Japan's Competitive Advantages in the Global Market

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Abstract

The paper analyzes Japan's competitive advantages in trade, comparing the nation with other industrialized countries. Paucity in resources, often mentioned in reference to Japan, we note, is overstated. Favorable climate and certain other aspects of the geography, for example, are unacclaimed but important bounties of nature. Relevant also in the context are such other factors as population, culture, and events in history, as are the role of the government (investment in physical and human capital, trade promotions policy). These factors together could more than compensate for the dearth of narrowly defined natural resources, land and minerals. The main underlying forces behind Japan's spectacular rise as a major economic power and a dominant player in today's global market find their original impetus in the early Meiji era, well into the second half of the19th century. This study, which ends with commentary, would provide other countries with a referential model with trade history and development strategy.

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1 Introduction

A nation's competitive advantages in trade may derive from its natural resource endowments or they may result from such other factors as population, culture, events in history, geopolitical idiosyncrasy, and so forth. The role of the government, furthermore, can exert critical influences as it relates to designing investments in the nation's core infrastructure, human capital development, and various policies aimed at promoting trade.

We discuss probable effects of the factors to have bearing on efficiency in production, logistics, and management, and, more specifically, on advances in technology which brings innovations and introduce new products.

Dating back to the Meiji era (1868-1912) and through the subsequent interwar decades, various forces laid grounds for Japan to become an increasingly potent player in international trade in the decades that followed World War II. We first explore aspects that are more intrinsic as natural resources, population and geography, and move on discussing other relevant factors.

2 Natural resource endowments

2.1 Land and minerals

The nation has the smallest per capita land area among most industrialized nations (G-7 nations, in particular). Moreover, of the total land (the size of the state of California) only 13.2 percent is under cultivation. Apart from the constraints in land space, Japan is low on minerals; it relies on imports for most core minerals such as iron ore, crude oil, coal, and copper. The paucity in natural resources (narrowly defined to include land and minerals) is apparent, especially when compared with the U.S., Canada, Australia, Russia, China, and major South American nations.

There are, however, several important gifts of nature for Japan that have often been overlooked and underappreciated. Her temperate climate, plentiful rainfall, topography, numerous natural deep sea ports, and certain other aspects of geography can be mentioned in this context.

2.2 Temperate climate, abundant rainfall, high mountains

Japan, in most part, is a temperate country and well watered. Tokyo shares the 35^{th} parallel with Atlanta (Ga.) and Cyprus (of the Mediterranean). The average rainfall in Japan is 106 mm during the March-October season (156 mm for the large Kanto Plain

that surrounds the Tokyo region). By comparison, Germany, which lies above the 45th parallel, is cooler in temperature and has low summer month rainfalls that average below 75 mm.

The mild climate and plentiful rainfall favor agriculture. The agricultural 'surplus' helped finance Japanese industrialization in early periods (1870-1915).[1] The nation's agriculture then was able to feed a growing urban population while also allowing a rise in export.[2] Tea and silk were among the main items of exports that provided foreign exchanges with which Japan could secure tools of industrialization[3]

Rugged terrain describes Japan's land mass; three quarters of it 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 high mountains and plentiful rainfall generate large-volume, fast-running water and become a significant source of energy and of ample water supply for industrial and residential use.[4]

Nuclear power represents an increasingly larger share of the nation's total energy supply, but even today, about 15 percent of electricity is generated from hydroelectric sources. This ratio was much higher 50 percent in 1960 and speaks of the important role Japan's hydroelectric power played in earlier periods.

The mountain ridges that tilt toward north and run through the entire length of the main island of Honshu (and those of Hokkaido) mitigate the Siberian influence of cold winter. They help retain the influence of warm sea waters of the Pacific that originates in the south, moving northward through Philippines and the East China Sea. This favors agriculture in the plains of Honshu facing south and east. [5] The warmer winter, to note also, would be an important energy saver as it reduces heating needs for the vast majority of the population.

2.3 Natural harbors

Port cities may emerge in an endogenous process (Fujita and Mori,1995; Fujita, Krugman, and Venables, 1999), but Japan's major urban centers all adjoin natural sea ports, offering important cost advantages in logistics (more of which later). This is another less well acknowledged "nature's bounty" for Japan. Harbors can be costly; they require considerable capital and technology -- though this is less of a problem today, with advanced technology and more readily available capital.

3 Population, geography, and culture

3.1 Large population

Japan, with its population of 128 million, is second most populous of the G-7 nations (Table 1), about twice as large compared with the U.K, France, (pre-1990) West Germany, or Italy. It provides the base for a large domestic economy, which offers

several major advantages over any major country of Europe. Japan's advantages of the size may have become of lesser importance, with Europe now united under the EU regime. The EU, however, may need more time to function as a cohesive economic entity, as does a single national economy of Japan or the United States.

3.1.1 Economies of scale and of agglomeration

The large domestic market enables Japan's firms to operate at more 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 (Tybout, 2000; Clerides, Lach, and Tybout, 1998), advantages of a large domestic market may be overstated.. Furthermore, if we talk about tradable goods, then the size of a domestic economy would matter even less. Luxembourg, a small country, has a viable steel industry and Switzerland's watch firms successfully compete in the world market.

Still, where products are of high value-added and require high technology to produce, advantages of a larger economy can be substantial. First, the level of technology and the range of requisite inputs (intermediate goods and skills) may require a large pool of well-educated, well-trained work force as well as sufficient capita. A larger economy can more readily meet these multiple needs. Second, for such products to be produced and to be in a more sustainable demand, the size of a domestic market matters. The larger a nation and the more homogeneous its culture and preferences, the more predictable would be the prospects of an entrepreneurial undertaking.

A larger economy also offers more adequate testing grounds for newly developed products. Extensive domestic testing for buyer satisfaction to precede their external debut, as is known to have been common practice in Japan for various new models of automobiles or construction equipments, for instance, ensures greater chances for their marketing success overseas.[6] Important also, 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 domestic industries. In this regard, the postwar Japan has had undisputable advantages over other industrialized nations, except the U. S.

Table 1 Population and Land Area, G-7 nations

	Population (millions)		Land Area (1,000 sq. mi.)	
	(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).

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

A larger economy can not only support a larger number of industries but also a larger number of firms within each industry. In Japan, there are as many as 9 major firms in auto industry, 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 also pose challenges, the domestic rivalry and competition will be more acute, given smaller differences in transport cost and the fact that the home consumers are more informed of the domestic products.

Fierce domestic rivalry among firms would lend themselves to high R&D intensity, and this will likely accelerate the pace of advances in technology. In 2005, Japan's R&D expenditures, at 3.2 percent of GDP, exceeded the corresponding ratios for other G-7 nations, including the U.S. (OECD, 2006). The disparities in the R&D/GDP ratio were significant between Japan and Europe; Germany that had led others European countries registered a low 2.5 percent in 2005. Even during the 1990s, the decade of economic stagnation for Japan, her R&D outlays had never fallen below 2.7 percent of the GDP.

3.1.3 Higher productivity of public infrastructure[7]

A large population, inhabiting a small area, enables Japan a greater efficiency in the use of social infrastructure, be it intercity railroads, urban mass transits, highways, 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.[8] Even for the United States, it is difficult to expect a financially viable high speed rail system in areas beyond the northeastern corridor of Boston-New York-Philadelphia-Washington for the present ("Conventional speed" rail-passenger service corridors have emerged in California and on some routes radiating out of Chicago.).[9]

It should be noted that our discussions, thus far, related to absolute, rather than comparative, advantages. What we described as factors that elevate productivity, thus competitiveness, would generally affect Japan's firms in different industries similarly.

