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Nation Building

The Meiji Era, 1868–1912

Modern Economic Growth

It is now well established that a nation remains economically stagnant for a long time before it starts on a takeoff into modern economic growth. During this long period, the nation is dormant. Its productivity remains at a low level. Income is barely at the subsistence level so that there is little room for population growth. Net capital formation is nil as the low income level does not generate positive net savings, and the demand for net investment is absent as there are little incentives for investment in the absence of technical innovations. Such an economy remains stationary. Although the Tokugawa economy may not have been as static as this stereotype of a pregrowth economy suggests, it must have been close to it.

At some point in time, however, the economy takes off. Productivity starts to improve steadily. People enjoy a rising standard of living, which enables them to expand population. The demand for new investment increases as technical innovations make capital formation more profitable and as the expanding population generates the demand for expanded output. People save more out of their increasing income. Thus, the takeoff leads to sustained economic growth.

The takeoff needs a certain strong jolt ("big push") to the economy, which has long been in the state of suspended animation. In the case of Japan, it is quite evident that this required jolt was supplied by the Meiji Restoration of 1868 when the Tokugawa regime was replaced by a new regime. Feudalism was replaced by capitalism. Many institutional reforms were initiated and a completely new page was turned in the annals of Japanese history. Modern economic growth, which followed this momentous event, has by now experienced a history of

twelve decades. Japan has turned itself from a fairy-tale island empire to an economic giant next to none but the United States. How could, and did, Japan achieve this remarkable feat in such a short period of time? This is the topic we shall discuss in the remaining articles of this issue. This article covers the very first subperiod, the Meiji era (1868–1912), under Emperor Meiji, which was devoted to the task of nation building.

The Nation Building

After more than two centuries of sheltered life, the country emerged out of its cocoon of isolation in the 1850s. There was a strong sense of crisis in the nation. European nations were colonialists. They had conquered most of Asia a long time ago and were finally ready to advance to the Far East. They pressured the *shogun* government to open the country for foreign commerce. The slogan *sonno joi* banded together concerned elements in the country. The shogunate government was overthrown and a new regime was installed. The emperor was "rediscovered" after many centuries of absence from political power. The young Emperor Meiji was placed as the titular head of the new government.[1]

The new government found it imperative to build the nation as quickly as possible in both economic and militaristic terms, as exemplified by a new national slogan, "fukoku kyohei" (a rich nation with a strong military force), so as to defend itself against any foreign aggression. In fact, Japan became a model student of the imperialistic West as it waged two major wars against the wobbling imperial China (1894–95) and the shaky tsarist Russia (1904–05), winning them both. In the meanwhile, Japan annexed Taiwan (1895) and Korea (1910). The Japanese government that performed these accomplishments was a benevolent despotism controlled by those once young radicals who toppled the Tokugawa government.[2] It guided the nation from above, keeping its strong hand in every part of people's lives.

Building the nation was therefore at the top of national priority. It was considered a *sine qua non* for turning the country successfully into a modern state. It was essential to introduce many new institutions from the West, even though Tokugawa Japan had had its own institutions well advanced for an economically underdeveloped nation. But they were not strong enough or developed enough to sustain a modern state. Thus, there was a legion of institutional reforms.

Institutional Reforms

Political Reforms

To begin with, the Meiji government had to unify the nation politically. The Meiji Restoration was not a revolution. Political power was transferred from one establishment to another in a more or less peaceful and orderly manner, even though it involved a wholesale change in the existing political system. Not only the *shogun,* who willingly gave up his birthright of national governance in 1867 but also all *daimyo* had to be asked to return their domains voluntarily to the new government. This measure was absolutely essential for unifying the nation as a single political entity. It was achieved in 1869. In return, *daimyo* were given aristocratic titles with pensions. As territories were returned to the national government, *samurai* became unemployed. At first, their stipends were continued by the new government, but paying stipends to those who had no practical work was a terrible drain on the national treasury. So, in 1876, stipends were converted to bonds with deferred payments.[3] The civil war of 1877, which took place in Kyushu,[4] resulted in severe inflation (the price index doubled from 1877 to 1881) and many former *samurai* had to sell off their bonds at cheap prices. This meant not only the political but also economic demise of the *samurai* class.

