Japanese Economic Performance [1]

Introduction

Japan is the only non-European country to have made the transition from being underdeveloped. She has had the fastest growth rate of any country in the past century, and in the past decade has outpaced all other countries and her own past achievements. Economic growth in the 85 years from 1879 to 1964 averaged 3.9 per cent a year compound, and in 1955-64 it was 10.4 per cent a year. Japanese productivity levels are now rapidly approaching those of Western Europe. Only a quarter of her labour force is in agriculture. Having recently overtaken Germany, Japan is now the fourth largest country in terms of total real output, behind the U.S., U.S.S.R. and China. She has assumed the obligations of a developed country in respect of trade, payments, and aid policies. She has joined O.E.C.D., observes the full convertibility obligations of I.M.F. and is treated as a developed country in G.A.T.T. and U.N.C.T.A.D.

More than in any other developed country except the U.S.S.R., Japanese growth has represented a deliberate effort of government policy. Japanese experience is therefore of particular relevance to developing countries but her recent performance raises important queries for Europe too. Should we revise our ideas about feasible growth rates? To what extent has she succeeded in achieving maximum growth? Is her experience transferable?

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TABLE 1

COMPARATIVE LONG-TERM GROWTH PERFORMANCE

		Annual average compound rates		
		GNP	Population	GNP per Head
Japan	1879-1964	3.9	1.2	2.7
U.S.A.	1871-1964	3.6	1.7	1.9
Canada	1870-1964	3.5	1.7	1.8
Argentina	1902-1964	3.5	2.5	1.0
Mexico	1895-1963	3.3	1.7	1.6
Australia	1870-1963	2.9	2.0	0.9
U.S.S.R.	1870-1963	2.9	1.0	1.9
Denmark	1870-1964	2.9	1.0	1.9
Germany	1871-1964	2.8	1.0	1.8
Sweden	1870-1964	2.8	0.7	2.1
Switzerland	1890-1964	2.6	0.9	1.7
Norway	1871-1964	2.6	0.8	1.8
Netherlands	1870-1964	2.4	1.3	1.1
Belgium	1870-1964	2.1	0.6	1.5
Italy	1870-1964	2.0	0.7	1.3
U.K.	1870-1964	1.9	0.7	1.2
France	1870-1964	1.7	0.2	1.5
India	1870-1964	1.4	0.7	0.7

Source: O.E.C.D. countries except Japan from A. MADDISON, *Economic Growth in the West*, updated with latest O.E.C.D. figures. Netherlands 1870-1913 derived from S. KUZNETS, *Postwar Economic Growth*, Harvard, 1964, pp. 139 and 141. U.K. 1900-1963 from *The British Economy, Key Statistics 1900-1964*, London and Cambridge Economic Service. Japan, 1879-1930, K. OHKAWA and H. ROSOVSKY, "Economic Fluctuations in Prewar Japan: A Preliminary Analysis of Cycles and Long Swings", *Hitotsubashi Journal of Economics*, October, 1962, 1930-55, National Income White Paper, 1963 edition, 1955-64, O.E.C.D. national accounts division. U.S.S.R. from A. MADDISON, "Soviet Economic Performance", *Banca Nazionale del Lavoro Quarterly Review*, March, 1965. Australia from N. G. BUTLIN, *Australian Domestic Product, Investment and Foreign Borrowing 1861-1938/39*, Cambridge, 1962, p. 33-4, and *Australian National Accounts, National Income and Expenditure*, Canberra. Argentina *El Desarrollo Economico de la Argentina*, E.C.L.A., 1959. Mexico, 1895-1939, ENRIQUE PÉREZ LOPEZ, "El Producto Nacional", chapter XVIII, in *Mexico: Cinquenta Años de Revolución*, Fondo de Cultura Económica, Mexico, 1960, p. 587, 1939-63, Ministry of Finance and Bank of Mexico. India, M. MUKHERJEE in *Asian Studies in Income and Wealth*, London, 1965 and Planning Commission, New Delhi. The figures are adjusted for changes in frontiers.

TABLE 2

STRUCTURE OF EMPLOYMENT 1872-1963

	1872	1913	1938	1955	1964
Primary	84.9	60.8	46.0	40.2	26.8
Secondary	4.9	18.8	24.7	24.4	31.9
Tertiary	10.2	20.4	29.3	35.4	41.3
Total	100.0	100.0	100.0	100.0	100.0

Source: K. OHKAWA, *The Growth Rate of the Japanese Economy since 1878*, Kinokuniya, Tokyo, 1957, pp. 245-6; Ohkawa quotes alternative figures for 1872 of 77.1, 3.8 and 19.1 per cent respectively, cf. K. OHKAWA, *Op. cit.*, p. 147. For 1955 and 1964 the figures are from *Manpower Statistics 1954-64*, O.E.C.D., Paris, 1965.

TABLE 3

GROWTH OF GNP, POPULATION, EMPLOYMENT AND PRODUCTIVITY 1879-1964

	Annual average compound growth rates				
	GNP	Population	Employment	Output per Head of Population	GNP per Man Employed
1879-1913	3.3	1.0	0.9	2.3	2.4
1913-38	4.4	1.3	0.7	3.1	3.7
1938-55	0.6	1.4	1.1	−0.8	−0.5
1955-64	10.4	0.9	1.4	9.3	8.8
1879-1964	3.9	1.2	1.0	2.7	2.9

Source: G.D.P. 1879-1930, K. OHKAWA and H. ROSOVSKY, "Economic Fluctuations in Prewar Japan: A Preliminary Analysis of Cycles and Long Swings", *Hitotsubashi Journal of Economics*, October, 1962; G.N.P. 1930-55, official national income white paper (in Japanese), 1963 edition, p. 178, with 1955 adjusted to a calendar year basis; G.N.P. 1955-64, O.E.C.D. national accounts division. Population 1879-1955 from *Historical Statistics of Japanese Economy*, Statistics Department, The Bank of Japan, 1962, pp. 1-2; 1955-64 U.N., *Monthly Bulletin of Statistics*. Employment 1879-1940 from K. OHKAWA, *The Growth Rate of the Japanese Economy Since 1878*, Kinokuniya, Tokyo, 1957, p. 145, 1940-55 *Historical Statistics*, *Op. cit.*, p. 41, 1955-64, O.E.C.D. *Manpower Statistics*. The last two columns are derived from the preceding.

I - The Stages of Growth

(a) *Japan Before the Take-Off* (2)

Japanese growth policy started with the Meiji restoration of 1868 when feudalism was abolished, and the Tokugawa Shogunate was deposed after more than 260 years of power.

Before 1868 Japan had lived in very isolated fashion with almost no foreign trade or contacts. In 1639, the Tokugawa regime cut off trade, foreign travel and study by Japanese, and residence by foreigners in Japan. It eliminated Christianity which was introduced briefly by St. Francis Xavier in the sixteenth century. However, the Japan of 1868 was by no means a primitive society. Japanese feudalism was highly efficient with a strong central power, and no significant internal warfare. Japan in 1868 supported 35 million people with less fertile land than the U.K., which had a population of only 7 million at the outset of its industrial revolution. Japanese rice yields were higher then than they are in several Asian countries today (3). It was an old and highly sophisticated civilisation whose idiosyncrasies, tastes and productive system had not been disturbed by colonialism. Urban life had some of the colour and gaiety of Restoration England, and though life was hard for the mass of the people, standards of hygiene and aesthetic sensitivity in housing were superior to those in Europe. There was a graceful hedonism in the pattern of Japanese life and religion. There was probably a higher

(2) The use of this Rostowian term in the Japanese context does not imply agreement with Rostow's general position in interpreting the historical development of present industrial societies. Japan is one of the few historical cases of rapid transition to fast growth, but even Japanese "take-off" does not conform to the criteria of Rostow, particularly in respect of capital formation. Some writers, e.g. T. C. Smith, *The Agrarian Origins of Modern Japan*, Stanford, 1959, have stressed the evidence of economic progress in the Tokugawa period, and tend to blur the change which the Meiji reforms introduced. Smith stresses the growth of urban centres, the extension of a market economy, use of wage labour, the development of handicraft industry, and technical improvements in agriculture such as the use of commercial fertiliser, wider variety of seeds, improved threshing techniques, irrigation and use of manuals of best practice techniques. However, one can readily reconcile such evidence of gradual growth in a "traditional" society with the view that the Meiji reforms put the economy on a quite different growth path.

(3) See Shigeru Ishikawa, "Conditions for Agricultural Development in Developing Asian Countries", Committee for Translation of Japanese Economic Studies, No. 42, International House, Tokyo, who quotes lower figures for present yields in India, Pakistan, Burma, Thailand and the Philippines.

degree of literacy in early nineteenth century Japan than in Western Europe (4), and Western learning had penetrated in the fields of medicine and science (5).

The Tokugawa family who had originally been court officials were the real rulers of Japan and occupied the Shogunate in Edo (modern Tokyo) whilst the emperor lived in Kyoto. The Shogun owned about a quarter of the land, and the rest was split between 270 lords (daimyo) (6). These in their turn had to support about 400,000 warriors (samurai) (7) whose military functions had decayed with the elimination of internal warfare, and who also served as administrators and intellectuals. The ruling classes maintained about 2 million vassals and retainers (8). In addition there was a prosperous merchant class in the cities. There was a certain amount of social mobility as merchants could buy and marry their way into the samurai class. The peasants formed the bulk of the population. Feudal levies amounted to about 40 per cent of the rice crop (rice being the great bulk of agricultural output). Thus there was a considerable economic surplus but it was not used for capital formation, but to support a large class of feudal lords and their vassals. Religion was less important in absorbing an economic surplus than the church in feudal Europe or religion in modern India. The military strength and temporal power of the monasteries had been eliminated in the sixteenth century in Japan.

Most of the peasant families worked plots of less than one hectare. Peasants were tied to the land and could not move around

(4) See J. K. Fairbank, E. O. Reischauer and A. M. Craig, *East Asia The Modern Transformation*, Boston, 1965, p. 115.

(5) R. P. Dore, *Education in Tokugawa Japan*, Routledge, London, 1965. The only Western contact in the Tokugawa period was with the Dutch who had a trading post at Deshima in Nagasaki harbour which was visited annually by a ship from Indonesia; Western learning was therefore known as the "Dutch Learning".

(6) The number varied as families died out or fiefs were altered by the Shogun, see G. B. Sansom, *Japan A Short Cultural History*, New York, 1962, p. 464.

(7) There were 420,000 samurai at the end of the Tokugawa period, see G. B. Sansom, *The Western World and Japan*, Knopf, New York, 1950, p. 235.

(8) 2 million is the figure given by W. W. Lockwood, *The Economic Development of Japan*, Princeton, 1954. However, Irene B. Taeuber, *The Population of Japan*, Princeton, 1958, p. 27, gives two alternative estimates of 1.2-1.8 million or of 3.8-4.0 million at the end of the Tokugawa era for the size of the imperial household, court nobility, the Shogunate, daimyo, samurai, other military families and their employees and dependents. Fairbank, Reischauer and Craig, *Op. cit.*, p. 185, suggest that the samurai class (by which they presumably mean samurai families) was five or six per cent of the population or roughly five times the proportional size of the degree-holding gentry in China.

the country or change their job. The bulk of the population lived very close to subsistence level. Livestock products apart from chickens and eggs were totally absent from the diet. Centuries of peaceful development with limited resources had produced frugal habits. The major check to population growth apart from disease and frequent famines was abortion in higher levels of society and infanticide amongst the peasantry. The evidence suggests that these had kept the population fairly static from the beginning of the eighteenth to the mid-nineteenth century (9).

The biggest city was Edo which already had a population of 1.3 to 1.4 million in 1780 when it was probably the biggest city in the world (10). Osaka and Kyoto were also large cities. The chief industrial products were textiles, pottery, lacquer ware, copper goods, paper, wax, tea, ink, fans, umbrellas, candles, charcoal, sake, bean paste, bamboo products, seaweed, and traditional drugs. Urban workshop production was organised by clans and guilds. The financial and monetary system was highly developed by Asian standards and as all daimyo were compelled to pass part of the year in Edo, the market economy was reasonably widespread. However, technology was isolated, most buildings were of wood, there was little construction of ships except for fishing, and wheeled vehicles were uncommon.

In the last half of the Tokugawa period, the Shogun was usually in financial difficulties, the daimyo were indebted to merchants and the rice stipends of most samurai were below their nominal level. The merchant class was prosperous, but subject to occasional arbitrary levies. The intrusion of foreigners helped push the system to its breakdown. In the 1850s, American imperialism arrived in the form of Commodore Perry and succeeeded in exacting extra-territorial legal and trading rights. The Americans were followed in this by European powers including France, the U.K., Russia and the Netherlands. These concessions were bitterly resented by the Japanese, and the emperor refused to ratify the Shogun's signature on the agreements. This external challenge revealed the backwardness of the Tokugawa feudal system vis-à-vis the West, and the Japanese determined to preserve their independence by catching up.

(9) See I. B. Taeuber, *Op. cit.*, p. 22.

(10) See H. Rosovsky, *Capital Formation in Japan 1860-1940*, Free Press of Glencoe, 1961, p. 66.

