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"Japan's low energy intensity undoubtedly results from dedication to manufacturing excellence, energy conservation and industrial innovation. It is also the result of a still surprisingly low level of personal energy consumption that reflects relatively poor housing conditions, a limited amount of leisure time and infrastructural weaknesses."

Does Energy Efficiency Explain Japan's Economic Success?

By Vaclav Smil
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Japan's economic success begs for explanation. Its magnitude and duration have made Japan the envy of other nations and have sent researchers to look for the critical factors that might reveal the "secrets" of Japanese success. Explanations range from intensely competitive domestic manufacturing (the "they have nine car makers, the United States has just three" school of thought) to the supposed socioeconomic superiority of the family-centered Confucian ethos. Other explanations single out the cunningly manipulative, long-range planning with which Japan's Ministry of International Trade and Industry (MITI) runs a single-minded export-oriented "Japan, Incorporated"; or the alleged advantages arising from mastering three writing systems of an unusually complex language.[1]

A more profitable quest would focus on those factors that Japan alone possesses. Leaving aside fascinating but hardly decisive examples like spending large sums of money on decorative stones or eating more beancurd than any other nation, one should look at more promising variables, like intensive primary schooling or high savings rates. But Japan is not in a category of its own in either schooling or savings, since various European nations either match or come close to Japan's levels.[2]

There is one critical variable in which the Japanese have a clear advantage over other nations: the energy intensity of economic output. Every economic activity is predicated on the supply and conversion of energy. The nation that uses the smallest amount of fuel and electricity to produce a comparable unit of national economic product will enjoy a variety of socioeconomic advantages, ranging from strong competitiveness in the global market to diminished environmental impact. Japan is clearly such a nation. The reasons for this unique position deserve close scrutiny, not least in order to understand the challenge facing the United States.

There is a wealth of relevant international energy and economic data, but to ensure the greatest possible comparability and consistency, this inquiry is based on statistics from the Organization for Economic Cooperation and Development (OECD), and the comparisons will be limited first to the Group of Seven (G7) countries and then to the contrast between Japanese and United States performance.[3] The most frequently used measure of national energy intensity is calculated by dividing total energy consumption—OECD statisticians prefer to call it the total primary energy requirement (TPER)—by a country's gross domestic product (GDP).

Taking 1988 GDP values at that year's prices, converting them to United States dollars at 1988 average exchange rates and dividing these values into TPER expressed in tons of oil equivalent yields the rate of 118 kilograms of oil equivalent (kgoe) per

[1]Two contributions to this literature are Chalmers Johnson, *MITI and the Japanese Miracle* (Stanford, Calif.: Stanford University Press, 1982); and Karel van Wolferen, *The Enigma of Japanese Power* (New York: Random House, 1989).

[2]The minimum number of school days required in Japan, 210 a year, is much like the West German or the Soviet total; see Michael J. Barrett, "The Case for More School Days," *The Atlantic Monthly* (Boston), November, 1990. The Japanese net household savings rate as a share of disposable income was 14.8 percent in 1988, which is not very different from Italy's 14.2 percent or Germany's 12.6 percent. In United States, there are fewer than 180 school days a year and during the 1980's American household savings rates fluctuated between 3.8 and 7.5 percent of disposable income.

[3]Unless otherwise indicated, all calculations concerning national energy efficiency are based on economic statistics published monthly in the OECD's *Main Economic Indicators* (Paris), while aggregate energy data come from various editions of *Energy Balances of OECD Countries* (Paris). As the latest (1990) set of energy balances contains the statistics for 1987 and 1988, I chose the latter year as the base for my comparisons. The Group of Seven is made up of the seven leading Western industrial nations. Members (in order of their gross domestic product) are the United States, Japan, West Germany, France, Italy, the United Kingdom and Canada. Data illustrating various aspects of national energy intensities are taken from 1970–1990 editions of the *Japan Statistical Yearbook* (Tokyo: Government Statistical Office) and the *Statistical Abstract of the United States* (Washington, D.C.: Government Printing Office).

$1,000 for Japan.[4] The second most energy-efficient major economy was France's, which was 28 percent above the Japanese level, with 151 kgoe per $1,000. West Germany needed 69 percent more energy than Japan, and the United States rate was 357 kgoe per $1,000, or three times as much energy as Japan's (only Canada's rate was worse, at 397 kgoe per $1,000).

Adjustments for substantial fluctuations in each country's exchange rate slightly alter the rankings, but they cannot take away Japan's lead or shrink the still considerable difference between low Japanese energy intensity and the inefficient performance of the United States. This wide disparity presents the following questions: what is the cause? what are the major contributing factors? how much of this difference stems from unique, and largely immutable, national peculiarities? and how much of it can be ascribed to technical prowess or backwardness, to frugality or repressed personal consumption, to excesses or rational use?

STRUCTURAL CAUSES

When compared with the United States, the Japanese advantage in energy efficiency extends to all major economic sectors with the sole exception of farming. Farming in the United States, which is based on large fields and concentrated animal husbandry, has recently required at least 25 percent less primary energy than Japan's fragmented, excessively subsidized agriculture. But the United States advantage is insignificant since farming contributes only 3 percent of United States GDP compared with 2 percent of Japan's, and it directly consumes less than 1 percent of the country's TPER compared with about 1.2 percent in Japan.

Comparisons of industrial production (which currently accounts for about one-fourth of GDP in the United States and one-third in Japan) show that resource extraction, processing and manufacturing are about 50 percent more energy-intensive in the United States than in Japan. Structural differences and technical advances account for most of this disparity. Structural differences arise from differing histories and resource endowments. The mineral-rich United States has traditionally been a heavily mining-based nation; mining contributed more than 5 percent of the country's GDP a generation ago, and it still provides close to 3 percent, compared with Japan's share of about 0.33 percent.

And even though the United States imports a great deal of crude oil, the country currently ranks as the world's largest producer of high-quality bituminous coal, and the second largest producer of crude oil and natural gas. Overall, the United States is the world's leading producer of primary energy, annually extracting and generating nearly 25 times as much fossil fuel and primary electricity as Japan. Extraction, processing and long-distance distribution of fuels over land are inherently energy-intensive activities; except for petroleum refining, these activities either have only a marginal place in the Japanese economy or are totally absent.