Having consolidated all 274 local domains, the national government divided the country into 75 prefectures in 1871. The prefectural government was administered by a government sent from the central government's cadre of professional civil service. The national government was run by a group of erstwhile radicals dominated by those from the Satsuma Han and the Choshu Han. The oligarchy system controlled Japan's national politics for the next half century, even though the national constitution of autocracy (patterned after the German constitution), which was promulgated in 1889, introduced the national parliament, which was popularly elected in 1890.[5] The political development in the Meiji era clearly indicates the subservience of the Japanese populace to authority. Even the constitution was a gift from manna. The authority was considered as "higher-up" (*okami*) to which absolute allegiance was expected. This trait was cultivated through the Tokugawa feudal system.

Despite profound political reforms, the government that emerged was not unlike the feudal one it had replaced. Since 1185, when Yoritomo Minamoto appointed himself as the shogun, who served both as the head

of the government and the commander-in-chief, Japan's feudal government was ruled by the warrior class. When the Meiji government came, erstwhile radicals who created it went into either civil or military services. Coming from the same original roots, they were almost interchangeable. In fact, many prime ministers after 1890 were military men (generals and admirals). They served as elder statesmen (*genro*) through the Meiji era. Thus, the Meiji government was a civil-military complex and its economic policy was heavily influenced by its makeup.

Systemic Reforms

In the financial sphere, the central government had to consolidate all local currency systems (liquidating nonconvertible *han* notes) and issue its own notes (in 1868). It implanted the Western banking system, creating private banks ("national" banks) and eventually came up with the central bank (in 1882). In the meantime, the country shifted from the bimetallic system to the gold standard system (in 1871). In public finance, the government instituted in 1872 the land tax based on assessments and paid in cash rather than in-kind. (The land tax accounted for four-fifths of national tax revenue.) It also permitted landowners to sell their possessions freely.

The class system was abolished,[6] and *samurai* lost all their former privileges including wearing swords on the street. At the same time, the special Japanese hair style was replaced by the Western one. Men's clothes were also switched to the Western style.

The military force had to be created and every male, regardless of class, was subject to military conscription (since 1873). A police force was also created on the national scale. A new judiciary system patterned after the Western system was introduced.

A nationwide education system had to be created from scratch, even though Tokugawa Japan had its own popular education system in the form of temple schools. Primary schools were set up as early as 1869, and compulsory schooling was decreed in 1872. Thus, literacy spread rapidly. To create qualified teachers for primary education, the upper-level part of the education system had to be created as well. The first university to be set up was the University of Tokyo, which was opened in 1877. Initially, in the 1860s and the 1870s, many foreign teachers were hired to support the upper-level education,[7] but they were replaced quickly by Japanese students who returned from advanced studies abroad.

Table 1

Per Capita GNP in 1982 Dollars: Japan and the United States

Year	Japan	United States	United States/ Japan
1982	10,583	13,106	1.24
1955–59	2,060	8,197	4.0
1935–39	1,397	4,648	3.3
1880s	541[a]	2,400[b]	4.4
1870s	488[c]	1,647[d]	3.4

Sources: Organization for Economic Cooperation and Development (OECD), *National Accounts of OECD Countries,* 1982 (Paris, 1984), vol. 1; Department of Commerce (United States), *Historical Statistics of the United States* (Washington, DC: Government Printing Office, 1975), series F1–5; Ohkawa and Shinohara (1979).
[a]1880–89; [b]1879–88; [c]1874–79 (see Table 4); [d]1869–78.
Legend: GNP = gross national product.

Other infrastructures also had to be built up. Although highways were in existence in the Tokugawa period, railways had to be constructed. The first rail line was laid between Tokyo (Shimbashi) and Yokohamu (less than 20 kilometers) in 1872. By 1889, a trunk line was finished between Tokyo and Kobe, a little less than 400 miles. Ocean transport had to be developed as well. (The Exclusion Act prohibited the construction of oceangoing vessels.) The postal system had to be started. The postal regulations were promulgated in 1871, and the telegraph regulations in 1872.