The Meiji restoration was inspired by reactive nationalism of the type of Ataturk in Turkey, or of Nasser in Egypt. The reaction to the threat of foreign domination was much sharper than in China because of the presence of a very large class of educated but functionless military men who were much more sensitive to the foreign technical challenge than the scholar gentry of China who had a sense of innate superiority to the West. The change involved some violence for about a decade after 1868, but it was a regenerative revolution in objectives and mode of life by the existing ruling class. The main dynamic element in promoting modernisation in the civil service and industry was the samurai class (11). Some of the old merchant houses did not adapt well to a capitalist economy, though others such as the Mitsui became very powerful in the new Japan. The fact that Japan reacted before colonialism had had time to become properly entrenched also meant that Japan was more ready intellectually to absorb foreign ideas and techniques than many developing countries are now (12).

(b) *The Meiji Period* (13)

The Meiji reforms replaced feudalism with an up-to-date version of European capitalist institutions. In 1868, the feudal property rights of the daimyo and samurai were commuted into state pensions and government bonds. The functions of the warrior class were replaced by a modern conscript army. Internal restrictions on movement of people and trade were removed. Administration was centralised, and the country divided into 46 prefectures.

The 1873 land reform gave titles to landowners and customary tenants, freed the transfer and sale of land from feudal restrictions, and imposed tax obligations equal to 3 per cent of the value of land (or about a third of the crop). These heavy land taxes were used

(11) See Takao Tsuchiya, "The Class Origins of Meiji Entrepreneurs", Committee for Translation of Japanese Economic Studies, No. 32, International House, Tokyo.

(12) See Carmen Blacker, *The Japanese Enlightenment*, Cambridge University Press, 1964, for a biography of Yukichi Fukuzawa — a great populariser of Western culture who had acquired the "Dutch learning" in Japan, learnt English from ex-shipwrecked Japanese sailors, visited San Francisco as a servant in 1860 and Western Europe in 1862 as "translator" to a delegation negotiating the postponement of the opening of Japan to foreign trade and residence. He set up a school and wrote many books on the West.

(13) The restoration of monarchical powers in 1868 coincided with the accession of emperor Meiji to the throne and he lived to 1912.

to compensate for the termination of feudal levies and to finance the new administration. They supplied four-fifths of central government revenue in the period 1868-80 (14) and still provided a third at the time of the first world war. Their initial burden was similar to the old feudal levies, but the tax had to be paid in cash and the obligation was more rigid. Quite a number of small proprietors were led into debt, bankruptcy and tenantry as a result of the high initial burden of taxes, but the burden was gradually reduced by inflation, at the same time as increasing productivity was adding to farm incomes. The new landowners therefore experienced an alleviation of the previous feudal burden, but rents were still mainly paid in kind, so that the burden on tenants was exploitative. As capital needs in agriculture were small, the increasing savings surplus of landlords was transferred to other sectors. The proportion of land under tenancy rose somewhat from 37 per cent in 1883 to 46 per cent in 1914 (15) but cultivation remained concentrated on small plots of less than a hectare.

Internal markets were enlarged by the abolition of local feudal levies on the movement of goods, and the economy was thrown open to international trade. Industrialisation was initiated by government enterprises, banks, insurance, shipping lines, and factories. After 1882 the government sold most of its plants to private business. Most of the government enterprises were sold off at very low prices, and the government gave many privileges and subsidies to industrialists. The Japanese merchant fleet of the Mitsubishi company was helped on its way by the gift of government ships (16). There was a very close link between government and business, and the modern sector was concentrated from the beginning in the very large corporations known as zaibatsu (financial clique).

The period 1868-1881 was generally inflationary. As tax obligations were fixed this left a bigger portion of producers' incomes free for savings. It also destroyed the samurai as a leisured class of rentiers with no economic function. Most of the samurai had received inadequate compensation for loss of their feudal incomes

(14) See Shigeto Tsuru, "The Take-off in Japan", in W. W. Rostow, *The Economics of Take-off into Sustained Growth*, Macmillan, London, 1963, p. 146.

(15) Cf. G. Ranis, "The Financing of Japanese Economic Development", *The Economic History Review*, April 1959, p. 447.

(16) See Fairbank, Reischauer and Craig, *Op. cit.*, p. 254.

in kind, and these fixed incomes were now further reduced by inflation. On the other hand, the daimyo had been so handsomely compensated that most of them became wealthy capitalists.

A major pre-condition for growth was the existence of good administration and an authoritarian bureaucratic regime bent on achieving its aims and reinforced by a spartan military tradition of obedience and hard work. In respect of the role of public or private enterprise, the allocation of tax burdens, and the promotion of new technology, the governmental attitude was flexible and pragmatic, secular and scientific and not doctrinaire. There were no strong religious or ideological obstacles to a policy of growth.

Another important aspect of Japan's situation as compared with many developing countries today is that she had a homogeneity of race, language, and law, so that she did not have to spend her energies on ventures destined to create a sense of national purpose. She was a relatively large country with a big enough internal market to permit optimum scale production in many modern industries. Furthermore, the technological gap between Japan and the most advanced countries was smaller than that between developed and developing countries today. In the 1870s Japanese productivity levels were probably about a fifth of those in the U.S., whereas the present gap between developing countries and the U.S. is at least twice as large.

For the first rather disturbed decade of the Meiji period we have no figures on G.N.P. movements, but for 1879-1913 the G.N.P. growth rate was 3.3 per cent a year according to the most recent estimates (17). An earlier estimate suggested that agricultural output grew at 3.7 per cent a year in this period and industrial output at 7.4 per cent.

Side by side with the modern sector there was an expansion of traditional small-scale industries as population and income rose. These had not been destroyed by colonialism as were Indian cottage industries. Some of them were adversely affected by new technology and trade possibilities, but many others catered to strongly ingrained

(17) See K. Ohkawa and H. Rosovsky, *Op. cit.* This source does not give a breakdown of G.N.P. by industry of origin as did K. Ohkawa's earlier book, *The Growth Rate of the Japanese Economy Since 1878*. This latter source had been revised downwards considerably in its overall assessment of the growth rate but this downward revision is presumably mainly concentrated on the service sector, and the figures cited for primary and secondary sectors may still be reasonably valid.

Japanese consumer preferences and living habits, and were not adversely affected by economic growth. The impact of modernisation on traditional products and on traditional modes of production was therefore remarkably smooth.

The major reasons for the economic growth of Japan up to the first world war were: (a) the commitment of the government to a policy of economic growth involving vigorous efforts at institutional reform, and drastic fiscal and monetary measures; (b) the efforts of the government to transfer and develop a technology suitable for Japanese conditions; (c) the opening of a completely closed economy to the benefits of international trade. Some authors have stressed the importance of high savings rates in Japanese growth, but the savings rate in the Meiji period was no higher than it is in many developing countries today.

The degree of success in creating and adapting an appropriate technology was particularly noticeable in agriculture where labour productivity grew by 3.6 per cent a year for 35 years with a negligible fixed investment of about 4 per cent of gross agricultural output. Agriculture provided 40 per cent of the increase in output between 1878 and 1913, it supplied the bulk of government revenue, most of the savings of the economy, half of foreign exchange requirements (by exports of silk and tea), fed an increasing population to improved standards, and permitted the increase in the labour supply to be absorbed by other sectors.

In the Meiji period, Japanese militarism did not have as unfavourable effects on growth as it did in later times, though it was a very substantial burden. Military spending reduced the amount available for savings, because it absorbed 6.2 per cent of G.N.P. in the period 1878-1913 (18). Some authors have suggested that successful and successive wars were an important factor in Japanese industrialisation (19), or that they helped to gain Japan markets. However, Japan could well have done without these stimuli. The positive results were to prevent Japan becoming a colony or sphere of influence of other aggressive powers, and to provide substantial war indemnities in foreign exchange. She was also able to abolish the earlier treaties which had granted the Western powers extra-

(18) See Koichi Emi, *Government Fiscal Activity and Economic Growth in Japan 1868-1960*, Kinokuniya, Tokyo, 1963, pp. 140-2.

(19) See Shigeto Tsuru, *Op. cit.*

territorial rights and tariff privileges. Japan's military success in the Sino-Japanese war of 1894-5 brought a large indemnity from China, and the cession of Formosa and the Pescadores. She shared in the indemnity due from China to the Western powers after the Boxer rebellion. She gained Southern Sakhalin (Karafuto) and concessions in China after the Russo-Japanese war of 1905, and annexed Korea in 1910. Exploitation of colonies did not really contribute to the economic surplus available for savings, for the cost of acquiring them was heavy and Japan made considerable investments in these countries.

(c) *1913-38*

1913-38 was a time of troubles for most economies as growth was adversely affected by the first world war and the great depression. Japan fared very much better than other countries. Her G.N.P. growth in this period was 4.4 per cent a year — faster than in the Meiji era. Unlike the European belligerents, she did not suffer physical destruction or manpower losses during the first world war, military expenditure was not so large a share of G.N.P., her capital formation continued at a high rate, and her trade and shipping earnings prospered in a world where demand was high and normal supply lines greatly restricted. She suffered sharply from the 1920-21 recession, but the later 1920s were a time of boom.

Japan's response to the Great Depression was to depreciate the yen enormously. Her terms of trade deteriorated and her income was adversely affected, but contrary to the experience of other countries, her exports rose in a period of sharply contracting world trade and production continued to expand. From 1931 onwards Japan was engaged in adventures against China, and military output accounted for a good deal of her production dynamic in the 1930s.

Agricultural output grew at only 0.8 per cent a year compared with 3.7 per cent in the Meiji period (20). The slower growth was due to several causes. At higher levels of income, Japanese demand for food was no longer so elastic. The technological opportunities for further output gains were becoming limited on very small holdings with almost no machinery. Export markets for agricultural products were prticularly poor, and raw silk exports fell catastro-

(20) See K. Ohkawa, *Op. cit.*

phically after 1931. There was increasing competition from food imports supplied by the colonies.

Industrial output during this period rose a little more slowly than it had earlier, but as industry was a much greater share of total output, its contribution to G.N.P. growth was greater. Industrial productivity rose much faster than it had earlier.

The rate of investment from 1913 to 1938 was considerably higher than in the Meiji period, but if Japan had had a maximum growth strategy there is little doubt that it would have pushed investment even higher. By this time, Japan's capacity to absorb capital was much higher than in the Meiji era, as she had already made such a heavy commitment to education and technological adaptation. It must be admitted that in a country heavily dependent on international trade, it would have been difficult to have followed a policy of faster growth in this period of world recession. Limitations of natural resource endowment and market size would have made a Soviet-type policy of autarky rather difficult, but a switch of resources away from aggressive military ventures might have added a good deal to growth.

(d) *War, Catastrophe and Recovery 1938-55*

The impact of war was catastrophic. During the war, capital formation was reduced, and there was massive damage to Japanese cities from conventional and atomic bombing. Most of her merchant marine was sunk, and the very large build-up of military output and capacity had no immediate postwar uses. Japan lost her colonies in China, Korea and Formosa, where it had made large investments. Karafuto and the Kuriles were lost and Okinawa ceased to be a normal part of Japan. The colonies and China had accounted for half of Japan's trade. Furthermore, Japan had to absorb nearly 5 million repatriates (half of them civilians) from the ex-colonies (21). Defeat involved unconditional surrender and foreign occupation for six years in which the occupying power broke up the zaibatsu and other Japanese institutions, carried out a land reform, promoted trade unionism and democratised Japan in its own image. Whatever their social and political consequences, many of these reforms adversely affected production and export incentives.

(21) See I. B. Taeuber, *Op. cit.*, pp. 344-6.

During the occupation, policy was deflationary and the growth perspective seemed pessimistic.

Independence, plus the Korean war boom, gave a great restorative fillip to the economy and brought back confidence to its entrepreneurs, so that by 1955 Japanese investment had risen to 26 per cent of G.N.P. There is some variation between the different indicators of Japanese growth from 1938 to 1955, so that it is not quite clear whether 1938 output was regained in 1952 or 1954. But it was not until after 1955 that 1938 productivity levels were regained. Foreign trade was still a quarter below prewar in 1956. Thus the recovery of Japan was delayed more than that of Germany and was probably not really completely eliminated as a factor in growth until the late 1950s. This is in striking contrast with Japanese experience as a result of the first world war.

(e) "*Explosive Growth*" - *1955-64*

From 1955 to 1964, G.N.P. grew by 10.4 per cent a year, and Japan experienced a rate of growth without parallel in the previous history of any country (22). Ohkawa has justly characterized this phase as one of "explosive" growth. The major source of dynamism in the economy has been industry. This has always grown fast in Japan except for 1938-55, but its growth rate after 1955 was truly spectacular in terms of both production and productivity. Table 4 is perhaps not quite consistent with our estimates of overall output and productivity in Table 3, but it does give an idea of relative sector movements.

There have been massive structural changes in the economy. Between 1955 and 1964 the number of workers in agriculture fell by about 4 million, and the share of agriculture, forestry and fishing in total employment fell from 40 per cent to only 27 per cent. In fact this was the first time that there had been a substantial fall in the absolute number employed in agriculture though the proportion in agriculture had been declining since the 1870s. As a result the non-agricultural labour force rose by 39 per cent in 9 years — much

(22) However, growth in the twenty-six years 1938-64 was no faster than in the period 1913-38. Japanese figures for growth in the 1955-64 period may also overstate growth somewhat because of inadequate deflation of the output of the service sector, but the overstatement is unlikely to be large enough to invalidate our general conclusions from the present evidence.

faster than in any other major country. It is quite obvious that this particular feature of Japanese growth potential will be reduced in future. The proportion of population in agriculture is still higher than that of most West European countries, but is about the same as Italy.

