Unbundling Japan, Inc.

Everyone agrees that Japan's postwar economic success has been truly spectacular. While the Japanese government's precise role and influence in this unprecedented development is sometimes debated, it is generally agreed that government policies at both the macro and micro level facilitated the process. As other observers have pointed out, Japan at the end of WWII was a country with few resources except a well-educated, hard-working labor force. She had little arable land to feed a 100 million people, and few energy or natural resources. Food, energy, and natural resources would all have to be imported and paid for with exports if Japan was to survive, much less prosper.

To accomplish this fundamental requirement, Japan needed an internationally competitive manufacturing sector producing products for which there was worldwide demand. Japan had to export in order to import. From this logic, some basic policies evolved which underpinned Japan's spectacular postwar growth. However, since 1973, their effects have become less benign.

1) Competitive growth in manufacturing requires substantial investment. For this investment to be non-inflationary, thereby maintaining international competitiveness, it must be supported by a high rate of savings. The government, therefore, instituted substantial incentives for promoting savings; itself running a budget surplus until the 1970's. These funds were in turn channeled to key business sectors through administrative guidance, budget incentives, lending policies by government banks, and Bank of Japan rediscount policies.

2) Government policies supported the promotion of light industry exports such as textiles first, for which there was substantial worldwide demand and where low cost labor was a prime requirement. Fertilizer, shipbuilding, steel, power, and coal were targeted as key industries to reduce transport and foreign exchange costs and as necessary to successful industrialization generally.

3) As imported oil became cheaper than coal, Japan phased out coal and pushed to reduce the cost of imported oil. This led to larger oil tankers, more
demand for steel, and large investments in oil refining, chemicals, and petrochemicals.

4) The Heavy Industry Bureau of MITI had responsibility for the development of these basic industries and became the architect of Japan's postwar industrial policy. As the GOJ, MITI, and the Japanese public all wished to raise their growth and standard of living, overtime they raised their sites to industries with more value added and technical complexity: in succession, autos, consumer electronics, computers, semiconductors, bio-technology and space.

5) The model for industrial development in each case has tended to be the same: First there is import of the product and development of the domestic market. This is followed by protection of the domestic market (including government subsidies, technology imports, cooperative R and D, low cost loans, etc.). As investment grew and cost fell, the industry began to export first to less developed countries where competition was less and finally to the advanced countries. In time as the economy grew in size and sophistication and as capital generation became substantial, the need for subsidies was reduced. Indeed, the value of the Japanese market itself and low cost capital became the pillars supporting industrial evolution.

6) In this context, import substitution has led to rapid growth in demand supported by large scale investments funded by high debt levels. Large scale investment and the lower cost of debt capital (due to tax deductability) in turn resulted in lower costs, lower prices, more demand, more investment, and the search for other markets including exports. This situation continued until domestic and export markets were saturated or politically limited.

This economic growth engine continued at accelerating rates until a series of events dramatically changed Japan's economic context. Domestically many major industries such as steel, non-ferous metals, chemicals, and pulp and paper matured. Further investments and lower prices did not expand demand domestically and overseas. In addition, the other developed countries, as well as the NICs and the LDC's were interested in limiting Japanese exports to either stem the erosion and employment effects of Japanese imports or promote their own industrial development. On top of this were layered two oil shocks
that increased the price of oil 40 times, the floating of the yen with a net appreciation of 20 to 30%, and a disillusionment among Japanese with growth for growth sake. The latter in particular was fueled by some spectacular pollution cases combined with the worldwide ecological movement that prompted the Japanese to adopt the world's strictest pollution legislation.

It was these events which prompted the GOJ and MITI in particular to promulgate an acceleration in Japan's intent to move out of heavy industry into knowledge intensive industries such as computers, biotechnology, fashion, management consulting, engineering, and so on. Within this development, of course, computers, semi-conductors, telecommunications, satellites, software development were the key sectors just as steel, shipbuilding, chemicals, and autos had been earlier. Not surprisingly, techniques similar to those used earlier were employed: investment by foreign firms was limited until 1976, and tariffs were held at high levels. Also administrative guidance was used to encourage sales by domestic companies. In addition R and D cooperatives were formed, government funding was provided, and loans to key firms were facilitated.

The industry's growth and progress prospered, particularly in semi-conductors such as large scale DRAMS. Japanese computer companies, NEC, Fujitsu and Hitachi emerged as the only serious global competitors to U.S. firms, particularly IBM. More recently, Japan announced its 5th generation artificial intelligence and super computer projects which have captured the imagination of many foreign observers and has served notice of Japan's intention to capture the lead in information processing from the United States. Indeed, the pressure on Japan and MITI to accomplish this objective have grown substantially since the first oil shock.