Moreover, the possession of abundant energy resources promotes higher energy use because it attracts energy-intensive industry and because it leads to relatively wasteful consumption. Not surprisingly, there is a strong negative correlation between dependence on primary energy imports and average TPER per GDP levels.[5] The structure of primary energy use, which is largely a matter of resource endowment, influences energy intensity: liquid and gaseous fuels have an inherently higher thermal conversion efficiency rate than solid fuels. As a result Japan, with 18 percent of its TPER coming from coal (compared with 24 percent in the United States), enjoys another structural efficiency advantage.[6]

Although the United States has reduced the share of energy-intensive mining and heavy industrial activities in its GDP since the early 1970's, the Japanese have done so to an even greater extent. Broad economic restructuring reduced Japanese reliance on the energy-intensive industries that were responsible for economic growth during the 1960's and the early 1970's. Nothing symbolizes this trend better than the changes in Japan's iron and steel industry. Between 1965 and 1973, the country's crude steel output nearly tripled (from 41.2 million tons to 119.3 millions tons)—but by 1988, as Japanese steelmakers embarked on a long-term program of drastic rationalization and diversification, it was just 105.7 million tons.

These changes, accelerated since 1986 by the high value of the yen, included cuts in the labor force and closing down blast furnaces (for example, Nippon Steel completely shut down blast furnaces in four of its five plants and left only one working in

[4]Oil equivalent is used as a common denominator because refined oil products are the most important sources of primary energy in the OECD nations.

[5]Canada, the only net energy exporter among the G7 countries, is the most energy-intensive of the group, while Japan, the largest energy importer, is the least. Another highly energy-intensive sector in the United States involves the development and deployment of strategic nuclear weapons and of large land, air and naval forces. A large portion of energy expenditures for the military is subsumed in manufacturing demand for fuel and electricity because the production of vehicles, tanks, ships, airplanes, missiles and weapons requires many highly energy-intensive inputs (above all, special metals and composite materials).

[6]Liquid and gaseous fuels generate a lower amount of air pollutants per unit of useful energy, and it is possible to remove virtually all sulfur from natural gas or fuel oil before combustion. Coal desulfurization is much more difficult and expensive.

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its Yawata Works). Other changes included branching into electronics, new materials, biotechnology and land development. The 1990 annual report of Nippon Kokan, Japan's first privately owned steelmaker, shows little evidence that the company still produces steel: the brochure is full of photographs of electronics, computer-aided design and manufacturing devices, and condominium models.

Manufacturing output rose by 11 percent between 1985 and 1988. But the output of high-value-added goods requiring less energy for production rose even more: in the same period the output of pharmaceuticals increased 23 percent, integrated circuits 24 percent, computers 43 percent and telecommunications 108 percent. Japanese companies have also been at the forefront of virtually all low-energy but high-value-added product innovations of the 1980's, ranging from composite materials and copying and facsimile machines to computer-controlled luxury cars and robotics.

TECHNICAL DIFFERENCES

A detailed analysis of steelmaking in the United States and Japan shows that in 1973 the average energy costs of American steelmaking were about 50 percent higher than in Japan.[7] The reasons behind this disparity were overwhelmingly technical; larger (and hence more efficient) Japanese blast furnaces were operating at higher top pressures, with higher oxygen enrichment, higher blasting temperatures and higher quality coke, and they were charged more often with preheated ores.

Moreover, about one-fourth of all United States steel was coming from the type of inefficient open hearth furnaces that accounted for less than 2 percent of Japanese output; 25 percent of all Japanese steel was produced by efficient continuous casting, compared with only 11 percent in the United States. Since the 1970's a variety of technical improvements have increased the energy efficiency of typical iron and steelmaking sequences in both nations by about 15 percent; but the overall reduction of fuel and electricity use in American ferrous metallurgy owes more to new attempts to increase the recycling of scrap than to technical improvements.[8]

Steelmaking in the United States, however, continues to lag behind steelmaking in Japan. In 1988, 95 percent of Japan's steel output came from efficient continuous casting operations, compared with only 60 percent in the United States, and about three-fourths of America's steelmaking capacity will require upgrading or replacement by the year 2000, compared with only 15 percent in Japan. The technical advances that reduced the average energy cost of Japanese steelmaking by 20 percent between 1973 and 1985 had an even greater impact in other industrial sectors: energy requirements in pulp and papermaking were reduced by about 25 percent, and in ethylene synthesis by about 35 percent during the same period.

But the combination of sectoral differences and technical advances in industrial production does not account for most of the disparity between United States and Japanese energy intensity. Compared with Japan's energy use per capita, industrial energy use in the United States is "only" 1.6 times higher, while energy use for transportation is 3.6 times higher, and energy residential energy use is 3.5 times higher. The high energy needs in the United States result from enormous private consumption in transportation and housing rather than industrial inefficiency.

ENERGY FOR TRANSPORTATION

The huge size of the United States (more than 21 times larger than Japan, even without Alaska) naturally demands considerably more energy for transportation. Extraordinarily high dependence on private cars intensifies this disadvantage; annual gasoline consumption alone during the 1980's in the United States was equal to between 87 and 90 percent of Japan's total energy use. In 1988 the Japanese consumed only 238 kilograms (85 gallons) of gasoline per capita, compared with 1,287 kilograms (460 gallons) per capita in the United States.

The difference derives from the higher level of car ownership in the United States (in 1988, there were 57.4 passenger cars for every 100 Americans, compared with 25.1 cars for every 100 Japanese), longer average distances traveled (in 1988, 16,190 kilometers per car in the United States versus 9,986 kilometers per car in Japan), and lower gasoline efficiency (in 1988, a mean of 23.2 miles per gallon in Japan, compared with 19.9 miles per gallon in the United States). The average gasoline efficiency of cars in the United States rose by more than 50 percent between 1973 and 1988 (from 13 miles per gallon to 19.9), and it is now only 15 percent behind the Japanese performance (which improved by 6 percent during the same period); moreover, Japanese car ownership rose by nearly 50 percent during the

[7] Thomas V. Long 2d et al., *Economic Determinants of the Use of Energy and Materials in the U.S. and Japanese Iron and Steel Industries* (Chicago, Ill.: The Committee on Public Policy Studies, University of Chicago, 1978).

[8] In Japan the ratio of pig iron to crude steel remained largely unchanged (0.77 in 1973, 0.75 in 1987), but in the United States it declined from 0.7 in 1975 to 0.5 in 1989. Smelting iron and then producing steel typically requires 60 to 70 percent more energy than making steel from recycled scrap in electric arc furnaces.

Social Infrastructure in Five Industrial Countries

	Japan	Britain	West Germany	France	United States
Main Sewage (percentage of population served)	40.0	95.0	91.0	64.0	73.0
City parking (in square meters per person)	2.5	30.5	37.4	12.2	45.7
Express highways (in square meters per vehicle)	87.0	120.0	290.0	264.0	465.0
Public water supply (percentage of population with access)	94.0	99.0	98.0	98.0	—
Telephones (per 100 people)	40.5	38.1	42.3	41.7	45.2
Hospital beds (100,000 people)	1,204.2	856.6	1,149.6	1,069.4	585.7

Source: *Far Eastern Economic Review* (Hong Kong), June 20, 1990, p. 50.