The Meiji Economy: Evolution

The Economic Level

Needless to say, the Meiji economy was heavily dominated by agriculture in the initial phase. Agriculture accounted for three-fourths of the labor force in the 1870s.[8] This percentage is what one sees in the least developed countries of the contemporary world.

Then, how far was Japan behind then-developed countries (i.e., the United States and European countries)? In Table 1, we trace the growth records of Japan and the United States from 1982 to one century ago. In

1982, per capita gross national product (GNP) in the United States was 1.25 times as high as that in Japan (in terms of purchasing power parity [PPP]). However, the income differential narrowed between the two countries only recently. It is the result of the rapid growth in the 1960s. In the late 1950s, the differential was as high as 4 to 1. In fact, the differential was somewhere around 4 to 1 and 3 to 1 before World War II. This differential may seem formidably large, but the differential for low-income countries now is 25 to 1 or thereabout.[9]

The differential failed to narrow through the prewar period because both Japan and the United States were growing at about the same rate. From 1885 to 1940, Japan's real GNP increased six times, population two times, and per capita income three times. Roughly speaking, population grew at 1 percent, per capita income at 2 percent, and total income at 3 percent. These were respectable growth rates. But per capita income was growing at about the same rate in the United States. This shows how difficult it is for a latecomer to catch up with leaders.

Industrial Structure

The growth rate may seem to have been modest, but, as a matter of fact, there was a big transformation of the Japanese economy. This is shown in Table 2, which compares the sectoral compositions of the labor force and of net domestic product in 1885 and 1934–36.[10]

Agriculture, which accounted for nearly three-fourths of the labor force, was reduced to less than half by the mid-1930s. Labor productivity (net domestic product [NDP] per worker) in agriculture was one-third of that in nonagricultural production in 1885, but fell to one-fourth in the mid-1930s. The transfer of labor from agriculture to nonagriculture contributed a great deal to raising the average labor productivity for the economy as a whole.

Table 3 shows the initial economic structure in 1874 before the start of industrialization.[11] In this table, production is limited to commodity production but the labor force covers all employment. The table reveals that agriculture was of primary importance on the production side, and rice accounted for nearly two-thirds of agricultural output. Combined with the labor force figures, it is seen that productivity was four times as high in manufacturing as in agriculture.

When an economy grows out of underdevelopment, it industrializes and urbanizes itself. Following this general pattern, Japan witnessed

Table 2

Sectoral Composition of the Labor Force and Net Domestic Product (NDP), 1985 and 1935 (Percent)

	1885		1935	
Sector	Labor	NDP	Labor	NDP
Agriculture, forestry, and fisheries	71	45	45	17
Mining, manufacturing, construction, and "facilitating" industries (transportation, electricity, etc.) + all others	29	55	55	83
Mining, manufacturing, construction, and "facilitating" industries (transportation, electricity, etc.)		17		45
Mining + manufacturing		11		29
Construction				
Transportation		2		10
All others		38		38

Source: Ohkawa and Shinohara (1979), tables A10 and A53.

agriculture getting less and less important as time went on. From 1872 to 1940, the population grew at 1.1 percent a year, more than doubling in the next seven decades. The labor force (hence, population) in agriculture remained very stationary, except during World War I. This is due to the prevalent practice of primogeniture in farming. The eldest son inherited the father's farm. With almost no additional cultivable land area, it was difficult to accommodate for other children. Second and third sons had to leave farms to find jobs elsewhere. Thus, the growing population moved out of agriculture into nonagriculture.[12]

The steady growth of population and the move into urban jobs were a clear departure from the Tokugawa period. It required the emergence of agricultural surplus. As the demand for food continued to increase, one farmer had to feed more and more nonfarmers. For this to be possible, productivity must have improved in agriculture. The food expenditure was about two-thirds of personal consumption in the 1870s. So, the pressure to increase food supply was particularly strong in the initial phase of modern economic growth. Fortunately, the income elasticity of demand for food was less than one.[13] The demand for food did not grow as much as income grew. Coupled with the rising productivity in agricul-

