Japan: Growth and Prospects

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The subject of Japan has always generated extreme opinions. In 1929, John E. Orchard said, "The causes that have retarded progress are so fundamental and so permanent that Japan cannot hope to become a manufacturing nation of major rank." But in 1970, Herman Kahn said, "The Japanese have, in effect, discovered or developed an ability to grow, economically, with a rapidity... that might well result, late in the twentieth century or early in the twenty-first, in Japan's possessing the largest gross national product in the world."

Serious students of Japan are aware of the fact that Japanese economic history provides many examples of both significant achievements and significant failings. This issue of the Economic Review provides evidence on both scores. The first article is an essay in the perennially rewarding field of growth analysis. The second article represents a first attempt to analyze a new financial phenomenon—the comparative record of American banks in Japan and of Japanese banks in the United States. The final article, in contrast, discusses an inefficient sector of the Japanese economy—agriculture, which penalizes Japanese urban consumers with some of the highest food prices in the world.

Martin Bronfenbrenner, on the basis of a lifetime of study in this area, summarizes his views of the Japanese growth process in the lead article. He notes that Japan has experienced not one but two "economic miracles" during the past century. The first miracle, which coincided roughly with the Meiji Era (1867–1912), propelled Japan in half a century to a world economic power of the second class—"itself a unique accomplishment for a non-European country with few significant natural resources, no significant Western population, and no history of Western colonization or dominance." The second miracle, which coincided roughly with the post-World War II period, "not only surpassed all extrapolations of prewar growth but also lifted Japan past Britain, France and Germany to the position of the world's third-ranking economic power."

Bronfenbrenner finds two schools of thought disagreeing over the causes of the two economic miracles. "The 'one-sword' school explains Japanese growth with a theory that cuts through a vital point of the economy—a point so vital that a push would set the whole economy pulsating. The 'literary' school contents itself with arraying large numbers of 'factors responsible' for whatever one is trying to explain." Bronfenbrenner personally leans toward the first school, his candidate for the role of "sword" being in Keynesian terms the high marginal efficiency of private domestic capital investment. But high marginal efficiency depends on public policies which diminish risk, such as those which provide major industries with guarantees against failure, financial stringency, or substantial layoffs of permanent workers.

Going further, Bronfenbrenner finds analogies to the three swords worn by the hero in every samurai movie. The power of the broad-sword—marginal efficiency augmented by risk diminution—has been supplemented by two additional aids to growth. One is the "short sword" of forced frugality, brought about by the "tax" of secular inflation. The other is the "dagger" of a highly productive, highly trained, and flexible labor force. These are in turn induced by two features of Japanese industrial relations: the "permanent" employment of rigorously and credentilly selected employees and the weakness of craft unionism. The author also mentions several alternative explanations: a high private saving rate, low expenditures on national defense, cheap access to foreign technology, and yen undervaluation. But he emphasizes the importance of the three "swords," and gives the Japanese high marks for avoiding excesses (and
incuring negative returns) when bringing those weapons into play.

In the second article on banking, Henry S. Terrell attempts to measure the impact of economic factors—such as growing trade flows and expanding local markets—which have affected the lending activities of American banks in Japan and of Japanese banks in the United States. In both cases, lending activity increased significantly between late 1972 and late 1978, although the growth pace fluctuated somewhat during that period. In the Japanese market, U.S.-bank branch claims on nonbanks (mostly loans) amounted to 2.3 percent of comparable loans and discounts at the large Japanese City Banks in November 1978. In the American market, the ratio of commercial-industrial lending of Japanese institutions to comparable U.S. weekly reporting banks reached 11.5 percent last November.

A model developed by Terrell did quite well in explaining the growth in lending activities of the two groups of banks. Changes in lending by U.S. banks in Japan were positively related to growth in local-bank lending, to growth in total Japanese trade, and to the degree of ease in the Japanese banking system—and negatively related to the degree of ease in the U.S. banking system. Meanwhile, growth in lending by Japanese banks in the U.S. market was positively related to the growth of the local U.S. market, and very strongly related to growth in total Japanese trade—and related to banking-market ease in the same way as were U.S. banks in Japan.

Yet certain key differences showed up in this analysis. The model indicates that growth in total Japanese trade strongly affects lending by U.S. offices of Japanese banks, reinforcing the widely-held view about the importance of those institutions in financing Japanese trade. In addition, Terrell shows that the impact of local-market growth on foreign-bank loan growth is much smaller for U.S. banks in Japan than for Japanese banks in the United States. This suggests that regulatory restraints on U.S. banks may have affected their ability to participate in the growth of the local Japanese market. “By contrast, Japanese banks in this country have been more free to expand their branch networks, operate subsidiary banks, and develop local sources of funding, and thus have been better able to benefit from growth in the local market.”

In a third article, Michael Gorham considers one of the problem areas which mar Japan’s otherwise strong economic performance—agriculture, which is a very high-cost supplier of food to the nation’s consumers. Japanese consumers spend 39 percent of their budgets for food, compared with only 19 percent for U.S. consumers. These high food costs reflect the existence of a relatively inefficient agricultural sector, which is protected by a comprehensive system of tariffs and import quotas. “That policy reflects both the rurally-biased distribution of national political power and consumers’ fears about the security of Japan’s food supply.”

Gorham examines an alternative and potentially cheaper food strategy—the removal of all barriers to grain and soybean imports, along with the creation of a one-year contingency stockpile of each of those commodities. He finds that the cost of stockpiling would have exceeded the net social cost of the current program in the mid-1970’s, but he claims that the cost relationship probably would be reversed by the mid-1980’s. By 1985, current policies could cost almost $8 billion, while the stockpile approach could run a little over $1 billion. But he cautions, “A switch to a stockpile approach could have a dramatic impact on the domestic farm economy, with falling prices, production, land values and incomes. Thus if such a policy switch took place, it would have to be implemented slowly.”

Noting Japanese fears about secure food supplies, Gorham contends that the solution may center around the development of a major food-processing industry. “By becoming a supplier as well as a demander of foodstuffs, Japan could become an important part of the world food-supply system—one which could not be easily cut off in times of food shortages.”
On Japanese Economic Growth

Martin Bronfenbrenner*

Perhaps uniquely among recently developing countries, Japan has experienced not one but two “economic miracles” during the past century. The first miracle coincided approximately with the Meiji Era, i.e., the reign of the Meiji Emperor Mutsuhito (1867-1912). It propelled Japan in half a century from a state not too far removed from Adam Smith’s “lowest barbarism”1 to a world economic power of the second class—itself a unique accomplishment for a non-European country with few significant natural resources, no significant Western population, and no history of Western colonization or dominance. The second Japanese miracle has been a postwar recovery (1945-73)2 which not only surpassed all extrapolations of prewar growth but also lifted Japan past Britain, France, and Germany to the position of the world’s third-ranking economic power. Japan’s total GNP is now surpassed only by the U.S. and the Soviet Union. In terms of both income and productivity growth, Japan sharply exceeded the U.S. performance in the first two postwar decades (see Table 1).

After an introductory discussion of the stability of Japan’s underlying growth path, this essay will analyze the factors behind the nation’s post-1950 growth record. Japan’s rapid growth can be ascribed primarily to public policies designed 1) to increase the attractions of large-company investment by socializing risk, and 2) to finance such investment in part by the so-called inflation tax or “forced frugality.” We also consider the labor-market institutions which have raised labor productivity so significantly. Some other growth hypotheses will also be mentioned, and likewise the “developmental arts” of avoiding overdoses of developmental medicine.

Stability or Instability?

The question of growth-path stability is more than a pedantic or semantic quibble. The implication of a stable path is dominance by “market forces,” with an additional implication that growth would have proceeded at reasonably satisfactory rates in Adam Smith’s “natural course of things” even without such government intervention as has actually occurred. The implication of an unstable path is that public intervention is necessary, since the market process, left to itself, would be apt to shoot upwards from “knife-edge” equilibrium to hyper-inflation,3 or downwards to some form of stagnation, or to fluctuations between these two states.

This writer is one of the numerous students (both Japanese and foreign) who have seen postwar Japanese growth, at least, as essentially an unstable process, and who have seen Japanese government economic policy as holding the actual growth path consistently above the equilibrium path without permitting hyper-inflation.4 By the “equilibrium path” of growth I mean,

Table 1
Growth of National Income and Productivity
Average Annual Increase (%)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Real National Income</td>
<td>8.81</td>
<td>4.00</td>
</tr>
<tr>
<td>Real National Income per Employee</td>
<td>8.50</td>
<td>2.83</td>
</tr>
</tbody>
</table>

Source: E.F. Denison and William K. Chung. How Japan’s Economy Grew So Fast (1976), Tables 5–1, 5–3 (pp. 52,54)

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following Harrod and Domar, a path along which planned or *ex ante* saving and investment remain equal at all points, or one along which the income effects of increased investment (through the Keynesian multiplier) balance at all points the output effects of investment as a whole (through the productivity of capital). Many students, perhaps even a majority, may have taken a similar position as regards the instability of Japanese growth, usually without the formalism of Harrod-Domar growth models. (This does not mean that we have been right, but only that I cannot claim originality.)

More recent cliometric studies, applying econometrics explicitly to the longer Japanese historical record, have come out strongly on the "stability" side of the debate. In view of the dispute, I find it desirable to discuss at once the principal factors—beyond hardening of the intellectual arteries—which keep me unconverted.

Let us consider as an example a mini-model, familiar to economists, from business-cycle theory but without "Japanese" or "growth" implications. Samuelson's multiplier-accelerator model of business fluctuations develops a three-equation system relating income (Y), consumption (C), and investment (I). Time periods are indicated by subscripts:

\[ Y_t = C_t + I_t \quad C_t = aY_{t+1} \quad I_t = b(C_t - C_{t+1}) \]

These equations can be combined to give a growth path of Y:

\[ Y_t - a(1 + b)Y_{t+1} + abY_{t+2} = 0 \]

which may be stable or explosive, monotone or cyclical, depending upon the numerical values of a Keynesian multiplier \( \frac{1}{1-a} \) and an accelerator \( b \).

Suppose an econometrician were to fit a dynamic equation to the observed values of Y in a mixed or regulated economy, and obtain (a, b) estimates which imply stability. These estimates may be misleading, because the Y values might have been different in the absence of public intervention. The alternative coefficients which might have been derived from the "laissez-faire" path of Y—call them \( (a', b') \)—might have implied explosive or anti-demand behavior. Such data on Japanese growth under laissez-faire have not been considered by any cliometric experiments with Japanese data in either the Meiji or the Showa (present) era, because they do not exist. (I suspect that the difficulty may transcend modern econometrics.)

### Marginal-Efficiency "Sword"

Let us agree that public policy, including growth policy, really matters for better or worse, i.e., that it frequently surprises even the most rational of market expectations. Let us also agree that economic growth is more than the extrapolation of a multi-equation cliometric model. This leads, however, to the question of the disagreement between the "one-sword" and the "literary" schools of growth. The "one-sword" school—the term is credited to Miyohei Shinohara and associated with Osamu Shimomura—explains the growth situation with a theory that cuts through a vital point of the economy—a point so vital that a push would set the whole economy pulsating. The "literary" school contents itself with arraying large numbers of "factors responsible" for whatever one is trying to explain. Some journalists have listed as many as 25 such factors in explaining Japanese development performance. Hisao Kanamori, professing allegiance to this school, requires only six.

My own "line" is rather closer to the "one-sword" school than to the "literary" (or "laundry-list") one. My candidate for the role of "sword" is in Keynesian terms the high marginal efficiency of private domestic capital investment, permitting higher investments with longer pay-off periods than prevail in most other countries.
market;\(^\text{13}\) (3) Reducing tax rates on business income to levels below those prevailing in other industrial countries. I should include a tacit codicil, that “chosen instrument” firms are expected in turn to support and protect their principal sub-contractors, sales agencies, and similar affiliates.

Two examples of socialization of risk may be listed:

(a) After the Nixon dollar-devaluation of August 1971, the Bank of Japan provided funds to permit commercial banks to buy Japanese firms’ dollar balances and dollar debts at ¥360 per dollar, at the cost of a sharp increase in the rates of both monetary growth and price inflation.

(b) Japan prides itself on applying a “polluter pays principle” to compensate victims of environmental pollution, on the basis of what our own common law calls “strict liability.” However, the firms’ resulting liabilities are then financed by long-term government loans at preferentially-low interest rates.

In macroeconomic theory, the marginal efficiency of investment in a capital instrument may be defined as the post-tax marginal productivity of that instrument as a percentage of its purchase price, averaged and discounted over its expected life with additional subjective discounting for uncertainty. Keynes in the *General Theory* stresses particularly the importance of uncertainty:\(^\text{14}\)

It is important to understand the dependence of the marginal efficiency of a given stock of capital on changes in expectation, because it is chiefly this dependence which renders the marginal efficiency of capital subject to the violent fluctuations.

It follows that if uncertainty is socialized, and especially if pessimistic changes in general expectations are attenuated or eliminated by public policy, the over-all marginal efficiencies of both capital and investment are increased. The level of investment is thus increased—and likewise the growth rate of the capital stock and (diminishing returns to capital aside)\(^\text{15}\) the growth rate of national income and product as well. A Hicksian four-quadrant diagram (Figure 1) illustrates the demand side of this dynamic mechanism.

On this diagram, the marginal efficiency function \(E\) relates the sum of private investment \(I\) and government expenditures \(G\) to the ruling real rate of interest \(r\) on the NW quadrant. The locus of planned (ex ante) equality between the sum of saving \(S\) and taxes \(T\) is then the IS function on the NE quadrant, given both the definitional ex post equality between \((I + G)\) and \((S + T)\) on the SW quadrant and a direct relationship between \((S + T)\) and the national income \(Y\) (SE quadrant).

After the investment climate improves (as by lowered risks), the marginal efficiency function \(E\) eventually rises to the position \(E'\) (NW quadrant). Private saving (plus taxes) also rises from \((S + T)\) to \((S' + T)\) (SE quadrant), usually by a smaller amount. The locus of ex ante or planned equality between saving-plus-taxes and investment-plus-public expenditures therefore shifts from IS to IS' (NE quadrant). The ex post or observed equality between these quantities remains operative (SW quadrant).

For any real interest rate such as \(r\) on the diagram, the equilibrium real investment level rises by the amount \(II'\) (NW quadrant), while the real income level rises by the larger quantity \(YY'\) (NE quadrant). The rise in income appears as a single once-for-all movement, but the rise in investment implies an increase in the society’s capital stock (not shown on the diagram), which raises the future income streams as well. What appears on the diagram as a once-for-all process is therefore actually a continuous one.
"Short Sword" and "Dagger"

So much for the Shinohara sword, the role assigned to the marginal efficiency of investment, as per the E and E' functions of Figure 1. But in addition to his two-handed daiō the well-dressed samurai carried a short sword or shōtō and not infrequently a dagger or tantō as well. (The last-named weapon was also wielded at times by his lady!) In this arsenal of economic weaponry, I believe that both a shōtō of inflation and a tantō of labor flexibility accompany the marginal efficiency daiō, and will discuss them separately in a moment.

The short sword of secular inflation, more particularly its "inflation tax" aspects of forced saving or forced frugality, pertains to aggregate demand. The dagger, however, pertains to aggregate supply by way of labor productivity in Keynesian "efficiency units." To some extent, of course, the impressive rise of Japanese labor productivity reflects the increased and improved capital stock with which that labor works. But insofar as rising labor productivity, average and marginal, reflects improved human capital—both the capacity and the willingness to up-date, broaden, or transform old skills while learning new ones—it calls for independent attention.

