

Japan's Competitive Advantages in the Global Market

John Riew
Penn State University
September 2007

Abstract

The paper analyzes Japan's competitive advantages in trade, comparing the nation with other industrialized (G-7) countries. Japan's paucity in resources, we note, is commonly overstated. Endowments such as climate and geography, for example, are unacclaimed but important bounties of nature. Important also in this analysis are factors of population and culture, as well as events of history, the role of the government (investment in physical and human capital, industrial policy and trade promotions), and the private sector behavior. These elements combine to promote competitiveness with a magnitude that far more than compensates for the dearth of natural resources. The main sources behind Japan's spectacular rise as a major economic power and a dominant player in trade originates as early as the last quarter of the 19th century. This study provides other countries with a referential model with trade history and development strategy.

Introduction

A nation's competitive advantages in trade may derive from its natural resource endowments or they may result from such other factors as the events of history, the role of the government (in infrastructure investments, human capital development, industrial policy and trade promotions), as well as other relevant social institutions and private sector behavior. These combine to promote competitiveness, with varying effects over time.

We analyze Japan's competitive advantages, comparing the nation with other industrialized countries. Evaluations are more in qualitative terms in that our analysis depends more on logic as we discuss probable effects of differences in endowments and other relevant factors that bear on efficiency in management, production, marketing, and logistics, thus the prices of the products, and further on the ability to bring forth quality improvements, introduce innovations, and generate new materials and new products to the international marketplace.

Dating back to the Meiji era (1868-1912) and through the interwar decades, various forces enabled Japan in her postwar economic achievements, becoming one of the most potent players in international trade. We begin with our discussion on such factors that are more intrinsic as natural endowments, population, geography and culture, and delve into other relevant factors that had bearing on competitive positions of specific sectors or to influence overall efficiency of the whole economy to impact on general competitiveness of the nation's firms in the global market.

I Natural Endowments

1. Natural resources: land and minerals

The nation has the smallest per capita land mass of all G-7 nations. Moreover, of the total land (the size of California) only 13.2 percent of it is under cultivation. Apart from the constraints in land space, Japan must rely heavily on imports for most core minerals such as iron ore, crude oil, coal, and copper. The paucity in natural resources (land and minerals), in absolute or per capita terms, is so pronounced when compared with the U.S., Canada, Australia, many major South American nations, China, and Russia.

Japan has thus been known to be among the least blessed in natural resources. There are, however, several important gifts of nature that have been often overlooked or underappreciated: Temperate climate, plentiful rainfall, topography, the natural harbors, and certain other aspects of geography.

2. Temperate climate, abundant rainfall, high mountains

Japan, in most part, is a temperate country and well watered. Tokyo shares the 35th parallel with Atlanta (Ga.) and Cyprus (of the Mediterranean). Japan's average rainfall is 106 mm during March-October (156 mm for the Kanto Plain that surrounds Tokyo). By comparison, Germany, which lies above the 45th parallel, is cooler in temperature and has the summer-month rainfall average of below 75 mm.

Though limited in arable land, the mild climate and plentiful rainfall favor agriculture. The agricultural 'surplus,' the U.N. reports document, helped finance Japanese industrialization in early periods, from around the Meiji Restoration, 1868, to World War I.* During this period, a greater agricultural productivity ably fed a growing urban population while also supporting a rise in exports.** Tea and silk were among the main items of exports that provided necessary foreign exchanges with which Japan could secure some of the tools of industrialization.***

With a rugged terrain, three quarters of Japan is mountainous. The Japanese Alps, a north-south ridge of 10,000 ft granite peaks (in the middle of Honshu, the main island), are 140 miles long and 60 miles wide. These and other mountains and plentiful rainfall generate large-volume, fast-running body of water and become a significant natural source of energy and of ample water supply for industrial and residential use.

Nuclear power represents an increasingly larger share of the nation's total energy output, but even today, about 15 percent of electricity is generated from hydroelectric sources. The corresponding ratio was around 50 percent in 1960 and is a testimony to the important role played by Japan's hydroelectric power, in earlier periods and to this day.

*Food and Agricultural Organization of the United Nations, Economic and Social Commission, *Agricultural Development in Modern Japan*, Commission Papers/63/CP/IIC/I (February 16, 1963), an extraction reprinted in *Readings of Taxation in Developing Countries*, eds. Richard M. Bird and Oliver Oldman, Johns Hopkins Press, 1967, pp. 478-491.

**The annual growth rate of agricultural net output during the period averaged almost 2.3 percent, and the expansion rate of food crops was high enough to outstrip the growth rate of population. The elements making for this progress were twofold, technical and institutional. At technical level, land improvement (better irrigation and drainage facilities and some land reclamation), and still more, better seeds, better methods of crop cultivation, and increased input of manures and fertilizers all contributed to expanded output. Technical advances at this time – so called "Meiji Technology" was a combination of indigenous know-how and very selective borrowing from the West. Institutionally, the Meiji Restoration abolished numerous restrictions of the feudal era of "Tokugawa Shogun," thereby enlarging the scope of the domestic market and increased demand. With the nation unified, more advanced agricultural methods could be more readily disseminated on a national basis, through an extensive education program, extension services, and the like. (FAO, U.N. Economic and

Social Commission, "Agricultural Development in Modern Japan," February 15, 1963, as quoted in Bird and Oldman, 481-485.)

***The central government had depended much on agriculture for its revenue (with land taxes amounted to about 35% of the estimated crops from the land (Bird & Oldman, p. 482)

3. Natural Harbors

Port cities may emerge in an endogenous process described by Fujita and Mori (1995),* but Japan's major urban centers all adjoin natural harbors, offering strategic benefits as we note below. This is perhaps an underappreciated feature of "nature's bounty" bestowed on the nation. In the case of port cities, harbors can be costly; they require considerable capital and technology -- although this would be less of a task today than in the earlier prewar era.

*Masahisa Fujita and Tomoya Mori, "Why Are Most Cities Great Port Cities?: Transport Nodes and Spatial Economic Development," *Working Paper in Regional Science*, No. 175, University of Pennsylvania, March 1995; Masahi Fujita, Paul Krugman, and Anthony J. Venables, *Spatial Economy*, The MIT Press, Cambridge, 1999.

II Population, Geography, and Culture

1. Large Population

Japan is the second most populous nation of the G-7 (Table 1), about twice as populous as the U.K, France, the pre-1990 West Germany, or Italy. Its population of 128 million (2005) provides the base for a large domestic economy, which in turn offers several major advantages over European counterparts. These advantages may have become of lesser importance with the nations of Europe now united under the EU regime, although the latter as a cohesive economic entity may require more time to function in the way a single national economy does as in the case of Japan or the United States.

A. Economies of scale and of agglomeration

The large domestic market enables Japan's firms to operate at efficient scales, allowing lower unit costs. To the extent that internal (plant-level) economies of scale in manufacturing are exhausted even in economies that are not very large (James R. Tybout, JEL, March 2000, pp. 11-44; Clerides, Lach, & Tybout, QJE, August 1998), the merits of the size (of a domestic market) can be overstated. Moreover, if we talk about the tradable goods, then the trade would make the size matter less; Luxembourg, a small country, has a viable steel industry and Switzerland's watch firms successfully compete in the world market.

Still, where products involved are of high-value added and require high technology to produce, the size of an economy matters. First, the level of technology and the range of required inputs (intermediate goods and skills) are such as to take a large pool of well-educated and well-trained work force as well as sufficiency of capital to develop the requisite technology which in turn must be drawn from a population large enough to meet these multiple needs. Second, for such products to be produced and absorbed in the market on a sustained level (the demand side considerations), a nation has to be of certain size, the larger being the better. The larger the nation, and the greater the cultural homogeneity, the more predictable the prospects for entrepreneurial success.

A larger economy also offers a good testing ground for newly developed products. The testing to precede their debut in the international arena, as is done in Japan (for various new models of automobiles, for instance), ensures greater likelihood of success in the sale of the products abroad. This will also help build and sustain the credibility of the brands that represent the nation.

Even more important, to the extent that the size of an economy determines the number (variety) of industries, a larger economy and the synergy it generates would help elevate the overall efficiency of its various industries. In this regard, Japan, during the most postwar decades, has had advantages over other G-7 nations except the U. S.