1980's with people buying larger, less energy-efficiency vehicles. Nevertheless, there is little hope for any significant narrowing of the huge gap in gasoline efficiency.

The cost of gasoline in Japan is nearly four times the cost of gasoline in the United States, and it is physically impossible for cars in Japan to become the leading means of transportation, so average travel distances will remain limited (in fact they declined by about 8 percent between 1975 and 1988) and larger cars will be bought more for display than for extensive driving. Similarly, even the recent surge in Japanese flying, which nearly doubled jet fuel consumption between 1986 and 1988, has done little to close the enormous consumption gap between the two nations.

RESIDENTIAL CONSUMPTION

In spite of Japan's growing consumer affluence, the country's consumption of household energy remains far below the United States level; in 1988, there was nearly a fourfold difference. Among the G7 countries, only Italian households use less energy. Only a small part of this disparity results from unavoidable climate differences. The most important factors are the average size of dwellings, the actual temperature maintained inside during the heating or cooling period, and the ownership and power ratings of household appliances. Japan lags behind the United States in all these areas. An apologist could interpret this gap as a sign of commendable consumer frugality, but most Japanese would welcome substantial improvements to make their lives more comfortable.[9]

Japanese household appliances are almost invariably well designed and highly energy efficient, but their relatively small size contributes to their lower energy use. While there would be little benefit from overheating and overcooling the rooms (as is so commonly done in North America), the average Japanese family would like to have a larger house (the existing mean for single family dwellings is about 90 square meters compared with about 150 square meters in the United States), and one that is centrally heated and cooled. Forced air or electric resistance heating are the norm in the United States, but central heating started to appear in Japan only during the 1980's; in 1980 only 18 percent of households had a warm-air furnace and in 1988 only 50 percent had one.

Consequently, in Japan nearly half of all families use portable kerosene stoves and *kotatsu,* electric heaters. The kotatsu is placed under a four-legged frame covered with a futon-like quilt that retains heat and warms the feet of the family as it gathers around the only warm spot in an often drafty room. Similarly, while central air conditioning has been used in new housing in the United States since the 1970's, room units are still standard in Japan.

Another element that contributes to lower Japanese residential energy use is the fact that the Japanese simply have considerably less leisure time than Americans. Compared with between 1,800 and 1,900 working hours a year in the United States, the United Kingdom or France and just 1,700 hours in West Germany, Japanese workers average over 2,100 hours a year. This is slowly changing. For example, between 1980 and 1986, employers provided an average of 15 vacation days but workers actually took off only half that time. Moreover, surveys show that blue-collar workers would prefer to have a higher income even if it required them to work more hours.[10]

SOCIAL INFRASTRUCTURE

Japan's well-known infrastructural deficiencies

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[9]The *Survey on People's Living* conducted regularly by the Japanese Prime Minister's Office shows that concerns about housing are consistently more important than those about leisure, food and ownership of durable items.

[10]Economic Planning Agency, *Economic Survey of Japan, 1987–1989* (Tokyo: Economic Planning Agency, 1989), p. 191.

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JAPAN'S ROLE

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duce structural impediments to the flow of trade and investment. The United States asked Japan for changes in six areas: savings and consumption, investment balance, the distribution system, land-use policies, exclusionary business practices, and pricing. For its part, Japan asked the United States to address its budget deficit, its low savings rate and educational and worker-training difficulties. In short, each side "interfered" in the internal affairs of the other country.

The SII talks represented one of the few times that postwar Japan and the United States made demands on each other. Japan should be more assertive in dealing with the United States since Americans are used to resolving conflict through argument and debate. Avoiding issues for fear of confrontation can only add to confusion and misunderstanding. Effective leadership requires the ability to articulate and initiate moves. Robert Samuelson wrote in the *Washington Post* a few years ago that "great nations do not negotiate so much as they initiate. Japan is a great nation. It should begin acting like one."[11] Indeed, providing the initiative is a precondition for Japan to establish a working partnership with the United States in the framework of an international joint leadership system. ■

[11]Robert Samuelson, *Washington Post*, March 6, 1985.

SINO-JAPANESE RELATIONS

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for admission to a Japanese "language school." The "language school" (altogether some 300 unlicensed schools existed in Japan in 1988, with 80 percent located in the Tokyo area) would then certify the applicant as a student and put in a request to Japanese immigration authorities to issue a visa.

Once the student received a visa and entered Japan, he or she would study part-time and work full-time, saving as much as possible to send back to China. Living conditions were often difficult; usually three students would share a six "tatami-mat" room (about 108 square feet), and work in the service industry or in construction, auto repair, or metal working plants.

This system worked until April, 1988, when the Japanese government began to restrict the number of visas for language study. Chinese who had earlier paid huge sums of money to "people's brokers" to gain admission to language schools were unable to enter Japan. Resentment toward the government's new visa policy boiled over in November, 1988, when 35,000 Chinese staged a demonstration outside the Japanese consulate-general in Shanghai, protesting the changes. A Chinese embassy official in Tokyo complained that "China's young people are the real victims" of Japan's incoherent visa policy.

After the crackdown on the democracy movement in China, the Japanese government initially tried to reassure the more politically active Chinese students by announcing that their visas would be extended and that they would not be forced to return to China. However, staying in Japan did not prove to be a sanctuary. Some students claimed that members of the Chinese embassy in Japan were spying on them and trying to intimidate them by making threatening phone calls.

The Japan Civil Liberties Union (JCLU) accused the Japanese Immigration Bureau of being unhelpful in granting visa extensions to pro-democracy activists. It documented 13 cases of pro-democracy activists who were denied visa extensions, and 23 other members of the Japanese branch of the Federation for Democracy in China (FDC) whose requests for visa extensions were put into the special category "under consideration," meaning that they were neither approved nor denied.[12]

[12]"Japan: Harassment of Chinese Dissidents," *News From Asia Watch*, October 4, 1990.

CONCLUSION

The suppression of the democracy movement in China temporarily chilled economic and political ties between Tokyo and Beijing. High-level official political contacts were finally renewed after Finance Minister Ryutaro Hashimoto visited Beijing on January 8, 1991.

It was clear that the relationship was far too important to both countries to allow strained relations to continue indefinitely. Leading members of Japan's Liberal Democratic party like former Deputy Prime Minister Shin Kanemaru and Takeshita visited Beijing in the summer and fall of 1990. These visits came after a trip to Tokyo in early 1990 by the head of China's State Planning Commission, Zou Jiahua.

Long-term Japanese economic and strategic interests forced Japan to maintain an "open door" with China, regardless of human rights violations and United States displeasure at Tokyo's lack of moral outrage. Japan's response to the suppression of the democracy movement in 1989 showed that Japan and China will maintain relations in the face of international and domestic pressures. Should China's aging hard-liner leadership pass quickly from the political scene and a reformist government emerge, Sino-Japanese relations will improve even more. ■

THE U.S. AND JAPAN

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more vulnerable to major policy shifts in case of any such negative developments.