The Role of Inflation

A long-term inflationary trend—so long as it remains within "reasonable" bounds which we cannot define explicitly—embodies a mechanism which can potentially encourage economic growth. That mechanism is forced frugality, otherwise known as the "inflation tax."

In a period of inflation, holders of money balances are "taxed" in the sense that the real purchasing power of their holdings is eroded. This erosion is like depreciation on an ordinary capital good. It requires that the money-holder make a larger provision for depreciation out of current income than before. Spending by money-holders therefore is reduced, and in this way the private sector's command over resources is reduced, freeing some for public-sector use. Thus, the proceeds of the tax accrue to the government. The impact of this tax on growth depends in turn on the government's disposition of the tax "revenues" between (public) consumption and investment.16

As with any tax, there is a natural incentive for individuals to try to avoid its burden. Avoidance, in this case, would require economizing on money balances. Whether this is possible to any significant degree depends on the availability of alternative ways of holding wealth besides money. For the typical small saver in Japan, there are few alternatives to bank deposits available. Moreover, the small saver is largely dependent on his savings to provide for retirement, which suggests that the burden of adjustment to the inflation tax will take the form primarily of reducing consumption rather than saving.17

Figure 2 combines the long and short swords of marginal efficiency and secular inflation. The effects of reduced uncertainty upon the marginal efficiency of investment are represented by a rightward shift of IS to IS', as in Figure 1. They are reinforced (in their effects on demand) by the effects of inflation upon the LM function of Figure 2, which becomes LM'. The rightward movements of these two Hicksian functions raise the equilibrium income level by the quantity YY' on Figure 2.18 This rise combines once-for-all effects, which do not influence longer-term growth, with permanent effects springing from increased investment and capital stock. On the diagram as drawn, the equilibrium real interest rate remains unchanged at r, while the nominal rate rises by slightly more than the rise in the
inflation rate. This constancy of the real rate appears as a special case, but it may actually be a more permanent effect for reasons suggested by Frank Knight (see footnote 15).

**Labor Productivity**

Labor and capital resources are used together, usually in complementary fashion. Thus the marginal productivity of investment or the capital represented by a tractor is high when the superior farmer can fix it when it gets out of order, low when the ordinary peasant must bring it to town for repairs or call a repairman to his farm, and lower when some superstitious illiterate beats it with a sledge-hammer to punish it for running improperly.

The economist's usual way of handling such facts is to incorporate them in an aggregate supply function of output, like the S function of our Figure 3 relating output Y to the price level P, while our other arguments are reflected in the aggregate demand function D relating the same variables on the same diagram. We follow the conventional practice here, but note that aggregate demand D and aggregate supply S are less independent than they are drawn, because investment demand influences aggregate supply at a later date.

The supply function S of Figure 3 features an upward slope and upward concavity, both of which represent diminishing returns to inputs. The function eventually becomes vertical when inputs are fully employed and no more output can be produced. (The analysis ignores the possible availability of supplements from abroad by foreign aid, or the running down of a country's reserves of international means of payment.)

Increases in the marginal efficiency of investment, induced by the various considerations developed already, are reflected in outward and rightward shifts of a conventional aggregate demand function D. The higher capital stock to which they lead is reflected in outward and rightward shifts of the aggregate supply function S—marginal efficiency at one remove. The (historical) inflationary tendency of the Japanese economy is depicted also, by the upward shift of the D-S intersection points on Figure 3 as we move to the right.

In this diagram we also suppose that effective fiscal and monetary fine-tuning supplement, if necessary, the rising marginal efficiency of investment to keep the economy at high employment. (This assumption is reasonably accurate for Japan during the greater part of its development history.) This feature is indicated by the location of D-S intersection points where S becomes vertical, i.e., at points of full employment.

A question ignored thus far is why aggregate supply S moves over time from S to S' rather than only to S'', given a rise in aggregate demand from D to D'. Or, to put the matter differently, how can the Japanese economy support aggregate demand at D' with no greater inflation (from P to P') than some "country X" of equivalent size which could support only the smaller rise of aggregate demand to D''?

Given Japan's well-known paucity of "land" and natural resources, an obvious explanation is the quality and quantity of the Japanese labor force. Attention has focused upon the average man-hour productivity of Japanese labor, which has apparently been increasing much faster than the corresponding rates for most of Western Europe and North America (Figure 4). To some extent, of course, the difference reflects the higher volume of capital investment in Japan—marginal efficiency again, at a second remove!—given the complementarity of labor and capital...
inputs. But there is more to it than that, although the mathematics are unwieldy even under the simplifying assumption of a two-input world.\textsuperscript{19}

If we believe, as I do, that high and rising labor productivity contributes to both rising Japanese income and rising Japanese marginal efficiency of capital, and that it is itself something more than a mere spin-off from high past investment and high past marginal efficiency, immediate questions arise as to what the “something more” may be, and from whence it arises. It is tempting at this point to relapse into tautological “national character” explanations, as Japanologists so diverse as Herman Kahn and Fosco Maraini have done.\textsuperscript{20} Tautology-shyness, however, steers me away from “national character” into lesser degrees of abstraction. The principal components of high Japanese labor productivity—marginal efficiency of past investment aside—then appear to be the following quartet:

1. A well-educated and well-trained labor force, both blue- and white-collar, much of it capable of learning new skills and disciplines which maintain its initially high productivity well into adult life.

2. Availability of on-the-job training and retraining at many levels for workers hired on a “lifetime-employment” basis. This training, which apparently is a good investment for employers, compares in the larger firms to that provided in modern military establishments.\textsuperscript{21}

3. Systems of job tenure and of heavy weighting for age and seniority in salary and promotion decisions. These lessen workers’ reluctance to permit new methods and machines.

4. Absence of craft unionism (as distinguished from other forms of labor organization) with its overtones of job-consciousness, its “lump-of-work” theory of labor demand, its strictures against poaching on “the other fellow’s” specialties, and its history of jurisdictional disputes.

American home-owners, recalling their disputatious negotiations with construction workers (whose traditions of job-conscious craft-unionism are perhaps the strongest in America) may ascribe almost exclusive importance to the last point cited—especially when they learn that the Japanese daiku-san (literally, carpenter) is actually a multi-purpose construction worker-cum-building contractor. Such emphasis is probably exaggerated in most other trades, however, and our four points are mutually inter-dependent. At any rate, the significance of our developmental tantō of labor flexibility should be obvious.

Four Alternative Swords

Besides the three “swords” we have discussed and in addition to the antological “national character” explanation, four other factors are mentioned with sufficient frequency in literary and laundry-list explanations of “the Japanese Howdunit” to justify at least passing mention. These four alternative development “swords” are (1) the traditionally high private saving rate, (2) low expenditures on national defense, (3) cheap access to foreign technology, and (4) yen undervaluation.

1. \textit{High saving ratios} without correspondingly high investment rates are a depressive and not an expansive factor in macroeconomic dynamics and macroeconomic statics. In our Figure 1, for example, IS would have moved in the wrong direction had \((S + T)\) increased without an equal or larger increase in \(E\). In Japan, the high saving rate has been for centuries an aspect, perhaps even a result, of the high marginal efficiency of investment.

The high saving rate apparently dates from the 17th Century, when the Tokugawa peace and Tokugawa dictatorship made capital, and there-
fore also investment, safe against marauding soldiers and bandits. The advantages of capital formation encouraged savings and investment simultaneously, as peasants saved to build new barns or potters' wheels, or to buy more silkworms. The subsequent urbanization, with the rise of banks and other financial intermediaries between savers and investors, has loosened the present connection between the saving and marginal-efficiency functions of the Japanese macro-economy, but not to the vanishing point. Conventional Keynesians have been, I think, wrong when they treated the two functions as quite unrelated to each other, but right in pointing to investment rather than saving as the dynamic member of the duo. I accordingly treat the high saving ratio as an aspect or offshoot of the high marginal efficiency of investment rather than as an independent determinant of growth. (I do not claim that planned investment automatically generates precisely the amount of saving necessary to finance it—"Say's Law in Reverse.")

2. Low defense expenditures (below one percent of GNP) keep tax rates down, and marginal efficiency accordingly up, no more and no less than do other forms of public expenditure. We have already mentioned low taxes as a feature of the high marginal efficiency of Japanese investment. Is there anything more to be said?

Yes, there is. There are many countries—the U.S.S.R. is certainly one, and perhaps also the U.S.—in which the prior military claim on skilled manpower reduces the aggregate production function. I do not think Japan is such a country, thanks to its highly-developed systems of formal education and on-the-job training. Of course, if Japan were to attempt a Soviet- or Chinese-sized military establishment, the foregoing argument would not apply.

We should also recall that Japan's first (Meiji Era) economic miracle coincided with the building up of the best, though perhaps not the largest, defense establishment on the continent of Asia, which won two wars in ten years against China and Russia. The wars themselves slowed Japanese economic growth, but the build-up and maintenance of the defense establishment apparently did not do so.

3. Cheap technology. Research and development discourage immediate-run economic growth, even when the later applications of their results encourage long-term growth. It is often advantageous, therefore, to buy existing technology ready-made and adapt it to one's own peculiar conditions, rather than attempt to do it oneself, blind alleys and all. This is particularly true in the early stages of a growth process. Largely for this reason, "appropriate technology" (usually labor-intensive) has been neglected even in developing countries, with their high population and labor-force growth rates, capital shortages, and substantial unemployment (open or disguised).

Japan took full advantage of purchased, borrowed, and sometimes stolen technology during the Meiji Era economic miracle, without actually catching up in many fields to the technological leaders of the West: Germany, the U.S., and Britain. Japan's "technology gap," never eliminated completely, widened again in the China Incident and World War II (1937–45), particularly after the American aerial bombing of the war's last nine months.

Using American EROA aid effectively, Japan applied Meiji Era methods again to close the gap with surprising speed in the first 10–15 years after the end of war. Many observers (including myself) accordingly expected Japanese "income-doubling" growth to slow significantly as soon as Japanese technology had caught up with the West or even gone ahead in some fields. The late 1960's or early 1970's were mentioned as dates when Japan would "run out of steam" because of shifting to domestic research and development from the cheaper imported varieties.

Japanese growth has indeed slowed since 1970. Most of the blame has been attributed, however, to labor shortages, the spread of investment from "factories, factories, and more factories" to social expenditures (such as housing and pollution controls), OPEC aggression, and subsequent world recession. It is difficult to associate any significant part of the decline with increased reliance on home-grown research and development. Comparing only Japanese and American statistics, Jorgenson and Nishimizu estimate that by 1973 Japanese technology (as distinguished from capital intensity) had risen to surpass the American. Technology was then no longer cheap, but the growth-rate differential
between the two countries failed to narrow (see Figure 2 once more). Because of such fragmentary and circumstantial evidence, I would not stress superficially-plausible "cheap (or parasitic) technology" theses at least for the post-1945 Japanese miracle. (The Meiji Era case remains less clear.)

(4) Yen undervaluation. Our last alternative explanation is the cheap yen (¥360 to the dollar) which prevailed during the 22 years 1949-1971. Professor Shinohara was among the first Japanese scholars to maintain that the ¥360 rate undervalued the yen even under the Occupation conditions of 1949,23 and he has maintained the same position over the years. Once the Occupation was over and basic freedom of trade restored, the equilibrium (purchasing-power parity) rate may have been as low as ¥250. Undervaluation, according to Shinohara in 1959, caused "a tendency for every industry to become an export industry" with a "trend toward all-out export industrialization in iron and steel, ammonium sulfate, shipbuilding, automobiles, cement, electrical machinery, and the like, to say nothing of textiles, dry goods, and foodstuffs."24 Export expansion paid for both the raw materials necessary to expand Japanese output and the staples necessary to feed the labor force while rural workers were being induced to leave their farms and come to the cities. A dearer yen would, Shinohara believes, have slowed down the growth process.

One may perhaps disagree to some extent, in view of the rapid rise of Japanese man-hour productivity in the 20-year period following the end of the Korean War. A dearer yen (say ¥250 to the dollar) would of course have required 30-percent lower yen-export prices to match Japan's actual export performance. Could these lower prices have been achieved without a major depression, and without a reduction in real wages?

I believe they could have safely been achieved, in view of the productivity gains just mentioned (10-12 percent per year), the lower prices of imported raw materials, and the considerable inflation experienced during the Korean War. The main results of a higher yen rate would I think have been (1) a deeper "Dodge depression"25 in the year preceding the Korean War, (2) less Korean War inflation of Japanese yen prices, (3) some postwar deflation after that war ended in 1953, and (4) a lower long-term Japanese price level thereafter, but with no real hardship after mid-1950 and no material reduction of the Japanese growth rate. As in the actual case, money wages and consumer prices would doubtless have risen relative to wholesale and export prices, but from lower bases.

Developmental Arts
These pages have been rather mechanical. Not only do they permit—they positively support—the questionable inference that a country already endowed with Adam Smith's “peace, easy taxes, and a tolerable administration of justice” can increase the marginal efficiency of its capital and the measured growth rate of its economy indefinitely, simply by cushioning risks for certain leading firms and industries, by tolerating inflation, by training multi-skilled workers, and by suppressing craft unionism. Such inferences are exaggerated; this section proposes to indicate their limitations, and also to assess Japanese success in the developmental arts of remaining within these limitations.

As for risk reduction (or socialization): Clearly, domestic firms and industries should not be supported unconditionally. Conditions should be implied, if not imposed explicitly, relative to product quality, technological alertness, and cost control. Japan has done better than many rivals and imitators in this branch of developmental art. The case of the passenger car illustrates the point. When the American Occupation ended (1952) a number of companies were already building automobiles in Japan.26 But the Japanese car was an over-priced "pile of junk" or "bag of bolts" imitating Western styling of last year or the year before. Its major technical defect was inferior durability on inferior Japanese roads. However, under the guarantee system supervised by the Ministry of International Trade and Industry—alias "notorious MITI"—that agency encouraged,27 permitted, and apparently required a few major Japanese companies to overcome these deficiencies, and "administratively guided" the others to affiliate with one or another of the majors, avoid duplication, and reduce average costs of production. The result is history, despite MITI's occasional fallabilities.
As for inflation: There is chronic danger of hyper-inflation. In a hyper-inflationary situation consumers hoard significant amounts of intermediate and final products which normally "belong" in production pipelines and business inventories. Diversion of goods-in-process to consumer's capital slows down growth and employment by creating bottlenecks. Furthermore, the effective unit of circulation and account may cease to be the national currency. The national currency must share its position increasingly with something else in whose value people have more confidence, and whose quantity the monetary authorities cannot expand—gold, cigarettes, foreign currency are all examples. This too makes inflation counter-productive by diverting resources out of production, consumption, or import financing into the provision of domestic liquidity. But Japan has avoided hyper-inflation except during the decade of the 1940's, when it could be blamed rightly or wrongly upon "Acts of God"—the demands of the Imperial Army and Navy during the first half of the decade, and the policies of the Occupation during the second half.

As for labor productivity and flexibility: The jack of all trades remains master of none, except for the occasional Renaissance man. Flexibility and variety, training and retraining, can both be overdone. The professional linguist should not shift his emphasis from Japanese to Chinese until his Japanese has had time to penetrate his semi-conscious if not his unconscious. Nor should the professional musician shift from the piano to the violin under similar circumstances. The great Einstein would have done well to avoid his occasional ventures into jejune and unoriginal Socialist Economics. Flexibility and retraining can indeed be overdone, but Japan has thus far refrained from overdoing them, perhaps because capital instruments have been too costly, too specialized, and too long-lived to permit indiscriminate fad-following.