TABLE 4

OUTPUT GROWTH IN JAPAN BY SECTOR

	Primary Sector	Secondary Sector	Goods Producing Sectors
1878-1913	3.7	7.4	4.5
1913-1938	0.8	6.9	3.7
1938-1955	2.4	0.9	1.4
1955-1963	0.9	18.9	10.7

Source: 1878-1938 from K. OHKAWA, *Op. cit.*, p. 248, and 1938-51 from p. 232-4; 1955-63, unpublished figures supplied by the Economic Planning Agency, Tokyo.

TABLE 5

PRODUCTIVITY GROWTH IN JAPAN BY SECTOR

	Primary Sector	Secondary Sector	Goods Producing Sectors
1878-1913	3.6	2.9	3.9
1913-1938	1.2	4.8	3.6
1938-1955	n.a.	n.a.	n.a.
1955-1963	4.2	12.3	9.5

Source: Output figures from Table 4 and employment 1878-38 from K. OHKAWA, *Op. cit.*, p. 145; 1955-63 from unpublished figures of the Economic Planning Agency, Tokyo.

The rapidity of this transformation has no parallel in European countries, although the share of agriculture did fall considerably in Germany, Italy and France. It shows that Japanese demand for labour in the industrial sector has been extremely heavy. It has absorbed the large influx from agriculture, the large increase in the labour force, as well as the underemployment already existing in the industrial sector (23).

(23) Hiromi Arisawa quotes a figure for 1954 of 9 million persons whose working hours averaged less than 34 hours a week, see " Low Wages and The Structure of the Japanese Economy », Committee for Translation of Japanese Economic Studies, No. 25, International House, Tokyo. Since 1955 there has been a drop in the proportion of industrial workers in small low-productivity firms. In 1955 20 per cent of manufacturing employees were in firms with 1 to 9 employees, 40 per cent in firms of 10 to 99 employees, and 40 per cent in bigger firms. In 1962 the proportions were 13, 39, and 48 per cent respectively, see *Japan Statistical Yearbook*, Office of the Prime Minister.

It is noteworthy that the fastest rise in output in Japan since 1955 has been in " heavy industry ". Output in this sector rose to 470 per cent of 1955 by 1963 compared with an increase of 206 per cent for light industry — an annual rate of 21.0 per cent compared with 9.4 per cent (24). This was a reflection of the increasing share of investment in total demand — from 26 per cent of G.N.P. in 1955 to 37 per cent in 1962. The increase of demand has been concentrated in sectors where productivity growth was particularly fast. It is clear, however, that the demand for the products of heavy industry cannot go on increasing at this rate for the share of heavy industry in total industrial output is already higher than in other industrial countries.

The rapidity of Japan's growth was certainly due in part to its economic backwardness and the technological opportunities which this presented. Furthermore, her relative degree of backwardness (measured in terms of relative productivity levels) was substantially greater in 1955 than in 1938. In 1955 U.S. productivity was about one-third higher than in 1938, whereas Japan was only just regaining prewar levels. Japan still has a good deal of technological leeway to make up as her absolute level of productivity is even now only a little over a third of that in the U.S. But the gap between Japan and Europe has now narrowed considerably, and she may find it increasingly difficult to get a reasonable pay-off on such high investment rates.

The major reasons for the explosive Japanese growth since 1955 are as follows:

(a) the unprecedentedly high level of investment. The average for 1955-63 was about 33 per cent which is twice the level for 1913-38 and more than three times the pre-1913 level;

(b) the labour supply rose faster than population, whereas in earlier periods it had risen more slowly;

(24) This degree of disparity between industrial branches was even more extreme than that in the U.S.S.R. from 1928 to 1940, where these branches rose at 19.7 per cent and 11.8 per cent a year respectively.

(c) the very high level of demand brought labour out of low productivity work in very large quantity;

(d) the international market environment offered scope for rapid growth of exports, and the flexibility of the Japanese economy in terms of both production, quality and costs enabled her to be highly competitive. Japanese export volume rose nearly 15 per cent a year from 1955 to 1964, or more than twice the world average;

(e) Japanese military spending has only been about 1 per cent of G.N.P. since 1955, whereas in the ten years 1930-39 it averaged 9 per cent and in 1920-29, 4.9 per cent. This demilitarisation freed financial resources for investment, particularly by government, but also ensured that all the best technical brainpower (25) was devoted to civilian purposes (e.g. the management and entrepreneurship of the Sony company was derived from the military sector);

(f) her educational effort was superior to that of much more advanced countries. Her stock of engineers increased threefold in the 1950s — an achievement paralleled only by the U.S.S.R. — and the number of engineers and other highly trained people per head of the labour force is close to that in Western Europe. Her capacity to absorb capital and use it efficiently was therefore high.

II - Level of Productivity and Use of Resources

In 1964, Japanese productivity in the economy as a whole (26) was only 38 per cent of that of the U.S., but it had reached about two-thirds of that in France and Germany and three-quarters of that in the U.K. Japanese income levels are higher relatively than productivity because the employment potential of the population is more

(25) See the remarks of Saburo Okita on the skill reserves freed by demilitarisation. "During the second half of the 1930s, the Japanese economy primarily served military purposes and in 1937 it was placed on a wartime footing. The heavy and chemical industries rapidly grew to meet the demand for munitions and military supplies, and the demand for engineers and skilled workers increased enormously. The government greatly expanded the secondary and higher technical education system and established public institutions for training skilled mechanics. At the same time it ordered large manufacturers to provide vocational training for skilled occupations. Thus, during the Second World War, secondary and higher technical education made great strides". "Manpower Policy in Japan", *International Labour Review*.

(26) For a comparison of industrial output levels (which is consistent with our results) see Miyohei Shinohara, "International Comparison of the Levels of Industrial Production in 1958", *The Developing Economies*, March 1965, Institute of Asian Economic Affairs, Tokyo.

fully mobilised than in the U.S., with more of the population in the labour force, less unemployment and longer working hours. The age structure is also more favourable to labour force participation than that of the U.S.

The share of consumption in Japanese G.N.P. in 1962 was only 54 per cent compared with a West European and U.S. average of 63 per cent. Japanese consumption standards are, in fact, only two-thirds of those in advanced West European countries but they are about the same as in Italy. The diet is now closer to European levels than in prewar years and as a result young Japanese are much taller. Consumption of housing, automobiles and furniture is rela-

Table 6

LEVEL OF REAL OUTPUT, PRODUCTIVITY AND OUTPUT PER HEAD 1964

	Population 000s	Employment 000s	Annual Working Hours	Real GNP at U.S. Relative Prices	Output per Head of Population	Output per Man Employed	Output per Man Hour
				U.S. = 100			
France	48,417	19,866	2,121	17	69	64	57
Germany	56,097	25,926	2,100	22	76	63	57
Italy	50,955	19,799	1,945	13	48	47	46
Japan	96,906	46,730	2,184	28	55	44	38
U.K.	54,213	25,431	2,256	20	70	56	48
U.S.A.	192,119	73,095	1,907	100	100	100	100
U.S.S.R.	228,810	105,710	1,968	68	57	47	46

Source: Population from U.N. *Monthly Bulletin of Statistics*; Employment for Western countries and Japan from O.E.C.D. *Manpower Statistics*, U.S.S.R. relationship of employment to population extrapolated from 1960 figure in A. Maddison, "Soviet Economic Performance", *Banca Nazionale del Lavoro Quarterly Review*, March 1965. Weekly working hours from I.L.O. *Yearbook of Labour Statistics*, Geneva, 1964, pp. 286-8. Annual holidays from A. Maddison, *Economic Growth in the West*, except Japan and Russia where an 11 month working year was assumed. G.N.P. for France, Germany, Italy, U.K. and U.S.A., figures for 1955 are given by Milton Gilbert and Associates, *Comparative National Products and Price Levels*, O.E.E.C., Paris, 1958; these were extrapolated to 1964 with data supplied by O.E.C.D. National Accounts Division. Japan, 1960 purchasing power parity ratios for consumption at U.S. weights were obtained from *A Study on International Comparison of Levels of Living* (in Japanese), Institute of People's Living, Tokyo, March 1965. These were assumed valid for G.N.P. as a whole and used to convert yen figures for G.N.P. supplied by the Economic Planning Agency. 1960-64 G.N.P. movement from data supplied by O.E.C.D. national accounts division. For the U.S.S.R., the national product estimates of Morris Bornstein for 1955 in "A Comparison of Soviet and United States National Product", *Comparisons of the United States and Soviet Economies*, Part II, U.S. Congress, Joint Economic Committee, 1959, p. 385, extrapolated from A. Maddison, "Soviet Economic Performance", table 6 assuming growth rate of 5.0 per cent a year for 1960-64.

tively low, but high in household mechanical gadgets, radio, television, cameras and textiles. Health standards and facilities are about as good as in Western Europe and educational opportunities are better.

Investment in the 1960s was about a third of G.N.P. — much higher than in any West European country. However, the price of investment goods is higher relative to consumer goods in Japan than in Western countries, so that the Japanese investment effort in real terms may be somewhat overstated by figures at official exchange rates.

Government current expenditure on goods and services in Japan absorbs only about 9.1 per cent of G.N.P. This is lower than in most European countries, largely because Japan has very small military expenditures.

TABLE 7

DISTRIBUTION OF RESOURCES BETWEEN CONSUMERS, GOVERNMENT AND INVESTMENT

(Percent of G.N.P.)

	Consumption	Current Government Non-Military Expenditure	Military Expenditure	Investment	Foreign Balance
France	65.4	8.9	4.6	20.9	0.2
Germany	57.1	11.1	4.4	26.0	1.3
Italy	62.2	(13.1)	(2.7)	24.0	−2.1
Japan	54.3	8.1	1.0	36.6	0.1
U.K.	65.2	12.4	7.0	16.5	1.1
U.S.A.	62.8	8.7	9.8	17.7	0.9
U.S.S.R.	48.0	10.8	13.1	28.1	0.0

Source: France, Germany, Italy, U.K., U.S.A. for 1963, from O.E.C.D., *General Statistics*, January 1965. The U.S. figures for investment have been adjusted upwards by $5 billion to allow for government spending on machinery and equipment. Government non-military expenditure of the U.S. was reduced by a similar amount. Japan 1962 from unpublished figures of Economic Planning Agency, Tokyo. The Japanese defence figure is from the budget as quoted in the *Japan Statistical Yearbook*, 1964, p. 427. Italian defence figure is an estimate. U.S.S.R. 1955, A. BERGSON, *The Real National Income of Soviet Russia Since 1928*, Harvard, 1961, p. 237.

III - The Japanese Business Cycle

Before the first world war, the Japanese economy exhibited greater instability than the developed Western countries. Until the turn of the century, half or more of its output was in the agri-

cultural sector, and this fact alone gave it substantial volatility as crop fluctuations could produce major variations in G.N.P. just as they do in developing countries today. In the first world war and the interwar period Japan's growth was steadier than that of Western countries, chiefly because competitiveness enabled it to keep up exports, and military spending added greatly to domestic demand.

TABLE 8

EXPERIENCE OF RECESSION IN TOTAL OUTPUT 1890-1964

	Maximum Cyclical Fall in Real GNP from Peak (a) to Trough (annual data)			Per cent of Years Below Peak		
	1890-1913	1920-38	1955-64	1890-1913	1920-38	1955-64
France	n.a.	18.0	0.0	n.a.	61	0
Germany	4.0	16.1	0.0	17	46	0
Italy	5.2	4.2	0.0	43	39	0
Japan	11.7	2.8	0.0	52	6	0
U.K.	4.1	7.9	0.3	43	23	11
U.S.A.	8.3	28.0	1.7	22	50	11

Source: Same as for table 1.

(a) Refers to peak within the period mentioned.

TABLE 9

EXPERIENCE OF RECESSION IN INDUSTRIAL OUTPUT 1956-64

	Maximum Cyclical Fall from Peak to Trough in Quarterly Index	Percent of Quarters Below Previous Peak
France	4.2	26
Germany	1.6	14
Italy	4.8	17
Japan	6.6	20
U.K.	2.7	40
U.S.A.	12.1	43

Source: O.E.C.D. statistics division. Data are seasonally adjusted.

In the postwar period Japanese G.N.P. has never declined on an annual basis though growth flattened out in 1958 and the growth rate has varied considerably from year to year. In the industrial sector, Japan has had greater fluctuations. It had the "Dodge" recession of 1949, induced by the deflationary policies of the occupa-

tion. Industrial output dipped somewhat in 1954, there was a 7 per cent fall in industrial output between mid-1957 and mid-1958, and another slight dip in the second half of 1962. The amplitude and duration of postwar industrial recessions has been mild, but given the much higher trend in Japanese industrial output, its volatility has been somewhat higher than continental Europe, but less than that of the U.S.