Table 3

The Economic Structure of Japan (1874)

Value of production (% of total)		Labor force (total: 20 million)	
Agriculture	61	Agriculture	77.2
Primary, other than agriculture[a]	9	Manufacturing	3.7
Manufacturing	30	Commerce	6.7
		Miscellaneous	9.5
		Others[b]	2.9
Of which:			
Agriculture[a]	100		
Rice	63		
Barley	11		
Cocoon	5		
Others	21		
Manufacturing	100		
Textiles	27.7		
Raw silk	5.5		
Others	22.2		
Food	41.9		
Furniture	1.7		
Oils and fats	6.3		
Ceramics, etc.[c]	7.7		
Paper and publishing	5.2		
Machines, etc.[d]	5.9		
Machines	2.7		
Pharmaceuticals	3.6		

Source: Yamaguchi (1963).

[a]mining, forestry, fisheries, and livestock; [b]civil service, religious, military, medicine: including "employees" accounting to 2.0. [c]ceramics, lacquor ware, wood products, metal products, etc.; [d]machines, fertilizers, ships, nets, etc.

ture, a given number of farmers was able to support the ever-rising nonagricultural population.

The nonagricultural labor force continued to grow as a result of the natural increase in urban population and the emigration of labor from agriculture (second and third sons). New goods and services were produced. With productivity in nonagriculture also rising, the economy's real income expanded. With the increasing supply and the increasing demand matching each other, the economy moved along a path of self-

sustained growth. It is important to realize that both agriculture and nonagriculture must grow simultaneously if growth is to be self-sustained. If one stagnates, the other suffers. Quite wisely, the Meiji government encouraged both to improve productivity through its agricultural and industrial policies.

Changes in Aggregate Demand

In Table 4, based on long-term economic statistics (LTES) estimates, we look at long-term changes in the composition of aggregate demand.[14] The table shows the percentage composition of gross national expenditure (GNE) for every five years.

Broadly speaking (after removing the effects of two major wars in 1894–95 and 1904–05), one notes the following features for the Meiji era as a whole:

1. Personal consumption expenditure, which claimed about 80 percent of GNE on average for the era as a whole, was on a declining trend as percent of GNE.
2. Government consumption expenditure was relatively stable, fluctuating around 8 percent of GNE.
3. Gross domestic capital formation was on an upward trend.
4. Exports and imports both continued to increase their shares of GNE. Imports were somewhat larger than exports so that there were foreign borrowings going on.
5. While the population expanded at about 1 percent per annum, the labor force grew at 0.5 percent. The labor-force-participation ratio continued to fall.
6. The real growth rate was not steady over time, especially with falls in the early 1900s. But the average labor productivity grew always at a positive rate.
7. The inflation rate was relatively modest, though there were two periods of rapid price increases, namely, the civil war inflation of 1877–80 and the postwar inflation of 1896–97 when the GNP deflator jumped by 20 percent. The civil war inflation was followed by the Matuskata deflation.[15]

The Role of Government Capital Formation

For an economy to grow, capital formation is essential. And the government must share a considerable part of this capital formation. In the case of Japan, the country had two objectives: “fukoku kyohei”; that is,

Table 4

Gross National Expenditure, Population, and Labor Force

	GNE composition				
	Personal consumption	Government consumption	Gross domestic fixed capital formulation	Exports	Imports
1975–1979[a]	(84.2)	(7.4)	(12.0)	(5.1)	(–8.4)
1980–1984[a]	(82.5)	(6.9)	(12.0)	(4.6)	(–5.8)
1985–1989	79.6	7.3	13.4	7.2	–7.5
1890–1994	79.4	6.9	14.6	8.2	–8.6
1895–1999	78.3	7.0	18.1	9.6	–13.0
1900–1905	77.3	9.8	14.1	12.8	–14.0
1905–1909	74.0	12.1	16.7	14.8	–17.7
1910–1914	75.8	8.0	17.8	15.6	–17.3
1915–1919	68.3	5.7	19.3	24.2	–17.3
1920–1924	75.5	7.5	19.3	15.9	–18.3
1925–1929	75.3	8.5	17.2	19.2	–20.2
1930–1934	75.2	12.2	15.7	18.2	–18.3
1935–1939	64.5	11.3	24.7	22.0	–22.6
1875–1909	79.9	8.2	14.4	11.1	–13.2
1910–1939	71.9	8.9	19.0	19.2	–19.0
1875–1939	75.6	8.5	16.5	14.8	–15.9