Conclusion

Modifying the Shimomura "one-sword" approach to explaining Japanese economic development, miraculous or otherwise, we suggest the marginal-efficiency as augmented by risk diminution explanation to be at least the major sword. This major sword, however, we supplement with two additional aids to growth and to the marginal-efficiency schedule as well: the short sword of secular inflation and the dagger of the highly productive, flexible labor force. Finally, we have eschewed purely-mechanical theorizing by suggesting under the head of "developmental arts" the importance of carrying none of these devices so far as to bring on self-defeating negative returns. We have given Japan high marks for avoiding such excesses—avoiding, that is to say, swords too numerous or too heavy to carry or to wield.
1. This reference has become famous, although its original source is an early essay now apparently lost: "Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice, all the rest being brought about by the natural course of things." (Smith, Wealth of Nations, ed. Edwin Cannan, p. xliii.) The Wealth of Nations (1776) shows considerable familiarity with Japan, including (p. 416) a favorable comparison of "the empires of China, Indonesia, Japan.

Among Smith's "requisites" for economic development, the most important of Smith's trio, to my way of thinking, is internal and external peace, especially if maintained independently and not imposed by outside power. Such a peace the Japanese had when Smith wrote, thanks to the long dictatorship (1603-1868) of the Tokugawa shoguns. (Some writers, indeed, claim that Japan would eventually have achieved some kind of economic miracle completely on its own, without the expansion of Western contacts which followed Commodore Perry's visit in 1853.)

2. The generation intervening between the death of the Meiji Emperor and the end of World War II (1912-45) was not a glorious one for the Japanese economy. Growth slowed somewhat because of World War I and postwar reconstruction. The 1920-21 recession was severe in Japan; the great Tokyo-Yokohama earthquake of 1923 prevented Japan from sharing fully in the prosperity of the 1920's, a forerunner of the Great Crash came to Japan in 1927. The period of 1931-45 was one of wars and war preparations, ending in a disastrous defeat.

3. On the monetary side, tendencies toward hyperinflation require "accommodative" money-supply policies.


8. The cliometric results do not imply that public policy is without influence. Thus, the Kelley-Williamson model of Meiji Japan yields slower growth over a sub-period including two wars (Sino-Japanese War, 1894-95; Russo-Japanese War, 1904-05) than over earlier and later sub-periods, while stability prevails throughout.


10. Ibid., p. 32. An example is Shimomura's stress on fixed investment in heavy and chemical industries.

11. Ibid., p. 32f. "I am often asked by foreigners why Japan's economic growth rate has been high; by mentioning the higher rate of savings, the fast increase in fixed investment, the sufficient manpower resources to draw on, the high educational level, and the small military expenditures, I find most of my questioners become satisfied."

12. The term zaibatsu has exploitative, imperialistic, and militaristic connotations, and is no longer popular in Japanese business circles. Conglomerates with substantial oligopoly power are now called keiretsu, and the group of all keiretsu (plus a few large independents) is called zaikai. I consider these distinctions more exclusively terminological than most Japanese industrial economists do.

13. Herman Kahn, however, goes somewhat too far in putting the very term "risk capital" in quotation marks when describing Japan, because:

...under Japanese conditions the real risks are low. The high growth rate cuts down losses, and makes it easy to cover up any losses that occur. A large Japanese firm in serious trouble would be bailed out by the government—by arranging for a merger or for banks to extend loans. The employees, stockholders, (creditors) would be taken care of. Thus one of the reasons that large modern Japanese firms can afford to operate in a seemingly risky way is that they know their government and society is behind them... By American standards, the Japanese take too many risks. They are very expansionist. While this can produce some mistakes, they are the right kind of mistakes. They are the kinds of mistakes that allow for high expansion rates and for overcoming lethargy, inattention, and rigidity." (The Emerging Japanese Superstate (1970), p. 107 f.)

14. John Maynard Keynes, General Theory of Employment, Interest and Money (1936), p. 143 f. We avoid here the controversial subject of the relations between the marginal efficiency of a given capital stock and of the investment flow which further specifies the rate at which this stock is to be augmented.

15. I accept the argument of Frank H. Knight, "Diminishing Returns from Investment?" Journal of Political Economy (February 1944) that investment as a whole is
immune from diminishing returns even though individual investments are not. This is because of the impact of other factors besides conventional physical capital, such as the impact of social investment on human capital, and also because of the “induced innovation” resulting from investment in research and development. Compare M. Bronfenbrenner, *Income Distribution Theory* (1971), p. 316.

16. Sukarno’s Indonesia is a recent Asian illustration of how taxation can discourage growth when it finances public consumption or unproductive investment.

17. Apart from the continuing impact of inflation on growth via forced frugality, there may also be a one-time effect. An increase in inflation expectations will lower the demand for real balances. To the extent that such a shift in money demand occurred in Japan despite the institutional constraints referred to in the text, real growth would have been stimulated. But since the trend rate of growth of Japanese inflation was fairly constant over much of the post-war period, inflation expectations were presumably steady as well, so money demand would not have continued to shift.

18. Both this literary analysis and the diagrammatics of Figure 2 assume that the initial situation at income level Y includes sufficient unemployed or underemployed labor and capital resources to permit movement to or beyond Y.

19. If an aggregate production function f relates output Y to the stock of physical capital K and the volume of employment N, we have:

\[ Y = f(K, N) \text{ and } \frac{dY}{dN} = \frac{\partial Y}{\partial N} + \frac{\partial Y}{\partial K} \cdot \frac{dK}{dN} \]

If, in addition, the labor share of Y, denoted by s, equals the ratio \( \frac{\partial Y}{\partial N} \) as per marginalist theory, and \( \frac{Y}{N} \) is approximately constant, as is the capital or property share \( \frac{\partial Y}{\partial K} \), we derive:

\[ \frac{dY}{dN} = s \frac{Y}{N} \text{ and } \frac{Y}{N} = 1 - s \frac{dY}{dK} \cdot \frac{dK}{dN} \]

Differentiating average labor productivity \( Y/N \) with respect to time t we obtain its rate of change:

\[ \frac{d}{dt} \left( \frac{Y}{N} \right) = \frac{1}{s} \frac{d}{dt} \left( \frac{Y}{N} \right) - \frac{1}{s} \left( \frac{dK}{dN} \right) \cdot \frac{dY}{dt} + \frac{dK}{dt} \cdot \frac{dY}{dt} \]

which decreases with \( Y/N \) and therefore increases with \( K \) the capital-income ratio K/Y. It also increases with any increase \( dK/Y \) attributable either to technical progress or to net investment.


21. This contrasts with the situation alleged to prevail in the U.S. automobile industry, where: Computerized and robotized plants will divide workers into very highly skilled and very low-skilled categories, wiping out the intermediate skill range vital for a sense of upward mobility. “It’s scary,” says a UAW skilled trades committee-man at GM’s Willow Run (Mich.) assembly plant. “It may mean more skilled jobs, but we’re not getting the training. When one of these machines breaks down, they call in the vendor.” (“UAW Fears Automation Again,” *Business Week*, March 26, 1979, p. 95.)


23. Shinohara cites Professors Masao Takahashi and Shigeto Tsuru, who worked with SCAP at the time, as asserting “from the inside” that the Occupation originally thought in terms of a ¥300 dollar rate, but chose ¥360 as a subvention to Japanese exports. Miyōhei Shinohara, “Evaluation of the ¥360 Exchange Rate,” in Shinohara, *The Japanese Economy and Southeast Asia in the New International Context*, Institute of Developing Economies Occasional paper 15 (1977), p. 4. (Dollars, however, were selling for as much as ¥500 on the Japanese black market of 1949.)


25. Joseph M. Dodge, President of the Detroit Bank and (later) Budget Director in the Eisenhower Administration, was a principal architect of the Japanese disinflation of 1949–50. At that time, the sudden unfavorable disappointment of Japanese business leaders’ anticipations of continuing inflation caused a recession, which lasted for nearly a year before being relieved after the outbreak of the Korean War (June 1950).

26. Nissan and Mitsubishi had embarked on automobile production well before World War II.

27. This “encouragement” included refusal to permit Ford and General Motors to purchase sufficient yen to reactivate their pre-war assembly plants in Japan, or to permit the Hino company to continue making obsolete Renault models for the Japanese market with used machinery.

28. I owe to another former teacher (Melchior Palyil an example from the German clothing trades in the 1922–23 inflation. Production and employment were hindered because the public was accumulating drawers and closets full of cloth, needles, and thread as inflation-hedges.
International banking has been a rapidly growing industry since the mid-1960's. This paper will analyze two important aspects of that development, the activities of American banks in Japan and the activities of Japanese banks in the United States. The study will attempt to determine empirically the economic factors (such as growing bilateral trade and expanding local markets) which influence the growth of these institutions, and to determine whether these factors have affected the two groups of banks in a similar manner in the period from November 1972 to November 1978. Numerous studies have analyzed international banking in general, the role of foreign banks in a particular country, or the international activities of banks based in a particular foreign country. However, no previous study has systematically attempted to study international banking on a bilateral basis.

This study will focus primarily on the lending activities of each country's banks from banking offices located in the other country. This focus on banking activities from foreign offices places the paper within a broader context of foreign investment. Such an approach is useful because it isolates for analysis a large and rapidly growing segment of international banking for both countries' banks. The rapid growth of foreign branch and subsidiary activities by both Japanese and American banks indicates a customer preference for obtaining banking services—such as access to credit, deposit, and payment facilities—from the office of a bank with which they are familiar in a country where they are conducting business. Customers much prefer this approach to the alternatives of either dealing with a local institution or, more expensively, dealing with a far-distant banking facility.

The United States and Japan present ideal countries for a study comparing international banking activity. Since 1972, trade between the two countries—measured as the sum of exports plus imports computed in dollar terms—has approximately tripled, and their banks' foreign activities have grown rapidly. In addition, the activities of both countries' banks in the other country are heavily concentrated either in local-market activity or in international trade involving the home or host country. Thus data on the activities of these institutions can be analyzed in relation to local economic activity and home or host country trade. By contrast, comparable analysis is impossible for branches of non-local banks in Continental Europe, or in financial centers such as London, Hong Kong, Singapore, and Nassau, since foreign banking offices in these countries deal in large part with customers in other than the home or host country.

A final reason for this interest in a study of Japanese and American banks concerns the differences in regulatory attitudes in the two countries towards banking in general and foreign banks in particular. American regulatory authorities place few restrictions on the balance-sheet structure, such as quantitative ceilings on lending, of banks operating in the United States. By contrast, the balance-sheet positions of banks operating in Japan are much more tightly monitored and controlled by the Bank of Japan.

Many of these same regulatory attitudes carry over to activities of non-local banks. The United States has traditionally been open to entry by foreign banks. In fact, until the passage of the International Banking Act of 1978, foreign banks (subject to state law) had the advantage of

*Visiting Scholar, Federal Reserve Bank of San Francisco, on special assignment from the Federal Reserve Board of Governors. Mark Abramson and Kirk McAllister provided research assistance for this paper.
being able to operate full-fledged banking offices in more than one state, a privilege generally denied to U.S. banks. The state laws of the major financial centers were generally quite liberal with respect to entry by foreign banks. Foreign banks operating in the United States have been permitted agency, branch, and subsidiary forms of operation.

Japanese authorities, however, have used more restraint in permitting foreign bank entry. With a few exceptions extending back to the immediate postwar period, they have limited foreign banks to operations at a single branch facility, which has effectively kept those banks from entering retail banking on any significant scale. In addition, the authorities in the past have adopted some measures designed to limit the access of non-local banks to local sources of funds. This study will attempt to analyze whether differences in the local environment have had any measurable impact on the growth in lending by Japanese branches of U.S. banks.

I. Conceptual Framework

The term international banking covers a wide variety of transactions, including deposit and loan transactions by a bank’s indigenous offices with residents of other countries, and the establishment of foreign branches and subsidiaries for the conduct of banking activities in foreign countries. International banking, when conducted through foreign branches and subsidiaries, is really a subtopic of the broader topic of foreign investment, since in theory a bank could conduct international-banking activities from its domestic offices. Richard E. Caves in a survey article suggests that foreign investment is often associated with product differentiation, which may include possession of intangible assets such as a firm’s knowledge about how to produce and distribute its product. In Caves’ model a firm has a definite home-country identity (including language), but elects to invest abroad to adapt “the firm’s basic product to local demand conditions.” A firm rarely invests abroad to produce something it does not produce in its domestic market.

The Caves’ model of foreign investment can be applied to international banking. Major banks offer a differentiated product and the knowledge (intangible assets) to serve the financial needs of their major corporate customers. Banks establish their branches and subsidiaries abroad to adapt their basic product to local conditions, rather than attempt to “export” banking services from their head offices. Virtually all banks operating abroad were major producers of banking services in their home country prior to their investments abroad.

Caves’ model suggests that a U.S. bank establishes its banking presence in Japan largely because its traditional customers have a demand for banking services in Japan, and a preference for conducting business with a bank with whom they have an established relationship. Caves’ model is also consistent with the notion of “cross-hauling” of international banking services, since Japanese banks have a specialized differentiated product to market to their traditional Japanese customers seeking banking services in the United States.

Vernon and Wells analyze the expansion of multinational banks in somewhat similar terms. Their explanation centers upon factors such as technological capabilities and trade names, i.e., the preferences of customers to deal with banks that are well-known to them, most often through previous associations. Vernon and Wells also suggest that economies of scale are important in multinational banking. Economies of scale occur when each foreign branch and subsidiary contributes to the bank’s profitability by enhancing the bank’s ability to portray itself as a worldwide institution. Within a local market, economies of scale may exist because of a bank’s ability to collect and disseminate information on local economic conditions, laws, regulations, and business opportunities.

Finally, foreign investment may be the only feasible way for a bank to expand its activities—a point which is ignored by the several authors cited. A bank’s home market might be relatively unprofitable due to competition, or legal restrictions might limit its ability to expand locally. For example, U.S. laws prohibiting multistate branches are a constraint on many U.S. banks.

Caves, as well as Vernon and Wells, help explain the motivation for large banks to es-
tablish foreign facilities to service the foreign activities of their large corporate customers, who much prefer to maintain their relationships with certain banks rather than purchase banking services from banks with whom they have had little past contact. In this situation, the typical foreign branch's loan demand would exceed its deposit base, since corporations are on balance large net borrowers from banks. Moreover, while the loan and advisory services of a foreign bank may be tailored to the special needs of its traditional customers, an institution of that type normally would be unable to offer deposit facilities markedly different from those offered by local banks. In essence, foreign banks typically have a core mix of customers who are loan-oriented, and their deposits are not perceived to be superior to local bank deposits—in fact, when denominated in local currency they may be perceived to be inferior, because of their lack of access to local central-bank credit in a liquidity squeeze. Consequently, offices of foreign banks typically would have to rely on non-deposit sources of funds, such as interbank borrowings and net advances from their parent institutions, to finance their loan activities.

The Caves and Vernon-Wells approaches to foreign investment help explain the initial establishment of a foreign office, but they fail to explain the second stage of expansion—the stage when banks go beyond servicing the financial needs of their traditional customers. This stage occurs after a bank has borne the fixed costs of establishing a foreign presence for its traditional relationships. In this second stage, the foreign bank utilizes its contacts in the local market to compete for local business with established banks. The foreign bank may be able to offer a differentiated product, such as advice to local companies desiring to do business in its own home market, or certain international services where it has special expertise. However, the foreign bank may be unwilling or unable to differentiate its product, and so may compete for local business simply on the basis of price, particularly if the local banking market is characterized by a degree of monopoly power.