3.2 Major urban-industrial centers are in close proximity and are all port cities

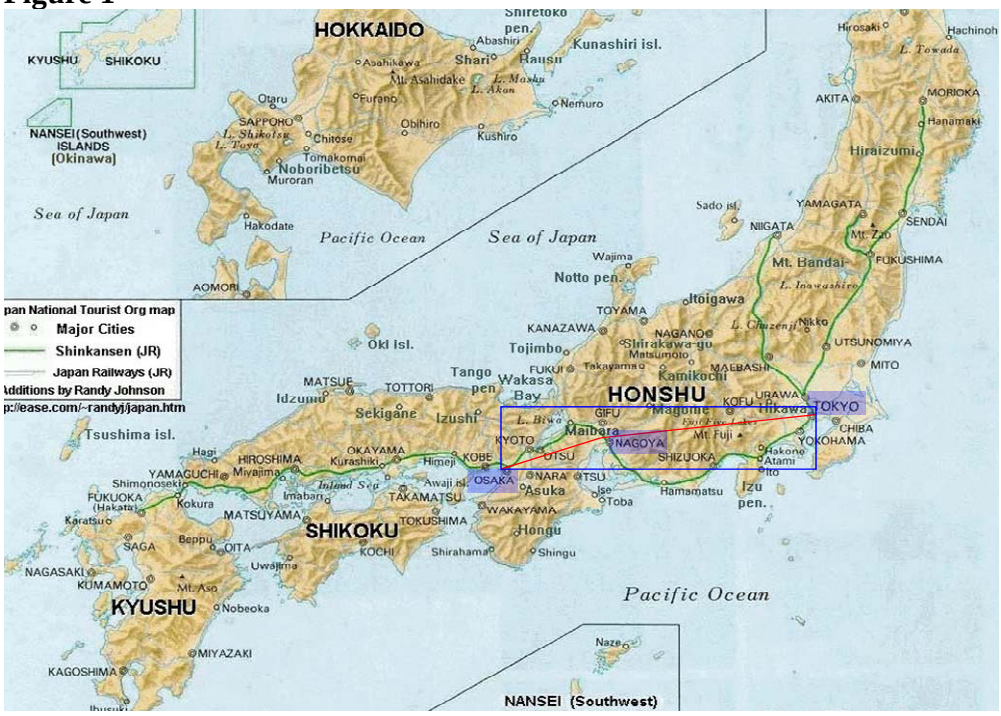
3.2.1 Tokyo, Osaka, and Nagoya, Japan's three largest metropolitan areas, are within reach of 2.5 hours on rapid train

The three major metropolises with high concentration of population and industrial activities are all within convenient geographical proximity (Figure 1).[10] This derives from an exogenous endowment of the three major plains of fertile land in Japan, the largest of which is the Kanto Plain (that surrounds the Tokyo region), the sources of plentiful farm produce. They gave rise to the development of large urban settlements which in turn led to industrial development in and around the areas, where demand is large (for industrial products) and supply of inputs (labor and raw materials) are more readily available. Large urban areas ensure *economies of scale* in production and close distance between major cities *lowers costs to transactions across space*. These, Krugman observes (1991), are the two key factors that bring efficiency to an economy.

The cluster of large metropolitan areas close together moreover promotes active interactions among firms within an industry and across industries, generating synergies making the whole economy function more efficiently. It, as noted, would foster competition and intensifies R&D efforts among competing firms.

Further, these are all in bay areas that have natural deep sea ports. For Japan, a nation that has depended heavily on exports for growth, this was important, especially in her earlier stages of development.

Figure 1



3.2.2 Advantages of port cities

Japan's three largest industrial centers and the fourth largest Fukuoka-Kitakyushu all enjoin large port cities. These port cities have their inherent logistics advantages; they can keep domestic land transport costs to minimum. Compare Japan with Germany, for instance (Figure 2).

German industrial centers are in and around Cologne/Bohn and the vicinity (the Rhein-Rhur), Frankfurt, Mannheim, Stuttgart, and Tuebingen, to the west, and Dresden, Leipzig, and Chemnitz (the Saxony Triangle), to the east, are all inland cities. The Rheine and the Elbe, respectively, serve as valuable water conduits to other destinatins, but they are nowhere near as efficient as ocean waterways that can serve vessels of all sizes.[11]

Figure 2

The same can be said of the United States although she is far better off than Germany. Major industrial centers of the Midwest (Chicago, Milwaukee, and Detroit) and others to the South (St Louis, for instance) are situated inland. They have the St. Lawrence Seaway and the Mississippi River, respectively, as conduits to sea, but in either case, transports overseas require long arduous journey before they could hit the sea. Russia, with her huge land masses, we note, finds herself so enclosed, with limited access to the open sea and serviceable ports, St. Petersburg, inconveniently located in the remote north-west, and Vladivostok, to the Far East.

Japan's port cities possess further values, being able to access (see Figure 2a and 2b):

- Huge markets in Asia, at lower transport costs, given their relative proximity to vast expanse of Asian destinations (vis-à-vis European and the U.S. rivals).
- The long chain of Pacific side markets, to her east, of the U.S., Canada, Central and South Americas, and the Oceania (distant, but no barriers such as a sea canal).

Lower transport costs are of greater values where trade involves bulky and heavy products. Passenger cars, trucks, tractors, construction equipments, machine tools, and various home appliances and consumer electronics are carried by surface transports, making up 90 percent of the trade in tonnage, though much less, about one half, in values. When traded products are high tech, high-value added, and more compact, weighing less, where to locate factories become less important.

Steel, ship-building, automobile, and other heavy machinery and equipment industries generally find themselves in and around the major coastal port cities in Japan. Given that the nation imports much of raw materials, factory sites in the vicinity of port cities confer double logistical benefits when large parts of their outputs are exports. The nation's firms trading overseas become more competitive.[12]

With advances in technology, transport costs fall and are no longer as important a factor in trade as they were in the past. For air transport, technology (development of jet engines) led to a sharp decline in costs: between 1955 and 2004, the average revenue per ton-mile shipped has dropped by 92 percent.[13] In ocean shipping, however, in spite of revolutionary innovations (notably in container shipping), the cost falls are not as evident, due to sharp increases in fuel and port costs.[14]

Figure 3a

Figure 3b

3.3 Culture and the diet

3.3.1 The culture of frugality

Scarce resources of Japan may have brought forth the culture of thrift and frugality among its population. Attempting to prove the link between scarcity and the culture or knowing how long the observed culture might persist into future is beyond the scope of this study. But, the way of living or doing with less, one would suspect, could have resulted, at least in part, from resource constraints.

The notion of "recycling (haibutsu-riyo)," relatively new to most Westerners, the U.S. in particular, was popularized in Japan well before World War II. The term "culture," used here for this tradition of thrift, seems to linger on even after the nation becomes more affluent, either by choice or by inertia, or, perhaps, by the constraints of millions of ordinary small houses, buildings (public or private businesses), or various social infrastructure already built and still in use.

The scarcity of land keeps land values high and influences the way in which ordinary households in Japan allocate their income. Lesser land space and smaller homes would

mean fewer construction materials, smaller and fewer furniture, home appliances, and, more important, smalrtl and fewer automobiles, and lower consumption of utilities (electricity, gas, and water).