(continues)

Table 4 (*continued*)

	GNE		Population growth rate	Labor force growth rate	Labor force as percent of population
	Real growth rate	Inflation rate			
1975–1979[a]	(1.5)	7.5	0.8	0.4	61.3
1980–1984[a]	(3.0)	–1.2	0.8	0.4	59.7
1985–1989	3.0	2.2	0.8	0.5	58.8
1890–1994	3.1	3.8	0.9	0.6	58.1
1895–1999	2.9	8.4	1.1	0.6	57.0
1900–1905	1.3	4.2	1.3	0.5	55.1
1905–1909	1.2	3.3	1.0	0.4	53.4
1910–1914	1.7	2.9	1.4	0.6	51.3
1915–1919	6.9	18.4	1.1	0.6	49.8
1920–1924	0.6	–0.5	1.1	0.5	48.2
1925–1929	3.3	–2.3	1.5	0.9	46.2
1930–1934	4.5	–3.5	1.5	1.1	45.5
1935–1939	5.1	7.5	0.9	0.9	44.9
1875–1909	2.5	4.0	1.0	0.5	58.9
1910–1939	3.2	3.8	1.3	0.8	47.7
1875–1939	2.8	3.9	1.1	0.6	53.7

Source: Ohkawa and Shinhohara (1979), tables A1, A3, and A53.

[a]Personal consumption, government consumption, exports, and imports are extrapolated backward from 1885, based on tables A30, A32, A34, A35, and A44. Gross domestic fixed capital formation is assumed to be 0.12 of gross national expenditure (GNE).

enrich the nation and strengthen the military. Both cost money. To enrich the nation, one must build up economic infrastructures, such as roads. Early in the Meiji period, the government embarked upon laying railroads (the National Railways being responsible for two-thirds of railroad mileages), and this activity continued through the prewar period.[16] To strengthen the military, the country must acquire military hardware (e.g., naval fleet). Japan won the wars with China and Russia, to a large extent because Japan's naval fleet overwhelmed the enemy's.

Thus, roughly speaking, gross capital formation had the following makeup in this period:

$$100\begin{cases}\text{private} & 50\\ \text{government} & 50\end{cases} \qquad 50\begin{cases}\text{military} & 15\\ \text{nonmilitary} & 35\end{cases}$$

The Japanese economy was government-led in the Meiji era.

Industrialization and Foreign Trade

Foreign Trade

When an economy begins its takeoff, it has to import manufactured goods, especially capital goods, because its industrial base is almost nonexistent. In the case of Meiji Japan, a very large part of imports was textile products and other consumer goods as shown in Table 5.

In the late 1870s, one-third to one-half of clothing expenditure must have been imports. Imports of textile products became less and less important over time while imports of textile materials continued to rise. Most important textile imports were cotton goods and raw cotton. Behind this development, there was the decimation of the cotton industry when Japan opened for foreign trade and the subsequent rebuilding of the industry. The process of import substitution went on in other industries as well, as is clear from the continued decline in the share of manufactured goods and the continued increase in the share of primary goods in total imports through the Meiji era. Table 5 indicates that this process was largely completely by the end of the Meiji era.[17]

The economy was growing and imports grew faster than GNE (Table 4). To pay for imports, exports had to be expanded. In the very early years of the Meiji era, green tea and raw silk remained the two most