Table 1 Population and Land Area, G-7 nations

	Population (<u>millions</u>)		Land Area (<u>1,000 sq. mi.</u>)	
	(1979)	(2005)	(1979)	(2005)
Japan	115.9	127.5	143.5	144.7
Germany		82.4		135.2
(West Germany)	61.3		95.8	
France	53.5	60.9	213.0	210.7
U.K.	55.9	60.6	94.2	93.3
Italy	56.9	58.1	116.3	113.5
Canada	23.7	33.1	3,851.8	3,511.0
U.S.	225.6	298.4	3,618.8	3,537.4

Sources: *Statistical Abstract of the United States*, 1980 (Table 1438) and 2007 (Table 1308).

B. More firms per industry, greater competition and R&D intensity

A larger economy can accommodate a larger number of firms in each industry. In Japan, there are 9 major firms operating in automobiles, 11 in trucks, 5 in steel (all integrated companies), 16 and 34, respectively, in personal computers and semiconductors, and 15

in TV sets (Porter, Table 8-3, p. 412). While, for tradable goods, foreign firms could pose even greater challenges, the domestic rivalry, that occurs within proximate areas, can be more intense, given smaller differences in transaction/transport costs facing firms and the home consumers more informed of domestic products.

Fierce domestic rivalry and competition among firms lend themselves to high R&D intensity, and it would have positive effects on advances in technology. Whatever other reasons there may have been, Japan's R&D expenditures, at 3.2 percent of GDP, in 2005, exceeded the corresponding figures of other G-7 nations (The Science & Technology Indicators, OECD, Paris, 2006). The U.S. aside, the disparities in the R&D/GDP ratio were significant; a Germany that had previously led other nations of Europe registered a low 2.5 percent in 2005. Even during the 1990s, the decade of economic stagnation, Japan's own ratio had never fallen below 2.7 percent.

C. Higher productivity of public infrastructure*

A large population, inhabiting a small area, enables Japan a greater efficiency in the use of social infrastructure, be it intercity railroads, highways, urban subway and surface mass transits, air and sea ports, and so forth. Japan's high speed trains (the Shinkansen) is an example which cannot be emulated in Canada or Australia where the major cities are smaller and too far apart.** Even for the United States, it is difficult to expect a feasible self-financing high speed rail system in areas beyond the northeastern corridor of Boston-New York-Philadelphia-Washington, D.C., for the present.***

It might be noted that our discussions, thus far, related to absolute, rather than comparative, advantages. What we described as the factors elevating productivity, thus competitiveness, affect Japan's firms in different industries, by and large, in similar ways.

*Holtz-Eakin, Douglas and Mary E. Lovely, "Scale Economies, Returns to Variety, and Productivity of Public Infrastructure," *Regional Science and Urban Economics*, 26, 1996, pp. 105-123).

**The Shinkansen Tokyo-Kyoto route opened in 1964, extended to Fukuoka of the southern island of Kyushu in 1977, were put into operation, well ahead of such rail networks elsewhere. France's TGV (connecting Paris to Lyon), the vanguard of high speed passenger rail system in Europe, was built in 1981 (John Riew, "Information Technology Revolution and Its Impact on the U.S. Economy and Beyond," mimeo, 2006).

***For the U.S., with immense investments in highways and the popularity of private cars, any rapid move in this area would be unrealistic, notwithstanding current intense concerns on energy supply and environment.

1. Major urban-industrial centers are in close proximity and are all port cities - Benefits of Geography

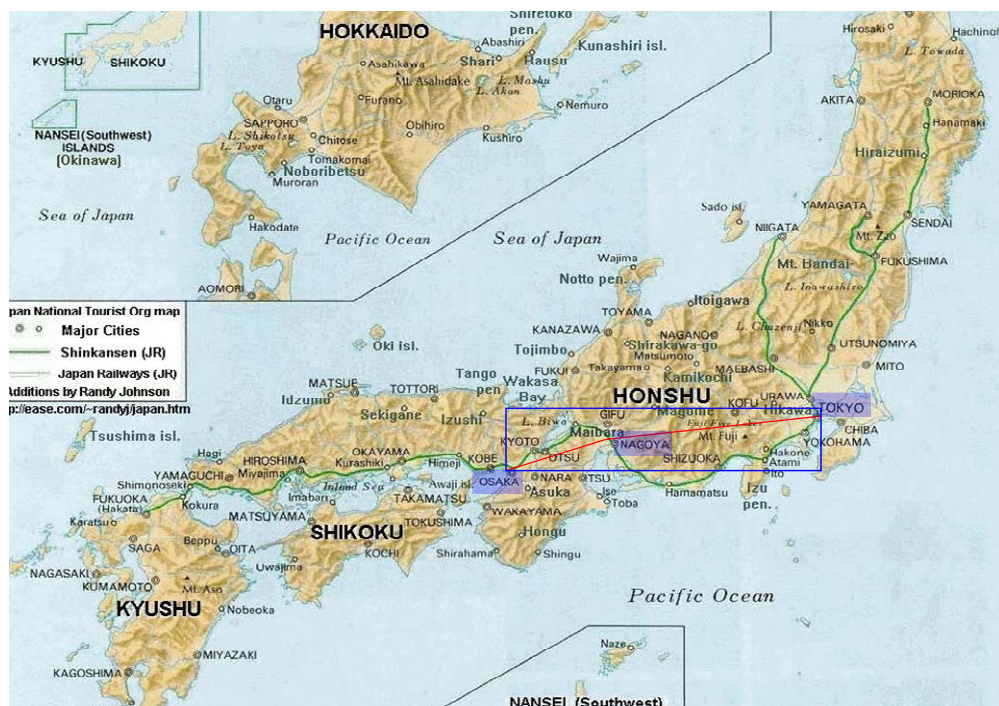
A. Tokyo, Osaka, and Nagoya, Japan's three largest metropolitan areas, are within reach of 2.5 hours on rapid train

The three major urban-industrial centers are all within convenient geographical proximity (Figure 1).^{*} It ensures closer interactions among firms in each industry and across industries, generating a synergy benefiting the whole economy. They, as noted earlier, foster competition and intensify research efforts among competing firms.

Furthermore, these are all in natural bay areas that offer ports at lesser costs to build. For Japan that depended heavily on exports for growth, this was important, especially in the earlier stages of development.

^{*}The population of the Greater Tokyo Area (which includes Yokohama, and surrounding prefectures of Kawasaki, Chiba, and Saitama) is **34.6 million**, while those of the Osaka-Kobe-Kyoto Metropolitan Area and the Nagoya Metropolitan Area are **18.6 million** and **8.7 million**, respectively. Japan's fourth largest metropolitan area (the southernmost) of Fukuoka-Kitakyushu has a population of **5.4 million** (Population of Metropolitan Areas, Japan Statistics Bureau, Wikipedia (internet), July 26, 2007.)

Figure 1



B. Advantages of port cities*

The three major industrial centers of Japan, as well as one in the fourth largest Fukuoka-Kitakyushu area, enjoin large port cities. The port cities, apart from their inherent logistical advantages (of bypassing inland transports), connect directly to (Figure 2a and 2b):

- Huge markets in Asia, at lower transport costs, given these cities' proximity to Asian destinations (vis-à-vis the rivals in Europe and the U.S.).
- Long chain of Pacific side markets of Canada, U.S. Central/South America, and the Oceania (distant, but no barriers such as a sea canal).

Lower transport costs would be of greater value where trade involves bulky commodities. But even when the traded products are increasingly more high-value added and more compact and of lesser weight as they are today, the volume of goods shipped via sea is significant. Passenger cars, trucks, tractors, construction equipments, machine tools, and many home appliances are carried by surface transports, making up 90 percent of the trade in tonnage, though about one half in value. With advances in technology, transport costs have fallen and are said to be no longer as important a factor in trade as in the past. For air shipping, indeed, advances in technology (development of jet engines) have led to a sharp decline in costs: "average revenue per ton-kilometer shipped dropped by 92 percent between 1955 and 2004."** In ocean shipping, however, in spite of technological revolution in the form of container shipping, pronounced price declines are not evident, due to sharp increases in fuel and port costs.

*Fujita-Mori paper, *ibid.* on advantages of port cities.