1. As a result of Japan's dramatic increase in energy costs, some 24 industries, in which over 50 percent of operating costs are accounted for by energy and raw material, are classified as structurally depressed. Though these industries were built with export sales in mind, exports are usually money losing even on a
cash basis. Most of these industries, including chemicals, petrochemicals, pulp and paper, fertilizer, lumber, plywood, etc. are thus operating at 50-60% of capacity. But some, like aluminum, are operating as low as 20% of capacity. Since domestic sales amount to over $100 billion, the threat of increasing imports is apparent. The government also has a major program underway to scrap capacity and rationalize these industries.

2. A combination of maturing demand, depressed industries, and a continued high savings rate have slowed economic growth considerably in the last few years from around 6% in the 1970's to 3-4% currently. This has in turn decreased demand and investment opportunities, further slowing growth.

3. High budget deficits have stimulated fiscal conservatism, curtailing budget expenditures, while investment and pressures to keep the yen strong have limited expansionary monetary policy. Thus macro growth policies have been restrained.

4. Pressures from the NICS in Japan's traditional industries is growing not only in export markets but Japan itself. Korean and Taiwanese textiles, steel, ships, consumer electronics are all factors in the marketplace.

Given the above factors, the pressures on Japan to find a major, even leadership, role for itself in the information age or knowledge intensive industries are very severe. Yet, despite this situation, there is no clear government agency with the mandate to achieve this result. Though MITI's general industrial policy vision for the 1970's and again the 1980's clearly sets forth Japan's reasons and objectives in moving towards a post-industrial economy, legal responsibility for several key post-industrial sectors lies with other ministries. The Machinery and Information Industries Bureau of MITI does not have the same mandate for the 1980's and 90's that the Heavy Industries Bureau had for the 1950's and 60's. The responsibility appears more dispersed: The Ministry of Education (MOE) - has responsibility for University based R and D, copywrite and education; The Ministry of Health and Welfare (MHW) - for biotechnology, medical equipment, pharmaceuticals; The ministry of Finance (MOF) - information based financial services, electronic banking, automatic funds transfer; The Science and Technology Agency (STA) - space and satellites; The Ministry of Post
and Telecommunications (MPT) - telecommunications including enhanced services; MITI - information processing industries, semi-conductors, space hardware, and patents. While MITI has tried to extend its mandate through organizations in areas such as bio-technology, software, and telecommunications (often administratively populated with ex-MITI bureaucrats), their administrative responsibility is weak.

The other ministries appear jealous of their turf and want to take their turn at being responsible for part of Japan's future. In this sense, Japan remains very different from the United States in that the big bureaucratic question is not whether government should manage Japan's entry into knowledge intensive industries as per the traditional model but by which ministry. However, it is also apparent that many business interests would like to see a greater degree of freedom, at least from control over certain industries.

Some recent U.S.-Japan trade policy situations involving VANS (Value Added Networks), Software Registration, and Communications Satellites are instructive in illustrating some of these divisions, shifting interests, and the economic stakes. There also appear to be some new developments in the wings.

In the case of VANS, the issue has been who will control the delivery of information services, widely interpreted, by telephone cable, satellite, or radio wave, not whether it should be guided. That is, while MITI has argued for complete liberalization with respect to establishing VANS, it hopes to exercise its authority via its mandate to promote firms developing/producing related hardware and certain software. Indeed, VAN liberalization in conjunction with their software registration package would enable them to exercise full authority over both VAN hardware and the services transmitted (software packages).

MPT, on the other hand, wishes to retain authority over the use of telecommunications facilities just as it did several years ago with respect to time sharing services. And in the end, the result appears similar: a partial compromise, but with MPT retaining authority. The foreign ownership, MPT inspection, and licensing requirements have been dropped, but a MPT registration and notification system are retained. In addition, hardware must meet common carrier interconnect requirements and standards. The MOF may also want some guidance over VANS used for financial services. But some conflicts may soon
arise with the major city banks who want to run their own nationwide VAN independent of NTT and the MOF.

MITI's motivation in developing a new system for protecting software appears even more clear cut:

1. The U.S. lead in software seems substantial and does not appear to be narrowing. The U.S. has ten times as many programmers as Japan, plus several thousand professionals (e.g. consultants, accountants, lawyers, doctors, etc.) developing specialized programs for their own use.

2. Copywrite law extends the period of protection to such an extent that much of the basic existing computer programming language and microcode used worldwide, including in Japan, would remain under U.S. control for the next several years (e.g. IBM 360-370 based software systems).

3. While copywrite law permits the writing of new software to achieve the same results, it does not allow copying or add-ons without the orginators' approval. In certain cases, MITI does not feel Japan has the time to spend on writing new software. Also this would force Japan's limited programming resources to effectively reinvent the wheel. Given the rapid rate of change in this area, this could place Japan at a further competitive disadvantage in software for some time.