Table 5

Merchandise Imports

Year	Primary goods	Food	Textile materials	Other materials	Manufactured goods	Metal and products	Machinery	Textiles	Others	Total
Composition, current value, percent of total										
1875	5.5	0.3	1.2	4.0	94.5	5.2	10.4	51.8	27.1	100.0
1885	11.6	1.0	2.9	7.7	88.4	8.4	13.9	39.4	26.7	100.0
1895	32.2	6.0	20.6	5.6	67.8	10.2	11.2	23.3	23.2	100.0
1905	45.6	14.9	24.6	6.2	54.4	12.3	7.8	12.3	22.0	100.0
1915	60.0	10.2	41.5	8.3	40.0	9.7	2.6	2.5	25.2	100.0
1925	63.3	19.7	35.3	8.3	36.7	5.9	5.7	6.0	19.1	100.0
1935	62.5	18.3	29.4	14.8	37.5	12.2	5.0	1.9	18.4	100.0
Quantum index, 1905 = 100										
1875	0.8	0.2	0.5	4.0	15.5	3.1	4.5	43.4	14.4	8.6
1885	2.3	0.7	1.2	12.5	16.4	7.1	9.4	41.2	11.8	9.7
1895	26.6	15.4	30.5	42.3	42.1	30.7	30.5	70.5	40.6	34.8
1905	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1915	140.7	77.2	182.0	134.5	64.7	79.3	32.8	22.7	114.7	100.4
1925	284.1	256.5	278.9	396.6	175.5	156.9	152.4	102.5	259.9	226.6
1935	416.7	345.3	364.3	900.2	225.7	372.1	109.8	53.5	360.6	315.5

Source: Ohkawa and Shinohara (1979), tables A27 and A29.

important export goods, accounting for two-thirds of Japan's merchandise exports at the time. Green tea quickly faded out, but raw silk maintained its importance. Nontextile manufactured goods came to be exported in an increasing amount over time. In this way, the share of manufactured goods in total merchandise exports rose from less than half to nearly 90 percent through the Meiji era as shown in Table 6.

Table 7 shows changes in the structure of manufacturing production. Three factors are clear: (1) the growth of the silk textile industry, both raw silk and silk fabrics; (2) the growth of cotton textile industry, both cotton yarns and cotton fabrics; and (3) the growth of heavy industry toward the end of the Meiji era.

Major Industries

The Raw Silk Industry

Raw silk was the single most important commodity for exportation when Japan opened its door for foreign trade in the 1850s. It became even more important in the Meiji era. Raw silk had already been a very sizable part of industrial production before 1868. The particular strength of raw silk as an export good was that its production depended not at all on imported materials. From raw materials (cocoons) to equipment, everything was domestically produced. The whole value of raw silk exports thus accrued to the domestic economy. As time went on, the raw silk industry (silk reeling) came to be specialized on exportation.

The principal purchaser of Japanese raw silk was the American silk manufacturing industry, which needed raw silk for its raw material. Japanese raw silk was found to be much more suitable for machine handling than European raw silk, which was much finer. Thus, a strong complementary relationship developed between the United States and Japan. At that time, silk goods had no competition from other fibers since synthetic fibers, such as rayon and nylon, were yet to be invented. Silk was a luxury good because of its expense, but it was a necessity since every female had to have a silk dress for her Sunday best. Thus, the income elasticity of demand was as high as three. As the American economy was growing, the American demand for silk expanded at a tremendous rate. Eventually, 90 percent of American raw silk imports came from Japan, and 90 percent of Japan's raw silk production (machine-reeled) was exported to the United States. But whenever the U.S. economy went

Table 6

Merchandise Exports

Year	Primary goods	Food	Tea	Others	Manufactured goods	Textiles	Raw silk	Silk fabrics	Cotton yarns	Cotton fabrics	Others	Total
Composition, current value, percent of total												
1875	54.7	39.8	36.9	14.9	45.3	32.0	29.2	—	—	0.1	13.3	100.0
1885	37.3	23.2	18.5	14.1	62.7	41.4	35.1	0.2	—	0.5	21.3	100.0
1895	21.5	12.5	6.5	9.0	78.5	53.9	35.2	7.4	0.8	1.7	24.6	100.0
1905	13.4	5.3	3.3	8.1	86.6	51.7	22.3	9.4	10.3	3.6	34.4	100.0
1915	12.2	5.8	2.2	6.4	87.8	50.5	21.4	6.1	9.3	5.4	37.3	100.0
1925	7.1	3.2	0.6	3.9	91.3	70.1	38.1	5.1	5.3	12.4	21.2	100.0
1935	6.5	2.2	0.5	4.3	93.5	50.9	15.5	2.1	1.4	17.9	42.6	100.0