Smaller size and higher use intensity of buildings for schools, business firms, government and NGOs, plainly visible in Japan, are, in large part, attributable to high land values.. The culture of thrift and non-waste permeates in broad spectrums of life in Japan.[15]

At a given level of income, households who live in smaller houses, constrained by high costs of land and of building materials, could be expected to channel a larger part of their income to saving. This, more pecisely, would depend, in part, on the price elasticity of demand for land, since the total outlays for land will not necessarily fall (as would be the case if the demand is price-inelastic, i.e., less than unit elastic).

Two comments are in order here. 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, where demand for land is price-elastic (i.e., the total outlay for land is smaller at a higher land price). Second, even where the demand is inelastic (the total outlay for land to rise at a higher price), as long as the demand is price-sensitive and the land area purchased is smaller,[16] If so, spending on other goods that are complimentary to housing (utilities, furniture, household appliances , and as noted, outlays for automobiles too) will also fall. And the resulting saving could more than offset the increment to the spending for land. A higher land price thus, regardless of demand elasticity of land, will have suppressing effects on the combined spending on housing *and* the complementary goods.[17] Assume that the (household) income exceeds the combined sum of these outlays, the excess will be divided between savings and other expenditures. Here, much of the "other expenditures" may be said to be in a broad category of luxuries. It is then reasonable to assume that a larger share of that excess could go to saving.

The chronic high household savings in postwar Japan can be better understood in such a context. Japan's well known longevity, of course, could be another factor to bear on high saving, given Japan's relatively low public support for the retired. Important also, Japan's natural calamities (earthquakes, floods, and assaults from the sea) make the Japanese all the more of precautionary savers.[18]

A larger pool of saving and the resulting lower cost of capital positively affect investment and productivity. With impediments to capital mobility across nations, this becomes more important, as was the case in the prewar era and during much of the postwar decades (until most recently, say, into the late 1980s and thereafter under the WTO regime).

Higher land values, to the extent that they induce economizing of land space, lead to lesser construction and maintenance costs for schools, public buildings, and social infrastructures and this, other things being equal, would lend itself to lower taxes. The

lower taxes, along with lower private housing and related outlays could have a moderating effect on labor's wage demand. They all favor the business sector and help reduce unit costs of production, thus adding to the competitive edge of Japanese firms in the global market.

3.3.2 The diet, general health, and average physique

For a nation of islands, fish understandably becomes a major part of the diet. The small land mass it has leaves little space for anything other than the basic food staple, rice. The basic diet, then, of rice and fish (taken in moderate amounts, by Western standards), some claim, accounts for Japan's notable high longevity.

The healthy, low-calorie, diet, one suspects, could 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, evident, for instance, in the houses and furniture – notably short beds - of the old colonial Virginia settlements, preserved intact as colonial museums). Today's youth in Japan at secondary and postsecondary schools are taller than their older generation counterparts, attributable, undoubtedly, to the nation's postwar affluence and some changing diets.[19] Even so, younger generations will not be unaffected by the culinary culture of the old. At the elementary level, Japanese schools, with 28.3 students per class, has one of the largest average class sizes among the OECD countries; in 14 OECD countries, the average class size is 20 or less (OECD, 2008, p. 14).[20]

To the extent that Japan's moderation in food intake has no adverse effects on nutrition for healthy growth of the youth, downsizing physical structures of public schools (to smaller classrooms, lower ceilings, narrower hallways, and ones that require lower energy and utilities) would all be cost-saving, as it would be so for smaller private housing, automobiles, and public infrastructures (even mass transits and highways). Local trains and buses that seat more passengers per unit space would not go unnoticed to outside observers.

The healthy Japanese diet also translates to savings in health care costs for workers and retirees. In the U.S., high health care costs (under Medicare for the elderly and Medicaid for the poor) are causes for added government budget and deficits, and for high corporate health care costs (as we note occasional media reports on high profile corporate bankruptcies), and, of course, productivity loss from illness-related loss in work days. Health care problems have become increasingly more serious in U.S.; the health care now claims a rising share of the income of ordinary households.[21]

4 Historical perspectives

4.1 Early achiever advantages: Japan as monopolist and monopsonist in Asian markets

Commodore Mathew Perry's 1853 visit to Tokyo Bay was the beginning of Japan's substantive trade relationship with the outside world.[22] 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 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, a succession of instability and 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 began 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 continuing rapid advances in industrial might. Prior to and during World War II, Japan made significant leap forward on broad fronts, 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, as a sole supplier within Asian regions. With lower logistics costs ("transport costs, delay, and problems with negotiating a deal from afar," (Eaton and Kortum, 2002), Japan had long been a de facto monopolist in Asia and could extract price advantages in export, over Europe and the U.S. This had been so even in post-World War II decades into the 1960s, and even beyond, though, perhaps, to lesser extent.[23]

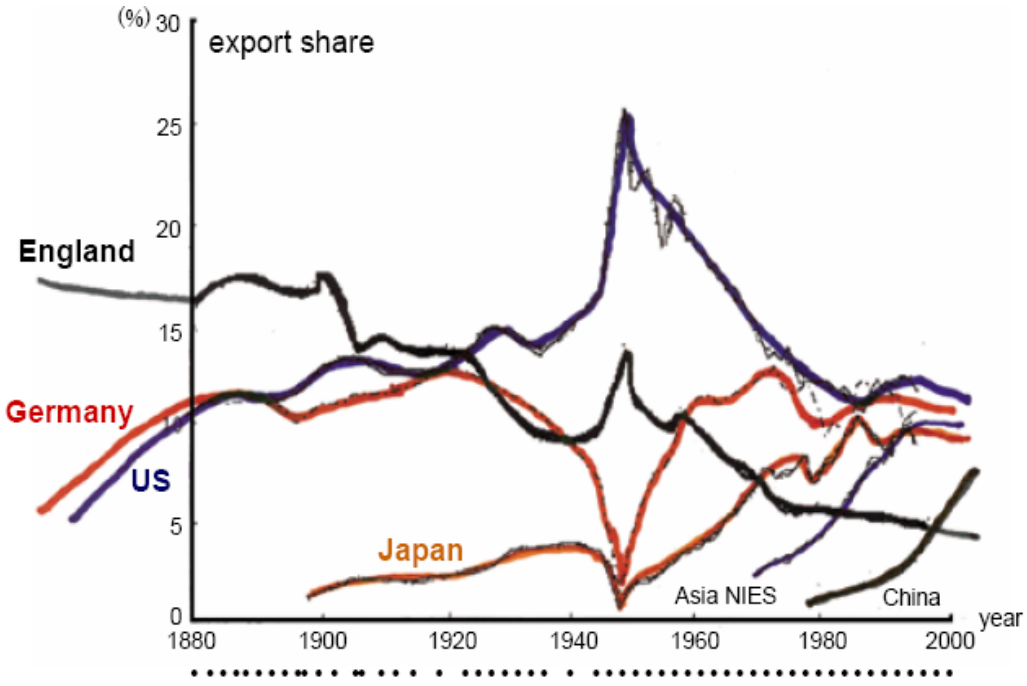
- Access to raw materials (coal, iron, other minerals, timber, etc.) at lower delivery costs from the nearby supplier nations of Asia. Japan, Asia's sole industrialized nation for long, certainly up until 1960s, had further advantages of being a monopsonist in raw

materials markets, to the extent the distance placed Europe and the U.S. in competitive disadvantages as importers from Asia.

These advantages helped Japan in its effort to solidify the foundations for continuing industrial development in the interwar period (1920s ne 1930s) and thereafter. Japan was able to recover speedily from the scourge of World War II and could achieve remarkably rapid progress in the global export share.