4. From MITI's view helping users, including hardware producers, gain access to important software is as critical as protecting software developers. This is because hardware producers currently seem at some competitive disadvantage due to software even though their hardware is clearly state of the art.

5. Copywrite Law applies automatically, and on an international basis even if one does not formally register a program. This approach substantially reduces the ability for government to interfere in the process as well as to discover via an application process how the program was created.

For all these reasons, MITI has tried to replace copywrite protection with their own version of software protection registration, claiming that software is inately associated with a machine and is thus an economic property. Therefore, a patent process, which MITI controls,
is more appropriate. In this position, they were opposed by MOE and the U.S. government who pointed out that programs were works of authorship and that the rest of the world including Japan, was generally applying copywrite law to program protection. The USG also noted that if the MITI Bill were passed, Japan would be in violation of the Universal Copywrite Code and the Berne Convention. In turn the U.S. would probably take remedial action including not allowing Japanese programs U.S. copywrite protection and embargoing imports containing U.S. pirated software. After much bureaucratic jockeying in an attempt to reach a compromise, both bills were withdrawn. But in effect, the Japanese courts are still applying copywrite protection.

In both of these situations above, different business groups lined up with the various Ministries involved. Each view was different, depending on whether they were software developers or users, had their own independent software (e.g. NEC versus Hitachi and Fujitsu), or were facing potentially strong competition. This is even more true in the case of communications satellites. Japan is interested in developing its own independent space capabilities. However, given its slow growth rate, depressed industries, and large budget deficits, the STA is facing severe budget constraints on its program. It is thus vital to its program that NTT continues to fund 70% of the communications satellite program, including launch capabilities.

However, from NTT's perspective this approach significantly raises the cost per channel versus buying a U.S. delivered system. This in turn puts the cost onto Japanese users, such as those purchasing or establishing VAN services. In an information based economy such protection could be a large tax on the system, hurting its development. In addition, the government has announced that NTT is going to be privatized. Other firms will be permitted to enter the common carrier business. While NTT may still not be allowed to purchase foreign satellites, in order to support STA's space program, it appears other private firms will be allowed. If they can purchase satellites cheaper and then offer lower cost leases than NTT to VAN's, this will seriously affect NTT's ability to compete and grow in this important area.

Yet without NTT's support, STA will find it difficult to support producers of launch and satellite equipment such as MHI, Nissan, and NEC to develop their capabilities in this big area of future technology. However, major
users such as Keidanren's supporting companies and organizations are concerned about the cost of this protection to them in higher information and telecommunication fees. Further, telecommunication producers not directly involved in satellite production or ground stations, view themselves as being disadvantaged if NTT's system is not expanded rapidly at low cost due to the slow pace of Japan's space program. Currently, it will be 1990 or 1992 before Japan can launch the large capacity satellites available from the U.S. now. There is also the reduction in NTT funds available for other projects. So far, STA has succeeded in excluding U.S. made satellites, but the fight between interest groups continues.

Recently, there is some indication that budget constraints may force STA to ask some satellite system producers to fund some of their basic capital costs as well. As companies like MHI are already suffering from the low demand for ships and heavy machinery, while NEC needs its funds for its broad efforts in computers, semiconductors, and telecommunications systems, there will be some difficulties in switching what was a government funded effort for the future to joint funding. Especially true when the eventual payoff is still many years off.

VAN's, software, and satellites, indicate an apparent lack of homogeneity in terms of Japan's approach to high technology electronics. The objective of moving into the information age is generally agreed on. But the how, and role of the government, and more specifically each ministry or firm have yet to be resolved. So far it appears that no one agency or group of businesses will have such control. Japan Inc. seems to be unbundling, with each group representing its own interest and generating only moderate pressure for a consensus.

On the other hand, where MITI's influence is clear as in the case of the 5th generation computer and super computer projects, resources and research are being mobilized (including super VLSI and semi-conductor equipment). This is an impressive consensual effort involving several major firms, including NTT, to leap-frog current technology and U.S. market competitiveness. This is despite some friction among competing firms and with MOE on the involvement of universities. One interesting objective of this project (described in more detail in other articles in this edition) is to automate software production substituting hardware and capital (Japan's strength) for software expertise (the U.S.'s current advantage). Such factor reversal is of course a classic competitive response to a
specific advantage. (The power loom in the 19th century was invented in response to a shortage of weavers that in turn resulted from the invention of automated spinning equipment).

Given the importance of the information processing and data transmission business to the future of both Japan and the U.S., the ebb and flow of U.S. and Japanese policy and competitive response is important to everyone. To understand how this dynamic is evolving, however, now requires a more detailed analysis of Japanese interest groups and the position of concerned ministries. It is no longer sufficient to only look at MITI and its industrial visions, other players are also playing a major role now and will in the future too.

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