A foreign bank's ability to compete in a local market will depend upon a variety of factors, including the strength and quality of its management as well as the size and growth of the local market. The latter factor is important, since it is easier to enter and expand in a large and growing market than one that is stagnant or contracting. Indeed, local-market entry depends on a number of factors—the attitude and policies of both host and home country regulatory authorities, the growth of trade between the home and host country and between the host country and the rest of the world, the presence or absence of exchange controls or controls over profit remittances in the host country, the foreign banks' assessment of the host country's ability to maintain political and economic stability, and so on. Profitability of expanding into new markets may also be affected by the ease or tightness of the host country's banking system, and to some extent by both the home and host countries' foreign-reserve positions, to the extent that they affect either country's banking system.

II. Basic Data and Concepts

The relevant data on the activities of U.S. banks in Japan, and on the activities of Japanese banks in the United States, focus on transactions with nonbank customers (Tables 1–3). A bank's foreign branches are often active in local interbank markets, for investment and liquidity purposes. Transactions in interbank markets, however, are rarely the raison d'être for incurring the costs of entering a foreign market, since margins in such markets tend to be extremely narrow. Moreover, banks can handle interbank transactions at their head offices or in offshore banking centers at a small fraction of the cost of establishing a banking facility in the United States or Japan. On the other hand, a branch can use interbank transactions as a means of adjusting its liquidity position, so that it isn't forced to rely on the bank's head office. Interbank borrowings may be an important net source of funds to a newly-established office of a foreign bank which is not well-known to local nonbank depositors. Overall, transactions with nonbanks represent the best measure of the success of foreign banks in developing a customer base in the local market.
The key comparisons in the tables are those between non-local banking offices and the local institutions with whom the foreign banks would be expected to be in direct competition. For the United States, the offices of Japanese banks are compared to the approximately 300 large banks that reported weekly to the Federal Reserve in the 1972–78 period. These “money center” banks account for slightly over one-half of the assets of all U.S. banks. They also account for an overwhelming proportion of the international capabilities of U.S. banks, and are the principal competitors of the foreign banks operating in the United States.

For Japan, the branches of U.S. banks are compared to the large City Banks which account for about one-half of the assets of all Japanese banks. The City Banks tend to be more heavily involved in international finance and corporate lending than other types of Japanese banking institutions. Thus, they appear to be generally similar to the weekly reporting U.S. banks in size and business orientation. The data in the tables refer to the ratio of the foreign balance-sheet item to the comparable item for the domestic banks. Thus, the percentages refer to the size of the foreign banks’ activity divided by the closest comparable measure for the local banks, i.e., a ratio rather than a share.

Comparisons: Japanese Market

Between late 1972 and late 1976, U.S. bank activity in Japan grew extremely rapidly, as U.S. bank branch claims on nonbanks (mostly loans) nearly quadrupled (Table 1). Also, these claims increased in size from 1.3 percent to 2.7 percent of comparable loans and discounts at the City Banks. Since late 1977, however, lending by U.S. banks in Japan has shown little growth, and has actually declined from 2.7 percent to 2.3 percent of lending by the City Banks.

The record for liabilities to nonbanks (mainly deposits) is roughly similar, although this deposit ratio peaked somewhat earlier than the loan ratio. More strikingly, however, the liabilities (deposit) ratio over time has averaged only about one-third as high as the claims (loan) ratio. This result is consistent with the theory that non-local banks, with their heavy mix of corporate customers, would have loans in excess of their deposit resources.

Comparisons: U.S. Market

Japanese banks operating in the United States have expanded at a different pace than U.S. banks operating in Japan (Table 2). But first, some introductory remarks are needed to explain why the data are arranged as they are.

### Table 1

<table>
<thead>
<tr>
<th>Date</th>
<th>Loans to Nonbanks</th>
<th>Liabilities to Nonbanks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount1</td>
<td>As Percent of Japanese City Banks2</td>
</tr>
<tr>
<td>November 1972</td>
<td>2,020</td>
<td>1.3</td>
</tr>
<tr>
<td>November 1973</td>
<td>3,263</td>
<td>1.6</td>
</tr>
<tr>
<td>November 1974</td>
<td>4,618</td>
<td>2.1</td>
</tr>
<tr>
<td>November 1975</td>
<td>6,458</td>
<td>2.5</td>
</tr>
<tr>
<td>November 1976</td>
<td>7,806</td>
<td>2.7</td>
</tr>
<tr>
<td>November 1977</td>
<td>9,137</td>
<td>2.7</td>
</tr>
<tr>
<td>November 1978</td>
<td>9,384</td>
<td>2.3</td>
</tr>
</tbody>
</table>

1 For branches of U.S. banks, data refer to claims on and liabilities to nonbanks from FR2052 reports. (Data include customers’ liabilities on acceptances.)
2 For Japanese city Banks, data refer to loans, discounts, and customers’ liabilities on acceptances from Economic Statistics Monthly published by The Bank of Japan.
3 For Japanese banks, data refer to total private deposits (which exclude official and interbank deposits) from Economic Statistics Monthly published by The Bank of Japan.
The Japanese-bank data are tabulated for agencies and branches, and separately for all institutions, which include U.S.-incorporated subsidiary commercial banks operated by Japanese banks. This is done because subsidiaries have a different business orientation than agencies and branches, being much more retail oriented; and secondly, because operating a subsidiary commercial bank is a privilege available to Japanese banks in the United States but not to U.S. banks in Japan.

The loan focus is confined to commercial and industrial loans, which account for about four-fifths of the U.S. lending activities of Japanese banks. Narrowing the focus in this way restricts the comparisons to similar lending by large U.S. banks. Also, this facilitates comparisons with the activities in Japan of both U.S.-bank branches and large Japanese City Banks, since both groups of banks limit their lending primarily to commercial and industrial enterprises.

Over the period studied, Japanese bank lending increased steadily relative to lending by large domestic U.S. banks—except for the period between late 1974 and late 1977, when Japanese banks' foreign activities were restrained by the Ministry of Finance and the Bank of Japan. Altogether, between November 1972 and November 1978, the ratio of commercial-industrial lending of Japanese agencies and branches to U.S. weekly reporting banks increased from 5.2 percent to 9.7 percent, while the ratio for all Japanese institutions (including subsidiaries) increased even faster, from 6.1 percent to 11.5 percent. Thus, the ability of Japanese banks to operate subsidiary commercial banks in the United States enhanced their ability to grow faster than domestic banks.

Japanese-bank liabilities to nonbanks (deposits) showed a similar upward trend. As in the case of U.S. banks in Japan, Japanese-bank deposits in this country have lagged considerably behind their loans to nonbanks, reflecting their concentration with corporate customers. But their deposits have risen sharply because of two important factors. First, many Japanese banks previously operated in New York as agencies (which cannot accept deposits) rather than as branches (which are deposit-taking institutions). But between January and September 1977, the number of agencies of Japanese banks in the United States declined from 32 to 23, and the number of branches increased from 9 to 25.

Japanese banks made this conversion largely to take advantage of the domestic CD market. In some earlier years, they had been forced to pay a premium to attract CDs in the U.S. market. However, in more recent years, Japanese banks

### Table 2
**Activities of Japanese Banks in the United States (millions of dollars)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Commercial and Industrial Loans</th>
<th>Liabilities to Nonbanks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>As Percent of U.S. Weekly Reporting Banks</td>
</tr>
<tr>
<td></td>
<td>Agencies and Branches</td>
<td>All Institutions³</td>
</tr>
<tr>
<td>November 1972</td>
<td>4,558</td>
<td>5,391</td>
</tr>
<tr>
<td>November 1973</td>
<td>6,875</td>
<td>7,774</td>
</tr>
<tr>
<td>November 1974</td>
<td>9,213</td>
<td>10,414</td>
</tr>
<tr>
<td>November 1975</td>
<td>8,643</td>
<td>10,138</td>
</tr>
<tr>
<td>November 1976</td>
<td>8,278</td>
<td>9,989</td>
</tr>
<tr>
<td>November 1977</td>
<td>8,843</td>
<td>10,775</td>
</tr>
<tr>
<td>November 1978</td>
<td>13,498</td>
<td>15,965</td>
</tr>
</tbody>
</table>

1 For U.S. offices of Japanese banks, data derived from FR886a monthly reports.
2 Liabilities to nonbanks include deposits and credit balances.
3 Includes subsidiary commercial banks in addition to agencies and branches.
have been able to market their CDs on comparable (or nearly comparable) terms as U.S. banks.\textsuperscript{19} The shift reflected the growing financial strength of the Japanese banks, combined with the growing reserves of the Bank of Japan, which assured the Japanese banks a strong lender of last resort. As a result of these changing conditions, total nonbank deposits of Japanese agencies and branches tripled between November 1976 and May 1978, and their size increased relative to total nonbank deposits at large U.S. banks.\textsuperscript{20}

A second factor contributing to the rapid growth of deposits at U.S. offices of Japanese banks is the growth of the subsidiary commercial banks, with their ability to offer a wide range of deposits. The data in Table 2 indicate that subsidiaries accounted for nearly two-thirds of the increase in the growth of the ratio of deposits of Japanese banks in the United States relative to the large weekly reporting banks.

**Sources of Funds**

U.S. banks in Japan, and Japanese banks in this country, have both had to rely heavily on nondeposit sources of funds (Table 3),\textsuperscript{21} because for both groups of banks, liabilities to nonbanks represent a relatively small proportion of claims on nonbanks. However, while for the offices of U.S. banks in Japan, the proportion of nonbank claims financed by nonbank liabilities has generally declined in recent years, the reverse has been true for agencies and branches of Japanese banks.

Net liabilities to unrelated banks typically have represented a major funding source for non-local banks. However, until recently U.S.-bank branches in Japan were actually suppliers of funds to the Japanese interbank market—reversing the role played by most other foreign branches of U.S. banks.\textsuperscript{22} This unique situation came about largely because of the very tight (overloaned) position of Japanese City Banks, who were forced to depend on interbank borrowing, as well as the Bank of Japan, to meet heavy loan demands. In contrast, Japanese agencies and branches in the United States have tended to be large net borrowers of funds from other banks, since 1973 funding from one-half to three-fifths of their U.S. lending from that source.

Net advances from parent banks have represented yet another source of funds.\textsuperscript{23} Typically nonlocal banks, both in the United States and abroad, fund a proportion of their local activity with advances from their related offices. U.S. bank branches in Japan have relied heavily on such advances to finance their lending activities, particularly in the 1974–76 period when the

### Table 3

**Major Balance Sheet Characteristics of Branches of U.S. Banks in Japan, and of Agencies and Branches of Japanese Banks in the United States**

(millions of dollars)

<table>
<thead>
<tr>
<th>Date</th>
<th>Amount Claims on Nonbanks</th>
<th>Liabilities to Nonbanks</th>
<th>Net liabilities to Banks</th>
<th>Advances from Parent</th>
<th>Amount Claims on Nonbanks</th>
<th>Liabilities to Nonbanks</th>
<th>Net liabilities to Banks</th>
<th>Advances from Parent</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 1972</td>
<td>2,020</td>
<td>31.3</td>
<td>−32.4</td>
<td>55.8</td>
<td>4,558</td>
<td>3.7</td>
<td>21.6</td>
<td>81.7</td>
</tr>
<tr>
<td>November 1973</td>
<td>3,263</td>
<td>35.2</td>
<td>−10.1</td>
<td>40.2</td>
<td>6,875</td>
<td>4.1</td>
<td>57.8</td>
<td>35.6</td>
</tr>
<tr>
<td>November 1974</td>
<td>4,618</td>
<td>31.5</td>
<td>−61.4</td>
<td>96.6</td>
<td>9,213</td>
<td>3.3</td>
<td>61.3</td>
<td>26.0</td>
</tr>
<tr>
<td>November 1975</td>
<td>6,458</td>
<td>24.7</td>
<td>−26.6</td>
<td>83.2</td>
<td>8,643</td>
<td>7.3</td>
<td>56.8</td>
<td>32.5</td>
</tr>
<tr>
<td>November 1976</td>
<td>7,806</td>
<td>21.4</td>
<td>−10.8</td>
<td>73.5</td>
<td>8,278</td>
<td>8.2</td>
<td>56.3</td>
<td>29.2</td>
</tr>
<tr>
<td>November 1977</td>
<td>9,137</td>
<td>23.3</td>
<td>−2.5</td>
<td>61.8</td>
<td>8,843</td>
<td>16.4</td>
<td>47.7</td>
<td>19.9</td>
</tr>
<tr>
<td>November 1978</td>
<td>9,384</td>
<td>23.9</td>
<td>10.7</td>
<td>52.4</td>
<td>13,498</td>
<td>19.6</td>
<td>53.2</td>
<td>28.0</td>
</tr>
</tbody>
</table>

\textsuperscript{1} Includes only commercial and industrial loans.
Japanese banking system was in a very tight position. But U.S. banks' reliance on their related offices for funding has declined considerably since 1976. The U.S. agencies and branches of Japanese banks have followed a somewhat similar pattern, reducing their reliance on parent institutions in recent years as they developed alternative sources of funding.

III. An Empirical Model

It was suggested in Section I that the growth and character of banking activities in a foreign country could be explained by various economic factors, such as the level of international trade, the growth of the local market, and banking conditions in both the host and home countries. In this section a simple model is constructed to test whether lending to nonbanks by U.S. banks in Japan and Japanese banks in the United States can be explained by such economic variables.

As noted earlier, the principal reason why foreign banks establish banking offices in either Japan or the United States is to make loans to nonbank borrowers. It is expected that such lending would be affected by several directly observable economic factors. Since nonlocal banks tend to be trade oriented, their activities should be affected by international trade flows. For both U.S. banks in Japan, and Japanese banks in the United States, the most likely measure would be total Japanese trade, defined as the sum of Japanese imports and exports—or alternatively, total trade between the United States and Japan. U.S. bank branches in Japan, however, help finance Japanese trade with countries other than the United States, and thus their growth should be more closely related to total Japanese trade rather than simply U.S.-Japan trade.

For Japanese banks in the United States, the picture is somewhat different. Because of the importance of New York as a financial center, and because of the role of the dollar in settling international transactions, a large proportion of total Japanese trade (including non-U.S. trade) is financed at the U.S. offices of Japanese banks. There is little evidence to indicate that these offices finance significant amounts of non-Japanese related trade, i.e., trade which is neither an export from nor an import into Japan. Thus total Japanese trade will be utilized as an explanatory variable in the equations for lending by U.S. offices of Japanese banks.

A second variable affecting the growth of nonlocal banks is the growth in the size of the local market. Clearly it is easier for a foreign bank to expand its activities in a growing market. For the United States, the local market is defined as commercial and industrial loans by weekly reporting banks; for Japan, it is defined as total loans and discounts of City Banks.

A third set of variables affecting non-indigenous banks includes the tightness or ease of banking conditions in both the host and home countries. In particular, tight conditions in the host country, as measured by a high loan/deposit ratio, would be expected to encourage lending by nonlocal banks, because local banks would experience difficulty servicing their loan demand with existing resources. Conversely, a high loan/deposit ratio in the home country might exert a negative effect, as banks which were loaned up in their home market would be less able to expand lending at their foreign branches. The loan/deposit ratios function as proxies for the profitability of bank lending. By assumption, a banking system with a high loan/deposit ratio will provide foreign banks with profitable opportunities, particularly if they are able to bring in funds from abroad. In effect, a relatively tight position in local markets should mean higher interest spreads earned by banks.