Germany and Japan, Chart 1 shows, share a similar pattern, both plummeting in trade at the end of the war in 1945. But, Japan, the latecomer in economic race, exhibits greater resilience with a postwar surge in export share through the end of 1980s. Pre- and post-war contrasts between German and Japanese are remarkable. Wide prewar disparities in exports, Germany far exceeding Japan, so differ from postwar records, the two nations nearly converging by the 1980s. Japanese competitive advantages, by and large, explain this change.

Chart 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).

4.2 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 public spending in productivity-promoting infrastructures or R&D activities. Aschauer's empirical study (1989), using U.S. data (1949-85), indicates that while nonmilitary government spending (proxied by nonmilitary public capital stock) impacts significantly on aggregate productivity of the U.S. economy, military capital bears little relation to productivity.[24]

Equally, if not more, important, under this pacifist constitution, more of the nation's best and brightest in science and engineering worked in the civilian economy and its R&D projects, a huge advantage over others, the U.S. in particular. For the U.S., a lion's share of the best minds in science and engineering, as the large defense budget would allow, were absorbed into defense-related industries.[25]

In this context, the U. K. and France, among other G-7 nations, are at a disadvantage relative to 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. Here again, our concerns should go beyond the defense outlays. Note that many of their best minds, out of smaller pools of the talented and educated manpower, smaller than that of Japan and the U.S., by virtue of their smaller population, had to be siphoned away from the civilian economy. To the extent that there are impediments to technology transfers between military and civilian sectors for reasons of "national security," the civilian sector will suffer losses in productivity.
While other factors may have weighed in, West Germany, with her more frugal defense spending, had fared better (until the reunification with the East) in growth and employment than others in Europe, during much of the postwar decades.

The U.S. defense outlays comprised 9.0 percent of GNP at the peak of the Vietnam War; the ratios were higher still in the 1950s during the Korean War and the ensuing intense Cold War rivalry with the USSR. The United States had borne heavy costs for its postwar leadership role for the free world. The costs to the USSR , on the other hand, 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 the industrial structure, also face their higher relative defense costs. Here again, the afore-mentioned problem of manpower diversion into the military are more serious for Korea and Taiwan than for Japan, implicit in their larger relative defense costs and their smaller pools of educated/skilled manpower resources.[26]

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

	1987[1]		1995	
	Amount ($ in billions)	% of GNP	Amount ($ in billions)	% of GNP
	(1)	(2)	(3)	(4)
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	0.997[3]	50.2	0.959
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. [2]Estimates. [3]For Fiscal 1985.

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.); For Japan's *% of GNP* data (columns 2 and 4), Japan Ministry of Defense (http://www.mod.go.jp/e/data...)

4.3 Japan, a major logistics base during the Korean War

The Korean War, which began in June 1950 and ended (in ceasefire) in 1953, gave Japan with a timely and significant impetus for economic revival. Michael Schaller (2004), 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 accommodating urgent needs of the U.N. forces in Korea.

New demands created by the "direct procurement" program of the U.N. Forces brought a 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 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," Okita, a governmental official, notes.

The statistics show an upward trend in exports prior to the Korean War, but the increase in exports at the outbreak of the Korean War was much sharper (from $179 million in the second quarter of 1950 to $287 million for the fourth quarter.), turning Japan's pre-crisis trade deficit of $65 million, in the second quarter of 1950 to a surplus of $23 million in the fourth quarter.[27]

Japan which emerged from World War II with practically no capital thus was able to expand its stock of capital and widen and uplift its industrial base and productivity which helped elevate Japan's competitiveness in trade in the decades ahead.

4.4 The labor-management relations

Japan's various labor laws enacted in the Occupation era, and still in effect in most parts, legitimized unions as bargaining units on behalf of the employees (strikes by public employees were prohibited).[28] Compared with typical industry-wide unions in the U.S. and elsewhere, Japan's labor unions are "enterprise unions" which represent employees (including white-collar) of companies, typically of larger sizes. Trained in company-specific skills, union members aim for long ultimate tenures of service. They are generally well informed on the economic health of the company, with the management keen to briefing the union membership on the state of corporate affairs.[29]

The labor union and the company generally maintain close relationship, though it was not necessarily the case in the early postwar years (up until mid-1950s), especially in heavy industries.[30] The fact that many in the managerial staff are often former union members would help ensure conciliatory, less adversarial, labor-management relationships. Since 1981, the average number of days lost per worker each year to disputes in Japan was only around 9% of the corresponding figure for the United States (Faith, 1998). Despite the labor unions that appear to be more docile, it is noteworthy, Japanese workers, in the l980s, received pay hikes that on average closely reflected the real growth of the GNP. In 1989, for instance, workers' average wage hike was 5.1%, while GNP growth averaged 5% over the previously two years (Faith, 1998).

The union membership in Japan, which was 35.4% of the work force in 1970, had declined considerably by the end of 1980s, due in part to the nation's industrial structural change, away from heavy industries. Many people entering the work force in the 1980s

and thereafter joined smaller companies in the tertiary sector where there was general disinclination to joining labor organizations.

Japan's corporate culture and stable labor-management relationship would mean more favorable business environment and fewer losses in production, which, in turn, would add to the competitive edge of the firms in their overseas trade.

5 The role of the government

5.1 Infrastructure investments

Government investments in infrastructure, large and small, proceeded ceaselessly, and did so at accelerated pace during periods of economic stagnation. Major projects of strategic importance included intercity railroads, urban mass transits, air and sea port expansions (along with numerous land reclamation projects for such expansions) and the communications infrastructure.

5.1.1 Intercity railroad (high speed rail system); Urban mass transit

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. Catch up and some, she did. The Shinkansen, Japan's high speed rail network, opened its first Tokyo-Kyoto route in 1964, then branching out westward to Hiroshima and into part of the southern island of Kyushu (Fukuoka) in 1975, well ahead of such rail networks in Europe (Shinkansen Wikipedia, 2008). France, the forerunner in Europe's high speed passenger rail systems, opened its TGV Paris-Lyon route in 1981.

The "Nozomi" line (of the Shinkansen) enables passengers to reach from Osaka to Tokyo via Nagoya in 2 ½ hours, covering the distance of 550km or 341 miles. The Shinkansen rail network today extends beyond Tokyo, eastward to Hachinohe (pop. 242,000), a city in the northernmost Honshu and westward to Kagoshima (Pop. 530,000) in the southernmost Kyushu, with a total extended mileage of 2,459 km (1,528 miles) (Shinkansen Wikipedia, 2008). These high speed rail services reduce transactions costs and expedite interactions among firms, while also promoting exchanges among scientists and engineers in industry and academia in different parts of the country.

Japan's extensive intercity rail network contribute not only to efficiency in transport, but also to cleaner environments. The elaborate network of subway and surface rail transits in Tokyo and other metropolitan areas, furthermore, make the second car unnecessary for most residents, thereby reducing oil consumption and lessening environmental degradation.

In the U.S. of the postwar era, the misplaced focus on highways as the core transport infrastructure, to the neglect of rail systems, was very unfortunate. Investments on the interstate highway systems (so called the I System), in my view, greatly erred in their excess.[31] It had major adverse effects on the nation's railroads and in both the intercity and urban area mass transits. One-sided expansion in highway systems laid the path to over-dependence on automobiles and private cars, now a root cause for urban pollution and congestions, as well as the massive oil import and worsening trade deficits.

Multiple-lane highways radiating out of central cities to thinly populated suburbs and to further outlying exurbs (which provide cheap lands) led to expansive urban residential developments in America.[32] This would mean that many urban households could spend larger shares of their income on housing and related expenditures (complementary to homeownership, such as home furniture, appliances, utilities, and more cars, as noted). This, indeed, may have been an important cause for the nation's chronic low household savings we see today.