How might Japan avoid extremes in security matters? The country is largely isolated except for its bilateral security treaty with the United States. If a Conference on Security and Cooperation in Asia, adhering to principles similar to those of the Conference on Security and Cooperation in Europe, could be established for all the Asian democracies, then Japan, South Korea and other Asian countries would become enmeshed in a multilateral security framework that would lend political stability to East Asia. Also, Japan and the United States must consistently assert that their security relationship is designed for mutual assurance rather than as a threat to the Soviet Union or anyone else.

Bonds between the United States and Japan remain strong; any major change would be less satisfactory than the way things operate at present. But because conditions have changed dramatically since the compact between Japan and the United States was established after World War II, a series of measures, some cosmetic and some substantive, must be implemented to satisfy domestic demands in both countries without fundamentally altering the relationship. A somewhat modified status quo can be sustained if both nations are clever enough in their policy adjustments. If the United States tries to do too much or too little, however, it runs the risk of ruining a relationship that has been extraordinarily beneficial for both the United States and Japan for more than three decades. ■

JAPAN AND NORTH KOREA

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that the inflation rate and other factors, like Japan's economic assistance to South Korea since 1965, must be taken into consideration. Some observers even expect that North Korea will demand as much as $10 billion by requesting compensation for the postwar period.[9]

If properly handled, the establishment of diplomatic ties between Japan and North Korea could contribute to the stability of the Korean peninsula by facilitating "cross recognition" of the two Koreas by the major powers. However, Japan's failure to pay adequate attention to South Korea's security interests in seeking rapprochement with North Korea could undermine not only friendly relations with South Korea, but also the existing balance of power on the Korean peninsula. ■

[9]Katsumi Sato, "'Kanemaru wa nanio shini Hocho shita no ka," *Shokun* (Tokyo), November, 1990, pp. 30–31; see also *Shukan Shincho* (Tokyo), October 11, 1990, p. 46.

JAPAN'S ECONOMIC DYNAMISM

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vestments and technology transfer, and the trend will no doubt continue. Bilateral trade bashing notwithstanding, there will not be an economic war between the United States and Japan because the two economies have become critically interdependent. The complete economic integration of West Europe that is targeted for 1992 will probably mean a common market that is more open than protectionist vis-à-vis the outsiders. The Pacific Rim, with which Japan maintains basically harmonious and complementary economic relations, will remain the fastest-growing region of the world. The world economy in turn will be favorably affected by developments in the Japanese economy.

In Japan, domestic investment-led growth is expected to last through the end of this century. Levels of consumption, private investment in plant and equipment, research and development, and technological innovation will all rise. Wages will increase in line with productivity gains and price stability will continue.

As part of the Structural Impediments Initiative, an agreement with the United States signed in June, 1990, Japan will spend $3.3 trillion over the next 10 years on public works. This translates into an approximately 6 percent annual increase in public investment during the period. The improved infrastructure should significantly enhance the productivity of the private sector.

The Japanese nation is rapidly aging.[7] However, the number of people under age 15 is falling, while the size of the productive age group (between ages 15 and 65) will stay unchanged during the 1990's. The number of those in this group will continue to increase through 1995. Because of greater participation by women in the labor market, more reemployment of the elderly, a measured increase in employment of foreign workers, and continual labor-saving innovations, the labor shortage will not be a critical bottleneck in economic growth.

The leading Japanese economic forecasters are predicting that the economy will grow at an average annual rate of between 4 and 5 percent for the balance of the century, and that the yen will be revalued to 100 yen to the dollar by the year 2000.[8] If these predictions come true, Japanese GNP will match or slightly surpass United States GNP at the start of the next century. ■

[7]The birthrate in Japan has been steadily falling. At present the average birthrate is 1.57 live births per woman. If this rate holds, in only two generations the Japanese population will decline from the present 123 million to 70 million.

[8]The Japan Center for Economic Research, the Economic Planning Agency and the Nomura Institute.

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KAIFU'S GOVERNMENT
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repeal of the United States-Japanese Mutual Security Treaty; it now recognizes the legitimacy of South Korea, cooperates with the LDP on issues of common interest and in the spring of 1990 officially renounced Socialist revolution as its ultimate goal.

The Japan Socialist party has succeeded not only at the LDP's expense but also at the expense of the other opposition parties; Komeito, the Democratic Socialist party and the Japan Communist party lost a few seats each in the 1989 upper house elections and about a dozen seats each in the 1990 lower house election. As a result, the Japanese party system today looks more like the so-called one and one-half party system of the late 1950's and early 1960's. Nonetheless, the Japan Socialist party would require the opposition's cooperation to mount a serious challenge to the LDP. The two middle-of-the-road parties—Komeito and the Democratic Socialist party—have grown estranged from the Socialist party because of their electoral defeats. In the February, 1990, Diet elections for a new Prime Minister, members of the three opposition parties abstained rather than casting their ballots for Doi, the Socialist party candidate.

None of the opposition parties is likely to change its mind any time soon and begin cooperating with the Socialist party. As a result, the LDP will probably maintain its dominant position in the lower house, even while it remains dominated by the opposition in the upper house. Kaifu, on the other hand, has only a slight chance to remain LDP leader and Prime Minister beyond the next LDP party election in October. ■

ENERGY EFFICIENCY
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also contribute to its lower private energy use, as well as to its lower energy use in public and commercial establishments. The most infamous deficiency is the lack of sewers and wastewater treatment facilities: only 16 percent of Japanese homes were connected to sewers in 1970 and by 1987 this rate had risen to no more than 37 percent.[11] The quality of Japan's roads is also deficient; about 75 percent were paved in 1973 and by 1985 less than 78 percent had been paved. In contrast, 95 percent of America's vastly more extensive road network is paved.

NO SIMPLE CONCLUSIONS

Rates of average energy intensity in industrialized nations are revealing and valuable measures of economic performance and technical prowess. But as with any aggregate indicator reflecting a variety of national peculiarities, it would be misleading to interpret these rates naively. TPER per GDP ratios do not simply express national economic efficiency, nor do they measure appropriately overall energy conversion efficiency. "The lower the better" may be a commendable general aim, but a comparison of Japanese and American rates shows a much more complex reality.

Japan's low energy intensity undoubtedly results from dedication to manufacturing excellence, energy conservation and industrial innovation. It is also the result of a still surprisingly low level of personal energy consumption that reflects limited leisure time and infrastructural weaknesses. The title of a 1989 article, "Superpower Japan, the Closet Pauper," captures this contradiction.[12]

Compared with the United States, Japan enjoys other advantages that raise the energy efficiency of production without superior technical capabilities. Most notably, these include a high population density and moderate climate (reducing the need for transportation and household energy use), a virtual absence of inherently energy-intensive domestic fuel production (a paradoxically influential matter of resource endowment), and a much smaller defense sector (at the insistence of the United States after World War II). There are also important differences rooted in historical development, above all the contrast between Japan's limited natural resources and high cost of living and the United States proclivity for wasting energy because of plentiful land and abundant and still relatively cheap domestic fuels and electricity.

