are admirable, which are problematic, and which are contentious. The admirable parts are Japan's high levels of savings and investment, its rigorous educational system (at least through high school), and its demanding work ethic. These elements are a matter of emulation in the United States, Europe, and elsewhere.

Those parts which are problematic are Japan's strong emphasis on long-term employment and its rationing of bank credit in favor of large firms (and correspondingly against households). The commitment to long-term employment tends to convert wages into fixed costs, so that when demand drops, Japanese firms maintain the same level of output and slash prices. The result is an oversupply of goods that can drive equally efficient foreign firms out of business. Credit rationing can also sustain Japanese firms in a slump and carry them through the business cycle. More important, low capital costs give Japanese firms a long-term edge in areas where patience counts: exploring new technologies and capturing new markets.

These two features of the Japanese model are problematic, but they are not the main cause of the tensions between the Pacific and the Atlantic systems. The problems that arise from long-term employment practices are confined to periods of depressed market demand. The problems that arise from credit rationing are to some extent alleviated by the opening of the Japanese financial system, and to some extent they are becoming an object of emulation by the Atlantic system.

Those aspects of the Japanese system that are downright contentious are (1) the strong cross-buying relationships corresponding both to cross-ownership ties and to established loyalties between major firms and their subcontractors; (2) the relatively closed distribution system; and (3) the designation

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of targeted industries. Because these policies work either as invisible barriers to imports or as indirect subsidies to exports, they inevitably attract the hostile attention of foreign industries and their governments.

There are three ways to deal with the frictions that arise from the clash between the Pacific and Atlantic systems of capitalism. The first is to try to change Japan (and, later, other practitioners of Pacific capitalism). This was one of the motives behind the Structural Impediments Initiative (SII). The SII, started in 1989, focused on six Japanese issues identified as structural barriers to trade: exclusionary business practices; the *keiretsu* system; savings-investment patterns; pricing disparities; the closed distribution system; and high land prices. It also took the United States to task for its outsized budget deficit, its high consumer debt, and the weaknesses in its educational system. By all accounts, the SII talks have so far yielded a modest harvest of results.<sup>21</sup>

A second approach is to copy Japan. This would involve, for example, relaxing U.S. and EC antitrust laws, providing research and development subsidies, and, in the extreme case, creating a U.S. copy of the vaunted Ministry for International Trade and Industry (MITI). This approach so far has a limited following because it entails an unnaturally activist role for the U.S. government. However, it is possible that a Clinton Administration will revamp and rename the Department of Commerce, giving it a Trade and Competitiveness title, and adding the office of U.S. Trade Representative to its functions.

A third approach is to accept the Japanese system for what it is, neither try to change nor to copy it, but rather insulate the United States (and Europe) from its effects. This is the approach advocated by commentators such as Clyde Prestowitz. His proposed solution contemplates a policy of managed trade that would guarantee approximately fixed shares of the Japanese market for U.S. firms (the shares would be determined by reference to the Japanese share of the U.S. market). The recently extended Semiconductor Accord that guarantees U.S. producers a 20 percent share of the Japanese market exemplifies this approach. The objective is to promote growth in trade and to ensure approximately balanced growth in both directions. As John Zysman pointed out in this conference, if managed trade is accepted in principle, the devil is the details. Which sectors are targeted for management? What role does lobbying play? Does the managed trade lead to the restraint of imports or the growth of exports? What is the sideswipe effect on countries not party to the managed regime?

Regardless which approach wins out in the effort to reconcile Atlantic and Pacific capitalism, it is clear that bilateral discussions are targeted at highly contentious issues going to the fundamental question of how, and to what extent, those two systems mesh. In this there is a lesson. The enduring role for bilateral talks among the big three is to sort out their basic systemic differences, to address issues that are outside the GATT agenda, to reach accommodations which fall well short of regional cooperation, and to avoid lapsing into full-scale commercial warfare.

# **V. DIVISION OF THE TURF**

## A. GENERAL PRINCIPLES

From the discussion thus far, several variables can be listed that help decide where an issue is best discussed. The way these variables affect the outcome flows from two general conditions, identified by Stephan Haggard at this conference: In what forum is negotiation easier so that it is more likely that agreement can be reached? And which countries have concrete stakes in the outcome, measured by markets promised or markets in peril?