If all these are the consequences of the utility-maximizing consumer behavior (to accept larger home and related expenses for housing comforts or luxuary), some might argue, who are we to lament the situations we see here as a problem or dilemmas facing the nation? One's utility-maximizing choice, however, is conditioned by the current range of available options. And those options are affected by government policies that can be non-neutral, more specifically, pronouncedly non-neutral U.S. postwar infrastructure policies that favored highways and rendered railways to today's demise.

5.1.2 Port facilities (air and sea ports); Land reclamation.

Japan's rapid postwar economic growth required more expanded air and sea ports. The Narita/Tokyo International Airport, first conceived in 1962 to relieve the overcrowded Haneda Airport (located in the Tokyo Bay area), began operating in 1978 (much delayed due to the local opposition). 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 meters longer than Kansai's Runway A, and about the same length as Narita's Runway A.[33]

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

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. Mountain tops north of Kobe were excavated and the fills were 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 the city of Kobe an international fame.

Given the mountainous terrain surrounding most of the populous areas in the main island of Honshu, 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 developments have actually moved the original waterlines many kilometers away from their original locations, creating new coastal frontiers for economic activities. "In fact, it is rare for one to see the natural Japanese coastline, especially in the eastern seaboard."[34]

Land reclamation, compared with attempts to develop high grounds for large residential or industrial sites, was more cost-effective in making room for growing cities. Moreover, with 80 percent of raw 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-stretching coastal edges of the cities, thereby making urban centers more functionally cohesive and efficiently run. The investments, costly as they have been, had long-term benefits for Japanese firms in their competitions overseas.

5.1.3 Telecommunications infrastructure[35]

Japan has made rapid progress in developing telecommunications infrastructure; broadband services in Japan, reportedly, is the least expensive and the 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 special national focus, the Ministry of Internal Affairs and Communications, in December 2004, announced a "u-Japan" policy with the aim of achieving a "ubiquitous network society" in which anyone can access networks and freely transmit information from anywhere at any time by 2010. Advancement of the "ubiquitous network" is expected to contribute to accelerating technological progress, the source of economic dynamism. Japan, even in the stagnant 1990s, was moving actively on investment in information and communications infrastructure.

In transport and communications, government's comprehensive designs, coordination, and 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 budgetary costs were huge; Japan's national debt as ratio of GDP now exceeds 170 percent, far higher than the corresponding ratio of 66 percent (the 2007 estimate) for the U.S., 40.4 percent (2003 est.) for Germany and 12.2 percent (2002 est.) for the U.K.[36]

Large as it is, most of Japan's government 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 foreign share of 33.9 percent for the U.S. Moreover,

while much of U.S. federal debts were incurred for national defense and entitlements (welfare programs), Japan's debts are linked mostly to government investment in infrastructures and R&D which elevate the productivity of the economy, thus the competitive edge of the nation's firms in trade.

5.2 Investment in education

5.2.1 Elementary and secondary schools

During 1868-1885, 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, to six years.

In secondary education, according to Goto (2001), 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' (0.116). This 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 narrower or even reversed, given Japan's high attendance and low dropout rates in secondary schools. While Japan is still under the 9-year mandatory system (which began in 1947), most junior high graduates (91%) move on to senior high. Secondary education in Japan is known for its high standard overall, and especially in math and science.[37] In the 1960s, there was increased emphasis on technical and vocational education at the upper secondary level, and it was during that decade, many of the nation's colleges of technology were founded.

The long tradition of respect for learning and the high social status assigned to teachers is still in place, by and large, despite the postwar cultural changes, and Japan deservedly takes pride in its large pool of literate, educated, and increasingly skilled manpower. Japan's postwar success in rapid growth and its status as the world's second largest economy owes much to its solid achievements in secondary education. It produced a large number 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 students' curriculum choice.[38] Though some changes are indicated in recent years (The 2002 Education Reform Proposal), school curricula at secondary level, by and large, are strictly regimented.[39] The question here is whether the secondary education is so structured as to best assist students to develop their varying abilities and their potentials. In international competitions, students from Japan, Korea, and Taiwan, among others, would often score high on *average achievements* in math and science. But, the *average achievement* may not be the best indicator of the performance where it really matters. For the increasingly competitive world, the real winners will be the ones that to innovate and invent and those who promote advances in science and technology. Thus, a

goal at secondary level should be at tapping on aptitudes of individual students and focus more on developing students' natural talents and nurturing their creativity. Strict regimentation in school curriculum can be an impediment to fulfillment of individuals' full potentials.[40] This is where the secondary education in the U.S. perhaps excels, though it is not free of criticisms on other grounds.[41]

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

5.2.2 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 youth to study abroad; a significant part of the national budget was appropriated for the purposes. As the students began returning, they gradually 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.[42] 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.[43] 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 further enhancement of education/training of its youth, has sent a large number of students and post-doctoral aspirants 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 (Porter, p. 395).

University research in Japan is perceived to lag in scale and depth behind those of the industries.[44] By contrast, universities in the U.S. interact closely with industry and are believed to excel industries, in general, in the 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 ranges of science and technology. Firms' R&D activities tend to focus primarily on applied areas

and are more product-oriented. Undeniably, some technological breakthroughs emerge from private industry such as IBM or Westinghouse, for instance, or the military in the U.S., or an obscure Nichia Chemical Corp. of Japan, but the scientists in their labs would have had their earlier training at university labs.[45] That most of the Nobel Laureates in science are university-based, furthermore, seems to suggest the importance of sound university programs in science and engineering in providing firm foundations for short- and long-term progresses in technology.

With few exceptions, most of the top universities in Japan are government-funded national (public) universities, heavily regulated by Ministry of Education. Private universities, however, are nearly equally constrained under the MOE rules and regulations. Allowing more autonomous management and loosening the age-old constrictions whereby the universities are structured and operated would be in order, to make Japan's universities more competitive top universities of the West, those of the U.S., in particular.

5.3 Government's export promotion programs

5.3.1 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.

In earlier periods, when the private sector was yet to emerge for large entrepreneurial undertaking, for want of visions and capital, the government took initiatives. The Meiji government built and owned Yahata Steel Mill in Northern Kyushu, for instance, and, subsequently, turned it over to a private firm at a price far below the asset value. This was to be Japan's approach to developing "strategic industries." The government was generous in pricing for such turnovers and accommodative with low interest loans where necessary. After World War II also, loan subsidies were a main instrument for developing priority industries, such as steel and ship building, in the earlier postwar decades, with subsequent shift in focus on more high-technology, knowledge-intensive, and high value-added/high-volume export items.

5.3.2 Tax designs for saving, investment, and export promotions

The largest share of the nation's tax revenues originates from income-based taxes. Income taxes are more often regarded as having adverse supply side effects, as compared with consumption-based taxes. Japan's income taxes, however, incorporates significant incentive provisions for capital incomes, i.e., interest earnings from saving, dividends, and capital gains.[46] Until 1987, the individual income tax law of 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 prevailing rate then). This upper limit of tax-favored savings (the so called "Maruyu" - deposits at banks, postal savings, securities companies, and other private financial institutions - comprised 93 percent of such savings) was very 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, ch. 8).