But the comparison clearly shows the need for more convergence between the energy intensities of both countries. The United States needs more efficient industries, cars and household appliances in order to eliminate unnecessary waste. Japan requires larger houses, a modernized infrastructure, and more leisure time in order to improve the Japanese standard of living. However, nontechnical differences would keep Japan's energy intensity below the United States level. The goal of rational energy policy is not to have the lowest rate in international comparison, but as low a rate as possible given a country's economic structure and responsible expectations for a sustainable standard of living. Seen this way, both countries have a long way to go. ■

[11]Only 37 percent of Japanese live in districts served by sewage systems—by far the lowest rate among all rich nations. See Statistics Bureau, *Japan Statistical Yearbook 1989* (Tokyo: Statistics Bureau, 1989), p. 619. In Europe the figure is generally above 80 percent, and the United States rate in 1987 was almost exactly 75 percent.

[12]Takahashi Nobuaki, "Superpower Japan, the Closet Pauper," *Japan Echo*, vol. 16, no. 2 (1989), pp. 47–51.

SOVIET-JAPANESE RELATIONS

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it can export to Japan to ward off the deficits that are likely to be created by the demand for Japanese consumer goods and machinery. Six products—wood, metals, cotton, fish, coal and oil—account for 75 percent of all Soviet exports to Japan.[9] The travails of competing in the Japanese market (faced even by advanced capitalist countries) and the poor quality of Soviet manufactured goods make it difficult to overcome this quasi-colonial pattern of trade. Meanwhile, the Soviet economy's need for a variety of imports from Japan will pose the continuing problem of deficits.

A revised decree on foreign investment by the Soviet Council of Ministers in December, 1988, made Soviet legislation on joint ventures more flexible.[10] This could improve the prospects for larger Japanese investments in Soviet Asia, especially if progress is made on resolving political and territorial problems. Yet the four impediments mentioned show that it is incorrect to see the territories dispute as the decisive or sole barrier to expanding Japanese-Soviet economic transactions.

THE SECURITY DIMENSION

In Soviet strategic thinking, Japan is a platform for United States nuclear armaments deployed along the Soviet Union's northeastern periphery. It is also seen as a maze of installations that can support the projection of United States conventional forces into large, thinly populated Siberia. Siberia, though defended with some 500,000 troops, is far removed from the European centers of Soviet power. Moreover, this huge barren area is supplied by a sparse, vulnerable logistical network.

Soviet commentators regard the visits to Japanese ports of United States ships and submarines that are capable of carrying nuclear weapons as a violation of Japan's three nonnuclear principles. Japan maintains that since the United States has not made any requests to bring nuclear weapons into Japanese ports, United States vessels entering Japan simply do not carry them. The Soviet Union rejects this reasoning on the grounds that such requests contravene the well-established United States policy of neither confirming nor denying the existence of nuclear weapons on board United States vessels.

Soviet criticism of Japan's role as a nuclear weapons platform for the United States intensified after the deployment of F-16 aircraft (which can carry conventional and nuclear weapons) at Misawa airbase in northeast Honshu, and the introduction of the Tomahawk land-attack cruise missile, which can carry either nuclear or conventional warheads, onto the ships and submarines of the United States Seventh Fleet.

Soviet leaders view with alarm the expansion of Japanese defense spending. On the face of it this is puzzling. There is a great disparity in size, population and military might between Japan and the Soviet Union. The Soviet Union's reaction, however, has a historical context. The two countries have been rivals in northeast Asia throughout this century. On four occasions this competition has culminated in war.

There is also an economic context to the Soviet reaction. As Soviet Deputy Foreign Minister Igor Rogachev has pointed out, increases in Japan's defense spending should be commensurate with the immense technological attainments of its civilian economy. "This," he pointed out during a visit to Manila in 1988, "is what worries us."[11] The Soviet Union's apprehension about its failure to keep abreast of the late twentieth century technological revolution is all too apparent today. The military implications of this revolution have, as the writings of Soviet officers demonstrate, provoked considerable discussion on the need to remain competitive in military technology. This preoccupation explains why developments that suggest the beginnings of a military build-up by Japan, an opponent in previous wars, an ally of the United States and a world leader in technology, evoke anxiety in the Soviet Union.[12]

Soviet analysts stress that there has been a steady increase in Japan's defense spending, averaging 6 percent in the 1980's—a rate that significantly exceeds that of the North Atlantic Treaty Organization (NATO).[13] They also dwell on the sharp increase in Japanese expenditures for the maintenance of United States forces and the 1987 decision

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[9]Sumiye O. McGuire, *Soviet-Japanese Economic Relations* (Santa Monica, Calif.: Rand Corporation, 1990), table 2.1, p. 8.

[10]The decree removes the ceiling of 49 percent of equity that a foreign partner may hold and stipulates that the sharing of ownership is to be decided by the foreign partner and the Soviet enterprise. In theory, this appears to remove any limits on the percentage of equity that can be held by external partners. The decree also amends an earlier restriction by allowing foreign nationals to be directors of joint ventures, exempts joint ventures in Soviet Asia from any taxes for three years from the date of the first profits, and allows the Ministry of Finance to limit or remove taxes from profits sent abroad.

[11]Interview with *Malaya* (Quezon), March 28, 1988, pp. 1, 6, in FBIS, March 31, 1988, p. 18.

[12]While the trends in Japanese defense policy discussed here are followed with concern by Soviet defense specialists, not all Soviet experts on security, or scholars on Japan, believe that Japanese militarism is about to be revived.

[13]According to Japanese government figures for fiscal year (FY) 1981 through FY 1990, the average growth rate of defense spending has been 6.4 percent. The FY 1990 draft budget of December, 1989, called for a 6.1 percent increase and set total defense spending at $31 billion. See *Fact Sheet: Japan's Defense Budget, FY 90* (Washington, D.C.: Embassy of Japan), p. 1.

to breach the defense spending ceiling of one percent of the gross national product (GNP) adopted in 1976.[14] New developments in Japan's defense policy, such as discussions on the acquisition of Aegis destroyers, aircraft carriers, ships with advanced antisubmarine warfare sonar and aircraft with aerial refueling capabilities, or reassessments of the ban on sending military forces overseas, are followed in the Soviet Union with considerable interest and uneasiness.