TABLE 10

EXPERIENCE OF EXTERNAL RECESSIONARY INFLUENCE

Maximum cyclical fall from peak to trough in volume of exports (annual data)

	1890-1913	1920-38	1955-64
France	11.5	47.3	0.0
Germany	4.7	49.7	0.0
Italy	n.a.	31.9	0.0
Japan	14.7	18.9	0.0
U.K.	8.9	37.3	3.0
U.S.A.	10.7	48.5	14.8
World	2.7	26.8	2.0

Source: See Table 19.

TABLE 11

TRANSMISSION OF INTERNAL RECESSIONARY INFLUENCE

Maximum cyclical fall from peak to trough in volume of imports (annual data)

	1890-1913	1920-38	1955-64
France	11.0	28.0	3.0
Germany	5.4	40.5	0.0
Italy	n.a.	53.2	7.0
Japan	24.8	35.1	18.0
U.K.	3.2	13.0	2.0
U.S.A.	14.1	39.6	6.0
World	2.7	26.8	1.0

Source: See Table 19.

The most volatile item has been investment, particularly inventories, though Shinohara (27) has suggested that the inventory cycle

(27) See M. SHINOHARA, *Op. cit.*, pp. 194-7.

has been statistically exaggerated. Japan has a much higher ratio of inventory and fixed capital investment than Europe, and about the same ratio of consumer durable to total consumer expenditure, so that one might expect its G.N.P. growth to be less stable than that of Europe as these are the most volatile components of demand.

Japan has always had a very rapid growth in exports in the postwar period, but has had substantial fluctuations in her imports. This has produced a sharply cyclical balance of payments — quite different from that of the major European countries which have tended to remain in either chronic surplus or deficit. The declines in imports have largely been due to the efficacy of policy which has had a much sharper bite in alleviating payments problems quickly than has been the case in Europe.

The Japanese financial market is less solid institutionally than Europe, and business has been more dependent on bank finance, so that a check to growth brings a large proportion of firms close to bankruptcy. Price competition is sharper in Japan than in Europe and government anti-cyclical policy has been more severe. This has imbued business psychology with greater cycle-sensitivity than in Europe. Japanese government and academic thinking has also remained more "business-cycle" conscious than Europe, because of the bigger intellectual influence of the U.S.

The postwar price climate has been similar in Japan to that in Western countries. The steady pressure on prices and imports are the best indicators of the continuously high level of demand. Although in some respects there has been greater price flexibility and competitiveness than in Western countries, the postwar period was one of substantial price increase, with little evidence of downward mobility in overall indices. This contrasts with the prewar period; there were substantial declines in the 1880s, 1890s, 1920s and 1929-1931 (28). In the earlier periods this variability was due partly to instability of prices associated with crop variations in an agricultural country, but it was also a reflection of bigger variations in demand, and of deflationary policies in the 1880s and 1931.

The postwar period has been one of high demand as in Europe. After the occupation period when policy was deflationary and incentives were affected by purges and institutional reforms, demand was given a substantial push by the Korean war boom when Japanese

(28) See K. OHKAWA, *Op. cit.*, p. 130.

industry had spare capacity and was not occupied with military production as were other countries. At the same time Japan regained its political independence and started on an expansionist economic policy, with what seemed at the time rather ambitious plans. It has also made very full use of a wide range of monetary measures and direct controls to keep this demand at high levels. Fiscal policy has not been as active as in some European countries, but there have been successive and substantial tax reductions to offset the increasing yields of the highly progressive tax structure (29). When balance of payments difficulties emerged, sharp corrective measures were taken. Thus postwar Japanese recessions, like those of European countries, have largely been induced by government correctives to an overheated economy. Government policy has led to greater volatility than in Europe but has also been more successful in dealing with payments disequilibria.

IV - Factors Affecting Growth Performance

We must now try to analyse the contribution of different elements of policy to the remarkable economic performance of Japan since 1868.

(a) *Technical Assistance from Abroad*

Under the Tokugawa Shoguns there had been no modern education or universities in Japan, though some Western learning had penetrated in medicine and science. Traditional education with a heavy content of Chinese classics was not a monopoly of an educated priestly caste but was widespread amongst the samurai and fairly secular in character. Immediately after the Meiji reforms, the government sent people to study in various European countries and brought in foreigners to help set up a modern army, navy, legal system, public health service, police and administration. It also brought in foreigners to teach in the new Imperial University in Tokyo and to help in new research institutions. In 1872 there were 385 foreigners in government service, and the cumulative total from 1876-95 was

(29) See the economic survey, *Japan*, O.E.C.D., July 1964, for a review of Japanese anti-cyclical policies. See also "National Planning and Economic Growth in Japan" by T. Watanabe in B. G. Hickman (ed.), *Quantitative Planning of Economic Policy*, Brookings, 1965.

3,916. Their average salaries were ten times as high as Japanese received and their cost was a substantial burden. The cost of foreign technicians was forty to fifty per cent of the budget of the Ministry of Industry over the whole period of its existence. Foreigners were also employed in economic enterprises (e.g. 224 foreign officers in Japanese steamships in 1894). Between 1868 and 1895 the government sent 601 students overseas. Government officials and businessmen made trips abroad to pick up foreign ideas. From 1868-95, 3,783 government officials went abroad. This tradition has continued in highly organised form to the present day in both government and business. The total cost of foreign technicians and study abroad amounted to nearly 6 per cent of the central government budget from 1868-72 (30).

The Japanese themselves paid for all of this technical assistance, and for this reason probably used it more effectively than its modern analogue which usually comes to developing countries as a gift. As all of these people were paid by the Japanese they also had to conform to what Japan wanted instead of imposing foreign ideas.

Use of foreign personnel was, of course, a short-term expedient, but it helped to launch Japan quickly on the path to self-sustaining growth.

(b) *Education*

Japan redesigned its education system to produce modern skills. In 1871 the Ministry of Education was established, and in 1872 the school system law was established. At first the Ministry did not have control over all phases of education, but its powers were consolidated in 1886. In 1873 28 per cent of children attended elementary school, by 1886 it was 46 per cent. Japan did not go in for mass education quite as quickly as developing countries are doing now, and she thereby avoided the wastefully high drop-out rates currently so characteristic of education in developing countries, where many children attend school for only one or two years and do not acquire literacy. In Japan, mass education was effective in producing literacy in the pupils who received education, and this helped considerably in diffusing new techniques, particularly in agriculture.

(30) See Koichi Emi, *Government Fiscal Activity and Economic Growth in Japan 1868-1960*, Kinokuniya, Tokyo, 1963, pp. 11.4-24.

In 1886 four years of schooling were made compulsory, and in 1907 this was extended to 6 years. Vocational schooling was stressed and modern university faculties were established as well as two agricultural colleges. Higher technical schools were established for medicine, military science, navigation, commerce, and fisheries. Tokyo Imperial university was established to train civil servants and research institutions were set up.

(c) *Diffusion and Development of an Appropriate Agricultural Technology*

With the Meiji restoration the Japanese government became very active in promoting and diffusing technological change favourable to economic growth. This was particularly true in agriculture, where the government set up a network of specialised research stations, provided advisory services, diffused techniques, and created a technology suitable for small-scale agriculture.

At first the government attempts to promote agricultural technology were based on the idea of borrowing British and American techniques of extensive agriculture and mechanisation. They were also concerned with vocational training and land reclamation designed to produce an occupation for the displaced class of samurai. These techniques had some application in the new farming area in Hokkaido. But they had little applicability to the bulk of small-scale Japanese agriculture, and the government switched from promotion of Western techniques to improvement of traditional practices and it sold off its farm-machinery factory in 1888.

The improvement in internal communications in goods and persons after the abolition of feudalism did a good deal to permit spread of best practice techniques, particularly for rice seeds, and the policy of combining heavy tax burdens and price incentives was an excellent stimulus to productive effort. The government fostered the process of internal diffusion of technology in 1885 by picking out veteran farmers plus graduates of the two agricultural schools (Sapporo, founded 1876, and Komaba, 1877) to act as itinerant teachers. In 1893, the government set up national research institutions, as well as experimental stations in each prefecture so that research findings could be adapted to climatic needs of different regions. The prefectural stations also took over advisory responsibilities from the itinerant teachers. Extension work in the form of written directives

TABLE 12

ENROLMENT RATIOS IN JAPANESE EDUCATION

	Primary and two secondary levels, enrolment as per cent of population aged 5-19	Upper secondary enrolment as per cent of population aged 15-19	Higher Education enrolment as per cent of population aged 20-24
1880	30.7	1.0	0.3
1915	63.2	21.0	1.3
1940	78.5	49.9	3.5
1950	86.2	70.8	5.2
1960	92.3	82.4	8.6
1963	94.2	92.1	10.2

Source: Research section, Ministry of Education, Tokyo, unpublished study.

TABLE 13

PROFESSIONAL PEOPLE PER 10,000 POPULATION

	Primary Teachers	Secondary Teachers	Engineers, Scientists and Agronomists	Physicians and Dentists
1880	19.8	0.4	0.04	2.1
1915	31.0	3.4	1.3	7.7
1940	40.4	8.9	6.2	12.5
1950	37.2	35.6	10.3	12.5
1960	39.2	40.0	31.0	14.6
1963	83.6		40.5	n.a.

Source: Research section, Ministry of Education, Tokyo, unpublished study.

TABLE 14

PROFESSIONAL PERSONNEL AS PERCENT OF LABOUR FORCE, 1959

	Engineers, Scientists and Agronomists	Physicians, Dentists, and Pharmacists
France	0.8	0.4
Germany (F.R.)	n.a.	0.5
Italy	0.9	0.5
Japan	0.7 (a)	0.4
U.K.	1.0	0.4
U.S.A.	1.7	0.6
U.S.S.R.	1.2	0.5

(a) 1960.

Source: A. MADDISON, *Foreign Skills and Technical Assistance in Economic Development*, O.E.C.D. Development Centre, Paris, 1965, *Statistics of Health Personnel and Hospital Establishments*, W.H.O., Geneva, 1962, and table 13.

and pamphlets was greatly helped by the early impact of literacy. There were also agricultural continuation schools with evening teaching.

The government sponsored knowledge of best foreign practice by translations, and by bringing in foreign experts. After abandoning British and American techniques, it brought in German scientists to adapt new findings in chemicals and fertilisers to Japanese conditions, as well as Dutch agricultural engineers. It promoted meetings and associations of farmers to discuss farm techniques and promote exchange of seeds.

The major reasons for improved output in the Meiji period were improvement in seeds, and increased input of fertiliser (consumption rose 30 fold between 1878 and 1913).

> "The selection and breeding work was aimed chiefly at developing varieties characterised by a strong response to increased application of fertilisers, and many of the improvements in farm practices were also aimed at the development of what has been aptly termed a 'fertilizer-consuming rice culture'" (31).

There were other technological innovations specifically designed for Japanese needs, such as the pedal-operated rotary thresher invented in 1910 enabling wheat or barley to be used as a second crop, and reducing the need for labour at the peak season. There was the short-soled plough designed for small Japanese fields. The introduction of hybrid silkworms increased yields and artificial incubation enabled the production of autumn and summer worms. Dry paddy cultivation enabled double cropping to take place.

In Tokugawa times, horses and cattle were used only for transport and military purposes, and there was no consumption of meat, milk, milk products, or wool — partly because of the religious beliefs of Buddhists. After 1867 the government imported foreign strains of cattle, horses, sheep, pigs, and poultry. The government sponsored literature on livestock farming and trained veterinarians.

In the interwar period, agricultural demand and production slowed down considerably and agriculture began to be a subsidised sector rather than a contributor of funds to the rest of the economy.

(31) See T. Ogura, ed. *Agricultural Development in Modern Japan*, Fuji Publishing Co., Tokyo, 1963, p. 643.

Food imports from Korea and Formosa competed with domestic output. During this period the government subsidised fertiliser consumption and production, promoted irrigation and drainage and the use of a certain amount of light machinery. In 1921 a farm survey and information network was started, which provided better information for policy decisions than existed in other countries. The government also subsidised cooperatives which provided credit and marketing facilities and a large supplement to official advisory services. The government also introduced crop insurance, which was a major innovation not practised in other countries at that time on such a scale.

In the postwar period, there has been a big change in demand structure towards fruits and livestock and a decline in per capita consumption of traditional cereals. Food imports have risen again. There has also been an extensive use of light machinery, and for the first time a very substantial decline in the absolute level of the labour force.

Nevertheless, Japanese farming is still on a small scale with an average farm size in 1962 of 0.8 hectare. By European standards, the degree of mechanisation is low, but fertiliser input is higher than in any Western country except Germany.

In its pursuit of a suitable technology for Japanese agriculture, policy was characterised by the thoroughness and efficiency which was also applied in other spheres. The approach has been summed up aptly as follows:

> "While agricultural research, education and extension methods in Japan were not essentially different from those used elsewhere, they were carried through with a realism and intensity which make them almost unique. Agricultural research was vigorously directed towards the felt needs of farmers or the requirements of policy. The extension services were staffed on a scale which made advice on farm management readily available to all farmers. Extension workers were encouraged to live in the villages they served instead of spending much of their time at district or provincial headquarters" (32).