Based on these conditions, the first variable that helps decide where an issue will be resolved is the nature of barriers. Tariffs and quotas will clearly be shared between the GATT system and regional groups; but behind-the-border barriers will probably be more effectively addressed in regional or bilateral groups.

The second variable is the geographic breadth of the issue. An issue that involves a large number of geographically dispersed producers, with a crisscross network of trade, such as textiles and apparel or intellectual property, is best addressed in the GATT. If the issue concerns only a limited number of producing countries, for example subsidies for R&D civilian aircraft, then regional or bilateral talks are more suitable. The third variable is the sensitivity of the issue. The closer the issue cuts to the sovereign bone, the more likely either that cooperation will be found in a regional setting or that confrontation will occur in a bilateral setting. Rapid progress toward free trade in agriculture, the convergence of competition policies, and the adoption of comparable health and safety standards are thus most likely to be achieved in regional groups. Similarly, the difficulties encountered by U.S. and European firms in selling telecommunications equipment and semiconductors in Japan are best confronted in bilateral talks.

The fourth variable relates to whether rights and obligations covering the issue already exist or whether new agreements need to be forged. If the subject matter is squarely covered by existing GATT agreements, the new dispute settlement procedures designed in the Uruguay Round may well make GATT the right forum. But if the subject matter falls outside existing accords and requires a new agreement, then regional or bilateral talks probably offer a more satisfactory resolution.

## B. ENVIRONMENTAL AND TRADE ISSUES

Based on this analysis, the intersection of trade and environmental concerns can serve as a case study. The interaction between trade and environmental policy is hardly new. In 1911, Great Britain, Japan, Russia, and the United States signed the Fur Seal treaty that prohibited imports of seals and sea otters caught using unlawful methods. In 1927, the League of Nations discussed the growing use of trade restrictions for environmental conservation. The resulting Convention (and Protocol) for the Abolition of Import and Export Prohibitions and Restrictions sought to reduce trade barriers except for those designed to preserve animals or plants from extinction.<sup>22</sup>

Article XX (General Exceptions) of the GATT permits exemptions from its fundamental trade norms for measures "necessary to protect human, animal, or plant life or health" or "relating to the conservation of exhaustible natural resources." But GATT did not establish a working party on "Environmental Measures and International Trade" until 1971, and the first meeting of this group did not occur until 1991.<sup>23</sup> The number of environment-related trade restrictions is rising. The Montreal Protocol, seeking to curtail the use of ozone-depleting chlorofluorocarbons (CFCs), as amended in 1990, mandates trade actions against non-signatories; the Marine Mammal Protection Act was changed in 1988 to embargo fish caught using means dangerous to dolphins; and the United States embargoed shrimp from Surinam in the name of protecting endangered sea turtles. As trade and environmental issues are joined, different groups will be called upon to resolve the ensuing disputes. Our analysis helps suggest the assignment of issues to groups for three types of disputes that are currently on the horizon.

The first type of dispute concerns appropriate circumstances for the use of trade sanctions to enforce environmental accords. Few questions arise when sanctions are used to enforce environmental agreements that enjoy broad international support, for example the Montreal Protocol, agreements on ivory, and the Basel Convention on Hazardous Wastes. But serious disputes arise when environmental policies are unilaterally announced by a single country, or even by a subfederal unit of a single country, and then backed up with trade restrictions. Besides the dolphin and shrimp cases already mentioned, other examples of unilateralism include the EC embargo on furs of animals captured using leg-hold traps, and the attempt by GLOBE (an international association of legislators) to ban log imports from Malaysia until that country adopts sustainable timber management practices.

These disputes raise the problem of determining (1) whether the environmental goals involved are justifiable, and (2) to what extent trade sanctions are an appropriate compliance tool. The examples to date suggest that these cases often involve countries in very different parts of the world. By itself, this fact suggests that ensuing disputes are best addressed in a broad-based multilateral group.