**David Hummels, "Transportation Costs and International Trade in the Second Era of Globalization," *Journal of Economic Perspectives*, Volume 21, Number 3, Summer 2007, pp. 131-154.

Figure



Figure 2b



3. Culture and the diet

A. The culture of frugality

The resource-poor environments of Japan may have brought forth the culture of thrift and frugality among its population (living or doing with less, not so much by choice but more by constraints). Attempting a proof of the linkage between scarcity and a culture of frugality or knowing how long this observed culture might persist into the future is beyond the scope of this study.

The notion of “recycling (haibutsu-riyo),” relatively new in most of the West, and the U.S. in particular, was popularized in Japan well before World War II. The term “culture” is used here as this habit or tradition of thrift seems to linger on even after the nation becomes more affluent, whether by choice, inertia, or perhaps by constriction as the houses, buildings, or social infrastructure already built are still there in use.

The scarcity of land keeps land value high which affects how ordinary Japanese households allocate their income. Lesser land area and smaller homes mean fewer construction materials, not to mention smaller pieces of furniture, household appliances, and automobiles, as well as consumption of utilities (electricity and water).

Modest building accommodations for schools and business firms, and offices for government and non-profit organizations, plainly visible in Japan, are undoubtedly attributable to high land prices. The culture of thrift and non-waste seems to permeate throughout the country.*

The implications:

- i. At a given level of income, a family, living in a smaller house, constrained by high cost of land and of building materials, as in resource-poor Japan, can reasonably be expected to channel a larger proportion of that income to saving. This, however, would depend, in part, on the price elasticity of demand for land, since the total outlays for land will not necessarily fall when the demand is less than unit-elastic.

Two comments are in order in this regard. First, the utility of land for residential use relative to other amenities of life (education, sports, travels, food, clothing and so forth) may be such that the share of income for land acquisition may be smaller with high land price, assuming a price elastic demand for land. Second, even in the inelastic demand (and thus the total outlay for land is larger at a higher price), as long as the demand is price-sensitive (as is certainly likely),** we can envision lesser consumption of other goods that are complimentary to housing (utilities, furniture, household appliances – demand for automobiles are also affected, as noted). And this saving could more than offset the increment to outlays for land (with inelastic demand for land). If so,

we have reason to expect a suppressing effect of high land price on combined outlays for housing *and* related goods.*** The balance of disposable income over these combined outlays is divided between savings and other expenditures. Here, much of the “other expenditures” would go for broadly defined luxury goods and services, basically the non-necessity items, thus giving the savings a likelihood to claim larger shares in that balance.

The chronic high household savings in postwar Japan can be more readily understood in conjunction with the preceding observations. We should, of course, not overlook Japan’s well known longevity as another factor to have bearing on high saving, given low public provisions the nation has to offer for the retired.

A larger pool of saving and the resulting lower interest rates positively affect business investment and productivity. This is more important when there are impediments to mobility of capital across nations, as was the case in the prewar period and even during much of the postwar decades.

- ii. Lesser spending on schools, public buildings and infrastructures would allow lower taxes.
- iii. Lower living expenses (lower housing related expenditures and lower taxes) could, to some extent, have moderating effects on labor wage demand.

These are all favorable to the business sector and help lower unit costs of production and raise competitiveness of domestic firms in the global market.

*The railroad tract and the width of train compartments, in surface and subway systems, are generally narrower than those seen in other countries. Four lane highways in many parts of Japan seem barely equivalent to a three-lane system in the U.S. The topography may have been a reason, but could it be an extension of the culture being described here?

**A recent work by Joseph Gyourko and Richard Voith, “Price Elasticity of Demand for Residential Land,” Lincoln Institute of Land Policy, *Working Paper*, June 1999) suggests that the price elasticity of demand for residential land (based on the study of the Montgomery County, Pennsylvania housing market) is around -1.0, implying that while the amount of land in use falls at higher price, the outlay for land acquisition remains largely unchanged.

An earlier study by Sirmans and Redman provides estimates of the price elasticity of demand, based on 52 U.S. FHA housing market areas in 1967, 1971, and 1975, which indicate inelastic demand for residential sites for all housing areas and for all three time periods. The estimates of the elasticity ranged in value from -.35 to -.80. (See C.. F. Sirmans and Ronald L. Redman, “Capital-Land Substitution and the Price Elasticity of Demand for Urban Residential Land,” *Land Economics*, 55, 2, May 1979.)

If we assume the demand elasticity for urban land to be greater at a higher price (a concave demand curve over higher price ranges), it is possible that for Japan’s major urban areas, the elasticity may be greater than in many medium-size U.S. cities which comprised a large majority of the 52 urban housing market areas. Relevant also, given the stringent building code of earthquake-prone Japan (that relates to wind design and seismic design, along with the

“structural calculations” (Article 4-b of the nation’s Building Standard Law Enforcement Order), the cost of the structure (house), complimentary to land use, is higher and would tend to make the demand elasticity of land higher.

***Only in the case of inelastic demand for land *and* where, at the same time, savings from smaller outlays on house and related (complementary) goods are outweighed by the incremental spending on land, would this proposition be invalid.

B. The diet, general health, and average physique

For a nation of islands, fish naturally becomes a major part of the diet. The small land mass leaves little space for anything other than the basic food staple, rice. This basic diet of fish and rice (taken in relatively small amounts, by the Western standard) has often been said to account for Japan’s notable longevity.

Japan’s healthy but low-calorie diet would have influenced the average physique of the people, the low-calorie presumably affecting the average weight and height. (This, incidentally, is not unlike the smaller and shorter physique of Americans in the colonial period.) The postwar Japanese youth in secondary and postsecondary schools are taller than the older generations, attributable undoubtedly to the nation’s postwar affluence and some changes in the menu in the diet (milk, for instance, now added as an important part of the diet).* Even so, younger generations will not be unaffected by the culinary culture of the old.

To the extent that Japan’s moderation in food intake, the low calorie, has no adverse relationship with nutritional requirements, we envisage previously cited resource savings in housing, public schools (smaller classrooms, lower ceilings, narrower hallways, and lower energy costs) and public infrastructures (public buildings, and even mass transits and highways).** Local trains and buses that seat more passengers per unit space would not go unnoticed to an observer from the West.

The healthy Japanese diet also translates to savings in health care costs for workers and retirees. We contrast this to the situation facing the U.S. where high health care costs are causes for added government budget deficits, occasional high profile corporate bankruptcies, and productivity loss from lost work days. Health care problems have become increasingly more serious in U.S.; the high costs now comprise disproportionately large shares of income for ordinary Americans and make elimination of the uninsured more difficult.***

*In the mid-1990s, Japanese girls at primary school 6th grade level were taller than their postwar 1940s counterparts by 16cm. As for female 7th graders, they were more than 12 kg heavier than their 1940s counterpart. (T. M. Lim, “Changes in the Physiques of Japanese Women,” <http://www.mynippon.com/nao/discover/htm>)

**In 2005, according to an OECD report, the annual average spending per student for primary to tertiary education in Japan (\$7,438 in PPP-based U.S. dollar) was considerably lower than in Switzerland, the U.S., the Nordic countries and Australia. At the pre-primary level, it was

\$4,922, less than half the corresponding spending levels per child in the U.K. and the U.S. (\$8,452 and \$7,881). Other reasons, such as differences in educational qualities, student disciplines, and other cost-relevant environmental variations, will have to be factored in. Given that there are no apparent disparities in quality, yet significant differences in costs, our speculation on the effect of average physique may indeed have had some bearing. (Source; Education at a Glance 2005, OECD Briefing Note for Japan, 13 September 2005, Paris.)

***Added costs of caring for longer-living persons in Japan may be offset, in part, by higher household savings to be expected, thus a larger upfront pool of funds for investment.

III Historical Perspectives

1. Advantages of an early achiever among Asian nations

Commodore Mathew Perry's 1853 visit of Tokyo Bay was the beginning of Japan's substantive trade relationship with the outside world.* A detailed survey of the subsequent circumstances which prompted and enabled Japan to launch aggressive development programs would be beyond the scope of this study.. The fact relevant to this study is that Japan's modern economic growth began after the Meiji Restoration (1868) and that it was the beginning of the rapid surge in economic development which paved the way for Japan's successful industrialization in a relatively short span of time.