The Japanese experience contrasts sharply with that of underdeveloped countries under colonialism which usually concentrated

(32) T. Ogura, *Op. cit.*, p. 640.

on the problems of export crops. There are a few countries in the postwar period which have emulated or surpassed Japanese productive achievements in agriculture, i.e. Mexico, Israel and Taiwan. They have all had substantial research programmes and the last two have done a great deal of extension work. In Mexico and Israel the capital investment involved, particularly in irrigation, has been much greater than in Japan, but in Taiwan success has been due largely to the use of Japanese methods.

The introduction of the " Meiji technology " in agriculture was a major achievement of Japanese growth policy.

(d) *Industrial Structure and Industrial Technology Appropriate to a Labour Surplus Situation*

In industry, the technical problem of devising best practice technique was more straighforward. Foreign techniques could be used with less need of adaptation to local conditions. In the early Meiji period, the government brought in foreign technicians, sent people abroad for practical and academic training, had textbooks translated, organised exhibitions, financed its own plants and subsidised private industry.

Certain institutional and organisational characteristics of Japanese industry helped foster her development on lines appropriate to her degree of backwardness. In heavy industry, she concentrated production in monopolistic zaibatsu — large financial groupings. These arrangements made economic use of able technicians and executives, as well as financial resources, and ensured that production was carried out at something like optimum scale in industries where large-scale output was a technical necessity.

On the other hand there was widespread subcontracting to numerous labour intensive small plants. This was the so-called dual economy, in which a highly differentiated wage structure ensured intensive use of labour and the co-existence of firms with very wide productivity differentials. The absence of trade union pressure or welfare state ambitions allowed the Japanese labour market to develop characteristics different from those of Europe. This helped in some important respects to adapt the industrial structure to the Japanese factor endowment. A good many industries were developed in country areas; as a result a large proportion of farm households had some member of the family participating in " side-work "

outside agriculture. In 1883 the proportion was over 30 per cent, in 1920 45 per cent, in 1935 54 per cent and in 1960 66 per cent (33).

The wage structure in Japan is different from that in Western countries, being systematically lower for small plants and hence permitting labour intensive techniques. The differential in wage structure has narrowed very considerably in the last few years, but was a distinctive feature of Japanese development from the early 1920s. According to Shinohara (34) it was not a characteristic of the Meiji period.

Shinohara quotes figures showing a range of wage and productivity differentials as follows for the U.S. and Japan.

TABLE 15

WAGE DIFFERENTIALS AND LABOUR PRODUCTIVITY BY FIRM SIZE (JAPAN AND U.S.)

Size of firm by number of employees	Wage Differential		Output per Man	
	Japan 1957	U.S. 1947	Japan 1957	U.S. 1947
1-9	38	65	20	108
10-19	44	79	30	89
20-49	48	84	36	93
50-99	52	86	46	91
100-499	61	87	61	103
500-999	76	90	85	105
1,000 +	100	100	100	100

Source: M. SHINOHARA, *Op. cit.*, p. 18.

It is clear that the dispersion of both wages and productivity was much wider in Japan than in the U.S. In the 1930s the dispersion of Japanese wage levels by size of firm was much greater than in 1957. Since 1957 it appears to have narrowed considerably as labour shortage has made it increasingly difficult for small firms to attract labour.

To some extent the differentials are due to the fact that the most skilled Japanese workers are in the biggest firms which hire only the pick of new school leavers and give them a life-time job

(33) T. OGURA, *Op. cit.*, p. 638.
(34) MIYOHEI SHINOHARA, *Growth and Cycles in the Japanese Economy*, p. 15.

commitment. The quality of management is also better in the bigger firms. More of the workers in small firms are employed on a part-time basis than is the case in large firms or in small firms in other countries.

The difference in productivity also arises because of wide dispersion in quality of capital equipment between large and small firms. Large firms in Japan usually work with the latest technology, and small firms buy a good deal of the second-hand machinery scrapped by large firms. This is clear from the following figures quoted by Shinohara for 1957 on the ratio of second-hand to total purchase of fixed assets in manufacturing:

TABLE 16

PURCHASE OF SECOND-HAND MACHINERY BY SIZE OF FIRM 1957

Size of firm by number of employees	Ratio of second-hand to new purchases of fixed assets	Size of firm by number of employees	Ratio of second-hand to new purchases of fixed assets
4-9	41	100-199	15
10-19	35	200-299	9
20-29	31	300-499	7
30-49	26	500-999	5
50-99	22	1,000+	3

Source: M. SHINOHARA, *Op. cit.*, p. 24.

However, as rapid growth has absorbed underemployment, small firms have had to pay relatively higher wages and pay more attention to labour productivity, and the share of second-hand equipment in their new assets has declined sharply since the mid-1950s (35).

The differentiated labour market made it economic for Japan to use older vintages of capital than is the case in other countries. This prolongation of the life of capital was a factor reducing the Japanese capital-output ratio and was a highly efficient use of resources in a country where capital is scarcer than in Western countries.

(35) "The share second-hand items took up in the total additional machinery purchases of small-sized enterprises thus shrank from the 1955's 45.4 per cent to 16.3 per cent in 1961 and further down to 6.7 per cent in 1962", *Economic Survey of Japan 1963-1964*, Economic Planning Agency, English Edition, The Japan Times, Tokyo, p. 135.

The large firms have much better access to finance than the small firms because of the close interlocking of production, marketing and finance which still exists. Small firms have poor access to credit so a good deal of their capital is channelled via large firms. The heavy concentration of financial resources and modern technology on the large firms may lead to some misallocation of resources, but in some sectors of manufacturing there is no effective choice between an advanced capital-intensive and a labour-intensive technology if the goods are to be produced in Japan at all, and this lack of choice is reinforced by the need to compete with other industrial countries in the export market. For this reason, the big technical difference between large and small firms is not so irrational as it may seem to a Western observer.

Apart from these interlocking relations of small and large firms in the modern sector, Japan also retains a large number of small firms producing traditional Japanese goods. This sector is probably bigger than in many developing countries because of the refinement and distinctiveness of Japanese tastes, and the fact that they were not disturbed by colonialism.

What Japan has done is to exercise a choice of techniques where it is available by marrying technologies of different vintages in a closely interlocked pattern of subcontracting between firms with close financial ties and a well-organised market for sales of second-hand machinery.

> "Large firms find it profitable to use parts produced by cheap labour in the smaller firms; in other cases, the large firms produce primary products such as steel or cotton thread while the smaller firms manufacture secondary products such as machinery or clothing" (36).

Japanese practice is different from that in many developing countries where large amounts of capital and modern technology can only be mobilised by foreign firms, which create an enclave economy. Japan does not have this extreme dualism, but rather a widely differentiated range of technology. In countries where real dualism prevails there are not close institutional and financial links between foreign and small-scale indigenous firms. The limited size of their economies, and the extreme differences in technical level

(36) M. SHINOHARA, *Op. cit.*, p. 24.

do not permit them to use the second-hand machinery of giant foreign firms, and they cannot easily import second-hand machinery from imperfect foreign markets of which their knowledge is poor and from which transport costs are very high.

In many developing countries trade union pressure would not permit the development of such a differentiated labour market, and the result is usually an excessive use of modern capital, quicker scrapping, a higher capital output ratio and unemployment. This happened, for instance, in Italy in the postwar period. Overt unemployment has not been a problem in Japan. Trade unions have never had any very great power in wage negotiations apart from the occupation period, and their bargaining is in any case usually done at the firm rather than the industry level.

In Japan, most large-scale firms provide their workers with "lifetime employment", and use a "seniority wage" system whereby earnings are geared to the worker's length of service and family responsibilities rather than specific skills. This gives firms a much greater incentive to develop adequate training programmes than they have in other countries where new firms try (in vain, in the aggregate) to externalise these necessary costs by bidding away workers from existing plants. It also provides a form of social security and unemployment benefit system to a privileged group of the labour force. There are, however, many unskilled workers who do not enjoy such benefits.

Although the Japanese wage system is somewhat exploitative and paternalistic, there is no doubt that it led to economic use of capital in an economy where labour was in plentiful supply.

Japanese government efforts to develop an appropriate industrial technology for its factor endowment have been a major factor in its high growth rate. In this respect its policy has been much more sensible than that in Russia which made a fetish of mechanisation and bigness and destroyed small-scale industry.

(e) *Research*

In the postwar period the Japanese effort to foster technological change has been very substantial. In the first place, the process of capital formation itself involves innovation, and as Japan has been investing a third of a G.N.P. which in real terms is now bigger than that of any European country except the U.S.S.R., its technical

contribution has been considerable, e.g. in fields such as radio, television, miniature motor-cycles, cameras and shipbuilding.

Japan devoted about 1.3 per cent of G.N.P. to research and development expenditure in 1962, which is comparable to the portion in France and Germany, but lower than that in the U.K., U.S. and U.S.S.R. However, about half of the research of all these countries except Germany goes to military purposes, so that the civilian research effort of Japan is bigger than that of any of the West European countries.

Most government departments have large research bodies, usually at least on the same scale as in the U.S. and certainly much bigger than in European countries. The Bank of Japan and the Economic Planning Agency both have large research units with rooms the size of department stores packed with economists and statisticians. As a result economic (and other) policy decisions are informed by a good deal more statistical and analytical information than is at the disposal of Western governments.

TABLE 17

RESEARCH AND DEVELOPMENT EXPENDITURE AS A SHARE OF GNP IN 1962

U.S.A.	3.1	France	1.4
U.S.S.R.	2.5 (a)	Germany (F.R.)	1.3
U.K.	2.2	Japan	1.3

Source: U.S.A., U.K., Germany and France from O.E.C.D. Science Directorate; Japan from *Science and Technology in Japan*, Council for Science and Technology, Tokyo, 1964, p. 7, and E.P.A. for GNP figure; U.S.S.R. from E.C.E., *Some Factors in Economic Growth in Europe during the 1950s*, Geneva, 1964, chapter V, p. 5.

(a) Share of net material product in 1960.

TABLE 18

SCIENTISTS AND ENGINEERS ENGAGED IN CIVILIAN RESEARCH IN 1959

U.S.	436,000	U.K.	59,000
U.S.S.R.	354,000	Germany (F.R.)	38,000
Japan	118,000	France	31,000

Source: Japan, *Op. cit.*, p. 7; other countries from O.E.C.D. Science Directorate.

There is still not a great deal of foreign direct investment in Japan, but she does a great deal to keep abreast with foreign tech-

nology. In 1963, 207,100 abstracts of foreign scientific papers were made by over 2,000 abstractors (37). Japanese businessmen and government officials are constantly visiting foreign countries to pick up new ideas. Some of this is considered a form of industrial espionage by Western countries, but the prewar Japanese practice of gross copying and using foreign trade marks has been substantially abated. Japan also translates into English a very large body of her own material which is not always fully exploited abroad.

(f) *Foreign Trade*

The degree of isolation of Japan from foreign countries in 1868 is quite unparalleled by any underdeveloped country today. It had almost no intellectual contact with foreigners, no foreign investment and no trade. It was about as isolated in respect of trade as China at the time of Kublai Khan and Marco Polo.

TABLE 19

RATE OF CHANGE IN THE VOLUME OF EXPORTS 1890-1964

Average Annual Percentage Growth

	1890-1913	1913-38	1938-55	1955-64
France	2.8	−0.4	5.2	6.7
Germany	5.1	−1.9	2.6	10.2
Japan	8.6	4.7	−1.4	14.8
U.K.	2.1	−1.9	3.6	2.7
U.S.A.	3.8	1.0	5.3	4.9
World	3.5	1.0	3.1	6.4

Source: Japan: 1890-1913 from K. KOJIMA, "Japanese Foreign Trade and Economic Growth", *Annals of the Hitotsubashi Academy*, April 1958, 1913-38 from *Historical Statistics of Japanese Economy*, Bank of Japan, 1962, p. 99. 1938-55 from G. C. ALLEN, *Op. cit.*, p. 218. Other countries and world 1890-1955 from A. MADDISON, "Growth and Fluctuation in the World Economy 1870-1960", *Banca Nazionale del Lavoro Quarterly Review*, June 1962. 1955-64 from *Yearbook of International Trade Statistics 1963*, and *Monthly Bulletin of Statistics*, U.N., New York.

This situation was changed completely by the commercial treaties imposed on Japan in 1858 and 1866, which forced open her economy, gave trading privileges to foreigners, and obliged her not to impose tariffs of more than 5 per cent.

(37) *Science and Technology in Japan, Op. cit.*, p. 18.

Thus Japan changed very quickly from being an almost completely closed economy to a virtually free trade country. She gained great benefits from trade in the form of modern technology and capital goods. As a country with good sea communications and very limited natural resources, she gained a great deal from international specialisation as well as from the removal of the internal feudal restrictions on movement of goods. The opening of the economy to trade also created opportunities for big profits. The sharp and sudden competition did a great deal of damage to some sectors of the Japanese economy, but was a great help to efficient resource allocation and productivity. Production of tea and raw silk expanded greatly as three-quarters of their output were exported. Industries hit by competition were paper, sugar, cotton cloth and cotton cultivation.

Japanese firms usually left their foreign sales effort, and purchases of imports, to powerful specialised trading houses with many foreign agents, which were linked financially to the zaibatsu. This was particularly helpful in enabling them to break into foreign markets where these houses enjoyed economies of scale and specialisation. In the early days of industrialisation these houses also exercised countervailing power and eliminated the monopoly profits of the foreign traders who enjoyed extra-territorial rights.