Resource- and capital-poor in immediate post-war decades, Japan resorted to preferential tax treatment of capital incomes to promote saving and investment. The system was in place until 1989, when the tax rule on interest earnings were amended but remaining still generous with a low uniform 20-percent rate. Also, the tax on long-term capital gains (levied on assets held for more than three years) applied only on 50 percent of such gains. The 1989 tax reform was introduced only after the government became alarmed by rapidly developing boom in the equity market. The remedy, however, came too late. Abrupt descents in equity and asset values had begun at the turn of the decade (into 1990s). It was to be a forewarning of Japan's decade-long economic travail to start 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 investment while also supporting government's loan subsidy programs for prioritized industries. One could point to excess in the tax incentive schemes, in their level and duration. However, what was done in Japan, say, up to at least the early 1970's, mostly likely had more positive effects than harms in resource distortion.

If industrial policy were to be defined broadly to include a nation's tax policy and tax structure designs aimed at developing its "strategic industries" and promoting exports, the policy measures had their intended effects. Important to note, while direct impediments to imports (tariff or non-tariff) or outright subsidies to exports are not condoned in the WTO regimes, such other measures as tax designs aimed at promoting certain industries rarely seem to become a subject of contention in disputes between trading parties in discord.[47]

The U.S., out of concerns over the issues of equity and potential revenue loss, has been more cautious in providing tax preferences to capital incomes. The nation, however, could have benefited from such schemes, given the nation's chronic low saving and dependence on external capital. If potential revenue loss is also a concern, apart from an equity issue, then tax preferences on capital incomes with proper upper limits on such incomes could offer worthwhile compromises.

The value added tax (VAT) at a low 3 percent was introduced in Japan in 1989 and subsequently increased to today's 5 percent. Under the WTO rebate provision, the VAT on exports are refunded (thus lowering prices of exports) while the same tax is levied on imports. The VAT, thus, has been widely regarded as export-promoting, especially when it replaces corporate income taxes. Most European nations have had the VAT (the rates being much higher than Japan's rate) since early postwar years (the U.K., the latecomer, joining in 1973 with a 17.5 percent rate), and the U.S. being the only industrialized Western nation without one. One would wonder why Japan had waited for so long to adopt a VAT. It was due largely to political considerations with strong voter oppositions to a new tax, and, perhaps also, to the perceived distributional (regressive) effects of the tax.

5.3.3 The postwar trade policy - Import restrictions

Until mid-1970s, Japan's import nearly averaged out to match exports.[48] But, the trade balance took a rapid turn to surplus for Japan in the second half of the 1970s. The surplus reached a high $18.2 billion in 1978. The second oil shock of 1979 turned Japan's trade balance to a deficit ($10.7 billion in 1980). Japan regained a surplus of $18.0 billion by 1981. For the next five years, Japan's trade surplus grew explosively, to a peak of $82.7 billion in 1986 and stayed at high levels in the following two years, to exceed $90 billion.

The causes of Japan's roaring 1980s, apart from the oft-cited government-engineered weak Yen against other currencies, may be seen more in the context of the developments in the U.S. economy. The bulging U.S. budget deficits (caused by the 1982 tax act - a 25% uniform rate reduction in the federal individual income tax – and major defense budget increases during the eighties) led to high interest rates and this made the U.S. dollar-denominated assets (of the government and the private sector) attractive. This then resulted in higher exchange values of the U.S. dollar and, in turn, helped paving the way for a phenomenal rise in U.S. trade deficits, from $18.0 billion in 1981 to $117.7 billion in 1989. Of the latter, $42.8 (down from $49 in the previous fiscal years) was the deficits with Japan (*The New York Times*, September 25, 2008). In other words, the sequence of events in the U.S. in the 1980s, added fuel to the exuberance (one would say, "irrational") in Japan's asset markets of the 1980s

Japan's post-1965 trade surpluses had gone unabated for a quarter century, except in the immediate aftermaths of the two oil shocks, against the backdrop of the nation's postwar protectionist trade policy that remained largely in force through the late 1980s and even beyond. Tariff rates on numerous industrial goods had fallen at a modest pace in the 1980s, but for many other industrial and agricultural products, tariff and non-tariff barriers to imports were still in place. Among the most notable 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 recently (1993).[49]

Important to note, despite the ongoing large surplus, the government kept on with its intervention in the exchange market in support of Japan's export sector. When, in

October 1986, a "Yen-daka" (high Yen value) caused a stagnant Japanese economy turn a bit worse, the government lowered interest rates, expanded public expenditures while implementing tax reduction. Concurrently, in 1986, the Bank of Japan, concerned that exports took a downturn, had resumed its "Buy Dollar/Sell Yen" campaign, though the nation's trade and current accounts were still in large chronic surplus.[50] 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. Massive amount of liquidity searching for investment outlets had flooded into the 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 investment.

With the inevitable bust in the asset markets in Japan, that followed the U.S. economic downturn in 1990-1991 (triggered by the S&L crisis of the late 1980s), came Japan's painful, decade-long economic stagnation. Fortunately, the post cold war U.S. information technology revolution and the sustained U.S. economic prosperity of the 1990s, with resulting surges in import, the Japanese economy saved itself from further deterioration. The bilateral trade gap widening, the U.S. trade deficits vis-à-vis Japan nearly doubled $42.6 billion to $83.0 billion between 1990 and 2000.

Japan's earlier postwar interventionist trade policy, promoting exports and restricting imports, probably had compelling merits; it may have helped the resource–poor nation achieve its goal for capital accumulation. But, subsequently, even after the nation was well stocked with capital and the trade account was on chronic large surplus, the government policy protective of the export sector had largely persisted. Its economy, that had registered a four percent growth over l981-l900 (by far the highest among all G-7 nations), took a sharp turn to the longest postwar stagnation beginning in 1992, continuing into early 2000s. The nation had seen unprecedented postwar financial sector failure, with numerous financial institutions declaring bankruptcy, heavily laden with huge non-performing loans, to the tune of the reported hundreds of billions of dollars.

Enormous loss in GDP, high unemployment, and the collective psychological toll may have been averted, at least in their severity, had the government policy been less focused on protective policies for the export sector, for so long, and less influenced by its preoccupation for maintaining short-term macro stability.

6 Concluding remarks

Japan's paucity of natural resources, we note, is overstated. Bounties of the nature broadly defined to include the temperate climate, plentiful rainfall, numerous natural harbors, and certain other aspects of geography are often unacclaimed but valuable assets to Japan. Important also are such factors as population, culture, events in history, and the role of the government. They can all contribute to elevate the nation's competitive advantages in the global market.

To better understand Japan's remarkable post-World War II economic achievements, we trace the past to the Meiji era (1868-1912) and through the interwar decades. From historical perspectives, Japan, as Asia's earliest achiever in industrialization, enjoyed unique advantages in export and import markets within the region, especially in pre-World War II era and immediate postwar decades. The pacifist constitution of 1947, that stipulates 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 civilian sector of the economy (and its R&D efforts), away from the military and related sector. Also, looking back, the Korean War (1950-1953) offered Japan an important impetus for its postwar recovery.

Again, looking back, we note Japan's impressive prewar investment in infrastructure, ranging from railroad, urban mass transit, air and sea ports, and communications facilities. Important, Japan's investment in core transport infrastructure was more on railroads, from earlier on and even today. That was in stark contrast to the U.S. where the focus over the postwar decades has been on building up massive highway networks, with their attendant ill effects: polluted urban areas and the nation's heavy dependence on foreign oil.