Soviet reports maintain that in multilateral naval exercises held in 1988, Japanese ships focused on protecting United States aircraft carriers. Soviet leaders have traditionally seen these carriers as the key United States instrument for striking Soviet territory and for the execution of its maritime strategy. While Japan's role in the exercises has been the object of Soviet criticism since 1980, the Pacific Ocean naval maneuvers involving Japan and the United States, conducted to coincide with September, 1989, multilateral exercises, have also been pointed to in Soviet commentaries as evidence of dramatic changes in the theory and practice of Japanese military policy.

Japan's role in the maritime strategy has been dwelt on by Soviet military experts. They point out that United States–Japanese joint military exercises have involved simulated attacks on Soviet territory, antisubmarine warfare, and operations designed to blockade the straits that command the Soviet Pacific Fleet's access to the open sea. They also argue that Japan's role in antisubmarine warfare is a threat to the safety of the strategic nuclear submarines of the Pacific Fleet and thus to the maritime component of the Soviet nuclear deterrent.

Japan's collaboration with the United States in military research and development also troubles the Soviet Union. In 1983, Japan decided to exempt the United States from its 1967 and 1976 guidelines restraining the export of arms and military technology.[15] In the Soviet view, this step enhances the ability of the United States to develop high-tech weaponry; it also exploits the Soviet Union's technological lag by forcing it constantly to monitor and respond to the combined resources and skills of the world's two most technologically advanced states.[16]

While the substantive results of this exemption have been meager, Soviet leaders are clearly concerned about the basis for future cooperation it provides. Japanese and United States firms have already discussed cooperating in the development of a phased-array radar for the FSX fighter that is being coproduced by Japan and the United States. The United States is also interested in Japan's work in a variety of high-resolution sensor technologies. Joint work in seven areas of defense technology was on the agenda for discussion during United States Secretary of Defense Dick Cheney's visit to Japan in February, 1990. Negotiations, based on the 1983 accord, for United States–Japanese cooperation in defense technologies related to rocket motors, reducing submarine noise levels and target acquisition systems for missiles were held after Cheney's visit. These developments have not escaped Soviet attention. The 1987 Japanese decision to join the United States research effort on the Strategic Defense Initiative (SDI) evokes apprehension for similar reasons. For Moscow, United States–Japanese cooperation in defense technology means the exploitation of the Soviet Union's failure to compete in the latest technologies, many of which have important implications for weaponry, as Soviet military officers are well aware.

CONCLUSION

Gorbachev's foreign policy has confounded the predictions of pundits. In freeing East Europe from Soviet domination, accepting a united Germany in NATO, withdrawing his troops from Afghanistan and accepting the principles of deep, asymmetrical cuts and intrusive verification in arms control, he has done what most observers thought was impossible. It would be foolish, therefore, to forecast what will happen during Gorbachev's projected trip to Japan in April, 1991. He faces the task of redefining a relationship with Japan that has been shaped by a complicated territorial dispute and by a long historical legacy of rivalry, war and cold war. But it is unclear what Gorbachev can accomplish at a time when his ability to offer major concessions on the island territories controversy may be reduced by the turmoil and the rise of conservative forces in the Soviet Union. ■

[14]FBIS, March 22, 1988, pp. 27–28; and March 11, 1988, p. 11. Soviet sources stress that Japan's defense budget is now the third largest in the world, but the value of the Japanese defense budget in United States dollars has risen in recent years, principally because of the appreciation of the yen. See Kenneth Hunt, "Japan's Security Policy," *Survival*, vol. 31, no. 3 (May–June, 1989), p. 201.

[15]The April, 1967, principles on arms exports prohibited arms transfers to countries that were in the Communist bloc; to countries in which military exports were prohibited by United Nations resolutions; or to countries involved in, or likely to be involved in, wars. The February, 1976, policy guideline reaffirmed the 1967 restraints, pledged to limit arms sales to regions not covered by them, and stated that equipment relevant to arms would be covered by the same limitations imposed on arms under the 1967 principles. See the White Paper, "Defense of Japan, 1989," p. 183.

[16]The share of research and development in Japan's defense budget has risen steadily from 1.5 percent ($252 million) in 1984 to 2.5 percent ($716 million) in 1990. See *Defense News*, January 15, 1990, p. 10, citing Japanese Defense Ministry figures.

U.S.-JAPANESE TRADE RELATIONS

(Continued from page 155)

redress a trade disequilibrium has been tried and has failed: relaxation of import barriers, exchange-rate appreciation, accelerated domestic demand, politicians' exhortations to import more, and so on. Japan's argument about the true openness of its markets would be a lot more convincing if most of its trading partners were not voicing the same market-access complaints as the admittedly export-indifferent United States.

Although there is a dearth of smoking guns, circumstantial evidence, anecdotal evidence, and plain common sense collectively suggest that in the case of sophisticated manufactured goods, especially those in the targeted industries of the future, Japanese companies do prefer to keep the market share of imports to a "moderate" level. The market is not closed. It is, however, an extraordinary uphill battle by foreign exporters for more than a nominal market share in Japan. Even foreign companies that have a long-term, strong commitment to doing everything right in selling in Japan encounter levels of difficulty and frustration not experienced in countries with less of a history of keeping the rest of the world at a distance.[1]

Japan's efforts at "internationalization" have fallen far short of the mark. The country's retention of its insular, tradition-bound mentality has collided with the sheer magnitude of its export success, as well as with what is arguably the most pervasive international trend of the late twentieth century: accelerated economic interdependence. With its new role as the world's largest creditor nation come new responsibilities and the need for greater empathy for the economic needs and interests of its major trading partners and the poorer countries of the Southern Hemisphere.

Forecasts of the imminent peaking of Japan's economic success are, as they have been for almost 20 years, more wishful thinking and economic fallacy than truth. Japanese society may be aging, and a new generation born into relative affluence may not retain the same commitment to the work ethic as previous generations. But that will not prevent people from working harder. The idea that Japan has come to a plateau because it is not good at innovation flies in the face of the economic data showing massive outpourings of capital for investment in new plants and for research and development by Japanese corporations, as well as an upsurge in new patent applications.

[1]See for example the report of the sales failure in high-tech goods by a native-born Japanese émigré sent back to live in Japan by Allied-Signal, Inc., in "Hidden Wall: A Native Son Battles Japan's Trade Barriers," *Washington Post*, June 23, 1989.

UNITED STATES ECONOMIC FLAWS

The continuing difficulty in exporting sophisticated capital goods to the Japanese market is the first of two distinct, though interrelated, problems that constitute the essence of contemporary United States-Japan trade relations. The second problem is the inadequacies of both the domestic and external American economic performance. These collective inadequacies would perpetuate a large bilateral trade disequilibrium even if Japan were to undertake a radical restructuring of its attitudes toward dependency on foreigners for key technologies, its distribution system, its industrial structure, its willingness to abandon old business relations just to obtain cheaper products, and so forth.