But the problem with this tentative assignment is that the GATT badly fumbled its first trade sanctions case, the dolphin dispute. The panel decision on dolphins had a weak legal foundation and under the circumstances, the GATT was ill-advised to issue a decision that overnight made itself public enemy number one of environmental groups. Nevertheless, with great effort, the GATT may recover its environmental credentials. Here is one possible solution. Distinguished inter-

national panels, drawn from National Academies of Science, might be convened by GATT to render an advisory opinion as to the merits of environmental goals that are propounded unilaterally. After the opinion of the scientific panel is issued, a trade panel, again organized under GATT auspices, would pronounce whether the specific unilateral trade remedies are proportionate to the environmental harm. If the sanctions are found to be excessive, the sanctioned country would be entitled to invoke countermeasures.

The second type of dispute looming on the horizon involves "environmental capture" — the use of environmental arguments to justify new and unwarranted forms of trade protection. The hallmark of environmental capture is that the main goal is to protect a domestic industry rather than to preserve the environment. One example is the Indonesian ban on raw log exports. While this law claims to protect against deforestation, it was actually designed to encourage the processed wood products industry in Indonesia.<sup>24</sup> Another possible example is the German requirement that manufacturers of processed foods create refund and collection systems to ensure that packaging materials are recycled. While these requirements certainly seek an admirable outcome, they may put an undue burden on foreign producers of processed foods.

Alleged environmental capture laws raise problems involving both intent and effect. Which laws are truly adopted to protect the environment and which cynically use the environment as a shield for industrial protection? What is the dividing line between small effects and large effects? These distinctions are not easy to make. Countries often have both the environment and industry in mind when laws are drafted, and the best-intentioned laws can have unintended consequences.

Probably a bifurcated approach is best for dealing with environmental capture disputes. The presence of "improper" legislative motives is so delicate that it can be raised only in regional groups, if there. Rights of consultation, as legislation is being shaped, may evolve within Europe and North America, but probably not on a wider scale. The question of effects is more straightforward. Within the GATT framework, discriminatory effects can be challenged as a violation of the national treatment principle. Such effects can also be challenged within regional groups; indeed, the apparatus for raising environmental capture questions is included in the NAFTA text.

A third type of dispute involves "environmental dumping." Environmentalists are worried that trade talks will be used as a device through which, in the name of protecting jobs, environmental standards will be lowered. In the United States, environmentalists fear that Congress will decide that the adoption of the Clean Air Act imposed undue costs on U.S. firms and that, as a result of heightened competition with Mexico, weaker legislation on environmental protection will be enacted in the future. While U.S. environmentalists are concerned that the Congress may react by going slow on raising environmental standards at home, the trade community is concerned that Congress may do the opposite and force other countries to raise their standards by penalizing their exports.

Either way, this problem will probably prove too difficult to resolve in an international forum where member countries have a wide range of environmental standards, ranging from strict levels (Scandinavian countries and the United States) to almost nonexistent controls (Southeast Asia). Moreover, realworld cases of environmental dumping — as opposed to some hypothetical impact on future legislation — are most likely to occur when countries at disparate income levels have close trade ties (the United States and Mexico; Germany and Poland; Japan and Korea). These considerations suggest that environmental dumping is better handled in regional groups. The background of close cooperation on a range of issues, and high trade and investment linkages, may enable regional groups to bridge environmental disparities that lead to genuine instances of environmental dumping.

#### ENDNOTES

1. Seen as a battle of labels, the question, as Robert Lawrence has phrased it, is whether regional arrangements become "building blocks" or "stumbling blocks" in the long march toward freer trade and investment on a global basis. For now, the building block label seems appropriate. With minor exceptions, the regional arrangements have not raised barriers to trade with external countries; their sideswipes against outsiders are more accidental than deliberate (illustrated by the brief flurry over the EC Second Banking Directive); often they have genuinely opened trade to outsiders (e.g., Japanese firms have taken good advantage of the Auto Pact and the U.S.-Canada FTA); and the regional groups have exhibited a tendency toward geographic expansion.

2. Alan Oxley. The Challenge of Free Trade (New York: St. Martin's Press, 1990), p. 9.

3. William Cline, ed. *Trade Policy in the 1980s* (Washington: Institute for International Economics, 1983), p. 5.

4. Robert Gilpin. The Political Economy of International Relations (Princeton: Princeton University Press, 1987), p. 192.