Noteworthy also, Japan had visions and remarkable rapid achievements in education. While still on a 9-year mandatory system (which began in 1947), most junior high graduates move on to senior high. Its secondary schools are well known for quality programs, especially in math and science For higher education, introduction in 1886 of the imperial university system (five such universities were in existence by 1918, with more added thereafter) was an important milestone. The subsequent Universities Order of 1918 allowed founding of private universities and colleges, and paved the way for rapid increase in the number of such institutions. 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, benefiting from the Western models to emulate, achieved it in half a century.

The post-World War II expansion and upgrading of infrastructures in Japan proceeded at an incredible pace. Most notable are intercity networks of railroad (which feature the Shinkansen) that crisscross the nation, urban subway systems for major cities, air and sea ports, aggressive land developments (including those coastal area land reclamation), telecommunications facilities, and nuclear and hydroelectric energy plants. All the while, upgrading education at all levels and enhancing government-sponsored R&D programs, aimed at promoting cutting edge technology in "strategic industries," have continued. Superimposed on the prewar build up of the national economy over three quarters of a century, these postwar achievements laid grounds for Japan's emerging as the world's second largest economy and a dominant player in the global market.

As we focus on these post World War II developments and reflecting on recent past and ongoing situations facing Japan, we find ourselves tempted to make following few observations.

In earlier postwar decades, Japan's fiscal policy (aimed at promoting saving and investment) and monetary (loan subsidies) policy to develop core industries, and her trade policy, (export-promoting and import-restraining), it seems, had their compelling merits. They served well on the intended goals, expediting capital accumulation, elevating the industrial structure and raising productivity of the private sector economy. Investments in core infrastructure and government-supported R&D activities, wisely prioritized, added to this rise in productivity The nation had seen rapid increase in the average income and achieved remarkable progress in overseas trade. The trade surplus increased in earnest, in the second half of 1970s and had risen explosively in the following decade. All the while, however, despite the large surplus in place, especially in the 1980s, government's foreign exchange intervention was at work and impediments to imports, though lessening, still remained largely potent.

These measures, along with sustained low interest policy and deficit-financed public expenditures, aimed at maintaining the short-run macro stability, flooded the economy with huge amounts of liquidity. The end result was the "asset inflation," developing at an alarming rate in the last several years of the 1980s. The immediate trigger for the bust of the overblown asset markets was the U.S. recession that followed the S&L crisis of the late 1980s. Japan endured huge losses in GDP, high unemployment, numerous corporate bankruptcies and immense human suffering in the ensuing decade of the 1990s and beyond. One wonders how Japan would have fared had it pursued more flexible course in trade policy and been free of its excessive concerns over the short-run macro instability.

In education, there are various aspects of Japan's systems the rest of the world can learn and benefit from. Japan, on its part, could also look elsewhere for references or for evaluation of its own systems. In public schools, especially at secondary level, greater curricular choice for students would be in order. In today's setting of the competitive global economy, the need to tap into students' talents and aptitudes and nurture creativity becomes even more urgent. In higher education, also, loosening the grip of age-old mandates on universities would enable individual institutions to move ahead, more readily adapting themselves to changing environments of the world. Many top universities in the U.S., we note, are private and operate autonomously, by and large. Even public universities operate with wide latitude of autonomy.

Recent reformist movements in Japan, among government leaders in particular, are positive. Privatizing and restructuring of 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 went into effect on October 1, 2007. Other serious reform legislations also have been enacted or pending. Japan's 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 move toward enhancing local fiscal autonomy is in progress. 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. In education, also, last several years have also seen similar, though less aggressive, reform trends. The proposed changes include one that attempts to provide students more curricular options at secondary level and another that addresses the need for greater autonomy at institutions of higher education.

Japan, in recent years, has thus taken important steps toward far-reaching structural reforms. This will lead to improved use of resources and more efficient flow of capital to uses for higher productivity. The nation, having faced up to the massive banking-sector turmoil (of the 1990's), the need for reform in corporate structure and for further opening up the economy, and now with the postal reforms out of the way, 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, and enhanced corporate competitiveness, while contributing to economic stability and welfare of the world.

Endnotes

[1] 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.

[2] 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 outpace 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 the "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, 1963).

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

[4] It may be worth noting that the average monthly user fee for swimming pool in Tokyo was $73, compared with the much higher corresponding fee of $188 in Seoul (Chosun Ilbo Daily, Seoul, October 15, 2007, B-3).

[5] This writer, on his train ride in late October from Osaka to Tokyo (the middle one third in length of the Honshu Island), observed with amazement that much of rural lands were covered what appeared to be fresh greens and other vegetations, making him wander when the farming season ends in Japan.

[6] In this regard, Korea perhaps is somewhat better situated than is Taiwan, with its population (49 million), more than twice that of the latter (23 million).

[7] It may be worth noting that the average monthly user fee for swimming pool in Tokyo was $73, compared with the much higher corresponding fee of $188 in Seoul. Chosun Ilbo Daily, Seoul, October 15, 2008, B-3.

[8] 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' TGV (connecting Paris to Lyon), the vanguard of high speed passenger rail system in Europe, was built in 1981 (Riew, 2007).

[9] For the U.S., with the huge investment in airport and highways (and the popularity of private cars), any rapid move for high speed rail services would not be profitable and require large scale

government financing. It is thus unlikely to materialize, despite current intense concerns on energy and environment.

[10] 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 Area and the Nagoya Metropolitan Area are 18.6 million and 8.7 million, respectively. Japan's fourth largest urban 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.)

[11] The Rheine, to this casual observer, was in heavy use, with a large number of vessels afloat moving in opposite directions. The day time traffic, as one would expect from the many cities that cluster along the Rheine, is quite heavy, the ships having to negotiate occasional turns of the waterway. Navigating through the river must be arduous, unlike ocean sailing, for pilots of the vessels.

[12] It is interesting to note that the industries that cluster around the port cities of Korea are very similar to those in Japan, with the port cities of Pohang (in the east coast) and Kwangyang (of the southern coast) being homes to steel makers, and the Ulsan complex (due south of Pohang), well known for its automobiles and ship-building activities. Recently announced plans for industrial base expansion (the construction to start in 2010) envisage five more new complexes, two to be located inland and three in coastal areas. Of interest here, one of the two inland complexes is designed for "high tech companies," and the other "to house companies manufacturing electric parts and developing sound and visual technology." The Pohang complex will accommodate mostly companies "producing automobiles and shipbuilding parts and steel." (Korea Herald, 2008)

[13] 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.

[14]Recent dramatic surge in crude oil prices further underscores the importance of transportation costs impacting on trade. "The cost of shipping a 40-foot container from Shanghai to the United States has risen to $8,000, compared with $3,000 early in the decade," according to a recent study (CIBC, 2008). According to this study, the recent surge in shipping costs "is on average the equivalent of a 9 percent tariff on trade," (*The New York Times*, Aug. 3, p. 1 and p. 10). It suggests that Japan's trade advantages in the regions of Asia (vis-à-vis Europe and U.S.) are far from being nontrivial even today.

[15] The railroad track gauge (except on the high speed lines) and the width of train compartments, are generally narrower than those seen in other countries. The four lane highways in many parts of Japan seem barely equivalent to a three-lane system in the U.S. The topography (rugged terrain) may have been a reason, but could it also be an extension of the culture being described here?

[16] A recent work by Joseph Gyourko and Richard Voith (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 (1979) 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. 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 for land more price-sensitive.

[17] 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.

[18] I was advised on this point by Yasuyuki Sawada (U. of Tokyo).

[19] In the mid-1990s, Japanese girls at primary school 6th grade level were taller than their immediate postwar (1940s) counterparts by 16cm. As for female 7th graders, they were more than 12 kg heavier than their 1940s counterparts (T. M. Lim).