During this period in history, China remained largely isolated from the rest of the world; by the end of the 18th century, only Canton (today's Hong Kong) and the Portuguese port of Macau were open to the West. Then, Chinese concessions to foreign powers followed: the first Anglo-Chinese War (1839-1842) and further hostilities (1856-1860), the disastrous Sino-Japanese War (1894-1895) and the Boxer Rebellion (1900). China was a battered nation, in no condition to aspire for rapid industrialization.

Korea, situated in the middle of major powers, China, Japan, and later Russia, remained a reclusive kingdom until annexed by Japan in 1910, following the Russo-Japanese War (1904-1905). Other nations of Asia were mostly colonized, remaining agricultural and mere raw materials suppliers in trade.

In the early 1880's, the record shows, Japanese youths educated in the West were returning home in increasingly numbers. Japan soon became the first and only industrialized nation in Asia. That Japan was victorious in the wars with China and Russia is testimony to an industrial capability achieved by the late 19th century and further into the early 20th century.

It is also noteworthy that Japan was able to sustain a full scale world war for several years (December 1941 – August 1945) while continuing to wage war in China (that started in 1937). This too bespeaks of Japan's rapid advances in industrial might. Prior to and during the World War II, Japan made significant leaps in aviation,

communications, ship building, steel and nonferrous metals, optics, motor vehicles, machine tools, chemicals, textiles, and processed foods.

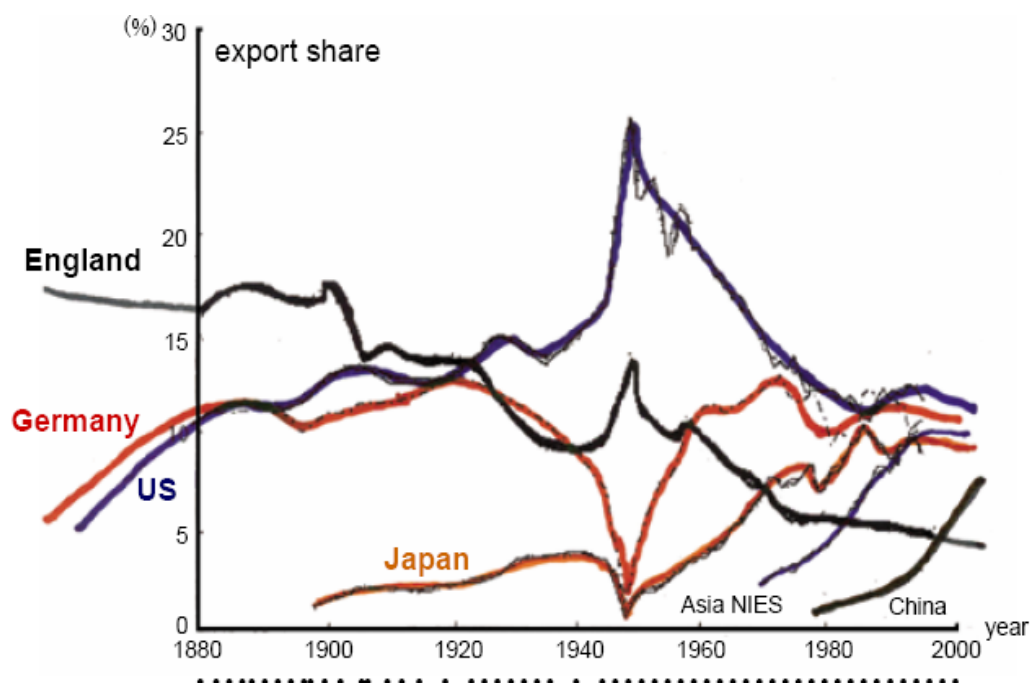
In the intervening (pre-World War II) periods, Japan had:

- Access to huge Asian markets for industrial products. With lower logistics (transaction and transportation) costs, Japan had price advantages in export markets (over Europe and U.S.), and, of course, little competition within Asia. This had been so even in the postwar years into the 1960s, and even beyond.
- Access to raw materials (coal, iron, other minerals, timber, etc.) at lower delivery costs from the nearby supplier nations of Asia. Japan, Asia's sole industrialized nation for long, certainly up until the 1960s, had further benefits of being a monopsonist in raw materials markets, to the extent the distance factor placed Europe and the U.S. in competitive disadvantages as buyers of Asia's raw materials.

These advantages helped Japan in its effort to solidify the foundations for continued industrial development in the interwar period and thereafter. Japan was able to recover speedily from the scourge of the World War II and achieved remarkable progress in the global export share (Chart 1).

Germany and Japan, Chart 1 shows, share a similar pattern, both plummeting in trade activity at the end of the war in 1945. But, Japan, the comparative latecomer in economic race, exhibits greater resilience with a postwar surge in export share through the end of 1980s. Contrasts between German and Japanese pre- and post-war records are remarkable. Wide prewar disparities in exports, Germany far exceeding Japan, are at great with postwar figures, which show the two nations' nearly converging by the 1980s. Japanese competitive advantages are an important part in explaining this change.

Figures 1 Export Shares among Industrialized Countries



Source: Masahisa Fujita, "The Future of East Asian Regional Economies," International Symposium on Globalization and Regional Integration – From Viewpoints of Spatial Economics, December 2, 2004, Institute of Developing Economies (IDE-JETRO).

*The first contact with the West came in 1542 when the Portuguese ship off course arrived in Japanese waters off the southern island of Kyushu. Thereafter, Spanish, Dutch, and English traders followed. During the Tokugawa period (1603-1867), however, Japan, suspicious of Christianity, prohibited all trades with foreign countries; only a Dutch trading post at Nagasaki was permitted.

2. The Postwar constitution – a low cap on military outlays

Japan's post-war constitution stipulates an upper limit on defense expenditures to one percent of the GDP. This meant lower taxes with their attendant positive supply side effects or high spending in productivity-promoting infrastructures or R&D activities.

Equally, if not more, important, this pacifist constitution led to a situation where a greater number of the nation's best and brightest in science and engineering were channeled to the civilian sector of the economy (and its R&D efforts) and to the government sector, a

huge advantage over others, the U.S. in particular. For U.S., a lion's share of the best minds in science and engineering were absorbed by the defense-related sector.*

In this context, the U. K. and France, among other G-7 nations, are more significantly disadvantaged vis-à-vis Japan (Table 2); the defense expenditures of these two nations, with their independent nuclear armaments and more potent naval forces, weighed heavily in the share of GNP.

The U.S. defense outlays as share of the GNP was 9.0 percent in the peak of the Vietnam War and higher still in the 1950s with the Korean War and the intense Cold War rivalry with the USSR. The United States had borne heavy costs for the postwar leadership role for the free world. The costs to the USSR in those periods of high tension with the West, as Table 2 shows, were far greater in relative terms.

Korea and Taiwan, the two emerging economies in the region, moving aggressively to narrow gaps with Japan in technology and industrial structure, also are handicapped with their high defense costs.

*To make the matter worse for the U.S., a large number of high caliber college graduates were attracted into the medical career. The disparities in earnings between medical practitioners and those in other professions have been so wide, attributable largely to the "licensure" pressed upon by American Medical Association. (See Milton Freedom, *Capitalism and Freedom*, Ch. 9).

Table 2 Defense Expenditures, Level and Share of GNP for Selected Countries, 1987 and 1995 (1995 dollars)

	1987 ¹		1995	
	<u>Amount</u> (\$bil.)	<u>% of GNP</u>	<u>Amount</u> (\$bil.)	<u>% of GNP</u>
U.S.	371.0	6.5	277.8	3.8
(USSR) ²	379.0	12.9		
Russia ²			76.0	11.4
U.K.	39.5	4.7	33.4	3.0
France	43.6	4.0	47.8	3.1
(E. Germany)	18.1	7.3		
(W. Germany)	42.7	3.0		
Germany			41.2	1.9
Italy	23.0	3.5	19.4	1.8
Canada	11.6	2.2	9.1	1.7
Japan	24.3		50.2	1.0
China	25.9	4.4	63.5	2.3
Taiwan	5.9	4.6	13.1	5.0
N. Korea	7.3	22.4	6.0	28.6
S. Korea	7.0	4.8	14.4	3.4
Greece	3.6	5.5	5.1	5.5
Turkey	3.6	4.4	6.6	4.0

Notes: ¹ For 1987, defense expenditures (shown in current dollars in the table cited below) were adjusted to the 1995 dollars. ²Estimates.