5. By 1986, as much as 50 percent of merchandise trade may have been subject to some form of NTB. For a survey of the U.S. experience, see Gary Clyde Hufbauer, Diane T. Berliner, and Kimberly Ann Elliot, *Trade Protection in the United States: 31 Case Studies* (Washington DC: Institute for International Economics, 1986). For a global review, see Richard J. Grant, Maria C. Papadakis, and J. David Richardson, "Global Trade Flows: Old Structures, New Issues, Empirical Evidence," 20th Annual Pacific Trade and Development Conference, September 10-12, 1992, (Washington DC: Institute for International Economics, July 1992), pp. 2-3.

6. Sperry Lea. "A Historical Perspective," in Robert H. Stern, Philip H. Trezise, and John Whalley, eds., *Perspectives on a U.S.-Canadian Free Trade Agreement* (Washington DC: The Brookings Institution, 1987), pp. 26-27.

7. Paul Wonnacott. The United States and Canada: The Quest for Free Trade, Policy Analysis 16 (Washington DC: Institute for International Economics, 1987), p. 1. 8. Jeffrey J. Schott. "The Free Trade Agreement: A U.S. Assessment," in Jeffrey J. Schott and Murray C. Smith, eds., The Canada-United States Free Trade Agreement: The Global Impact (Washington DC: Institute for International Economics, 1988), pp. 1-4.

9. Gary C. Hufbauer and Jeffrey J. Schott. North American Free Trade: Issues and Recommendations (Washington DC: Institute for International Economics, 1992), p. 37.

10. Hufbauer and Schott. North American Free Trade, p. 4.

11. "El Tratado de Asunción del Mercado Común del Cono Sur (MERCOSUR): Algunas Consideraciones," CEPAL, 1992, p. 3.

12. Carina Perelli and Juan Rial. "MERCOSUR: Regional Integration's Dilemmas and Alternatives," Council on Foreign Relations, March 1992, p. 24.

13. José Tavares de Araujo Jr. "MERCOSUR, the Bush Initiative, and the International Competitiveness of Brazilian Industry," Instituto de Economía Industrial, October 1991, p. 10.

14. Donald Coes. "Brazilian Trade Policy and Regional Trade Initiatives," paper presented to the International Center for Economic Growth conference, Panama, March 1992, pp. 21-22; "La Evolución Reciente de los Procesos de Integración en America Latina y el Caribe," CEPAL, 1991, p. 15; and Tavares, p. 13.

15. Perelli and Rial. "MERCOSUR," pp. 40-42.

16. Ambassador Rubens Antonio Barbosa. "The Brazilian Perception on the Southern Common Market," paper presented at Council on Foreign Relations'

"Workshop on the MERCOSUR Trade Agreement," March 1992, pp. 2-3.

17. Measured by the importing nation or group's share of the other's total exports. Gary C. Hufbauer and Jeffrey J. Schott. Western Hemispheric Integration: Starting Point, Long Term-Goals, Readiness Indicators, Paths to Integrations (Washington DC: Institute for International Economics, July 1992), pp. 16-18.

18. The one exception to this generalization is the EC penchant for using subsidies in a wide variety of situations: to support agriculture, to bolster high tech industries, and to slow the decline of sunset sectors. In several instances, EC subsidies have led to trade frictions with the United States.

19. Alternative labels for the two brands of capitalism might be the "Anglo-Saxon" and the "Asian" models.

20. However, within the Atlantic system, a distinction can be made between the Anglo-American approach, which historically has favored a hands-off attitude toward industry, and the Continental European approach, which has favored the use of subsidies to achieve industrial and agricultural goals.

21. As Larry Krause observed at this conference, the SII talks can be seen as a diplomatic ploy to buy time rather than as a serious attempt to alter economic systems. In buying time, they succeeded.

22. Steve Charnovitz, "Environmental and Labor Standards in Trade," The World Economy, vol. 15, no. 3, May 1992, p. 337.

23. Charnovitz, "Environmental and Labor Standards in Trade," pp. 338-9.

24. Charnovitz, "Environmental and Labor Standards in Trade," p. 347.

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