[20] In 2005, according to an OECD report, the annual average spending per student at the pre-primary level was $4,922 in PPP-based U.S. dollar, less than half the corresponding spending levels per child in the U.K. and the U.S. ($8,452 and $7,881, respectively). At the primary to tertiary education in Japan, it was $7,438 which was considerably lower than in Switzerland, the U.S., the Nordic countries and Australia.. Other reasons, such as differences in educational qualities, student disciplines, and other cost-relevant environmental variations, will have to be factored in. However, given that there are no apparent major disparities in educational quality, one may conclude that cost effects of differences in the average physique are at least might be worth exploring.

[21] Added costs of caring for longer-living persons in Japan may be offset, in part, by higher compensating household savings, thus providing a larger upfront pool of funds.

[22] The first contact with the West came in 1542 when a 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.

[23] Eaton and Kortum (2002), estimating a model using bilateral trade in manufactures for a cross-section of 19 OECD countries in 1990, find that trade diminishes dramatically with distance and that prices vary across locations, with greater differences between places father apart. Geography (or more specifically, distance) thus is shown to play an important role even in most recent periods. Japan' advantages over other industrialized countries (of Europe and the U.S.) in the trade of most high-end products may be seen still to prevail in the markets of the Asia proper.

[24] The relationship between aggregate productivity and military stock variable is shown to be negative, but statistically insignificant.

[25] To make the matter worse for the U.S., a large number of able college graduates moved into the medical profession. The disparities in earnings between medical practitioners and those in other professions have been so wide, attributed largely to the "licensure" pressed upon by the American Medical Association. (See Milton Freedom, esp. pp.149-160 on Medical Licensure).

[26] It is noteworthy that Taiwan's armed forces will do away with conscription by 2013. "The ROC government," according to National Defense minister Chen Chao-min (Taiwan Journal), "is planning to convert Taiwan's military into all–volunteer force within five years." The scheme is to commence in 2010 and annually reduce the proportion of the conscripts from its current level of 40 percent until an all-volunteer force is achieved by 2013. Under the plan, the military personnel budget will rise; the monthly pay for a volunteer will double the government-determined minimum wage, currently US$562. The rate is thus to be higher than the present salary earned by a private who serves voluntarily, US$908. But, the controversy surrounding the "brain drain" issue will subside.

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

[28] Early attempts at organizing for labor in Japan were made in the last decade of the 19th century by the nation's intelligentsia among those educated overseas, mainly in the U.S. and Germany, but it was in1945, under the Occupation authority, that labor unions were legalized (Scalpino, ch. 1).

[29]Kume (1998), in his positive assessment of Japanese enterprise unionism, observes: "It has achieved some notable successes in the postwar period - substantial improvement of working conditions, employment security, and .... Individual management tended to be accommodationist, as it depended on the cooperation of unions in order to operate in a highly competitive market." Labor's internal divisions within the company (accommodationists versus confrontationists), he further notes, often helped the union to gain more participation in management's production decision making. "The establishment of a norm in which workers were viewed as legitimate members of the enterprise, rather than mere production factors, has allowed unions to become more active on both productive issues and distributive issues."

[30] There were periods of pronounced union-management discord from the late 1940s to the mid-1950s, Scott Gordon (2000) notes. Under what is described as intolerable working conditions of the immediate postwar years, he says: "A steelworker died on the job every day. No benefits were given to the families and often the final pay would be delayed. It was in this atmosphere that the unions thrived." "But because of their success, the Cold War, and an about-face by the U.S. Occupation authorities, the management began to gain the upper hand."

[31] Powerful lobbies for federal funds for highways by such major U.S. industries as steel, automobile, oil, road construction, insurance among others, heavily weighed in on policy makers, Federal Highway Administration and the Legislatures, and at the state and local levels. Railroads, privately owned, until later when the federal AMTRAK took over some of the failing firms, did not share in the support of the government (except from federal land lease in the 19th century for railroad companies for railbeds). They, in fact, were in a double jeopardy, in their competition with highways, with state/local property taxes levied on railbeds and the rolling stocks, whereas highways are public properties, thus not subject to tax levies.

[32] Aschauer's preoccupation (1989) on highway as the main element of the core infrastructure for the U.S. economy is unfortunate. His empirical analysis supports increased funding for highways for improvement in the U.S. economic productivity, but it fails to address what expanding highways implies for alternative means of transportation. The railroads, once a bustling industry of the U.S., crisscrossing the continent until the end of World War II, has continued their downslide to today's sad state of deterioration. And this was done in a relative short span of time, i.e., in a little over a half century and, as some see, the situation has reached a point of no return, given the massive network of highway systems in existence

[33] The Runway B of the Kansai International began operating on August 1, 2007 (*Asahi Shinbun*, August 3, 2007).

[34] The push to reclaim land from the waters of the Tokyo Bay began as early as1650 (*Infratecture, Industrial Archpelago*, transstudio.com/infratecture/113.htlm).

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

[36] Even in 1995, at an early stage of the deepening crisis of Japan's budget deficits, her debt-to-GDP ratio was 89 percent, significantly higher than 69 percent for U.S. The rapid rise the debt-to-GDP ratio for Japan over 1993-2002 is attributable more to the shortfall in government revenue during the decade-long severe economic stagnation.

[37] Given Japan's labor intensive farming and compact rural communities, many public schools in rural areas operate with their enrollments that are large enough to ensure cost efficiency. By contrast, American public schools, in rural areas and sparsely populated urban suburbs, often lack adequate enrollment, especially at the secondary level, operate at high average costs and, 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 (i.e., operating at the least cost per pupil) for senior high schools was about 1,650. A large majority of high schools in that state, however, had

enrollments below 500. John Riew, "Economies of Scale in High School Operation," *Review of Economics and Statistics*, August 1966.

[38] By comparison, most American high schools, especially at the senior high 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 around the 5th grade are not uncommon and add to educational opportunities for students with recognized aptitudes and performances.

[39] The proposal includes increased curricular options at upper-level secondary schools as one of its goals (though it is listed at the very end, as if to suggest its low priority).

[40] 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 achievements would not have been possible without their learning experiences in the years of adolescence.

[41] *The Economist* (p. 15), in a recent issue, for instance, was critical of American school systems as "over-unionized and unaccountable."

[42] 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). Many of these institutions were *schools* before they were named as universities and they often were small establishments with a very narrow scope of academic pursuits. 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, 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, 1984)

[43] Fifty-three percent of the population completed higher education in Japan, ranking second only after Canada (55 percent) (OECD, *Education at a Glance*, 2008).

[44] 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, the MITI in particular, and the state-controlled financial institutions.

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

[46] Hiromitsu Ishi, *The Japanese Tax System*, Third Edition, Oxford University Press, 2001 (Ch. 8 for detailed information on taxation of investment income and savings.)

[47] 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. (Riew, 1987).

[48] Between 1960 and 1964, Japan incurred annual trade deficits, ranging from US$400 million to $1.6 billion. The era of chronic trade deficits ended in 1965, and by 1969, the nation had a positive balance of $1.0 billion, which rose to $ 5.1 billion by 1972. The jump in oil and other raw materials prices in1973 led the trade balance into deficit ($6.6 billion in 1974). With strong export growth, however, this was reversed to a surplus of $2.4 billion in 1976.

[49] In 1999, under the Rice Farming Income Stabilization Program enacted in 1998, the government subsidy to farmers totaled US$815 million. "On per hector 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 (Moody, " Japan's Rice Trade Policy"; Fukuda et al, 2003.

[50] 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.

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