Quantum index, 1905 = 100

1875	27.9	48.5	73.0	18.5	5.6	6.6	16.3	—	—	—	4.4	10.0
1885	50.1	77.3	104.0	37.6	15.6	14.8	33.9	—	—	—	15.9	22.3
1895	96.1	141.6	133.2	75.2	42.6	49.8	80.2	—	4.4	5.7[a]	32.9	55.0
1905	100.0	100.0	100.0	100.0	100.0	100.0	100.0	—	100.0	100.0	100.0	100.0
1915	193.5	223.2	116.6	179.9	253.1	255.7	245.0	—	205.4	411.3	239.9	241.5
1925	196.8	261.8	72.1	166.9	378.1	467.9	602.3	—	116.2	1,321.5	263.0	342.8
1935	284.1	318.0	96.5	268.5	997.9	1,013.5	763.8	—	36.1	8,270.6	940.2	854.1

Sources: Yamazawa and Yamamoto (1979), tables 1 and 3; Bank of Japan (1966), table 116.
[a]1896.

Table 7

Industrial Production

Year	Food	Textiles	Raw silk	Silk fabrics	Cotton yarns	Cotton fabrics	Chemicals	Metal and products	Iron and steel[a]	Nonferrous metals[a]	Machinery[a]	Others	Total
Value of production, percent of total													
1875	41.5	23.1	3.5	2.4	0.7	6.6	19.6	2.2	0.2	0.5	1.5	14.6	100.0
1885	42.4	29.1	6.0	3.9	2.0	6.1	14.2	2.5	0.2	0.9	1.4	11.8	100.0
1895	28.2	47.9	10.4	6.8	7.5	8.0	10.8	3.0	0.3	0.9	1.8	10.1	100.0
1905	34.8	32.3	7.5	4.3	8.0	5.0	11.7	10.1	1.5	2.2	6.4	11.1	100.0
1915	27.2	33.2	7.3	4.2	7.3	6.3	11.8	17.3	4.5	3.8	9.0	10.5	100.0
1925	25.6	39.4	9.5	4.1	7.7	7.6	10.1	13.6	4.4	2.0	7.2	11.3	100.0
1935	16.4	29.0	3.3	2.6	5.4	3.3	14.4	29.2	10.0	2.8	16.4	11.0	100.0

Production index, 1934–36 prices, 1905 = 100

1875	50.6	11.7	11.9	18.9	1.2	19.6	36.1	3.2	2.2	5.7	2.8	39.3	34.0
1885	50.2	23.8	26.5	40.2	6.1	30.9	47.4	9.2	5.4	19.6	7.6	49.3	39.9
1895	92.5	93.5	89.2	106.3	63.1	114.7	73.6	24.5	17.8	44.4	21.5	80.6	83.8
1905	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1915	150.1	207.8	221.6	327.6	190.0	216.7	204.5	327.5	426.5	568.9	259.7	174.8	185.8
1925	240.7	374.8	461.5	457.9	269.1	438.2	323.0	756.9	1,829.8	882.1	546.2	260.3	325.6
1935	273.8	799.7	662.9	1,525.9	393.2	922.0	1,050.0	2,643.4	7,354.7	16,625.0	20,400.6	493.4	697.9

Source: Shinohara (1972), Statistical tables 1, 2, 14, and 15.
[a]Series A.

into a recession, the demand for silk declined and the raw silk price plummeted. Thus, the Japanese economy came to be heavily involved in the ups and downs of the American economy.