Between 1899 and 1911, the extra-territorial rights of foreign powers were eliminated, and Japan became free to increase her tariffs, but until 1911 they were generally no higher than 10-15 per cent. In 1926 there were major upward revisions with iron, steel and dyestuffs heavily protected, and 100 per cent, or even higher, duties on luxuries.

Until 1897, Japan was on the silver exchange standard, whereas the other leading commercial countries were on a gold exchange standard. Between 1874 and 1897 when Japan moved on to gold, the parity of silver to gold dropped steadily by about 60 per cent, so that the Japanese currency was devalued to this extent against the other major world traders. In this way her exports became more competitive despite the greater price increases in Japan.

One factor which helped to ease balance of payments constraints at the beginning of industrialisation was the very considerable reserves of gold and silver carried over from the feudal period. Between 1868 and 1881 net exports of gold and silver amounted to 71 million yen.

It has sometimes been argued that the Japanese take-off occurred in a period when world trading conditions were particularly favourable (38) and there was a free trading world. It is perhaps true that world trade in primary products was more buoyant in the nineteenth century than it is now, but world trade was growing more slowly then than at the present time. Before 1913 a good deal of the world consisted of closed colonial empires, and there were important protectionist countries such as Germany and the U.S. The growth of Japanese exports was due mainly to dynamic policies which made her perform more than twice as well as the world average from 1890 to 1913 and more than four times as well in the inter-war period when world trade conditions were very unfavourable indeed.

The ratio of Japanese merchandise trade to net domestic product grew as follows:

TABLE 20

RATIO OF TRADE TO NATIONAL INCOME
(per cent)

	1875	1913	1929	1938	1955	1960
Imports . . .	5.6	17.4	19.8	18.8	13.6	14.1
Exports . . .	3.5	15.7	18.7	19.7	11.1	12.8

Source: *Historical Statistics of Japanese Economy*, Bank of Japan, 1962, pp. 89-90.

The growth in the share of trade in income up to 1913 was not paralleled in any European country, but the 1913 Japanese ratio of trade to G.N.P. was still lower than in Germany or the U.K. In the first world war, Japanese exports expanded tremendously. In the 1920s and particularly in the 1930s, the European trade ratio dropped very considerably whereas that of Japan increased so that the Japanese trade ratio in the 1930s was considerably higher than in the big European countries.

In order to break into world markets, Japan had to be willing to take big bursts of deflation to make her prices competitive. This was true in the Matsukata deflation of 1881-85, and in 1931 when she took a sharp cut in terms of trade in order to reduce prices and

(38) See W. W. LOCKWOOD, *The Economic Development of Japan*, Princeton, 1954, p. 97.

maintain her exports. She also had to make major changes in her export pattern. In the 1930s the market for raw silk collapsed and she had to develop new exports. The government followed discriminatory, buy-Japanese policies, raised tariffs and helped subsidise exports in various ways.

Japan helped finance her rapidly expanding imports by building up her earnings from shipping. Her merchant fleet carried 57 per cent of her trade by 1914, and 80 per cent by 1919 when she had a surplus on invisible trade. In 1938 her mercantile marine was the third largest in the world and her sales of shipping services to foreigners brought in receipts sufficient to pay for nearly one-tenth of her imports (39).

The postwar collapse of Japan's foreign trade was more spectacular than her internal collapse. It was not until 1958 that her export volume surpassed the 1934-36 level. Although her postwar exports have risen twice as fast as the world average, the share of trade in G.N.P. is still well below the prewar level. She compensated to some extent for the lower export ratio by internal sales (procurement) to American troops. In the early 1950s these were equal to about half of her exports, but by 1956 had fallen to 20 per cent and are now very much smaller.

The postwar decline in the foreign trade ratio contrasts sharply with the European situation where exports have been a very dynamic factor in demand, and are much higher as a share of G.N.P. than prewar.

There are several reasons for the decline in the foreign trade ratio:

(a) forty per cent of her prewar trade was with her colonies in Korea and Formosa and with China. This has been greatly restricted by political changes;

(b) the dismemberment of Japan's powerful trading organisations by the occupation authorities struck a heavy blow at Japan's commercial efficiency, as Japanese manufacturers had relied almost exclusively on these firms for foreign sales;

(c) in the early postwar years restrictive trade and payments policies by European countries also played a major inhibiting role.

(39) G. C. ALLEN, *Japan's Economic Recovery*, Oxford, 1958, p. 163.

However, the structural changes in the economy have played a major and more permanent role. The loss of colonies stimulated greater self-sufficiency in food. The structure of her exports has shifted heavily to capital goods, the import content of which is much smaller than that of textiles which were more than half the prewar total. Finally, she has reduced her demand for raw materials by development of synthetics, produces her own fertilisers instead of importing them and uses a bigger proportion of domestic iron ore. On the other hand her dependence on imported fuels has risen substantially.

Since 1955 Japan has suffered two major cycles of payments difficulties, in 1958 and 1962, and each of these has been dealt with by restrictive monetary policies. External imbalance and consequent government corrective policies have been a major factor in the Japanese business cycle just as in Europe. Japan has not suffered from problems of chronic long-standing surplus or deficit. The sharpness of corrective policy, and the high responsiveness of the wage and price structure (40) led to rapid readjustment, more similar to the pattern in the Netherlands than that in Germany, France, the U.K., or U.S. Consequently, Japan has not caused major payments problems for other countries, though her short-term borrowing may have inconvenienced the U.S., and she has not piled up excessive reserves. Japan has used foreign borrowing on a large scale to deal with payments constraints, either through bank borrowing in New York or bond issues in the U.S. or Europe. She has also borrowed from the I.M.F. and I.B.R.D. As in previous periods there has only been a limited amount of foreign direct investment in Japan.

In the prewar period Japan's policy of price flexibility helped increase her share of world trade, but her terms of trade worsened very substantially until in 1937 they were less than half of what they were in 1885. Since 1955, Japan's terms of trade have behaved much more like those of a developed than a developing country and have improved appreciably.

Throughout the period since 1868, government policy has played a major role in the balance of payments. Government has continually exerted itself to promote Japanese export markets. At an early stage it introduced quality control and inspection for tea and raw silk, its general financial policy favoured exports, institutional help was given to exporters, exchange rate policy and subsidies have helped, temporary export controls were used in markets likely to be oversaturated, etc. Similarly government policy has played a major role in regulating international capital movements.

(40) Japanese wages are more flexible than those in other countries. The wage itself is not flexible downwards, but a large proportion of wage and salary income is paid in twice-yearly bonuses whose amount can be varied with business conditions.

During much of the period Japan has followed policies somewhat different from those of major Western countries, and has often been assailed for this. Some of the criticism of shady trade mark practices and dumping were justified (41), but a good deal of the antagonism is that which developing countries always find from unenlightened manufacturers facing competition from "cheap labour" countries. It is fully justifiable for developing countries to indulge in a different set of trading and payments practices from developed countries, and a dual morality in this respect has developed *de facto* in G.A.T.T., and was given official recognition in U.N.C.T.A.D.

Now that Japan has become a developed country, has joined O.E.C.D. and accepted the convertibility commitments of Article 8 of the I.M.F., her "morality" in international trade and payments matters has become that of a developed country, and she is no longer free to use the exchange and trade controls which she used earlier in the postwar period. She has in fact entered into the phase of the "open door" economy and faces many of the same policy problems as European countries in this respect. On the other hand, her bigger growth momentum, and greater price flexibility give her fewer problems of external equilibrium than many European countries.

(g) *Foreign Capital*

At various times in her development, Japan ran into serious payments difficulties which were relieved by an inflow of capital from abroad. The role of foreign capital in relieving the payments problem was more important than its supplement to domestic saving, but even in the latter respect its role in Japanese development is often understated.

(41) See S. Tsuru, *Op. cit.*, p. 149.

In 1869 and 1872, Japan raised two foreign loans for a total of £3.3 million, but did not receive other foreign finance until the $146 million indemnity was received from China in 1895 at the end of the Sino-Japanese war. This amount represented about a quarter of her G.N.P. at the time. "These reparations made possible the expansion of the army and navy, the extension of the railroad, telegraph and telephone services, the establishment of the Yamata Iron Mill, as well as the adoption of the gold standard" (42).

In 1901, Japan was awarded about $26 million as her share of the indemnity due from China to the Western powers after the Boxer rebellion (43). Between 1903 and 1913 Japan borrowed fairly heavily from abroad. After allowing for an outflow of Japanese investment of about $280 million, Lockwood estimates her net receipts of capital in the form of loans, indemnities and investments from 1896 to 1913 to be $800 million or more (44). This is an average annual increment of about 90 million yen. Lockwood suggests that this represented only 2.5 per cent of national income in those years, but judging by the G.N.P. figures quoted by Koichi Emi (45) it would seem to have been 3.2 per cent of G.N.P. or about a third of capital formation for that period. Rosovsky (46) gives figures which show a net contribution of foreign capital considerably smaller than this, but it is not clear whether his figures include all foreign capital (they certainly do not seem to include the Chinese indemnities). Thus in the two decades before the first world war, outside capital went a considerable way to supplement domestic saving (47), though it contributed a smaller amount than in many developing countries today, who receive about 4 per cent of G.N.P. from this source on

(42) See M. SHINOHARA, *Op. cit.*, p. 53.

(43) For the size of indemnities, etc., see J. K. FAIRBANK, E. O. REISCHAUER and A. M. CRAIG, *East Asia The Modern Transformation*, Boston, 1965, pp. 234, 261, 470 and 474.

(44) See W. W. LOCKWOOD, *Op. cit.*, p. 255.

(45) KOICHI EMI, *Op. cit.*, pp. 141-2.

(46) *Op. cit.*, p. 9.

(47) This statement contradicts the findings of some other writers, in particular, KENNETH BERRILL, "Foreign Capital and Take-off" in *The Economics of Take-Off into Sustained Growth*, ed. W. W. Rostow, Macmillan, 1963, pp. 290-1. Berrill only deals with foreign borrowing and excludes the Chinese indemnities. He considers that a good deal of foreign capital went into military expenditures. However, without foreign help, it is likely that investment would have been cut to finance the military spending. He suggests that foreign borrowing was equivalent to only one seventh of Japan's savings from 1900-14, quoting Nurul Islam, *Foreign Capital and Economic Development*, Vermont, 1960, as his source. However, this estimate is lower than Lockwood's and higher than Rosovsky's.

average. Most Japanese borrowing consisted of bond issues. There was very little foreign direct investment in Japan either then or later.

During the first world war, Japan seized the opportunity of paying off a good deal of her prewar debt. She borrowed abroad again in the 1920s, but also built up her own foreign lending so that she was a net lender (48) from 1914 to 1934. She was a borrower on fixed term from developed countries, and carried out her own direct investments in developing countries. Japan started to invest overseas after acquiring colonies in 1895, and greatly expanded this in the interwar period when she made substantial investments in Manchuria, Korea and Formosa.

After the second world war, Japan lost most of her foreign assets, but she received a good deal of U.S. aid. The amount of U.S. postwar economic aid to Japan was about $2.8 billion (49) and there has also been military aid of about $1 billion. Japan has also borrowed from the World Bank. There has been some foreign direct and portfolio investment in Japan but it has not been on a large scale. More recently, Japan has borrowed by bond issues in Europe and New York and has borrowed heavily on short term in New York — mostly for balance of payments reasons.

Since the mid-1950s, Japan has resumed her own direct foreign investment on a limited scale and has been a capital exporter on government account because of reparations to Burma, the Philippines, Indonesia and Vietnam, and aid to these and other developing countries. Her total net capital flow to developing countries from 1950-63 was about $2 billion (50).

(h) *Investment*

In the Meiji period, gross investment was about 11 per cent of G.N.P. This is a lower rate than that of many developing countries today and it is substantially below the minimum effort prescribed

(48) See W. W. LOCKWOOD, *Op. cit.*, p. 259.

(49) See *U.S. Overseas Loans and Grants July 1, 1945-June 30, 1964*, Special Report Prepared for the House, Foreign Affairs Committee, A.I.D., Washington.

(50) Between 1950 and 1963 Japan's total official net flow to developing countries was $1,391 million and her private long term capital flow to these countries was $466 million. The government also guaranteed a net flow of $165 million export credits to these countries. See *The Flow of Financial Resources to Less-Developed Countries, 1956-1963*, O.E.C.D., Paris, 1964, p. 142.

by W.W. Rostow in his analysis of the conditions for take-off (51). However, the efficiency of investment was very high and the capital output ratio was only about 3.0 due to the very large effort to develop a capital-saving technology in agriculture, and to the considerable improvement in resource allocation which occurred through the opening of the economy to international trade.

TABLE 21

GROSS INVESTMENT RATIO IN JAPAN 1887-1962

	Gross Domestic Capital Formation as a Proportion of GNP	Non-Residential (a) Capital Formation as a Proportion of GNP
1887-1916	10.8	9.0
1917-1936	16.1	14.8
1955-1962	33.2	30.2

Source: 1887-1936 from H. Rosovsky, *Op. cit.*, pp. 2, 9 and 24. The figures exclude military investment. The Rosovsky figures are 5 year moving averages. Recent unpublished E.P.A. estimates show a lower fixed investment rate for 1917-36, of 15.2 per cent. 1955-62 from unpublished estimates of the E.P.A. incorporating latest revisions in GNP figures. Ratios are in current prices.