Another explanatory factor would be Japan's international-reserve position. Because of Japan's growing reserve accumulation, the Bank of Japan has placed dollar balances with Japanese banks, usually at attractive rates, and thus put those banks in a better competitive position to extend dollar credits at their home offices (often termed "impact" loans) and at their offices abroad. Moreover, because of those growing reserves, the Bank of Japan can now act as a powerful lender of last resort, a feature lacking in 1974 and 1975 when Japanese banks were required to pay a premium over market rates to obtain deposits.
To test these several hypotheses, regression equations were computed for lending by the two groups of banks. To avoid problems of serial correlation, the equations were run on first differences in total lending to nonbanks, and also for all the explanatory variables. In the case of U.S.-based Japanese banks, serial correlation in the first differences was eliminated by use of Cochrane-Orcutt procedures. Because of the severe inflation of the 1972–78 period, the data were transformed to real (November 1972) dollars to estimate the various effects in real terms.29 By doing so, the lending impact of changes in loan/deposit ratios could be analyzed without overweighting the later observations because of inflation-caused increases in nominal values.

Increases in lending based on increases in the size of the local market and the growth in total Japanese trade were assumed to be nearly simultaneous, because trade requires immediate financing and the growth of the local market affects loan demand fairly quickly. Changes in lending in response to changes in home and host country loan/deposit ratios were estimated using Almon lags with third-degree polynomials. Distributed lags were used because, in a given month, a nonlocal bank generally does not adjust its lending immediately to conditions prevailing at the end of the previous month, but rather responds to a weighted average of previous conditions in the home and host countries’ banking systems. For example, a nonlocal bank may not adjust its lending at all to a single month’s sharp increase in the loan/deposit ratio in the host country if it believes the increase has been caused by temporary factors. A longer lag was utilized for the host country (18 months) than for the home country (6 months), because a

Table 4
Regression Equations Explaining Monthly Changes in Loans to Nonbanks
(millions of dollars)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>40.8 (5.34)</td>
<td>16.7 (1.06)</td>
</tr>
<tr>
<td>Change in loans by local banks (billions)</td>
<td>13.8 (7.75)</td>
<td>39.5 (2.12)</td>
</tr>
<tr>
<td>Change in Japanese trade (billions)</td>
<td>12.1 (1.52)</td>
<td>131.1 (3.63)</td>
</tr>
<tr>
<td>Change in loan/deposit (Japan)</td>
<td>76.2 (2.63)</td>
<td>-80.8 (1.78)</td>
</tr>
<tr>
<td>Change in loan/deposit (U.S.A.)</td>
<td>-57.4 (3.29)</td>
<td>186.0 (4.00)</td>
</tr>
<tr>
<td>Change in Japanese reserves (billions)</td>
<td>-122.7 (4.31)</td>
<td>28.8 (5.3)</td>
</tr>
<tr>
<td>December</td>
<td>--</td>
<td>-27.2 (2.72)</td>
</tr>
<tr>
<td>January</td>
<td>--</td>
<td>200.0 (2.17)</td>
</tr>
<tr>
<td>October 1975</td>
<td>--</td>
<td>-39.1 (3.33)</td>
</tr>
<tr>
<td>May 1978</td>
<td>-195.9 (3.87)</td>
<td>--</td>
</tr>
<tr>
<td>November 1978</td>
<td>-53.4 (8.1)</td>
<td>593.9 (4.75)</td>
</tr>
<tr>
<td>( \bar{R}^2 )</td>
<td>.794</td>
<td>.615</td>
</tr>
<tr>
<td>DW</td>
<td>1.970</td>
<td>2.067</td>
</tr>
</tbody>
</table>

1 Coefficient based on 18-month Almon lag. 2 Coefficient based on 6-month Almon lag. t statistics in parentheses.
foreign office's lending can be adjusted more quickly by home-office direction than by responses to changing local-market developments. Changes in lending in response to changes in Japanese reserves were estimated with six-month lags.

Despite problems of random fluctuations resulting from using banking data derived from single-date observations, and problems associated with using data from different sources, the model does quite well explaining growth in lending by the two countries' banks (Table 4). Changes in lending by U.S. banks in Japan are positively related to growth in lending by local banks, growth in total Japanese trade (although only at the 90-percent confidence level), and changes in the tightness of the Japanese banking system. Changes in U.S. bank lending in Japan are negatively related to changes in the tightness of the domestic U.S. market, and to changes in the growth of Japanese reserves. This last result suggests that the reserve accumulation of the Bank of Japan has reduced somewhat the demand for dollar loans from branches of U.S. banks.

Changes in lending by Japanese banks in the United States can be explained by these same economic variables. Growth in lending by such banks is positively related to the growth of the local U.S. market, and is very strongly related to growth in total Japanese trade. Also, their growth is positively related to changes in the U.S. loan/deposit ratio and negatively related to changes in the Japanese loan/deposit ratio. The coefficient for the impact of changes in Japanese reserves on changes in lending by U.S.-based Japanese banks had the expected positive sign, but was not statistically significant.

In addition to these variables, dummy variables for December and January were added as a simple seasonal adjustment to capture differences in year-end behavior of Japanese banks in this country. The coefficients for the agencies and branches, which tended to be negative for December and positive in January, suggested that Japanese banks were less active than U.S. banks in end-of-year windowdressing.

For Japanese banks, a dummy variable was added for October 1975 to capture a major acquisition by the Bank of Tokyo, but this does not appear to have had a significant impact on growth in commercial and industrial lending. For U.S. banks, a dummy variable was added for May 1978 to capture a modification in statistical reporting procedures, which reduced the number of U.S. bank branches required to report, and modified the definitions of claims on nonbanks to exclude claims on publicly-owned corporations. For both groups of banks, a dummy variable was added for November 1978 to account for the impact of the U.S. policy measures to support the dollar. The large and highly significant positive coefficient for Japanese banks in the United States suggests that the measures may have induced Japanese banks to expand lending from their U.S. offices because of a shift in their exchange-rate expectations, since lending by these institutions is predominantly dollar-denominated.

Since the overall model performed quite well, it is useful to compare the coefficients for the two groups of banks for certain key variables. The most striking difference between the two equations was in the estimated impact of local-market growth on the activity of foreign banks. For Japanese branches of U.S. banks, a $1-billion increase in the size of the local market was associated with a $13.8-million increase in total lending to nonbanks; for U.S. offices of Japanese banks, a $1-billion increase in the local market was associated with a $39.5-million loan increase for agencies and branches, and a $40.7-million loan increase for all institutions. Thus the local-market coefficient for Japanese banks in the United States was about three times as large as the coefficient for U.S. bank branches in the Japanese market.

This striking difference in impact of local-market growth on foreign-bank lending can be attributed to a variety of reasons, including some factors such as managerial preferences, which could not be included as explanatory variables. One important reason for the difference is that Japanese corporate borrowers have a much stronger preference than U.S. corporations for dealing with their own national banks. Thus, growth in the local-market demand for credit in Japan would be directed largely to Japanese banks.
The empirical model has been developed with the intention of analyzing if restraints on the entry and expansion of U.S. banks in Japan have hindered their ability to grow. The results of the equations in Table 4 are consistent with such a hypothesis, after taking into account all the economic factors discussed above, because of the significantly lower coefficient for local-market influence for U.S. banks in Japan than for Japanese banks in the U.S. The results are suggestive and not conclusive since other factors, including managerial decisions which are not embodied in the model, may account for the difference.

Another important difference concerns the impact of growth in total Japanese trade on the growth of the two groups of banks. For Japanese branches of U.S. banks, a $1-billion increase in total Japanese trade was associated with a $12.1-million loan increase. However, the coefficients were ten times greater for U.S. offices of Japanese banks. In these cases, a $1-billion increase in total Japanese trade was associated with a $131.1-million loan increase by Japanese agencies and branches, and a $134.9-million loan increase for all Japanese institutions. The large coefficients estimated for the U.S. offices of Japanese banks confirm the market impression that those offices are in fact very active in financing Japanese trade.

IV. Summary and Conclusions

To summarize, the lending activities of Japanese and U.S. banks in each other's markets can be analyzed in terms of certain economic variables, such as growth in trade and growth of the local banking market. While the variables explaining the activities of the two groups of banks are generally the same, the estimated coefficients vary. In particular, the coefficients indicate that growth in total Japanese trade strongly affects lending by U.S. offices of Japanese banks, reinforcing the widely-held view about the importance of those institutions in financing Japanese trade. It is interesting to speculate whether the recent movement towards yen-financing of Japanese trade ("yen-shift") will reduce the role of Japanese banks in the United States, since trade financing in dollars is such an important part of their activity.

A second important finding concerns the coefficient estimating the impact of local-market growth on foreign-bank loan growth, which is substantially smaller for American banks in Japan than for Japanese banks in the United States. These coefficients have been estimated after accounting for the effects of all other major variables, such as trade, banking conditions, exchange-rate changes, and Japanese reserves. While a variety of factors may account for this difference, the significantly lower coefficient for U.S. banks in Japan is consistent with the interpretation that regulatory restraints have affected their ability to participate in the growth of the local market. By contrast, Japanese banks in the United States have been more free to expand their branch networks, operate subsidiary banks, and develop local sources of funding, and thus have been better able to benefit from growth in the local market.

Appendix

Alternative Definitions of Local Market Activity

The text of the paper analyzed the growth of the activities of foreign banks relative to the growth of local-market institutions. Clearly such comparisons are influenced by the choice of the local banks with which the foreign banks are compared. The text used the Japanese City Banks as the relevant local-market comparison for branches of U.S. banks in Japan, and the U.S. weekly reporting banks as the frame of reference for U.S. offices of Japanese banks. Since the definition of local markets must by necessity be somewhat arbitrary, this appendix will consider alternative definitions of competing banks.

The regression equations have been recomputed using alternative definitions of local-market competitors (Table 5). For U.S. banks in Japan, the local market is defined to include the Long-term Credit Banks as well as the City Banks, since U.S. bank branches in Japan extend long-
term credits. For U.S. offices of Japanese banks, the alternative local-market comparison is with the large weekly reporting banks in New York, California, and Illinois. These three financial markets contain most of the major money-center banks with whom the Japanese banks compete most closely, and account for the vast majority of the activities of Japanese banks in the United States.

The regression results in Table 5 appear generally similar to the results in Table 4, except for a significant change in coefficients caused by the modification of the definition of local market. For U.S. bank branches in Japan, inclusion of the Long-term Credit Banks reduced the estimated impact of a $1-billion increase in loans by local banks from $13.8 million to $11.2 million. For Japanese agencies and branches in the United States, restricting the local market to weekly reporting banks in the three major financial centers increased the estimated impact of a $1-billion increase in loans by local banks from $39.5 million to $43.4 million.

The local-market definitions used in Table 4 resulted in a local-market impact three times as great for Japanese banks in the United States as for U.S. banks in Japan. We may conclude that that figure represents a conservative estimate of the difference in local-market impact on the two countries' banks, judging from the results obtained from the different local-market definitions in Table 5.

### Table 5

**Regression Equations Explaining Monthly Changes in Loans to Nonbanks Using Alternative Local Market Definitions**

(millions of dollars)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Monthly Change in Loans by Japanese Branches of U.S. Banks</th>
<th>Monthly Change in Loans by U.S. Offices of Japanese Banks</th>
<th>All Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>44.0</td>
<td>17.5</td>
<td>19.8</td>
</tr>
<tr>
<td></td>
<td>(5.73)</td>
<td>(1.11)</td>
<td>(1.24)</td>
</tr>
<tr>
<td>Change in loans by local banks (billions)</td>
<td>11.2</td>
<td>43.4</td>
<td>54.8</td>
</tr>
<tr>
<td></td>
<td>(7.68)</td>
<td>(2.48)</td>
<td>(2.21)</td>
</tr>
<tr>
<td>Change in Japanese trade (billions)</td>
<td>13.2</td>
<td>129.4</td>
<td>139.6</td>
</tr>
<tr>
<td></td>
<td>(1.66)</td>
<td>(3.59)</td>
<td>(3.68)</td>
</tr>
<tr>
<td>Change in loan/deposit (Japan)</td>
<td>87.31</td>
<td>-96.52</td>
<td>-98.22</td>
</tr>
<tr>
<td></td>
<td>(7.53)</td>
<td>(2.06)</td>
<td>(2.03)</td>
</tr>
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<td>Change in loan/deposit (U.S.A.)</td>
<td>-59.22</td>
<td>186.11</td>
<td>185.81</td>
</tr>
<tr>
<td></td>
<td>(3.30)</td>
<td>(4.11)</td>
<td>(3.81)</td>
</tr>
<tr>
<td>Change in Japanese reserves (billions)</td>
<td>-122.22</td>
<td>44.32</td>
<td>76.62</td>
</tr>
<tr>
<td></td>
<td>(4.26)</td>
<td>(.83)</td>
<td>(1.41)</td>
</tr>
<tr>
<td>December</td>
<td>--</td>
<td>-27.6</td>
<td>25.7</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>(.39)</td>
<td>(.33)</td>
</tr>
<tr>
<td>January</td>
<td>--</td>
<td>213.2</td>
<td>191.7</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>(2.19)</td>
<td>(1.81)</td>
</tr>
<tr>
<td>October 1975</td>
<td>--</td>
<td>-9.4</td>
<td>82.3</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>(.08)</td>
<td>(.66)</td>
</tr>
<tr>
<td>May 1978</td>
<td>-199.7</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>(3.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 1978</td>
<td>-51.0</td>
<td>573.3</td>
<td>584.9</td>
</tr>
<tr>
<td></td>
<td>( .77)</td>
<td>(4.52)</td>
<td>(4.33)</td>
</tr>
<tr>
<td>R²</td>
<td>.791</td>
<td>.618</td>
<td>.624</td>
</tr>
<tr>
<td>DW</td>
<td>1.939</td>
<td>2.087</td>
<td>2.217</td>
</tr>
</tbody>
</table>

1 Coefficient based on 18-month Almon lag. 2 Coefficient based on 6-month Almon lag. 3 Local market includes long-term credit banks in addition to city banks. 4 Local market refers to weekly reporting banks in New York, California, and Illinois. t statistics in parentheses.
1. November 1972 is the first date for which comprehensive statistics were collected for the U.S. offices of foreign banks.


3. Exceptions to this would be required reserves and efforts by bank regulatory agencies to have banks increase their capital ratios.

4. In part, this concern results from the "overloaned" position (loans exceeding deposits) and the relatively low capital ratios of the major Japanese banks.

5. The principal types of institutions operated by foreign banks in the United States are: agencies, which may lend funds but cannot accept deposits (although they do accept credit balances which for many purposes are the functional equivalent of deposits); branches, which may accept deposits, make loans, and are integral parts of their parents, with lending limits and deposit support based on the resources of their parent banks; and, subsidiaries, which are separately-incorporated U.S. banks (of which at least 50 percent of the stock is owned by a foreign bank) and which have lending limits based on their own capital.


8. Ibid., p. 18.


10. As one possible exception, a nonlocal bank may have some advantage offering deposits denominated in its home currency if investors believe that banks would always have preferential access in world markets to their home currencies.

11. For example, a particular bank might be known to be very efficient in the area of funds transfer.


13. Restricting the analysis of groups of competing banks has definite advantages. In particular, it eliminates the activities of many smaller banks which conduct retail-oriented businesses in areas in which foreign banks are typically not interested in competing. Therefore, the focus on the larger banks eliminates the influence of factors affecting smaller banks, which may have little or no impact on the customers for whom the foreign and local banks are competing.