The counterparts of Japan's record-setting trade surpluses are the unprecedented United States deficits that turned the American trade account in the 1980's into a sea of red ink. An important source of the deficits in the first half of the decade was not of Japanese origin: the overvaluation of the dollar's exchange rate made imports a bargain and reduced the competitiveness of American exports on a global basis. Large federal budget deficits following the tax cut induced by Reaganomics combined with falling savings rates to produce an internal United States disequilibrium that inevitably caused a net inflow of capital from abroad and a deficit in the current account (goods and services) of the balance of payments. Until savings increase or the budget deficit is reduced, a United States trade deficit will remain, not of Japanese doing but one that is largely self-inflicted.

When competing head-on with the industrial giants of Japan, the weaknesses of American management practices and production techniques are painfully magnified. The American reward system, which instills myopia among business executives about the value of immediate profits, does not hold up well against the long-term time horizon of Japanese managers willing to invest years of effort and lose hundreds of millions of dollars to maximize global market share. Ironically, several of the "innovations" of Japanese management, such as statistical procedures to enhance quality control, were devised by Americans whose countrymen originally had no interest in their ideas. It was not until recent years that most American business executives switched from the argument that the Japanese were competing mainly through unfair practices to the position that even the mightiest, proudest American industrial company would do well to replicate the perfectly fair and quite clever strategies being practiced by their Japanese competition. Hence, many American companies learned that assembling goods right the first time is cheaper than repairing defects later on, that is, vigorous quality

control is effectively free.

Many American factories have switched to the Japanese system of "just in time delivery," by which inventory costs and the need for storage space are reduced by having suppliers deliver components only hours before they are actually needed on the production line. A number of American manufacturing companies have adopted the Japanese model of minimizing layers of middle management and maximizing attention paid to the ideas of production-line workers.

American companies are slowly absorbing the brilliant approach of their Japanese competitors to "process technology," the art of designing the production line for maximum efficiency. As exemplified by the unsuccessful multibillion-dollar retooling by General Motors in the 1980's, maximum efficiency on the production line means more than simple installation of labor-saving devices. It requires a proper configuration of flexible machinery on the production line and cooperation in the design phase among engineers, assembly-line workers, and even suppliers. Maximum efficiency also requires the ability to adjust machinery quickly and simply to turn out different models of the same products, be they automobiles or household appliances.

However, this is not to suggest the beginning of a turnaround in the bilateral trade disequilibrium. Even a more vigorous turnaround by American industry would be insufficient to overcome the disadvantages imposed by the fact that American economic policymaking does not put nearly enough emphasis on enhancing industrial competitiveness as Japan does. For example, the Japanese government has always put a major emphasis on ensuring that high-growth industries have ample amounts of low-cost capital. In the United States, government and business remain adversaries instead of trying jointly to forecast what goals and important new technologies the country's private sector should be pursuing. The American political establishment remains stubbornly opposed to any form of industrial policy in the increasingly important sector of commercial high technology, while mysteriously embracing it in sectors like agriculture and military aerospace. United States tax laws still encourage companies to go into debt to make acquisitions or engage in leveraged buy-outs.

While those presumed to be America's best and brightest are speculatively buying and selling corporate assets and issuing junk bonds of questionable value, the Japanese methodically go about the business of expanding sales through efficient, high-volume, low-defect production methods. While the United States focuses on how to carve up the existing national economic pie, the Japanese seek to enlarge it. While American executives try to please shareholders and maximize their incomes—admittedly a very efficient system—their Japanese competition is trying to please customers and maximize market share—sometimes an even better system.

The Japanese government has the simpler task in designing an optimal negotiating strategy with its United States counterpart. First, it relies on its vast commercial intelligence network in Washington to determine when United States threats are genuine. Second, the Japanese government relies on an even vaster public relations and lobbying network in the United States to get articulate, highly visible versions of Japanese viewpoints and rebuttals before United States officials as well as the general public. Third, it continues to find scattered import barriers to reduce. Japan's nearly quarter century of import liberalization is unique for more than just its extent; it has had the singular motive of seeking not to give lower prices to Japanese consumers but to please American demands. The potential for cheaper imports has been deemed a sacrifice, not an economic bonanza as it would in the United States. Fourth, when United States pressures intensify, the Japanese government pressures the appropriate Japanese companies to ease off on further export growth.

Japan's official trade agenda is basically reactive; the private sector takes the initiative and sets the tone. Most Japanese are satisfied with their country's trade performance and trade surplus. They prefer to stick with a winning formula, wanting nothing basic to change other than for the United States and other trading partners to be more understanding, to stop making threats, and not to pester them for ever more concessions. Japan's mounting global industrial and technological strength is accomplishing one of the transcendent goals of 2,000 years of Japanese history: retaining its political and cultural independence by carefully controlling and limiting foreign intrusion and leverage.

The United States government has found it much more difficult to set an effective bilateral trade agenda because its industry remains on the defensive. In lieu of adopting a grand strategy of homing in on the systemic problem, however, it has pursued piecemeal tactics aimed at changing trading conditions on a product-by-product basis. It has never known exactly how far to push Japan, fearing the triggering of protectionist trade actions or, even worse, political strains. Internal economic shortcomings have always been recognized as contributing to the trade disequilibrium, but for the past decade most of them have been attributed to government interference, not the lack of effective government initiatives or existing mistakes.

The net result is that United States trade policy toward Japan is the worst of both worlds. On the one hand, strident demands make the United States look like a bully with an unending request list. On the other hand, the lack of determination and consistency in United States policy has yielded wholly inadequate results. American negotiating strategy has been largely reduced to a repeated and somewhat predictable version of the good-cop/bad-cop routine of old Hollywood movies. After a ritualistic warning by the liberal trade-loving executive branch that the protectionist ogres in Congress are on the brink of passing restrictive trade legislation, Japan produces a ritualistic market-opening measure or export-restraint agreement, depending on the situation.

When the administration relies on the "congressional card," it implicitly links itself with purportedly fellow free traders in Japan in order to fight villains in another part of the United States government. In the words of a former United States negotiator: "The negotiation thus changed direction: originally a matter of U.S. government requests, it became one of mutually calibrating just how much action would be necessary to keep Congress leashed. Instead of a negotiator, the U.S. trade team became an adviser to the government of Japan on how to handle the U.S. Congress."[2]

The United States government would be well advised to develop a consensus on its needs and goals in the bilateral trade relationship, as well as how hard it is willing to press to achieve them. A unified strategy must come from the Office of the President, and it is unlikely to be produced by conventional policymaking forums. For legitimate intellectual reasons, Japan policy continues to be "trifurcated" along the classic lines of the bureaucratic politics model of decision making. The State Department, the National Security Council and parts of the Defense Department tend to argue that commercial issues are secondary to the larger goal of preserving the political and military alliance with Japan. The Treasury Department, the Council of Economic Advisers, and the Office of Management and Budget view themselves as the defenders of the free market and opponents of any official intervention to determine the composition of trade flows. These two sets of forces are pitted against the third bureaucratic version of what is truly in the United States national interest—the trade hawks. The Office of the United States Trade Representative, the Commerce Department, and those parts of the Defense Department worried about increasing dependence of United States weapons systems on Japanese electronics components view themselves as the spokespeople in government for both a largely battered, misunderstood American industrial sector and for a more decisive, aggressive, and consistent trade policy (bilaterally and multilaterally).