(a) Residential construction on farms is included for prewar years.

TABLE 22

INCREMENTAL GROSS CAPITAL OUTPUT RATIOS IN JAPAN 1887-1963

	Ratio of Total Capital Formation to GNP Growth	Ratio of Non-Residential Capital Formation to GNP Growth
1887-1917	3.0	2.5
1917-1936	4.5	4.1
1955-1963	3.2	2.9

Source: Investment ratios from preceding table. GNP growth from sources cited in table 1.

In the Meiji period government taxes were able to mobilise for investment purposes some of the "surplus" which had not been

(51) He prescribes a movement of *net* productive investment from 5 per cent or less to over 10 per cent of national income, see W. W. Rostow, *The Stages of Economic Growth*, Cambridge, 1962, p. 39.

used for capital formation in the Tokugawa period, but a good deal of tax revenue went into large pensions or interest on bonds to compensate old feudal interests for their sequestrated rights (52). The government also used a good deal of the tax revenues to finance a modern military force.

TABLE 23

INVESTMENT RATES AND CAPITAL OUTPUT RATIOS IN JAPAN AND OTHER COUNTRIES 1955-64

	Gross Capital Formation as Share of GNP at Current Market Prices 1955-63	Gross Non-Residential Capital Formation as Share of GNP at Current Market Prices 1955-63	Gross Non-Residential Fixed Capital Formation as Share of GNP at Current Market Prices 1955-63	Rate of GNP Growth (a) 1955-64	Gross Incremental Non-Residential Capital-Output Ratio	Gross Incremental Fixed Non-Residential Capital-Output Ratio
France . . .	20.4	15.7	14.2	5.0	3.1	2.8
Germany . .	25.3	20.1	18.2	5.6	3.6	3.3
Italy	22.7	16.9	15.9	5.7	3.0	2.8
Japan	33.2	30.2	25.9	10.4	2.9	2.5
U.K.	16.6	13.7	12.7	3.1	4.4	4.1
U.S.A. . . .	18.4 (b)	13.9 (b)	13.0	3.1	4.5	4.2

Source: Japan, data derived from preceding tables. Other countries, columns 1 and 2 from O.E.C.D., *General Statistics*, January 1965, G.N.P. growth rates from O.E.C.D. national accounts division.

(a) Adjusted for changes in geographic coverage.

(b) U.S. investment figures adjusted upwards by $5 billion a year to include government investment in machinery and equipment.

It seems unlikely that Japan in the Meiji period could profitably have absorbed a very much greater rate of capital formation, particularly when we remember that capital intensive investment in electricity and roads which are modern "preconditions" of growth, were not technologically feasible for a good part of that period. Instead Japan spent heavily on the acquisition and diffusion of education, skills, know-how and technology appropriate to her factor cost situation.

(52) In 1878, 42 per cent of government expenditures consisted of interest payments, cf. Shigeto Tsuru, "The Take-Off in Japan 1868-1900" in W. W. Rostow, *The Economics of Take-Off into Sustained Growth*, Macmillan, London, 1963, p. 146.

In the interwar period, the Japanese economy was much better prepared to absorb a large increase in capital formation, and the rate of investment rose to about 16 per cent of G.N.P., which by the standards of the period was reasonably high, though well below Soviet rates of investment in the 1930s. The efficiency of capital formation from 1917 to 1936 was lower than in the Meiji period, partly because of the disruption to growth involved in readjustments to world depression, and also to the reduced role of agriculture whose growth had been due much more to improved practices or use of fertiliser than to capital investment.

During the war, Japanese investment was fairly high, but wartime damage included loss of about a quarter of the housing stock (53), a good deal of capital equipment, most of the merchant marine, and foreign investments. In the early 1950s the rate of investment rose rapidly. A good deal of idle capacity was reactivated (54), and shadow capacity was restored by repairs. For this reason, the capital-output ratio was then abnormally low.

From 1955-63, investment averaged 33 per cent of G.N.P. or more than double the prewar level. This was higher than in any other country and was a major factor in the phenomenally high growth rate of the economy. Active government policies to maintain demand, and the work of the Planning Agency in setting targets have done a great deal to stimulate this high rate of investment.

The incremental gross capital output ratio has been lower than in other industrial countries. There are several reasons for this.

The composition of Japanese investment has been favourable to productivity growth. Japan has economised on investment in transport. The road network is still very poor, and railway capacity is used very fully. However, the biggest difference between Japan and Western countries is the much lower proportion of investment in housing. Only 9 per cent of gross investment in the postwar period, 16.3 per cent in 1887-1916, and 8.4 per cent in 1917-36 went to housing as compared with about a quarter in Europe or the United States. Japanese housing standards are aesthetically attractive but modest, with wooden structures, paper walls and little in the way of foundations. The cost of housing is further reduced by extensive

(53) See J. B. Cohen, *Japan's Economy in War and Reconstruction*, pp. 406-8.

(54) M. Shinohara, *Op. cit.*, pp. 11-12, quotes a figure for manufacturing capacity use rising from 53.1 per cent in March 1950 to 83.0 per cent in March 1956.

use of standardised parts in all kinds of house (55). If we exclude housing from the investment figures, Japan's rate of capital formation in 1955-63 was 50 per cent higher than Germany and almost three times as great as in the U.K. or U.S. It is therefore useful to concentrate attention on the capital-output ratio excluding housing.

A factor which reduces the gross capital-output ratio in fast growing countries is their smaller burden of replacement. In a country where the capital stock is growing fast, its average age is lower than in a slower growing country, and the proportion of G.N.P. needed to meet replacement is smaller. As the share of G.N.P. going to net investment is higher, the share of replacement in gross investment is smaller for two reasons. The replacement burden of non-residential fixed investment in an economy with a 3 per cent growth rate is likely to be 5.3 per cent of G.N.P. compared with 3.3 per cent for a 6 per cent rate and 1.5 per cent for a 10 per cent G.N.P. growth rate (56). As inventories are measured net of replacement, we should exclude them from our illustration. Replacement decisions are not based on formulae but vary according to economic climate and entrepreneurial estimates of demand. Furthermore the past rate of growth has not been steady. Nevertheless if the U.K. replacement burden from 1955 to 1964 had been 5.3 per cent of G.N.P., its net non-residential fixed investment rate would have been 7.4 per cent and its net capital-output ratio 2.4; similarly the Japanese net non-residential fixed investment rate would have become 24.4 per cent and its net capital-output ratio would be 2.3. Thus elimination of the replacement factor would be enough in itself to produce convergence of the two extremes in gross capital-output ratios if our crude assumptions about replacement were correct.

(55) H. Rosovsky, *Op. cit.*, p. 211, quotes Walter Gropius as follows: "the modernity of the traditional house is striking as it contains perfect solutions — already centuries old — of problems which the Western architect is still wrestling with today ... Still today, one can buy in Japan all the standardised component parts of a wooden house on the market and assemble them on sight ... The house and the garden of the common man and that of a monastery, a prince, or even the emperor, reveal the same spirit of approach. They differ in size and quality of materials but not in basic conception as similar buildings did during the feudal regimes of Europe", (Walter Gropius, *Yale Architectural Journal*, 1955).

(56) Assuming that non-residential capital has a 30-year life, that the capital-output ratio is 2.5 and that growth has been steady. The ratio of replacement to capital stock is determined by the formula $\frac{Ar}{(1+r)^n-1}$, where A is today's capital stock, r is the growth rate, and n is the life of capital.

A good deal of Japanese investment has gone to capital-widening, because of the extremely rapid growth of employment, particularly in the industrial sector, and this form of investment has a high pay-off because it does not involve a change in factor proportions. Whether one measures the increase in total employment or non-agricultural employment, this factor has had greater influence in Japan than in other major industrial countries (see table 24).

TABLE 24

PERCENT INCREASE IN EMPLOYMENT 1955-64

	Total	Non-Agricultural
France	2.6	13.3
Germany	11.6	21.2
Italy	0.4	26.2
Japan	13.4	38.8
U.K.	4.7	5.8
U.S.A.	10.8	11.5

Source: O.E.C.D., *Manpower Statistics 1954-64*, Paris, 1965.

We have already noted the dual structure of Japanese industry, which permits an intensive use of capital by long working hours, shift working, and a prolongation of the life of capital. It is doubtful if this has played a major role since 1955 as the Japanese economy has been changing away from the " dual " structure.

A major advantage of the Japanese economy is that it is further from the technological frontier than European countries, so that productivity gains are cheaper in capital cost. The technical possibilities for pushing productivity faster arise from the opportunities created by Japan's relatively backward position (57), and her effort

(57) I explored this problem of the technical opportunities created by backwardness (of Europe vis-à-vis the U.S.) at considerable length in *Economic Growth in the West*. These arguments apply even more strongly to Japan or to developing countries. The argument is similar to that of Professor Gerschenkron, see ALEXANDER GERSCHENKRON, *Economic Backwardness in Historical Perspective*, Harvard University Press, 1962; but he does not define backwardness as I do, i.e. in a measurable sense in terms of relative productivity levels, nor does he define the opportunity as I do, i.e. in terms of cheap capital deepening and a different schedule of marginal returns on investment. He stresses mainly the possibility of using large scale modern plant. However, doing this is not necessarily the best way of exploiting relative backwardness.

to produce new skills is big enough to enable these opportunities to be exploited.

The schedule of returns on capital deepening investment will vary between countries according to the productivity level from which they start, but it is not necessarily a reason for variations in their capital-output ratio. In European countries the level of productivity in the mid-1950s was around half of that in the United States. In Japan it was about a quarter. These differences in productivity were not mainly due to differences in natural resources or economies of scale, but to the difference in the amount of investment which had taken place historically. Therefore Europe and Japan could exploit their lower productivity position to get cheaper growth than the U.S. in terms of investment. These different opportunities might be reflected *ex post* in a lower capital-output ratio, but not necessarily so. If investment in these more backward countries is pushed to the stage where the marginal returns are similar to those of the U.S., then the capital-output ratio may not be different — though growth will be faster and investment higher. Thus it was possible to push investment up to 25 per cent of G.N.P. in Germany and 33 per cent in Japan without producing sharply diminishing returns to entrepreneurial profits. The United States is much closer to the frontier in terms of technology and consumer demand patterns. If the U.S. wanted to increase its investment rate considerably it would have greater technical problems as well as greater uncertainties in guessing what consumers would want to buy.

It is interesting to inquire into the sources of finance for such a high rate of investment as Japan has enjoyed in the postwar period.

(a) Government investment has been substantial at 8.4 per cent of G.N.P. from 1955 to 1962 or about a quarter of total investment. The government investment effort has always been high by European or American standards. In the period 1887-1936 it averaged 36.3 per cent of total investment (though a lower share of G.N.P. than in postwar years) (58). Postwar government revenue

(58) Up to 1880 the government owned most of the industrial enterprises including a cement works, a number of mines, a glass factory, brick factory, cotton spinning mill, silk reeling mill, a shipyard and agricultural machinery plant. It sold many of these off after this but continued to run its own armouries and two naval shipyards. It owned the railway system, the telephone and telegraph services, and the Yamata iron and steel works. Municipal

has been particularly buoyant and on top of financing its own investment, the government has had savings to channel to the private sector through intermediaries such as the Japanese Development Bank, the Small Business Finance Corporation, etc. (59). There has been practically no military expenditure, social transfers are lower than in Europe, and internal debt was practically wiped out by postwar inflation. Government revenues have been very elastic in a rapidly growing economy, because of the highly progressive structure of taxes imposed during the occupation. The government has thus been a major source of savings in spite of regular reductions in tax rates.

(b) Secondly, the corporate sector, which provides income to people with a high savings rate, has enjoyed high profit rates (60), and Japanese income distribution is probably more unequal than in Europe in spite of progressive taxation.

(c) The rate of savings by wage and salary earners has been very high, e.g. in 1960 the urban workers' savings ratio was 15 per

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authorities supplied water and city transport, and public authorities also made investments in gas and electricity. The figures on government investment include subsidies to the shipping industry (see H. Rosovsky, *Op. cit.*, p. 186). There was a government monopoly of tobacco, camphor and salt. In 1937 the electricity supply industry was nationalised. In addition there were the traditional government investments in public buildings, schools, hospitals and roads. In the postwar period the Yawata iron company and the electricity industry were sold off by the occupation authorities. Nevertheless, public investment has continued to be very large, particularly in transport and power.

(59) On the role of public financing of the private sector, the O.E.C.D. Economic Survey, *Japan*, 1964, has this to say: "Official funds were an important source of external finance for private fixed investment immediately after the war when the normal credit institutions had only limited resources available. They have played a very important role in financing the reconstruction of steel and iron plants, coal mines, and electric power stations. In 1952 public finance still provided 25 per cent of the total external finance for private fixed investment, and even in the 1960 fiscal year it represented 13.5 per cent, despite the intervening large rise of private saving. Yet a further important aspect of growth policy has been the fiscal privileges granted on a highly selective basis to particular industries or investment projects. Differential tax treatment for constitution of special reserves, accelerated depreciation of particular types of equipment, refunding of custom duties, etc. has been extensively used".