14. While preferable for purposes of comparability, both within the United States and between countries, confining the comparisons to commercial-industrial loans excludes the limited growth in retail lending by these institutions. As of November 1978, total retail (non-C&I) lending by all Japanese institutions in the United States amounted to only $3.1 billion, or less than one-sixth of total lending to nonbanks by U.S. offices of Japanese banks.


16. The data for subsidiary commercial banks for November 1975 are affected by the acquisition of California First National Bank by the Bank of Tokyo in October 1975.

17. California state law restricts foreign banking offices to deposits from non-U.S. residents, because of their ineligibility for FDIC insurance. The Japanese preference for operating agencies in New York reflects the fact that agencies, because they are not deposit-taking institutions, are generally not subject to lending limits.

18. Agencies do in fact accept credit balances, which are usually undrawn portions of a credit. Credit balances are, however, a very limited way to raise funds from nonbank sources.

19. The desire of Japanese banks to expand their CD base is also indicated by activity at their offices in London. CDs (and other negotiable paper) at the London offices of Japanese banks increased from $1.5 billion in November 1976 to $4.6 billion in November 1978. Source: Bank of England Quarterly, various issues.

20. While precise quantification is not possible, the differences in orientation of the agencies and branches suggests that there are limits to the ability of Japanese banks to shift business from their subsidiaries to their agencies and branches.

21. For Japanese banks, the structural characteristics refer to the agencies and branches. The subsidiary commercial-bank structure is closer to the structure of domestic U.S. banks.

22. In recent years, branches of U.S. banks have in fact shifted from net borrowers to small net suppliers of funds in foreign interbank markets, largely because of inflows of funds from oil-producing countries as well as large advances of funds from their head offices.
23. This total includes advances from the head office and related branches in other foreign countries.
25. Simply using dollar and yen lending rates would not have been practical, since nominal rates are influenced by inflation and exchange-rate expectations. Also, U.S. banks in Japan extend dollar as well as yen-denominated credits to nonbank borrowers.
26. Since the United States is a reserve-currency country, it is not meaningful to consider its international reserve-asset position.
28. This was part of the "tiering" of the Euromarkets that occurred following the Herstatt and Franklin incidents.
29. All statistical series, including trade data compiled by the Bank of Japan, are in dollar amounts, except total loans and discounts of the Japanese City Banks, which were converted into dollar terms using prevailing exchange rates.
30. Single-date balance-sheet data may exhibit some random fluctuations, due to financial conditions prevalent on the particular day for which the data are observed.
31. For all Japanese institutions (including subsidiary commercial banks) in the United States, the estimated impact of a $1-billion increase in local bank lending was increased from $40.7 million to $54.8 million when the comparison was limited to weekly reporting banks in the three major states.
Japan's Policy of Food Security: An Alternative Strategy

Michael Gorham*

Japanese food prices are among the highest in the world. The actual cost of food in Japan is even higher than retail prices alone would suggest, since a significant amount of tax revenues is devoted to agricultural subsidies. High food costs primarily reflect the existence of a relatively inefficient agricultural sector protected by a comprehensive system of tariffs and import quotas. While there are several reasons, including strong political reasons, for the current state of Japanese food and agricultural policy, a major policy objective is Japan's desire for some reasonable degree of food security.

We first discuss this current approach to food security, and then examine an alternative and potentially cheaper strategy—the removal of all barriers to grain and soybean imports, along with the creation of a one-year contingency stockpile of each of those commodities. The purpose here is not to criticize Japan for her trade policies—indeed, she has made a number of steps toward the liberalization of agricultural trade over the past decade. Our purpose, rather, is to discuss an alternative policy which could generate lower food prices and food security, and also open up the Japanese market to more foreign agricultural products.

I. High Cost of Eating in Japan

Eating in Japan is an expensive activity. A recent (March 1979) survey of retail prices revealed that shoppers in Tokyo were paying 504 percent more for potatoes, 112 percent more for broilers, 84 percent more for onions, 75 percent more for apples, and 62 percent more even for rice than were their counterparts in Washington, D.C. In this survey of 21 food items in 16 major capitals, Tokyo prices exceeded the median in all cases, and were the highest for just over half of the items surveyed. Since the demand for food tends to be price inelastic, it is not surprising that Japanese consumers spend a relatively large share of their budgets on food—39 percent in 1975. This share is exceeded by only 3 of the other 22 industrial countries shown in Chart 1. Two of these countries, Spain and Portugal, have per capita incomes considerably below Japan's, and given Engels' Law (the traditionally negative relationship between per capita income and the share of income spent on food), one would expect to find the Spanish and Portuguese devoting a larger portion of their budgets to food than do the Japanese.

![Chart 1: Per Capita Income and Food Share of Budget for O.E.C.D. Countries, 1975](chart)

Source: O.E.C.D., Main Economic Indicators, January 1979

*Economist, Federal Reserve Bank of San Francisco. Dennis Barton provided research assistance for this article.
Of countries at or above Japan's income level, only the Netherlands spends a larger share of income on food. New Zealand, which has approximately the same per capita income as Japan (but which is also a land-rich and agriculturally abundant country) spends less than half the proportion of its income on food as does Japan. Moreover, the Japanese seem to get less for their money by most conventional measures. Japan consumes significantly fewer calories per capita than does any other OECD country (Chart 2), and fewer grams of protein per capita than any other OECD country save Sweden, where protein consumption is negligibly lower (Chart 3).

Explaining High Food Costs

Why is food so expensive in Japan? There are several relatively minor reasons. First, Japan simply does not have the arable land to feed its population, so a significant amount of its food supply must be imported. Arable land in Japan is estimated at .05 hectares per person. The United States has 19 times as much, Canada 40 times as much, and even crowded India has 6 times that amount. During the 1972-74 period, just over half of Japan's grain consumption (by weight) was imported. By comparison, the European Community imported 11 percent, China 2 percent, India 3 percent, the Soviet Union 5 percent, and the Philippines 12 percent, of their respective consumption of grains. Because such a large share of the food supply must be imported, Japanese food must cost more than that of other countries by the amount of the additional transport and handling costs involved. However, these transport costs are relatively minor—yet Japanese farm prices range from 35 percent to 286 percent higher than the prices of foreign-produced commodities shipped to Japanese ports (Table 1).

Another possible explanation for high food prices is Japan's highly labor-intensive distribution sector. Whether the Japanese system of distribution is rational or not is a moot point. There is no doubt, however, that Japan (for whatever reason) has taken much less advantage of economies of scale than have other countries. For example, Japan has only half as many people as the United States, but it has over twice as many grocery outlets. Add to this multitude of retail outlets a multi-layered and small-scale wholesale sector, and the inevitable result is a larger wedge between farm prices and final retail prices than is the case in the United States. Yet despite the price impact of this type of distribution sector, the problem actually begins back at the basic-commodity level, as Table 1 suggests.
Inefficiencies in Agriculture

Japan's high food prices are largely due to a combination of an inefficient agricultural structure and a protective system of elaborate tariffs and import quotas. Both domestic and foreign observers have commented on this problem. Patrick and Rosovsky of the United States called agriculture "the largest and most conspicuous sector of economic inefficiency in Japan." Bieda of Australia noted that "this problem of Japanese agriculture being unable to evolve farms of sufficient size to make them economic is the most intractable of all Japanese economic problems." Former Prime Minister Tanaka argued that Japanese agriculture would have to undergo full-scale reorganization and large-scale mechanization.

The average Japanese farm covers slightly less than 3 acres—roughly one-hundredth the size of the average American farm—and is often scattered in non-contiguous parcels. Thus, while the Japanese rice farmer uses a combination of small machinery and his own labor for most rice growing tasks, the American rice farmer seeds, fertilizes and sprays for pests by airplane.

The Japanese farmer has performed extremely well within this farm-size constraint: per acre rice yields in Japan are among the highest in the world and are several times the Asian average. However, this tiny farm size presents a formidable barrier to achieving significant economies of scale. A major factor limiting farm size is the Occupation-inspired land reforms, which severely restrict the amount of land which can be owned or leased. Some efforts have been made to liberalize these laws and allow larger-scale agriculture through cooperatives, but as Bieda notes, these reforms have failed to induce any perceptible change in average farm size.

While these land-reform laws served their purpose in displacing the rural aristocracy and providing employment and food to the repatriated and industrially displaced Japanese following World War II, they have now created serious fetters on efficiency in agriculture. Before Japanese agriculture can reorganize itself along more efficient lines, further changes may be necessary in the legal framework governing the ownership and the leasing of land.

Even with reorganization, however, arable land will remain scarce and valuable because of the country's mountainous terrain. Land has always been the scarce factor in Japanese agriculture, so that capital and labor have been substituted for land to a much greater extent than in the United States. Thus Japan in 1970 used more mechanical power (measured in horsepower) per acre than any other country.

While Japanese agriculture has always been more labor-intensive than Western agriculture, rapidly rising industrial wages—generated by the 10-percent annual economic growth rate of the past two decades—have tended both to attract farm labor to the cities and to raise the opportunity cost of the labor remaining on family farms.

The Japanese have typically adapted to this situation by sending the most able-bodied members of farm families into the cities each day. As a result, the farms are often left in the hands of older, physically less productive and perhaps entrepreneurially more conservative family members. Farm family income benefits, of course, since the urban worker often remains a part of the farm household. Partly for this reason, farm family income is significantly higher than urban family income, and has risen more rapidly than urban income since 1958, as shown by Chart 4. (The relative improvement in farm income is also attributable to the shift toward higher subsidies for rice growers which began in

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**Table 1**

<table>
<thead>
<tr>
<th>Product</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>3.86</td>
</tr>
<tr>
<td>Wheat</td>
<td>3.73*</td>
</tr>
<tr>
<td>Barley (1975)</td>
<td>3.15</td>
</tr>
<tr>
<td>Soybeans</td>
<td>2.76</td>
</tr>
<tr>
<td>Sugar (1975)</td>
<td>1.35*</td>
</tr>
<tr>
<td>Milk (1975)</td>
<td>1.69**</td>
</tr>
<tr>
<td>Pork (1975)</td>
<td>1.59**</td>
</tr>
</tbody>
</table>

Japanese price is the average price paid to farmers, or if denoted *, it is the government purchase price.

World price is the average export unit price (plus 6-percent estimated ocean-transport cost), or if denoted **, it is the U.S. farm price.

However, the flight of the prime-age, male laborer from farm activity has also contributed to the uncompetitiveness of Japanese agriculture on the world market.

Protective Agricultural Shield

Japan's relatively uncompetitive agricultural sector is able to survive because it is insulated from the rest of the world by a system of tariffs and import quotas. While a number of tariffs have been reduced or removed over the past decade, Japanese agriculture is still quite heavily protected. Grains used for direct human consumption (rice and wheat) generally are protected—while those used for animal feeding (corn, sorghum, and oilseeds) generally are imported free of duty or quota, to help provide low-price feed for the livestock and poultry industries. While Japanese farmers do not grow any corn, they do grow barley (which is the only protected feed grain) and soybeans (for which they receive a subsidy).

Not all of the cost of protection is passed directly to consumers. For example, the government sells rice to wholesalers for less than it pays farmers. It offsets these losses partly by buying foreign wheat and other grains at low world prices and selling them domestically at higher prices. To the extent that the rice subsidy is not covered by "profits" on other government grain transactions, it is paid from general revenues and thus becomes a burden on taxpayers. To the extent that these expenditures contribute to a general budget deficit, financed by money creation, the burden takes the form of a higher rate of inflation.

Of all the types of agricultural protection, the rice subsidy is the most costly. In 1978, the rice subsidy alone (i.e., the difference between the government buying price and the 14-percent-lower government selling price) amounted to about $1.9 billion, and was the largest single item in the budget of the Ministry of Agriculture and Forestry. While this government selling price is lower than the farm price, it is still several times the price at which foreign rice could be delivered to Japan's door. Thus, in 1978, wholesalers paid the Japanese government $6.4 billion more for rice than they would have paid on the world market. The total cost of rice protection in 1978 thus reached $8.3 billion, or about $72 for each of the 115 million men, women and children in the country. 13

There are, of course, many other agricultural items which involve tariffs and/or import quotas. For 1972, Sanderson calculated that the cost of Japan's food supply, at the producer level, was 53 percent (or $5.5 billion) more than it would have been in the absence of import restrictions. 14 At the retail level, this might translate into a price premium of 20 to 25 percent above the alternative under free trade.15

II. Causes of Protective Agricultural Policy

Why has Japanese agricultural policy been so protective? Perhaps the best single answer is that such a policy is in the interest of farmers, who still have the political power to keep this protective apparatus in place. The fact that farmers account for only about 10 percent of the labor force is politically deceptive. When the current electoral districts were drawn in 1946–47, some 57 percent of the labor force was agricultural. Those electoral boundaries remain intact, so that the remaining rural population has retained its early postwar power despite the tremendous shift
of population from the country to the city.16 Rural areas and small towns thus control about 60 percent of the Diet, and a rural vote can have up to five times the weight of an urban vote. Also, since rice occupies more than half the cultivated acreage and accounts for more than a third of gross farm income, the relatively expensive rice program tends to have strong support in rural areas. So until there is some change either in electoral boundaries or in farmer attitudes toward protection, Japanese agriculture is likely to remain insulated from the world market.

The agricultural-protection policy also is popular because it acts as a welfare program. One could argue that the rapidly growing Japanese industrial machine has attracted the most productive workers off the farms, leaving behind the elderly and those less able to cope with an urban, industrial environment. A free-trade policy would seriously undercut the incomes of those left behind in rural areas. But a protective policy generates some urban support because, as Komiyaa argues, urban Japanese view such a policy as a way of supporting the incomes of the elderly and poor17—many of whom are their own relatives.

A third reason for agricultural protection—one which has become increasingly important since the 1973 food crisis—is Japan's desire to reduce her extreme dependence on the outside world for food. Japan is normally the world's largest importer of grains, having passed Britain in 1964.18 Moreover, Japan is one of the world's least self-sufficient countries in food supplies. Ogura found that only 13 out of 103 countries during the 1970-72 period depended upon foreign sources for more than 25 percent of their food calories. Only 3 of the 13 countries were industrialized, and one of these was Japan. Of the 18 largest countries, Japan was the only one which imported more than half of its grain—52.1 percent in 1972-74. (Indeed, most of these large countries were more than 90 percent self-sufficient in grain.) Moreover, Japan's self-sufficiency in food has declined rather sharply since 1960. Over the following decade, her self-sufficiency ratio declined 20 percent when measured in value, 30 percent when measured in original calories, and 52 percent when measured by weight (of grains only).19

For a while, there was surprisingly little concern over this increasing dependency upon foreign food supplies. According to Donnelly, neither the annual white papers on agriculture nor the annual report to the Diet by the Ministry of Agriculture and Forestry paid noticeable attention to food security. "As late as 1972, government planners and private research organizations were calmly projecting a continuing and rapid decline in the agricultural economy as a consequence of official programs of rationalization and liberalization."20

Then came three events which renewed Japan's concern over its degree of food dependence. First was the Soviet crop shortfall and consequent heavy purchases on the world market in 1972 and 1973. Grain became hard to find, and so wheat prices more than tripled and corn prices more than doubled during that brief period. Second was the temporary but very upsetting interruption in the flow of American soybeans to Japan. Japan imports about 97 percent of its soybean requirements, almost entirely from the U.S. But in 1973, in response to rapidly rising beef prices and "panic" Japanese buying of soybeans, the U.S. temporarily embargoed soybean exports in order to assure domestic supplies of feed. Even though the embargo lasted only a few months and barely affected the annual total of soybean shipments, the point had been made: Japan's food imports could be interrupted with short notice, depending on the internal politics of a major food-exporting country. The third event was the 1973-74 oil shock; while it did not involve food, the oil embargo and quadrupling of oil prices contributed to a general feeling of vulnerability on the part of the Japanese.