Sources: For 1987, Statistical Abstract of the United States (SAUS), 1990, Table 1486; for 1995, SAUS 1997, Tables 1395 and 1410. (Primary source: U.S. Arms Control & Disarmament Agency, *World Military Expenditures and Arms Transfers*, annual.)

3. Japan, a major logistics base during the Korean War.

The Korean War, which began in June 1950 and ended (in ceasefire) in 1953, provided Japan with a timely and significant impetus for economic revival. Michael Schaller, in his paper that focuses on how the Korean War affected Japan, goes as far as to say, “the Korean War proved an elixir that revitalized Japan’s economy.”* The impact of the war on Japan was swift and wide-ranging; the affected industries include those in machinery, metal and metal products, textiles, lumber and paper, chemicals, processed food and beverages, and others meeting urgent needs of the U.N. forces in Korea.

New demands created by the “direct procurement” program of the U.N. Forces brought sharp increase in industrial production. The industrial output index (1932-1936= 100) rose from 93.6 in June 1950 to 98.9 in September, and further to the estimated 126.9 in March 1951. “During the first eight months of the Korean War, the U.N. Forces’ procurement amounted to three percent of the GNP and to about one third of Japan’s current export trade.”**

The statistics show an upward trend in exports even before the Korean War, but the advance in exports at the outbreak of the Korean War was much sharper (rising from \$179 million in Apr. –June, 1950 to \$287 million for Oct.-Dec.), turning Japan’s pre-crisis trade deficit (-\$65 million in Apr. –June 1950) to a surplus (of \$23 million over Oct.-Dec. 1950).***

Japan emerged from World War II with little capital, was able to expand the stock of capital and widen and uplift its industrial base and productivity and helped elevate Japan’s competitiveness in foreign trade in the decades that followed.

*Michael Schaller, “the Korean War’s Impact on Japan,” in Willian Stueck, ed., *The Korean War in World History*, Lexington, University of Kentucky Press, 2004).

**Saburo Okita, “Japan’s Economy and the Korean War,” *Far Eastern Survey*, July 25, 1951, pp. 141-144.

***The Japanese foreign reserve also increased by about \$300 million to reach \$519 million by the end of 1950 (Okita, 142).

IV The Role of the Government

1. Infrastructure Investments

Government investment in infrastructure, large and small, proceeded ceaselessly, and at accelerated pace during periods of economic stagnation. The major projects of strategic importance included intercity railroads, urban mass transits, air and sea port expansions

(and numerous large scale land reclamation for such expansions) and communications infrastructure.

A. Intercity Railroad (High Speed Rail System); Urban Mass Transits

Japan's first railroad opened in 1872, just four years after the Meiji Restoration, and 19 years after Commodore Perry's first visit to the Tokyo Bay. A mere half century after the introduction of Europe's first regularly scheduled railroad (by an English company in 1825), the Japanese accomplishment was quite remarkable.

Japan saw the importance of the railroad and was in a great hurry to catch up with the West. The Shinkansen, Japan's high speed rail network, opened its first Tokyo-Kyoto route in 1964, branching out to other parts of Honshu and into part of the southern island of Kyushu in 1977, well ahead of such rail networks in Europe. The forerunner in Europe's high speed passenger rail system, France built its TGV Paris-Lyon route in 1981.

The rail system played a critical role in Japan's growth. The "Nozomi" line enables passengers to travel from Tokyo to Osaka via Nagoya and Kyoto in 2 ½ hours. The efficient rail system cuts down on logistics costs, expediting economic interaction among firms and promoting exchange among scientists and engineers in industry and academia. Japan's intricate network of urban subway systems and public transits (surface rail and bus) make the second car unnecessary for most metropolitan households, thereby lessening dependence on foreign oil and mitigating environmental degradation.

B. Port facilities (air and sea ports); land reclamation.

Japan's economic growth required more expanded air and sea ports. The Narita/Tokyo International Airport, first conceived in 1962 to relieve the overcrowded Haneda Airport in the Tokyo Bay area, began operating in 1978 (much delayed due to local resident resistance). Another mega project, the International Kansai Airport (of the Osaka-Kobe area), was constructed on reclaimed land in the former bay area. Its recently completed 4,000 meter-long Runway B, built also on reclaimed land in the bay area at an estimated cost of \$7.2 dollars, is Japan's largest, 500 meter longer than Kansai's Runway A, and about the same length as Narita's Runway A.*

Numerous other smaller projects, including the Haneda Airport 2002 runway expansion (now used mainly for domestic flights), have also been completed. Other projects are underway or on the drawing board .

Tokyo Bay Sea Ports were expanded using surplus soil from construction sites in Yokohama and Tokyo, making way for port terminals, cargo storage facilities and construction of coastal barriers. Even more remarkable was the "Mountains to the Sea" project of the 1960s for Kobe, now the nation's largest seaport. The tops of the mountains north of Kobe were excavated and the fill was used to make two artificial

islands that provide extensive land for port terminals, residential areas and business. Dubbed as an “engineering miracle,” these projects earned Kobe international fame.

Given the mountainous terrain surrounding most of the populous areas in Honshu (the main island), the Japanese have had two practical choices for urban expansion: the hinterland to the north and the sea to the south. Developing steep foothills was more costly than seaward expansion. Thus, in Tokyo, Yokohama, Osaka, and Nagoya, land development has actually moved original waterline many kilometers away from its original location, creating a new frontier for economic activities in the coastal area; “In fact, it is rare for one to see the natural Japanese coastline, especially in the eastern seaboard.”**

Land reclamation, vis-à-vis developing high grounds for large residential or industrial sites, was a cost-effective way for making room for growing cities. Moreover, with 80 percent of natural materials imported, most of them used for export, it was even more cost-effective to develop these coastal areas. Such developments also helped contain the ever-widening coastal edge of the cities, thereby making urban centers more functionally cohesive and efficiently run. The investments, costly as they have been, undoubtedly had long-term benefits for Japanese firms to compete in the global market.

*The Runway B of the Kansai International began operating on August 1, 2007, *Asahi Shinbun*, August 3, 2007.

**The push to reclaim land from the waters of the Tokyo Bay began as early as in 1650, *INFRACTURE, Industrial Archipelago*, transstudio.com/infracture/113.html.

C. Telecommunications infrastructure*

In the middle of rapid proliferation of the Internet and advancing telecommunications infrastructure developments such as broadband, it is necessary to promote active IT usage so as to expedite the “creation of competitive businesses.” Japan has made rapid progress in developing telecommunications infrastructure; broadband services in Japan, reportedly, is “the least expensive and fastest in the world.” In December 2003, terrestrial digital television broadcasting services were inaugurated in the three major metropolitan areas of Tokyo, Osaka, and Nagoya.

Convinced that this is an area that needs to be assigned special national focus, the Ministry of Internal Affairs and Communications (MIC), in December 2004, announced a “u-Japan” policy with the aim of achieving a “ubiquitous network society” in which “anything and anyone” can access networks and freely transmit information from “anywhere at anytime” by 2010. The ubiquitous network is expected to contribute to accelerating technological progress which is the source of economic dynamism. Japan, MIC notes, has an edge in telecommunications technology and, even in the stagnant 1990s was moving actively on investment in information and communications infrastructure.

Government's comprehensive designs, coordination, and aggressive executions began in earnest in the 1960s with expanded and improved intercity rail systems, highways, urban mass transit, air and sea port facilities, and communications networks. The scales of operation and the whole infrastructure campaign were nothing short of astounding. The costs were huge. Japan's national debt as ratio of GDP now exceeds 170 percent, far higher than the corresponding ratio of 66 percent (2007 estimate) for the U.S., 40.4 percent (2003 est.) for Germany and 12.2 percent (2002 est.) for the U.K.** Even in 1995, at an early stage of the deepening crisis of national budget deficits, Japan's debt-to-GDP ratio was 89 percent, significantly higher than 69 percent for U.S.

Large as its government debt is, most of Japan's debt is domestically financed, the overseas' holding rate of government bonds being a mere 3.4 percent (in fiscal 2003), negligible compared with the corresponding share of 33.9 percent for the U.S. Moreover, whereas much of U.S. federal debts were incurred for national defense and entitlements (welfare programs), Japan's debts are linked more to government's high-level investment in numerous physical infrastructures which would elevate the overall efficiency of the national economy, thereby strengthening the competitive power of Japan's firms in the global market.