(60) In 1962 the ratio of gross profits (including depreciation) before tax to total fixed assets and inventories was 24.5 per cent for manufacturing. In 1963 it was 28.1 per cent. The share of non-labour income in value-added in manufacturing was 59 per cent in 1962 and 61 per cent in 1963. See *Analysis of Financial Statements of Main Industrial Corporations in Japan*, Statistics Department, Bank of Japan, pp. 41 and 43 (October-March issues 1963 and 1964). For other countries, see A. Maddison, *Economic Growth in the West*, p. 53. The profit rate seems to be somewhat similar to that in Germany and much better than that of the U.K. and U.S., but the share of profits in value added is substantially bigger than in Germany and three times as high as in the U.S.

cent — partly because it is difficult for consumption habits to get adjusted to such rapidly rising income. A good deal of Japanese wage and salary income comes in the form of semi-annual bonuses which fosters savings. There has also been a very sharp growth in opportunities for Japanese to save by buying securities on the stock exchange.

V - Lessons of Japanese Experience for Developing Countries

It is relevant to ask whether Japan's experience has lessons for developing countries, nearly all of which are now committed to rapid economic growth as a major aim of policy.

There are significant differences between Japan and the developing countries of the present day. In some respects she was better off:

(a) Japan always had much lower population growth. Her long term average since 1868 has been about 1.2 per cent a year, and the rate has not moved significantly beyond this figure within the period. In the past decade, population growth in developing countries has averaged 2.2 per cent a year, but most countries now have rates with the range 2.5-3.5 per cent. This reduces their capacity to save, increases the investment requirements for a given growth in G.N.P. per head, and exacerbates problems of unemployment. If they are to achieve the 2.7 per cent long-term per capita growth rate of Japan they will need a 5 to 6 per cent G.N.P. growth instead of Japan's 3.9 per cent. Japan's lower population growth rate was partly due to the fact that her expansion started when medical technology was less advanced than it is now in curbing mortality. Fertility was also reduced by infanticide and abortion, but official Japanese policy did give considerable emphasis to birth control in the postwar period;

(b) Japan was a large country right from the beginning of her industrialisation. By contrast, many developing countries are so small that modern industrial development is handicapped because of limited domestic markets;

(c) the Japanese administrative machine was efficient and centralised, there was a strong sense of national unity, a highly sophisticated cultural background undamaged by colonialism, absence of major internal conflicts between social groups on the basis of caste

or religion, a fair balance between progress of different regions, and strong leadership from a bureaucratic authoritarian elite drawn from the samurai class. Many developing countries do not have these attributes;

(d) Japan's economy did not acquire a lop-sided dependence on a few primary commodities or enclave foreign investment as a result of colonialism.

In these respects, Japan was more favourably placed than present day developing countries, but she had fewer opportunities in other ways:

(a) foreign capital played a significant part in promoting Japanese growth from 1895 to 1913, but Japan did not have available the large-scale flow of government aid which developing countries now receive;

(b) the technological gap between the developed and the developing world is now bigger than it was in Japan in the nineteenth century. Developing countries have therefore greater technological backwardness and bigger growth opportunities;

(c) the world economy and world trade are growing more quickly now than during most of Japan's take-off. The external environment for growth is therefore more favourable than it was for Japan.

These then were the differential elements in the environment. What were the specific characteristics of Japanese development *policy*?

The major propellant of the Japanese economy in all its phases has been government policy which has given very high priority to growth. The only sustained parallel to this has been that of the U.S.S.R.

The Japanese government clearly took responsibility for promoting economic growth and made considerable sacrifices to achieve it — motivated first by a strong desire to avoid being colonised but also by her own desire to be an imperialist nation. The science of economic planning was not at all developed when Japan embarked on its policy of expansion. However, Japan was willing to use the market mechanism and incentives in a very effective way. Thus there was a willingness by government to carry out fundamental institutional reforms, to have harsh levels of taxation, to take extreme

deflationary measures when necessary for the foreign balance, foster exports and invisible earnings, control movements of international capital, to have the state act as an entrepreneur and innovator and to give adequate priority to agriculture. Many governments in developing countries claim to give economic growth equally high priority but they seldom have enough power or vision to carry through policies involving major sacrifices. They are also constrained by the requirements of social policies which Japan was able to ignore.

Pride of place must surely go to Japanese efforts to develop human resources by exploiting fully the use of foreign skills and training, by expanding domestic education in response to economic needs, and by extension work in agriculture.

Japan made a major effort to adapt her agricultural and industrial technology to her factor endowment. The Japanese wage structure also fostered this.

Had she not placed so much emphasis on militarism, her growth would have been quicker.

Developing countries seeking rapid growth will have to do most of the things Japan did. They should also give emphasis to high capital formation at an earlier stage than Japan did — partly financed by foreign aid. They will probably give greater emphasis than Japan to promotion of on-the-job training, they will need to do more to limit population growth, and they will need more active cooperation from developed countries in trade matters.

VI - The Prospects for the Future

In the previous section we tried to assess the applicability of Japanese experience and techniques to other countries seeking rapid development. Here we are mainly concerned with present-day policy problems which are largely those of a developed country. We will try to assess whether present policies will enable Japan to maintain high growth rates and see whether her prospects differ substantially from those of other industrial countries.

In terms of output and productivity per head, Japan is not now so far below the West European countries. She still has a quarter of the labour force in agriculture and some elements of " dualism " in her industrial wage and output structure, but her future possibil-

ities for removing " excess " labour from these sectors are much less than in the past ten years. Furthermore, the very small scale of her agriculture, which is largely in the hands of peasant owners as a result of the land-reform of the occupation period, will slow down the process of modernisation and mechanisation. Her population growth rate is declining and does not differ substantially from that of Western Europe. The rate of growth of the labour force will drop fairly substantially in the next decade after a peak in 1966 (61).

The scope for productivity gains will also be smaller now that the technological opportunities of backwardness have been narrowed. The profitability of investment will also be adversely effected by greater pressure on the labour market which will give workers the bargaining power to demand a greater share of the value added in industry. There will therefore probably be some fall in the share of G.N.P. going to private investment. Certainly a slower growth rate will require a lower inventory investment, which at present absorbs 6 per cent of Japanese G.N.P. Reduced investment could conceivably lead to a need for compensatory government demand stimuli, as the personal savings ratio is so high. But with a massive demand for automobiles on the horizon, and an upward adjustment in the relative incomes of the lowest paid workers, it seems more likely that the spontaneous demand pressures will continue to be inflationary.

The capital output ratio is likely to rise because of bigger investments in road transportation, housing, sewerage and urban development which have been neglected in the past. The use of second-hand machinery by small firms is also declining as labour costs rise. This will further increase the replacement ratio in an economy where it will rise in any case with a lower overall rate of capital formation.

It is therefore likely that growth in the next decade will be slower than 1955-64. There are certain dangers specific to an economy in deceleration, which are particularly apparent in the present recession of 1965. Some industries will find difficulties in adjusting to slower growth rates, and there will be danger of overproduction. The rate of wage increase will have to be reduced to match reduced

(61) " The average population increase rate of the 15 to 64 years age bracket is around 1,390,000 persons annually from 1960 to 1965, but the increase rate from 1965 to 1970 is expected to be 940,000. This figure is estimated to decrease to a further 620,000 persons during the 1970-1975 period ", *Economic Survey of Japan*, *op. cit.*, p. 42.

growth in supply potential and so will the growth of imports, otherwise payments difficulties will arise. The disappearance of underemployment will increase labour's bargaining power and the open door economy will make it less easy to control imports. Slower growth may mean some readjustment in stock market assessment of future profits, and there will be financial difficulties for some firms and banks which are over-committed to expansion. This problem is exacerbated by the financial structure which is much weaker than in European countries. The government will certainly have to take measures to strengthen the financial system. In the medium term economic plan for 1964-68, it is proposed to study measures for controlling the debt-equity ratios of firms and to regulate the liquidity ratios of banking organisations more strictly.

There are also certain specific elements of backwardness which will have to be changed in important degree. The present highly differentiated wage structure and system of lifetime employment reduces labour mobility. It will hardly be possible to maintain this and provide the right incentives once underemployment disappears. Its advantages in promoting intensive use of capital are less important than they used to be. It will probably be gradually replaced by something more closely resembling the Western system — with wages more standardised, and social security ensured by government schemes. In moving towards such a wage structure a good many small-scale enterprises will disappear. The government will have to take over more of the burden of vocational training from enterprises as they move away from the lifetime employment commitment.

On the other hand, the experience of explosive growth has created some useful characteristics which may help keep Japan on a higher growth path than she could have achieved without the earlier momentum. The economy is already attuned to high growth in several important respects. Investment is very high, education and training arrangements are geared to producing new skills at a high rate, workers are used to adapting to new jobs and do not have a restrictive mentality, salesmen and retailers are used to rapidly rising sales, and consumers have the habit of rapidly increasing their spending.

In many respects, Japan is better placed than Germany was to retain some of her dynamic characteristics in the decelerated phase. And she may be able to eliminate some of the lingering character-

istics of backwardness more quickly than Italy — which suffers from an extreme regional disequilibrium not present in Japan.

(a) Japan has a planning agency which exerts considerable influence on business and which helps both business and government to take an articulate view of growth problems. Planning does not give the government as big an influence as in France but gives it more than in any other capitalist country. Planning is indicative, but is supported by governmental powers to influence credit or depreciation allowances in a discriminatory fashion. The planning process involves close consultation with business. But the highly competitive business community always tries to increase its share of the market. As a result, the plans have always been overfulfilled, but they have served a useful purpose in smoothing growth problems and helping business to seize growth opportunities by identifying them ahead of time and ensuring that short-term decisions were taken in the light of long run trends;

(b) the government has instruments for short-term policy correctives which are just as sharp as in European countries. Because of illiquidity of business and the banks and the smallness of the national debt, monetary policy is particularly effective. Consumer credit has not yet developed on any scale, and control of this is not yet an effective policy weapon, but can be expected to grow. The government has not made such great use of fiscal policy as some European countries but it has made continuous reductions in tax rates to offset the high growth in revenue that arises with a progressive tax structure. In spite of some previous attachment to balanced budgets, it is unlikely that the development of a more active fiscal policy will be impeded by the sort of shibboleths which hindered the U.S. in the 1950s. The basic attitudes to fiscal policy resemble those of Europe rather than the U.S. The Japanese government is more willing to use direct controls than European countries, and its advice and requests are treated more seriously by business. On the other hand the cycle-sensitivity of the Japanese economy does seem to be somewhat bigger than in Europe;

(c) the Japanese wage structure remains quite different from that in Europe, and more susceptible to corrective influence in times of payments difficulty. Japan should therefore have less trouble with cost inflation than European countries. The growing labour shortage

and increased trade union power will change this situation in some respects but the unions are conscious of the benefits of keeping the country competitive;

(d) the Japanese government retains closer control on both inward and outward capital movements than European countries which helps it control payments problems more easily. European countries have moved too far in relaxing these controls in their pursuit of convertibility, and this has led to destabilising short-term capital movements;

(e) Japan's system of economic intelligence and statistical indicators is superior to that of most European countries and helps greatly in making for sound judgement of economic problems;

(f) the educational effort is better geared to foster growth than in European countries and the government has had manpower and educational plans since 1960. However, some of the American-inspired educational reforms have led to too much higher education of a non-specialised kind instead of vocational training;

(g) efforts to foster appropriate development of technology are increasing. Expenditure on research is growing as a share of G.N.P. In absolute terms, it is twice as high as in any West European country. Practically no scientific brainpower is wasted for military purposes. Agricultural research and extension is as active as ever;

(h) government investment is now over 11 per cent of G.N.P. and is expected to rise further. Government financial help to the private sector is likely to continue. The very low level of military spending should enable the government to continue these policies which involve very much bigger shares of G.N.P. than in European countries. This should help offset a possible downturn in private investment.

The newly adopted "open door" policy by which Japan has a convertible currency and is eliminating import controls will bring benefits by increasing competition and lowering costs. Japan is hardly likely to suffer from damage to infant industries, will gain better access to markets of other countries and cease to be treated by other developed countries as an outsider. On the other hand, the abandonment of import controls for short-term balance of payments stabilisation will reduce the range of policy instruments avail-

able, and increasing wage pressures will make balance of payments adjustments more difficult.

It seems reasonable to assume that Japanese performance will continue to be better than that of West European countries or the U.S.S.R., but several factors will operate to reduce its growth rate below the previous 10.4 per cent a year. The non-agricultural labour force will probably increase about half as fast as the 3.7 per cent of the past, and the same productivity growth rate will probably not be maintainable. It is unlikely therefore that her growth from 1965 to 1975 will exceed 7.5 per cent a year. Nevertheless, such a growth rate would probably bring Japanese productivity up to the highest European levels. It would also raise her consumption standards sharply, as we are postulating a reduction in the investment rate.

As Japan has better growth policies than European countries there is no reason why she should not continue to do better than they do even after she has drawn level with them. She will, after all, still need to catch up with the U.S. However, it is likely that the psychological impact of superior Japanese productivity and living standards will lead European governments to realise that in some important respects their growth policies are still sub-optimal. Better awareness of the sources of Japanese growth can therefore be expected to influence policy favourably in both the developed and developing countries.

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