The first stage of a more effective United States–Japanese trade dialogue would consist of both countries formally acknowledging the applicability of the Japanese proverb that when two men fight, both are at fault. Japan needs to accept the fact that selling advanced manufactured goods to its market still poses extraordinary difficulties to most foreigners. Pointing to its increased imports of consumer goods or to healthy sales and profits by United States corporate subsidiaries producing in Japan is not the same thing as demonstrating that the Japanese market for high-tech goods is "reasonably" open in regard to cost, energy, and effort. Japan's industrial policy tends to target the same high-tech industries—such as computers, semiconductors, telecommunications equipment, and biotechnology—in which the United States has (or had) international competitive strength. The United States should not be content with even a bilateral trade surplus with Japan if it was caused by a boom in exports of agricultural and other primary products. Japan ought to realize that the more it discusses its "internationalization," the less likely it truly exists.

The United States needs to accept the fact that, quite apart from its legitimate complaints about the relative difficulty and cost of exporting to Japan, its lack of competitiveness vis-à-vis Japanese products, especially in its home market, is primarily the result of shortcomings in United States domestic economic policies, management practices, and production skills. The United States needs to accept the costly nature of protectionist trade policies, inasmuch as they tend to dissipate pressures on American producers to continue cutting costs and raising quality. Furthermore, restrictions on Japanese goods have already been shown to be harmful to the increasing number of American companies using Japanese-made capital goods and components. At the same time, the United States government must realize that more of the same is not an optimal strategy.

As long as it avoids the somewhat arbitrary idea of putting specific numbers on what Japan should be buying, the United States would be well advised to follow the basic recommendation of the 1989 report to the United States Trade Representative by the Advisory Committee for Trade Policy and Negotiations: the United States should

> structure a program of action that pursues change on multiple fronts, commits adequate resources over a 4-5-year period, is strategically focused, and is results-oriented. This program we see as a natural evolution

[2]Clyde Prestowitz, Jr., *Trading Places* (New York: Basic Books, 1988), p. 281.

> of U.S. trade policy from a more or less reactive response to the damage wrought by the strong dollar in the early 1980's, to active efforts to create the conditions necessary for the growth of industries and sectors critical to the nation's long-term economic vitality.[3]

Japan should embrace as an integral part of its trade policy the belief that, in the long run, its national security is more likely to be enhanced by the friendship of trading partners than by the size of its trade surplus. The Japanese government needs to promote a whole new mind-set in Japan that encourages more attention to the Japanese consumer. This effort would need to be supported by such reforms as a more vigorous legal challenge to cartels and the easing of restrictions on large chain stores (they are more attracted to imports than the small stores effectively controlled by Japanese manufacturers). Furthermore, the government needs to go beyond slogans to generate a genuine consensus among Japanese industries that it is no longer in the national interest to discriminate against imports.

No matter how open the Japanese market becomes (or how much additional leisure time Japanese workers opt for), there is no reason to expect a diminution of Japan's increasing excellence in advanced technologies. If American exports to Japan are to rise and if American imports from Japan are not to swamp important high-tech industries, the United States clearly needs to improve its business environment. The appropriate starting point is an immediate, genuine (as opposed to accounting smoke and mirrors) reduction in the United States budget deficit. By reducing the government's absorption of the available capital pool, productive investment in the industrial sector would be encouraged by the assumed reduction in interest rates that would occur with a reduced federal budget deficit.

Furthermore, the government needs to realize that the nature of modern economics and the fading dividing line between military and civilian technology justify increased official funding of expensive or risky, but promising, new commercial technologies. While the United States does not need a comprehensive "industrial policy" to replace its basic dependence on corporate investment and venture capital, it does need additional government seed money to help entrepreneurial companies compete with the deep pockets of their larger, better financed, vertically integrated Japanese competitors.

No matter what Washington does to improve the domestic business environment, it will not be enough unless American business executives alter their behavior. They must place less emphasis on short-term profits, year-end bonuses, and wheeling and dealing in mergers, acquisitions and leveraged buy-outs. A significant part of the trade battle with Japan continues to be lost on the factory floor.

Official encouragement of dollar depreciation to an exchange rate of between 100 yen and 200 yen would aid American competitiveness, but it is not a panacea. Yen appreciation has not and will not keep Americans from buying high-quality Japanese goods, nor will it open the floodgates in Japan to imports of American-made manufactured goods.

There are two problems with this list of proposed policy and program reforms. First, it is far from definitive. At the same time, however, neither country is likely to act quickly on its contents. A resolution in the underlying causes of the trade disequilibrium can only be foreseen by optimists. More likely than not, the systemic causes of frictions will remain unaddressed. United States industry may well do better in the competitiveness race but not as well as Japan in the pursuit of excellence in the important new technologies. There is no reason to expect the industrial competitiveness gap to narrow significantly. It therefore appears that during the 1990's Japan is fated to remain America's number-one foreign competitior, number-one illuminator of shortcomings in United States economic policies and business practices, and the principal source of frustration to American trade policymakers.

Continuation of an inferior industrial performance relative to Japan is not conducive either to the long-term economic prosperity or national security interests of the United States. Regrettably, in its successful but short-sighted pursuit of profit and consumption maximization, America cannot be bothered to respond more effectively to the long-term challenges of the alternative model of capitalist power being pursued in Japan. Also regrettably, Japan is not likely to find increased economic success a reason to become truly less insular. By the turn of the century, the inadequacies of United States trade and economic policies may cause this country to fail two key tests cited by Paul Kennedy in *The Rise and Fall of the Great Powers:*

> whether, in the military/strategical realm, it can preserve a reasonable balance between the nation's perceived defense requirements and the means it possesses to maintain those commitments; and whether, as an intimately related point, it can preserve the technological and economic bases of its power from relative erosion in the face of the ever-shifting patterns of global production.[4] ■

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[3]"Analysis of the U.S.-Japan Trade Problem" (Report of the Advisory Committee for Trade Policy and Negotiations, Washington, D.C., February, 1989), p. ix.

[4]Paul Kennedy, *The Rise and Fall of the Great Powers* (New York: Random House, 1987), pp. 514–515.