*For this section, I extracted most of information from *Information and Communications in Japan*, annually published by the Ministry of Internal Affairs and Communications (MIC) since 2001 (MIC was reorganized in 2000 from former Ministry of Posts and Communications which had published *Communications in Japan* since 1973).

**The rapid rise the debt-to-GDP ratio for Japan between 1993 and 2002 is attributable more to the shortfall in government revenue during the decade-long severe economic stagnation.

2. Investment in Education

A. Elementary and secondary schools

It was in the latter part of the nineteenth century (1868-1885) that Japan, taking several Western countries as models, introduced a modern education system. Under the 1880 Education Order, revised from the previous year's order, children were obligated to attend elementary school for 16 weeks or more per year for three years. Then, in 1886, elementary education was extended to four years and, in 1907, further to six years.

In secondary education, Godo's statistics indicates, Japan's average years of schooling per person at this level, in 1890, was negligible at 0.00634, far behind and a mere 5.5 percent of the United States (with her corresponding figure of 0.116). This wide gap narrowed rapidly to 40.2 percent in 1920, and further to 88.1 percent in 1990.* Had the statistics related to the relevant age-specific population, this disparity for 1990 would probably have been reversed, given Japan's high attendance and low dropout rates at secondary-level schools. While Japan is still under the 9-year mandatory system (which

began in 1947), the most junior high graduates (91%) move on to senior high. Secondary education in Japan is known for its strong programs overall, especially in math and science.** In the 1960s, there was increased emphasis on technical and vocational education at the upper secondary school level, and many of the nation's colleges of technology were founded.

A long tradition of respect for learning and high status assigned to teachers is still in place, despite the postwar cultural changes, and Japan takes pride in its large pool of literate, educated, and increasingly skilled manpower. Japan's postwar success in rapid growth that led the nation to the world's second largest economy owes much to its solid achievement in secondary education; it produced the army of well trained workers manning factories and plants that churn out increasingly more high-tech and high-value added products.

A major challenge facing many secondary schools in Japan, it seems, is a relative lack of flexibility in curriculum choice, especially vis-a-vis American counterparts.*** Though some changes are indicated in recent years (Japan's 2002 Education Reform Proposal includes increased curricular options for upper-level secondary schools as one of its primary goals – though listed at the end among its five major goals), school curricula at secondary level, by and large, are strictly regimented, with student choices limited. Such differences are likely to have important effect on students' ability to achieve their full potential in respective careers. In international competitions, students from Japan, Korea, and Taiwan, among others, score high on the *average achievement* in math and science. But, the *average achievement* may not be a good indicator of performance where it really counts. For the increasingly competitive global economy, the real winner will be the one who innovates and invents, promoting advances in science and technology. Thus, educational goals at secondary level should focus more on nurturing creativity and developing students' natural talents and inclinations. Excessive regimentation in school curriculum, in impeding choice, discourages fulfillment of individual potential.****

Innovations, spectacular or lesser ones, would require young minds with fuller access to opportunities befitting their respective endowments and inclinations. Higher costs are to be expected for such educational accommodations but the added costs are to be weighed against possible far-reaching benefits. Japan seems to be moving in the right direction, though at moderate pace, constrained by inertia of the tradition and concerns of the critics that it might adversely affect the overall quality of Japan's secondary education.

*Yoshihisa Godo, "Estimation of Average Years of Schooling by Levels of Education for Japan and the United States, 1890-1990," Abode Reader [Godo.EducationJapanUS-2001.pdf].

**Given Japan's labor intensive farming and compact rural communities, many public schools in rural areas, including secondary schools, operate with their enrollments that are large enough to ensure cost efficiency. By contrast, many American public schools, in rural areas and sparsely populated outlying metropolitan suburbs, lack adequate

enrollments, especially at the secondary level, operate at high average costs and, often also, with loss in school qualities. A study based on the U.S. (Wisconsin) data indicates that given the educational standard and technology of the early 1960s, the optimal enrollment (operating at the least cost per pupil) for four-year high schools was about 1,650 (the large majority of high schools in that state had enrollments below 500). John Riew, "Economies of Scale in High School Operation," Review of Economics and Statistics, August 1966.

***In urban areas, most American high schools, especially at the senior level, provide students the menu of multi-level courses in science, math, humanities, and social studies (such as Physics 1, Physics 2 and Physics 3, with the first often being the required or one of the required science courses) and even further with options, for eligible students, to advance to college courses (where available), with teacher recommendations. Classes for "gifted students" beginning at the 5th grade, or even earlier, are not uncommon and added to educational opportunities befitting students with their respective talents and performances.

****Isaac Newton (1642-1727), known for his theory of gravitation, discovery of the secrets of light and color, and calculus, a new revolutionary branch of mathematics then, made these three discoveries within 18 months from 1665 to 1667 (at age 23-25). More recently, Albert Einstein, at age 26, presented to the world his *First Theory of Relativity*, and for Paul Samuelson, the first American Nobel Laureate in economics, *Foundations of Economic Analysis*, the doctoral dissertation and one of his main accomplishments was completed again at his youthful age of 26. These early renown achievements could not have happened in the vacuum of the learning experiences in their years of adolescence.

B. Higher Education

The imperial university system was established under a new Education Order of 1886. Between 1886 and 1918, five imperial universities (Tokyo, Kyoto, Tohoku, Kyushu, and Hokkaido) were chartered, with two more (Osaka and Nagoya) added to the system in 1936 and 1939, respectively. During the charter period, the government invited foreign instructors while sending large numbers of Japanese to study overseas; a significant part of the national budget was appropriated for these purposes. As the students returned from abroad, many of them replaced foreign instructors.

Under the Universities Order of 1918, many private universities and "single colleges" were founded. By around 1920, a modern education system was virtually in place. The isolationist Japan until mid-19th century, she no longer had an aversion to interact and learn from the West, and learn fast. Although it took Europe more than five centuries to develop their university systems, it took Japan a mere half a century.* There are today nearly 500 4-year universities and colleges in Japan and these institutions of higher education have respectable programs, especially in science and engineering. Its top schools are comfortably at par with top universities of the West.

Still, the graduation rate from advanced research programs (such as Ph D's) is comparatively low at 0.8 percent of population. Among 27 OECD countries with available data, Japan comes 22nd on this measure, the OECD average being 1.3 percent. Japan, for whatever shortfalls they see in its own institutions, would send its aspiring youths to foreign universities. In 1987-1988, more than 18,000 Japanese were studying in U.S. universities, ranking, in enrollments, well ahead of the U.K., Germany and Italy (Michael E. Porter, p. 395).

University research in Japan is perceived to lag in scale and depth behind those of the industries.** By contrast, universities in the U.S. interact closely with industry and are believed to excel industries in scope and quality of research. In the long haul, healthy development of university research, which stresses basic science as well as applied areas of technology, would be essential for major advances in broader areas of science and technology. Firms' R&D activities tend to focus primarily on applied areas and are more product-oriented. There is no denying that some technological breakthroughs emerge from private industry such as IBM or Westinghouse, or the military, in the U.S., for instance, or an obscure Japan-based Nichia Chemical Corp., but the scientists in their labs would have had their earlier encounter with university labs.*** That most of the Nobel Laureates in science are university-based, furthermore, seems to suggest the importance of the role of sound university programs in science and engineering in providing firm foundations for short-term as well as long-term progresses in technology.

With few exceptions, most of the top universities in Japan are national (public) universities funded by the government and regulated extensively by the Ministry of Education. So are private universities for that matter, on being constrained by regulated by MOE rules and regulations. Allowing more autonomous management by these schools and loosening the age-old constrictions in the way the universities are structured and operated could go a long way to develop even stronger and more competitive universities – comparable with top institutions of higher education of the West, the U.S. in particular.