While none of these three events actually caused significant food shortages in Japan, the potential for such a scenario became clear. And unlike the United States, Japan has several generations of people who experienced real and prolonged hunger during the severe food shortages following World War II.

The policy response to this increased feeling of vulnerability was an attempt to increase domestic food production and thus decrease import dependence.21 In April 1975, the National Agricultural Council recommended a series of steps to reverse the trend in Japan's food self-sufficiency ratio. These included: the develop-
ment of 0.7 million hectares of new land, the addition of 1.3 million hectares through double cropping of paddy fields, increased price supports to encourage these two developments, diversification of sources of agricultural imports, and a national stockpiling policy. The following month, the Ministry of Agriculture and Forestry published demand and supply projections to 1985 based upon this policy shift. The Ministry proposed to reverse the previous decline in the food self-sufficiency ratio (measured in value terms), with an increase in the ratio from 73 to 75 percent over the 1972-85 period as a result of increased subsidies to farmers. Actually, that improvement may be difficult to achieve because, as Sanderson argues, the Ministry underestimated the growth in meat demand and overestimated the ability of Japanese farmers to double forage production over this period.

### III. Food Security Via Greater Production

Assume for a moment that Japan could achieve 75-percent self-sufficiency (in value terms) in food by 1985. Would this actually guarantee Japan a secure supply of food? To answer that question, we must first determine what it is that the Japanese are insuring against. The worst scenario would be one in which all foreign sources of food were cut off. This could occur because the rest of the world was either unable or unwilling to export. It is not impossible that a combination of weather and pests could seriously cut world harvests for several years running, causing the export market to vanish. In such a case, Japan’s traditional suppliers would be simply unable to supply her needs, despite the best of intentions.

Of course, even the 1973-74 world food crisis did not approach this type of situation, but it did cause many analysts to believe that a long period of abundant food supplies had finally given way to a new era of worldwide food shortages. Japan thus had to take seriously the possibility that world agricultural production had undergone a fundamental change. Once the dust settled, however, the 1973-74 experience was generally attributed to transient (not permanent) factors—basically a Soviet crop shortfall combined with relatively thin world grain stocks. Indeed, grain supplies later returned to normal levels and prices fell by as much as two-thirds from their 1973 peaks. Moreover, some analysts argue that the medium-term outlook for world food supplies is favorable for those who have the currency to purchase supplies on the world market.

Yet even if the rest of the world is able to supply food to Japan, can Japan depend upon its continued willingness to do so? The prospects seem favorable in this regard. The fear that grain producers will form an OPEC-like cartel to restrict production appears unfounded, since grain production involves both a large number of countries and millions of producers within these countries—hardly the environment necessary to make a cartel work. Furthermore, the potential for grain production exists in almost all countries.

Export embargoes have been used in the past for political reasons. The United States stopped trading with Cuba in 1959 because the new Cuban government expropriated U.S. oil refineries. Again, the United Nations declared a trade embargo on Rhodesia in 1966, following the latter’s declaration of independence from Britain and establishment of a white minority government. (Both of these embargoes are still in effect, though embargoes, like cartels, are difficult to enforce.) However, since both Cuba and Rhodesia are agricultural countries, they have not incurred serious food shortages because of the embargoes. In fact, the international community generally withholds food supplies only in cases of outright military hostilities. So Japan, short of war, should probably not worry about the willingness of the rest of the world to supply grain as long as that grain is readily available.

For that matter, even a high level of domestic agricultural production might not assure a stable supply of food in the case of outright military hostilities. Japanese agriculture is energy dependent, and an interruption of oil supplies would hamper field work and slow the production of fertilizers and pesticides. Sanderson calculates that a sharp decline in fertilizer supplies alone could reduce grain yields by one quarter.
(for wheat and barley) to one third (for rice). Furthermore, an interruption in energy supplies would probably also reduce the Japanese fish catch—a serious event since the Japanese eat about twice as much fish as they do meat. Sanderson estimates that such an emergency could reduce Japan’s food production to about 1,650 calories (grain equivalent) per person per day—considerably less than minimum biological requirements. In short, Japan simply could not weather a total trade embargo, even if she increased the self-sufficiency ratio to 75 percent.

We may conclude that 1) the medium-term outlook for world food production is relatively good, 2) the rest of the world would be willing to supply food to Japan as long as crop surpluses are available, and 3) in the event of war, without accessible food-producing allies, Japan would not be able to produce enough food to feed its population even at a 75-percent self-sufficiency ratio.

Cost of Protection
What is the cost to Japan of this current approach to food security? Answers differ widely—partly because of differences in statistical methodology—ranging from $0.4 billion to $6.0 billion annually, or in per capita terms, from $4 to $54 annually.

Japanese agricultural policy imposes costs on both consumers and taxpayers, and imparts benefits to producers. Consumers pay more for food, and consume less food, than they would under a free-trade scenario. Taxpayers pay higher taxes, which are then used to subsidize farmers. While Japan’s protective policy is primarily designed to redistribute income from consumers and taxpayers to farmers, there is also a net social loss involved. This loss has two components. First, there is the deadweight loss in production due to the transfer of resources from other, more productive, pursuits to the less productive activities of the protected agricultural sector. Second, there is the deadweight loss in consumption due to the impact of artificially high food prices on consumers, with households purchasing less food as well as more non-food items which give them less satisfaction per yen. (See Appendix for a more formal discussion of the costs of protection.)

Of the three studies listed in Table 2, only the Bale and Greenshields study attempts to measure the net social loss due to Japan’s agricultural policy. The other two studies, although methodologically simpler, sacrifice a certain amount of theoretical neatness. They simply calculate the difference between domestic agricultural production valued at official producer prices and that same production valued at the world prices which would prevail under free trade. While this simple calculation captures the social deadweight loss in production, it also includes the transfer of income from consumers and taxpayers to farmers. Furthermore, it ignores the deadweight loss in consumption resulting from the fact that at lower world market prices, consumers would purchase more food, increasing their overall satisfaction. Therefore, this hybrid cost measure of Payne/Severs and Sanderson overstates the social cost by the amount of the consumer and taxpayer transfer to farmers, and understates it by the amount of the deadweight loss in consumption. While, in theory, this cost measure could either fall short of or exceed the methodologically current calculation of social cost, the estimates generated by the three studies suggest that the hybrid-cost measure is probably an overstatement.

According to the Bale-Greenshields estimates, the social cost of agricultural protection in the

| Table 2 |
|---|---|---|---|
| Estimates of the Cost of Agricultural Production in Japan |
| Year of Loss | Cost ($Billions) | Commodities | Nature of Cost |
| Payne/Severs | 1969 | $2.1 | Grains only | • Social loss in production plus transfer from consumers and taxpayers to farmers |
| Sanderson | 1972 | 5.5 | All Agriculture | |
| Sanderson | 1976 | 7.3 | Rice only | |
| Bale/Greenshields | 1975-76 | 0.4 | All Agriculture | • Net social loss in production and consumption |
| Bale/Greenshields | 1985 | 7.9 | All Agriculture | |
mid-1970's was not very burdensome. (Still, according to Sanderson, a substantial amount of income was transferred from consumers and taxpayers to farmers—about $7.3 billion, or $65 per capita, for the rice program alone.) But when Bajendra and Greenshields examine the increased level of protection currently planned for 1985, they see a substantial rise in social cost. The incremental annual cost of moving the self-sufficiency ratio from 73 to 75 percent turns out to be more than $3 billion for each percentage point, or a rather negligible increase in food security at a rather substantial cost. In 1985 this cost would average $63 per capita (in 1975–76 dollars), if the current 1.2-percent rate of population growth continues. The actual burden might be better expressed on a per worker basis, since it is typically the income earner who pays the taxes and buys the groceries. If roughly half of the Japanese population is employed in 1985, then the per-worker social cost of agricultural protection would be about $125. If we include the income transferred from taxpayers and consumers to farmers, the burden would increase significantly.

IV. A Stockpile Approach to Food Security

A high level of domestic agricultural production is not the only way to assure a secure supply of food. An obvious alternative is to stockpile a sufficient amount of food and feed grains to insure against world-market shortages. This approach has not received much serious discussion, at least not in the English-language literature. Komiya notes that "a systematic stockpiling program may cost much less than agricultural protection to prepare for possible emergencies," but he does not provide any calculations to support this argument.39

An OECD report notes that the Japanese government "has been envisaging increasing its stocks of wheat and barley and also encouraging private stocks of feed grains and soybeans."30 However, at this writing, none of these commodity stockpiles appear to exceed one or two month's consumption.31 Sanderson, more explicitly, suggests providing up to one year's stockpile of imported grains and soybeans. He does not calculate the cost of such a program, but suggests that it might be quite high.32

In order to assess the costs and benefits of a stockpile policy, let us assume that the Japanese government decides 1) to gradually remove all barriers to agricultural imports, and 2) to gradually develop a one-year rotating stockpile of essential food and feed grains and soybeans. Such an approach should reduce consumer food costs, since (as will be shown) the cost of this policy would be significantly less than that of the current approach of supporting domestic production. This approach also could partially insulate the domestic market from large swings in world grain prices. This would involve storing more when prices were low and less when prices were high. Since a flexible approach of this type would require a larger capacity per average ton of grain stored, it would also entail certain costs.

Table 3

<table>
<thead>
<tr>
<th>Changes in World Production of Selected Crops (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1970/71</td>
</tr>
<tr>
<td>71/72</td>
</tr>
<tr>
<td>72/73</td>
</tr>
<tr>
<td>73/74</td>
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<tr>
<td>74/75</td>
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<tr>
<td>75/76</td>
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<tr>
<td>76/77</td>
</tr>
<tr>
<td>77/78</td>
</tr>
<tr>
<td>78/79</td>
</tr>
</tbody>
</table>

Would this policy really provide food security? How much would it cost? What effect would such a policy have on Japanese farmers—and on the international grain market? We consider each of these questions in turn.

A one-year stockpile of soybeans and major grains (i.e., wheat, rice, corn and barley) would surely guard against any one-year shortfall in all crops or multi-year shortfalls of a single crop. Over the past decade, the world market has not once experienced a simultaneous downturn in the production of all five crops, and only once experienced two consecutive declines in any single crop (see Table 3). Even this latter case—the wheat decline of 1974-75—was cushioned by more than offsetting increases both before and after the shortfall.

While a one-year stockpile of grains and soybeans would insure against temporary production shortfalls, there are two possible scenarios in which it would not do the job. The first would be a prolonged war without accessible food-producing allies. (Allies across an ocean might not be of much use.) The second would be a period of prolonged crop shortages. We can say nothing about the first scenario, except that policymakers must assess the probability of such an occurrence and include this in their decision-making. On the second point, this century has seen its share of starvation, but this has typically been associated with wars or localized crop failures accompanied by a lack of income to purchase food on the world market. There has not been any prolonged period of insufficient global production. While we cannot simply extrapolate the past, several post-1973-crisis studies suggest that food supplies will be adequate over the medium-term future. Thus, as long as Japan has the income to purchase food on the world market, the food is likely to be there.

The storage approach to food security cannot be judged against some ideal standard, but rather against the current approach of import quotas and subsidized production. As explained above, even the current approach would not fare very well in the case of a prolonged war without food- or energy-producing allies. Furthermore, any worldwide pest, disease, or weather change which reduced yields in the rest of the world, could just as easily affect Japanese production.

And if prolonged shortages arose, for whatever reason, Japan could still allocate some resources again to domestic grain production. Skills would be rusty, mistakes would be made, and yields would remain low, but the country could shift back to some level of grain production in case of emergency. Thus, while there is no final answer, the storage approach probably could provide as much security as the current approach.

Cost, then, should be the deciding factor. Let us calculate the annual cost of a hypothetical storage program initiated in 1976–77 (Table 4). There are two major cost components involved—the cost of purchasing and the cost of storing the grain. To convert the initial lump-sum purchase cost of $5.8 billion to an annual cost, we assume that the Japanese floated a perpetual bond for that amount, and calculate the annual interest payments as the annualized cost of purchase. The government-bond rate in 1976–77 was two percentage points higher than the early-1979 rate, but to be conservative we use that high rate. (This is appropriate, since government bond sales involve modest government coercion and the stated rate may be a bit higher than a free market would yield.) On this basis, the annual cost of the initial purchase amounts to $465 million. Total storage costs, which are also estimated on the high side, approximate the same figure. So annual storage and amortized purchase costs would come to about $0.9 billion, or slightly less than $8 per capita, with rice accounting for about half of the total program cost.

One disadvantage of the rotating stockpile approach would be a decline in the quality of rice purchased by the average consumer. At present, Japanese stores typically sell rice when it is less than a year old, though they sometimes mix one- to two-year old rice with the new rice following years of poor harvests. Americans generally do not notice taste differences in rice stored as long as three or more years, but the Japanese are much more sensitive to taste changes which result from age, and have a definite preference for new over old rice. The quality decline would be slowed if the rice were stored in rough (unhusked) form, but this tends to raise storage costs, as our calculations indicate.

The $0.9-billion annual stockpile cost would be roughly double the Bale/Greenshields esti-
mate of the net social loss attributable to agricultural protection in 1976-77. Consequently, if the stockpile and protectionist approaches to food security provided equivalent outputs, Japan clearly made the correct least-cost choice for the mid-1970's. But this would not necessarily be the correct strategy for 1985. Bale and Greenshields estimate that the extra two percentage points of food self-sufficiency planned by the Japanese government will involve a social cost of $7.9 billion (in 1975-76 dollars). In contrast, the stockpile by 1985 might cost just over $1 billion (in 1976-77 dollars), as grain storage needs rise with population growth and with an expected increase in per capita meat and poultry consumption. A storage approach could thus be some $6-7 billion cheaper than the cost of continuing the current policy.

**International Effects**

If a free-trade program (with stockpiling) were adopted, what effect would it have on international grain markets? Since Japan already imports 89 percent of her barley, 96 percent of her wheat and soybeans, and virtually 100 percent of her corn and sorghum, the impact on world markets of reduced domestic production of these commodities would be almost imperceptible. If

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Consumption¹ (Millions of tons)</th>
<th>Purchase Price² (Dollars)</th>
<th>Total Purchase Cost ($ Millions)</th>
<th>Storage Cost per Ton³ (Dollars)</th>
<th>Total Storage Cost ($ Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>14.6</td>
<td>180.19</td>
<td>$2,630.7</td>
<td>18.00</td>
<td>$216.0</td>
</tr>
<tr>
<td>Wheat</td>
<td>5.6</td>
<td>113.85</td>
<td>637.6</td>
<td>9.19</td>
<td>51.5</td>
</tr>
<tr>
<td>Corn/Sorghum</td>
<td>12.0</td>
<td>99.34</td>
<td>1,192.1</td>
<td>9.19</td>
<td>110.3</td>
</tr>
<tr>
<td>Barley</td>
<td>2.2</td>
<td>142.53</td>
<td>313.6</td>
<td>9.84</td>
<td>21.6</td>
</tr>
<tr>
<td>Soybeans</td>
<td>3.5</td>
<td>294.02</td>
<td>1,029.1</td>
<td>11.47</td>
<td>40.1</td>
</tr>
</tbody>
</table>

*5,803.1  × 0.0802³*$

$465.4  Amortization of grain purchase

$439.5  Total storage cost

$904.9  Total program costs

1 Barley, wheat and soybeans from Bale and Greenshields op. cit. p. 60. Corn/sorghum estimated from data in Study of Trends in World Supply and Demand of Major Agricultural Commodity, Paris: OCED, 1976, p. 163. Rice from USDA “Foreign Agricultural Circular: Grains,” March 1978, p. 52. The 14.6 million tons of rice consumption is in rough form and is equivalent to 10.6 million tons milled, since there is a 27.4-percent wastage in Japanese rice milling.