*In Europe, universities in France and England were founded in the 12th and 13th centuries (Universities of Paris, Toulouse, and Montpellier in 1160, 1229, and 1289 and Oxford, Cambridge, and Northampton in 1167, 1209, and 1264) followed by Austria and Germany in the late 14th century on (Vienna in 1365 and Heidelberg, Cologne, and Leipzig in 1386, 1388, and 1409). Note that many of these institutions were *schools* prior to be named as universities and they often were small establishments with a very narrow scope of academic pursuits with little resemblance to today's institutions of higher education. As early as in the mid-16th century, however, scholarly and scientific journals became a popular way to "spread innovations," and by the 18th century, universities in Europe were publishing their own research journals (Walter Ruegg, "The Themes," A History of University in Europe, Vol. II: Universities in Early Modern Europe. Ed. Hilde de Ridder-Symeons. New York: Cambridge University Press, 1992, 16-17.) Enlightenment of the 18th century also encouraged the transition from the "preservation and transmission of accepted knowledge" to "discovery and advancement of new

knowledge.” (Willis Rudy, *The Universities of Europe, 1100-1914*, Cranbury, NJ, Associated University Press, 1984, 99; 82)

******This was first pointed out by Professor Chikara Komura. It was to be expected, given the well-documented fact that wide-ranging industrial R&D activities of the private sector benefited greatly from active support of the government of the MITI, in particular, and the state-controlled financial institutions.

*******Shuji Nakamura, a former Nichia employee, invented the first commercially viable high brightness LED (light emitting diode, a semiconductor-based device), expected to replace conventional incandescent light bulbs (a Thomas Edison invention).

2. Government's Export Promotion Programs

A. Loan subsidies

Government's programs to promote Japan's strategic core industries and, along with it, the export sector, fall in the domain of the MITI, MOF, and EPA (Economic Planning Agency). Under the so called financial-investment (Zaisei Toyushi) policy, they (the MITI being the principal schemer) collaborate in designing loan subsidies (the main tool for achieving these goals) and tax incentive schemes. Under the former (the loan subsidy), the government instituted the programs to encourage savings and deploy them in the prioritized areas. The postal savings system, made attractive with post offices conveniently located across the country, and, more important, generous tax exemption of interest earnings. It generated a huge reservoir of funds which the government would use for low interest loans given to targeted segments of the economy, the export and export-supporting sectors among them.

Japan's private sector yet to emerge for large entrepreneurial undertaking, for want of vision and capital, the Meiji government built and owned Yahata Steel Mill in Northern Kyushu and subsequently turned it over to a private firm at a price far below the asset value and this was to be the government approach to developing Japan's other strategic industries. For perceived national interests, the government was generous in pricing in such turnovers and/or accommodative with subsidized loans where necessary. The postwar loan subsidies were very much a main feature for many priority industries, such as steel and shipping, in the earlier decades, with subsequent shifting in focus to activities that involve more high-technology, knowledge-intensive, high value-added, and high-volume export items and other areas of greater future potential.

B. Tax Designs for saving, investment, and export promotions

The largest share of the nation's tax revenues originates from income-based taxes (Ishi, 1993). The latter, however, incorporates significant incentive provisions for capital

incomes, i.e., interest, dividends, and capital gains.* Until 1987, the individual income tax law in Japan permitted each individual to earn tax-exempt interest on personal savings of up to Y14.5 million (almost US\$100,000, where \$1 = Y150). The amount of tax-favored savings (the so called “Maruyu” - deposits at banks, securities companies, and other private financial institutions - and postal savings comprised 93 percent of such savings) was abnormally high by international standards. Taxes on capital gains also were extremely lenient. The taxpayer, until 1989, was required to pay only 1 percent of stock sale prices to meet his capital gains tax obligation under the withholding system (Ishi, 1993).

Resource- and capital-poor in the immediate post-war period, the merits of Japan’s preferential tax treatment of capital incomes seem apparent and are hard to dispute. The system, extended in duration, remained intact until 1989, when the special provisions on interest earnings were replaced by a less lenient but still generous 20 percent uniform rate tax. Also, the long term capital gains (on securities held for more than three years) became taxable on 50 percent of the gains. The tax reform of April 1989 was introduced only after the government became alarmed by rapidly developing boom in the equity market. The remedy came too late, at least by a decade, perhaps. Abrupt descent in equity values had begun in early 1990. It was to be a forewarning of Japan’s oncoming decade-long economic travail that started in earnest in 1992.

The income tax structure of the postwar Japan most certainly contributed to promoting the nation’s personal saving and creating a large reservoir of funds for private sector investment while also enabling the government to execute loan subsidy programs for chosen segments of the economy. One could justifiably point to the excess in the tax incentive schemes, in their level of preferences as well as in duration. However, what was done in Japan, say, up to the early 1970’s, mostly likely had more positive effects than harms of resource distortion and welfare losses.

If industrial policy were to be defined broadly to include a nation’s tax policy and tax structure designs aimed at developing its core industries and promoting exports, the policy measures had their intended effects. Important to note, while direct restrictions or interventions of imports or outright subsidy to exports are not condoned in the GATT/WTO era, such indirect measures as tax designs aimed at promoting certain industries seldom seem to become a point of contention or grievances registered between trading partners in discord.**

The U.S., out of the concern over issues of equity and revenue loss, has been far less disposed to offer such tax preferences to capital incomes. The nation, however, could have benefited from such schemes, given the chronic low savings and heavy dependence on external capital. If potential revenue loss was the larger concern, then providing tax exemption or lower rates on capital incomes, with strict limits on the eligible tax bases, would have gone a long way to address the problem.

The value added tax (VAT) at a low 3 percent was introduced in Japan in 1989 and subsequently increased to today’s 5 percent. The VAT, with the WTO rebate provision

that refunds the taxes on exports (thus lowering prices of exports) while imports are subject to the tax, has been widely regarded as export-promoting, especially when the VAT replaces corporate income taxes. Most European nations have had the VAT (the rates being much higher than Japan's) since early postwar years (the U.K., the latecomer, joining in 1973 with a 17.5 percent rate), with the U.S. being the only industrialized Western nation without one. One would wonder how it is that export-conscious Japan had waited for so long to adopt a VAT; it was due largely to political considerations with the strong voter opposition to a new tax, and, perhaps also, to the perceived regressive distributional ramifications.

* Hiromitsu Ishi, *The Japanese Tax System*, Third Edition, Oxford University Press, 2001, ch. 8 for detailed information on taxation of investment income and savings.

**Taiwan's tax system, in this regard, has much to offer as lessons for many developing countries, as well as for others, notably the U.S. John Riew, *Taiwan's Tax Designs for Savings and Investment*, Korea Economic Research Institute, Seoul, 1987.

C. The postwar trade policy – Import restrictions

Until mid-1970s, Japan's import nearly averaged out to match exports. But, the trade balance took a rapid turn to surplus for Japan in the second half of the 1970s and there was a phenomenal further surge in surplus in 1980-1985. The trend persisted largely unhindered until the very end of the decade.* Part of the cause for this development was the bulging U.S. budget deficits (triple digits in billions of dollars that began in early 1980s) and the attendant surge in interest rates and, along with it, the rising U.S. dollar value.

Japan's sustained trade surplus had been on the record against the backdrop of the nation's postwar protectionist trade policy that remained largely in effect through the late 1980s and even beyond. Tariff rates on numerous industrial goods had fallen over time at a modest pace in the 1980s, but for many other industrial and agricultural products, tariff and non-tariff import barriers were still in place, stringently being enforced. Among the more notable examples was Japan's rice policy. At the peak of the restrictive policy in 1985, Japanese rice import from the U.S. amounted to a miniscule 0.2 percent of the total domestic consumption. In fact, Japan has been closed to virtually all rice imports until very recently (1993).*

Important to note, despite the large surplus in place, the government kept its posture of intervening in the exchange market in support of Japan's export sector. When, in October 1986, with the "Yen-daka" (high yen value)-caused economic stagnation worsening, the government lowered interest rates, expanded public expenditures while implementing tax reduction. Concurrently, in 1986, the Bank of Japan concerned that exports took a sharp downturn (though still in large surplus both in trade and current accounts), had resumed its "Buy Dollar/Sell Yen" campaign.** These measures resulted in rapid rise in money supply ($M_2 + CD$). Beginning in 1987, the money supply increased at more than 10 percent per year for three years until 1990. In asset markets, both

equity and real estate prices tripled between 1985 and 1990 (Miwa, 209-210).**** The so called “asset inflation” and the attendant wealth effect added fuel to consumer demand and provided further stimulus to firms’ facilities investments.

With the bust of the asset markets that followed the U.S. economic downturn (the S&L crisis of the late 1980s and the subsequent recession of 1990-1991), came Japan’s painful prolonged economic stagnation. Had it not been for the U.S. IT revolution of that decade which brought sustained U.S. prosperity and the resulting rapid surge in imports, the Japanese economy could have fared much worse, even to a meltdown as some had observed. The bilateral trade gap widening, the U.S. trade deficits vis-à-vis Japan nearly doubled between 1990 and 2000 from \$42.6 billion to \$83.0 billion.

Japan’s earlier postwar mercantilist trade policy may be said to have had merits, to the extent it might have been instrumental to helping the resource-poor nation with capital accumulation. But, subsequently, even after the nation was well stocked with capital and trade surplus was on the rise on a sustained basis, the government’s policy protective of export sector persisted. Its economy, registering the 4 percent growth over 1981-1990, took a sharp turn to the longest postwar stagnation beginning in 1992, continuing into early 2000s. The nation had seen unprecedented postwar financial turmoil and numerous bankruptcies of financial institutions heavily laden with non-performing loans (that amounted to hundreds of billions of dollars). Enormous loss in GDP, high unemployment, and the collective psychological toll could most likely have been averted, at least in its severity, had the government policy been less protective of the export sector and more flexible with respect to its goal for maintain short-term macro stability. Japan’s normally high R&D intensity (the ratio of R&D outlays to the GDP) also fell from 3.1 percent in 1990 to an average 2.8 percent until the end of the decade.***** The difference between 3.1 percent of expanding GDPs and lower 2.7 or 2.8 percent of stagnant GDPs over an extended period would be more of a difference than the disparities measured solely in percentage terms. Combination of all these developments surely would have left a market dent on the growth path of Japan’s economy.

*In 1999, under the Rice Farming Income Stabilization Program enacted in 1998, the government subsidy to farmers totaled US\$815 million. “On per hectare basis, Japan subsidized an incredible \$9,600 more than the U.S.” The corresponding figures for the U.S. and EU nations were \$117 and \$676, respectively. Sources: Steve Moody, Japan’s Rice Trade Policy,” www.japan101.com/government_rice_trade_policy.htm; Fukuda et al (2003), “Rice Sector Policies in Japan,” Electronic Outlook Report from Economic Research Service, U.S. Department of Agriculture, www.erc.usda.gov

**In 1985, under the Plaza Agreement (among five major industrialized nations), Japan, in order to support the U.S. effort to lower the dollar’s exchange value, sold \$2 billion in 10 days, causing 20 percent fall in the value of dollar. This supportive overture on the part of Japan caused abrupt rise in the exchange value of Yen. The yen/dollar exchange rate fell from 238.6 to 168.5 in one year from 1985 to 1986.

***Ryoichi Miwa, *Gaisetsu Nihon Keizaishi - Kingendi* (An Overview of Modern Japanese Economic History), 2nd Ed. (in Japanese), University of Tokyo Press, 2002.

****UNESCO (1993, 1996, 1998), *World Science Report*, Paris; UIS (2001), *The State of Science and Technology in the World, 1996-97*, Paris; UNESCO (2004), *A World of Science* 2(1), Paris.

V Concluding Remarks

Japan's paucity of natural resources, we note, is commonly overstated. The temperate climate, plentiful rainfall, numerous natural harbors, and other aspects of geography are unacclaimed but important bounties of nature. Important also are such factors as population and culture, as well as events in history, the role of the government and the private sector behavior. These elements combine to promote competitiveness with varying effects over time.

For a better understanding of Japan's remarkable postwar economic achievements, we traced the past from the Meiji era (1868-1912) through the interwar decades. Japan, as Asia's earliest achiever in industrialization, enjoyed unique advantages in export and import markets within the region, especially in prewar and immediate postwar periods. The pacifist new constitution of 1947, stipulating a low cap on military outlays, meant lower taxes (with their positive supply side effects) and allowed Japan to channel the best and brightest of its scientists and engineers to the civilian sector of the economy (and its R&D efforts) and the government sector. In addition, the Korean War (1950-1953) offered Japan significant impetus for its postwar recovery.

Again, looking back, we note Japan's impressive prewar investments in infrastructure, ranging from railroads, urban mass transit, air and sea ports, and communications facilities. Even more noteworthy are Japan's early vision and focus on education. While still on a 9-year mandatory system (which began in 1947), most junior high graduates move on to senior high. Today, its secondary schools are well known for their quality education, especially in math and science. The introduction in 1886 of the imperial university system (five such universities in existence by 1918, and two more added in the late 1930s) was an important milestone for the nation's higher education. The subsequent Universities Order of 1918 allowed the founding of private universities and colleges. By around 1920, a modern education system was virtually in place. It took more than five centuries for nations of Europe to develop their modern university systems; Japan achieved it in half a century.

The postwar expansion and upgrading of infrastructures proceeded at an incredible pace. Intercity railroads (the world famous Shinkansen among them) that crisscross the nation, in addition to urban subways and other mass transit. The same period witnessed the creation of air and sea ports, aggressive land development (which often involved mega projects on offshore reclamation), telecommunications facilities, and nuclear and hydroelectric energy plants. All the while, rising educational standards at all levels and

enhanced government (MITI)-sponsored R&D programs, aimed at promoting cutting edge technology in numerous areas, have always been a national priority. Built upon the prewar foundation of the national economy that took Japan three quarters of a century to build, these postwar developments forged Japan's new status as the world's second largest economy and a dominant player in trade in the global market.

Focusing now on the postwar developments and reflecting on the recent past and ongoing situations facing Japan, we offer a few comments.

Japan's earlier postwar trade policy, export-promoting and import-restraining, may be said to have had merits in expediting capital accumulation. But the nation's trade surplus that began in the mid-1970s continued its surge into the decade of the 1980s. All the while, despite the large surplus in place, government intervention in the exchange market went unabated. The combination of sustained low interest policy, deficit-financed public expenditures, and foreign exchange intervention in the 1980s, designed to bring stability in the export sector, instead had done a great harm to the economy. The huge loss in GDP, high unemployment, numerous corporate bankruptcies and the collective psychological toll in Japan pervaded through the 1990s and beyond. All this perhaps could have been avoided, or at least lessened, had the government trade policy been less protectionist of the export sector.

In public schools, especially at the secondary level, should provide students with more curricular choice. In today's global open economy, the need to nurture creativity and tap into students' talents and aptitudes becomes more compelling. In higher education, a bold move away from strict rules and regulations imposed on public universities may be in order. Loosening the grip of age-old mandates on universities would enable individual universities to adapt themselves to the changing environments of the world. We note that many top institutions of higher education in the U.S. are private schools, operating freely from government rules. Even public universities, we may note, operate with some autonomy.

Recent reformist movements in Japan, among government leaders in particular, are encouraging. The privatizing and restructuring of the Japan Postal Service, the center piece of Koizumi administration's reform projects, have become a reality; privatized and reorganized (with its savings, insurance, and postal services to function separately), the new operation goes into effect on October 1, 2007. Other serious reform legislations also have been enacted or pending. The Japanese tax structure that once seemed impregnable is also yielding to changes; parts of the central government's "sacred domain of tax base" have now been transferred to local governments (to replace the old subsidies) and the process of enhancing local fiscal autonomy is progressing. Other reform proposals affecting the financial sector, communications and various service industries are expected in the days ahead. The WTO regime undoubtedly will provide added impetus, accelerating the pace of changes toward more open, competitive and efficient structure of the nation's economy. The last several years have also seen similar, though less aggressive, reform trends in education. The proposed changes, as noted, include one that concerns student curricular options at secondary level and another that

addresses the need for greater structural and operational discretions at institutions of higher education.

Japan, in recent years, has taken important steps toward far-reaching structural reforms. This will lead to improved use of resources and improved flow of capital to uses for higher productivity. The nation, having faced up to the massive banking-sector problems of non-performing loans (of the 1990's), the need for reform in corporate structure, the need to open up the economy, and now postal reforms, is on the right course. Continued efforts among political leaders (and the leaders of the business sector) to drive through reform will help ensure Japan's long-term high productivity, high growth rates, and enhanced competitiveness of the firms of the nation, while contributing to economic stability and the wealth-creating process of the world.