2 Prices are U.S. wholesale prices plus 6 percent for transportation (and insurance) to Japan. Rice price is U.S. farm price plus 6 percent for domestic handling, plus another 6 percent for transportation to Japan. Prices are from Commodity Research Bureau, Inc., Commodity Yearbook 1978, New York, 1978. For 6 percent shipping factor, see Sanderson 1978, op. cit., p. 19. Cheaper sources of these grains may be available elsewhere; for example, Bangkok prices for milled rice tend to be 25 percent below U.S. prices. We also assume here that price elasticity of demand is 1.0, so that the stock purchase would bid prices up by the following percentages: rice, 4.1 percent; wheat, 1.5 percent; corn, 3.5 percent; barley, 1.3 percent; soybeans, 4.7 percent.

3 Storage costs for rice from Shelby Holden and Earl Sterns, “Costs of Commercial Rice Drying and Storage Facilities in Mississippi, 1978,” Agricultural and Forestry Experiment Station, Mississippi State University, 1979, Mimeo. Storage costs for other grains based upon USDA payment of $0.25 a bushel to cover farmer storage costs in various agricultural programs. The rice-storage cost is estimated for 1978, at about 11 percent above the January 1977 figure. Also, storage costs of other grains range from 23 to 53 percent higher than those used in a Brookings study of grain reserves. See Philip Trezise, Rebuilding Grain Reserves: Toward an International System, Washington, D.C. 1976. This upward bias in our storage estimate should much more than offset any higher land costs in Japan, given that land accounts for a very small portion of creating a storage facility—0.3 percent in the case of the U.S. rice facility.

4 The interest rate used here is the average Japanese government-bond rate for 1976-77. This rate has since fallen to an average 6.09 percent in 1978.
the program had been implemented in 1976, additional Japanese requirements for wheat, soybeans and barley would have been no more than 1.0–1.5 percent of the world export markets for those commodities.34 The rice market would be dramatically different, however—at least in the extreme case where all Japanese producers drop out of business because of the effects of a free-trade policy. In that case, Japan would probably not have been able to purchase sufficient rice in 1976 to fulfill her domestic requirements; and an attempt to do so would have driven prices sharply upward. After all, Japan’s 12-million metric ton consumption was almost twice the size of the world export market in that year. On the other hand, only about 2 to 4 percent of world rice production enters the export market in any given year, reflecting the fact that rice (unlike wheat and corn) is generally consumed where it is produced. Therefore, rice production outside Japan would have had to expand only about 3 percent in 1976–77 to offset the cessation of Japanese rice production.

The problem may be complicated by the fact that the Japanese have a strong preference for short-grained rice—as opposed to the long-or medium-grain rice which is produced in such major growing areas as China, Thailand and the Philippines. It is not difficult to shift production from long-to short-grain rice, but major adjustments would have to be made in production and marketing patterns, commensurate with the vast size of Japan’s expected demand. In any event, a recent Trilateral Commission report argues that with certain changes in irrigation, Asian rice production could be doubled in 15 years,35 so that a sharp rise in Japanese demand could be handled by the world market.

What role would the United States, frequently the world’s leading rice exporter, play in this picture? California, which is now the only significant producer of short-grain rice in this country, probably cannot bring additional land into rice production due to water constraints. By shifting its medium-grain land into short grain, it could produce another 700,000 metric tons, but that would be less than 5 percent of Japan’s needs. A significant increase in short-grain prices would be needed to bid land in Arkansas and other southeastern states away from long-grain production, but if that were done, a potential 2 million acres could be diverted—enough to produce 4 million metric tons of short-grain rice, or just over one-fourth of total Japanese consumption.36

A listing of the world’s leading exporters indicates the sources of potential Japanese supply (Table 5). Actual trade patterns, of course, would depend on such factors as production and transportation costs, alternative land uses, political developments, and so on. At any rate, all exporters except Italy and Egypt today send significant shipments to Indonesia, one of Japan’s neighbors. All five of those exporters (the U.S., Thailand, Pakistan, Burma, and Australia) thus could become major suppliers to Japan, provided that they offered the desired short-grain variety. Moreover, Japan’s experience with the 1973 world food crunch and U.S. soybean embargo has increased her desire to diversify sources of food imports. Consequently, if Japan should decide to cease or sharply reduce rice production, she probably would spread her import business among a number of producers, some of which (such as Taiwan and Korea) do not even appear in our listing.

### Table 5
Major Rice Exports in 1976

<table>
<thead>
<tr>
<th>Exporter</th>
<th>Exports (Millions of tons)</th>
<th>Share of Market (by value)</th>
<th>Major Customers’</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>2,107.0</td>
<td>31</td>
<td>Indonesia (12%), Iran (11%)</td>
</tr>
<tr>
<td>Thailand</td>
<td>1,977.8</td>
<td>21</td>
<td>Indonesia (27%)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>NA</td>
<td>12</td>
<td>Sri Lanka, Indonesia, Saudi Arabia</td>
</tr>
<tr>
<td>Burma</td>
<td>NA</td>
<td>7</td>
<td>Indonesia, Sri Lanka</td>
</tr>
<tr>
<td>Italy</td>
<td>398.5</td>
<td>6</td>
<td>France (30%)</td>
</tr>
<tr>
<td>Egypt</td>
<td>211.0</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Australia</td>
<td>310.8</td>
<td>4</td>
<td>Indonesia (26%), Hong Kong (13%)</td>
</tr>
</tbody>
</table>

1 Customers purchasing more than 10 percent of that exporter’s sales

Effect on Farm and Food Sectors

As noted earlier, agricultural protection in Japan is viewed as part of the nation’s welfare program—an important consideration, since the Japanese have no well-developed social-security system. The removal of subsidies, tariffs and quotas would thus have a tremendously depressing effect on farm income. Farm land prices would also be depressed, so farmers who had been looking toward land appreciation as a major form of retirement protection would find these capital losses eating into their planned future consumption. On the other had, income losses would be cushioned by the availability of non-farm sources of income. Also, land price declines—at least near urban areas—would be cushioned by the potential utilization of farm land for non-agricultural purposes.

Still, a change to a free-trade policy would involve serious social dislocations. Many of the farmers who would be forced out of business are probably too old and unskilled to enter the non-farm labor force. About a third of the agricultural labor force in 1972 consisted of people over 50, and few of these people would be able to find equally attractive occupations outside of agriculture. So if the policy change were ever made, it would have to be done slowly and with appropriate compensation to those made worse off by the change.

The face of the Japanese agricultural landscape would change considerably with such a move, in view of the fact that almost half of Japan’s farm land has been devoted to rice in recent years. If forced to compete on the world market, only the most efficient rice growers on the best land would remain in business. With the drastic cutbacks in rice and other grain production, much land would shift to forestry and non-agricultural uses. Other land would shift into agricultural pursuits for which the Japanese have or could develop a comparative advantage. In Sanderson’s view, these would include production of livestock, fruits, vegetables, and nuts.

If Japan were to reduce her primary-production role, she might be wise to expand her role as an important food processor. The processed component of the world’s food supply is growing, and will continue to grow as rising world incomes and growing female labor-force participation cause households to substitute away from kitchen labor. Japan may have a comparative advantage here, in view of the inroads she has already made in the soy-sauce and instant-noodle markets. Other non-perishable processed foods which can be conveniently shipped include breakfast cereals and stacked potato chips. Also, a whole range of new soybean derivatives is not out of the question.

If Japan developed as an important supplier of processed foods, other countries would be more reluctant to reduce her supply of primary agricultural commodities. The more Japan becomes a supplier as well as a demander of food stuffs, the more secure will be her own domestic food supply.

Conclusion

This paper has called attention to the high cost of food in Japan, and attributed this mostly to the current agricultural policy, which subsidizes and protects inefficient grain production. That policy primarily reflects the rurally-biased distribution of political power in the country, but it also reflects urban consumers’ fears about the security of Japan’s food supply.

We considered an alternative approach to food security, specifically the maintenance of a one-year stockpile of all major grains. While the cost of stockpiling would have exceeded the net social cost of the current program in the mid-1970’s, by the mid-1980’s this cost relationship would likely be reversed. By 1985, current policies could cost just under $8 billion, while the stockpile approach could run a little over $1 billion. A switch to the stockpile approach could have a dramatic impact on the domestic farm economy, with falling prices, production, land values and incomes. Thus if such a policy shift took place, it would have to be implemented slowly. However, Japan could evolve into a major food processor, importing raw foods and exporting processed foods for which there is a rapidly growing world demand. By becoming a supplier as well as a demander of foodstuffs, Japan could become an important part of the world food-supply system—one which could not be easily cut off in times of food shortages.

A diagrammatic illustration of Japanese agricultural policy is shown in Figure 1. Under free trade, the world price of food, $P_w$, would prevail in the Japanese market, domestic producers would supply $Q_1$ of food (where their marginal cost equaled the world price), consumers would demand $Q_4$, and the quantity $Q_4 - Q_1$ would be imported. Japanese agricultural policy involves two deviations from this free-trade scenario. First, a tariff of $P_c - P_w$ is applied to imported goods, so the domestic-market price is raised from $P_w$ to $P_c$. (This is a simplification, since there are also quotas and government purchases of imports at world prices, with resale at higher domestic prices.) Corresponding to this tariff is a loss of consumer surplus represented by the areas $2 + 4 + 6 + 7$.

Second, in order to stimulate domestic production even more than is done by the tariff alone, the government buys farm products at the official producer price $P_p$ and resells them in the market at the lower price $P_c$, thus incurring the loss $1 + 3$. Note, however, that a portion of this agricultural subsidy, $1 + 3$, can be paid from the tariff revenues $6$. The actual cost to taxpayers is thus $1 + 3 - 6$. The total loss to consumers and taxpayers is $1 + 2 + 3 + 4 + 7$.

Not everyone loses in this retreat from free trade. Producer incomes have risen by $1 + 2 + 3 + 4 + 5$, though with increased production their costs have also risen by $3 + 4 + 5$. The net gain to producers is thus $1 + 2$—the first area consisting of a transfer from taxpayers and the second a transfer from consumers.

We now come to the bottom line. Since $1 + 2$ is simply shifted from consumers’ and taxpayers’ pockets to producers’ bank accounts, it cannot be considered a loss to society as a whole, unless we judge the gainers somehow less deserving than the losers. There is, however, an unambiguous social loss in the two triangles $3 + 4$ and $7$. The former, $3 + 4$, represents the deadweight loss in production due to the transfer of resources from more-productive to less-productive pursuits in the protected sector. The other triangle, $7$, is the deadweight loss in consumption; this represents the fact that consumers must now shift to other products which give them less satisfaction.

We turn to the estimates of these losses given in Table 2. Only the Bale and Greenshields' study estimates the two triangles representing the net social loss of protection, $3 + 4 + 7$. Their estimate of the 1975–76 loss is relatively small, amounting to less than $4$ per capita. The other two studies use a very simple technique which avoids the use of supply and demand elasticities. They simply calculate the difference between domestic agricultural production valued at official producer prices, and that same production valued at world prices. The simplicity of the calculation, however, sacrifices a certain amount of theoretical neatness. This technique actually estimates the deadweight loss in production plus the consumer and taxpayer transfer to producers, $1 + 2 + 3 + 4$—a sort of hybrid cost measure which overesti-
mates the net social cost by the amount $1 + 2 - 7$. It should thus not come as a surprise that this technique yields considerably higher cost esti-

mates than that of the Bale and Greenshields' study.

FOOTNOTES

2. Note that the three countries (Portugal, Spain and Luxemburg) which devote larger budget shares to food have beverages included in their food category, while Japan does not. If beverages were included in the Japanese case, the point for Japan would shift to the right in Chart 1, and the gap between Japan and the other three would be reduced.
3. Because both protein and calorie requirements are typically expressed as linear functions of body weight (e.g., the Recommended Daily Allowance of protein for adults is 0.8 grams per kilogram of body weight), the smaller average body weight of the Japanese suggests that their per capita requirements would be somewhat less than those of Westerners. Furthermore, we do not suggest that the Japanese diet is less healthy than that of other OECD countries; in fact, the opposite could be true. The point here is simply that the Japanese spend a larger share of their income on food and get less for it.
10. This discussion of land tenancy laws draws heavily from K. Bieda, op. cit., p. 243-254.
11. Ibid., p. 261.
13. In 1978, the Japanese government paid farmers $1,300 a ton for brown rice and in turn sold it to wholesalers for $1,120 a ton. This subsidy of $180 a ton on the 10.5 million tons consumed in 1978 amounts to a total of $1.9 billion. Since the wholesalers could have had U.S. rice delivered to their door at $507 a ton for $478 U.S. price plus 6 percent for shippers’ handling and insur-


domestic production

14. Fred H. Sanderson, Japan’s Food Prospects and Policies, Washington, D.C.: The Brookings Institution, 1978, p. 23. This simple exercise involves valuing Japanese agricultural output for 1972 at Japanese producer prices, then at world prices, and simply dividing the former by the latter. Thus, $16.0 billion/$10.5 billion = 1.52, or 1.53 before converting yen to dollars, and the cost of protection is 53 percent.
15. Producer prices are only a portion of the final consumer price of food. While the share of retail food prices attributable to farm prices is not readily available for Japan, the U.S. figure has been relatively stable at about 40 percent in recent years. If the Japanese figure is roughly the same, a 53-percent premium at the farm level would translate into a $(53 \times .4) = 21$-percent premium at the retail level.
18. This section draws heavily on Ogura, op. cit.
19. Self-sufficiency ratio = domestic consumption / domestic production, with the units measured alternatively in value, weight or original calories. In the latter case, meats are converted to their grain equivalent.
22. See, for example, Lester Brown and E.P. Eckholm, By Bread Alone, New York: Praeger, 1974.
25. Ibid., p. 61.
29. Komiya, op. cit., p. 185.
31. From a telephone conversation with Mr. Uno, Agricultural Attaché at the Embassy of Japan in Washington, D.C.
33. See Sanderson, 1975, op. cit., for a discussion of these studies.
34. This does not mean that Japan would not be an important participant in these markets. She is generally the largest single importer of wheat and corn (13 and 20 percent, respectively, in 1976) and the second largest importer of barley (18 percent in 1976).
35. This discussion is based upon U.S.D.A. “Rice Situation,” March 1979, and telephone conversation with USDA rice specialist, Tom Elam.
38. Some Japanese food processors have already begun to move offshore because of a combination of high raw-food costs and the yen appreciation. Because the domestic price of imported wheat is held far above the landed price of that wheat, instant noodle makers have been facing a severe profits squeeze. Three noodle makers have already opened plants in the United States. For a discussion, see Kenichi Tsunoya, “Food,” Industrial Review of Japan 1979, Tokyo, March 1979, p. 117.