Raw silk production starts in farms in the form of cocoon raising (sericulture). Cocoons are hatched from eggs and fed with mulberry tree leaves and plenty of water, day, and night. Mulberry trees can be planted in hilly areas. So, sericulture spread to mountainous prefectures, such as Nagano (north of Tokyo with the Japan Alps), which are not fit for rice production. When grown up, cocoons turn themselves into moths. Before that happened, cocoons were boiled and dried. They were then processed at home, where old farmers' wives unraveled cocoons soaked in lukewarm water on a silk reeling wheel. A silk reeling mill assembled these women under one roof and supplied motive power by mechanical means (water wheels and then electricity) to run reeling wheels. Since water supply is essential, silk reeling mills sprang on lakesides, such as Lake Suwa in the Nagano prefecture. Raw silk was then sold to exporters for shipment to the U.S. market in New York. In this way, raw silk involved the entire economy of Japan from agriculture to foreign trade.

As the American demand for silk expanded, so did the Japanese supply. Thus, raw silk remained the most important commodity in Japan's exports (Table 6). Productivity continued to be improved in both sericulture and silk reeling, and the price of raw silk continued to fall relative to other prices.

The Cotton Textile Industry

When Japan was opened for foreign trade, Japan's cotton industry collapsed, owing to its inability to compete with Lancashire cotton. Cotton yarns, cotton fabrics, and woolen fabrics were three major import items in the early 1860s. With the domination of imports, the industry had to be rebuilt. It presents a textbook case of import substitution. The rebuilding began at the lowest base, namely, the production of cotton yarns (cotton spinning). The principal source of the supply of cotton yarns shifted from imports to domestic production (based on imported raw cotton). After this process, the important substitution moved on to the next stage, that is, cotton weaving. Cotton fabrics were now supplied from domestic sources. While import substitution went on, exports of cotton goods began—first with cotton yarns and then on to cotton fabrics. This is the familiar process of the product cycle.[18]

The cotton industry is similar to the raw silk industry in terms of the skill requirement and the capital requirement, both of which were low. Ninety percent of the industry's work force was female; most of them came from farms. The job tenure was slightly longer in this industry than in the raw silk industry, probably because of more labor skills required for work, especially at the weaving stage. Cotton mills did not need to be located lakeside, but they were of small scale. Thus, like silk reeling mills, cotton mills were outside the control of big enterprise groups, or *zaibatsu.*

A developing country begins industrial development from light manufactures, representative of which are textiles. Raw silk was indigenous to Japan, and there was no problem of import substitution. Cotton textiles had to go through the process of import substitution and export promotion. The capital requirement was not high in either industry. Labor skills were low. The work force was young females and there were plenty of them in supply. Firm size was small and the management expertise was not too high. All together, these industries well suited the initial conditions under which Meiji Japan had to operate.

Other Industries

Other light industries also came into being; for example, cement, glass, paper, chemical fertilizers, and sugar refining. Heavy industries, which required more capital and more skills, came later. It was necessary for the government to promote heavy industries by setting up model factories, albeit on a small scale. In the iron and steel industry, for example, the Yahata Steel Mill (established in 1897) remained a government enterprise until the 1930s. Also, only large firms could go into heavy industries because of heavy capital outlays. The development of heavy, especially engineering, industries needed large firms to appear, but they had to wait until enough capital was accumulated and concentrated in the hands of large business conglomerates.

The Macro Balance

Flow Balance

As important as the expenditure side, the financing side of GNP must be examined. How was government expenditure financed? How was in-

vestment financed? Where did saving come from? Did the country depend much on foreign borrowing?

Government expenditure was financed by tax revenue, the largest part of which was initially the land tax, which was levied at the rate of 2.5 percent on the assessed value of land. Apparently, farmers were the largest segment of the population and collecting taxes from them must have been easier. Can the same thing be said for the main source of saving, which financed investment? Did private capital formation come also from farmers? Or did industry save enough from its own profits to finance its own investment? As statistical information is inadequate, one can only conjecture. One such view, presented by Teranishi (1981), even though based on highly conjectural evidence, supports the latter; namely, the industry was relatively self-supportive.

Contemporary developing countries depend in many cases on foreign borrowing in order to supplement their insufficient domestic savings. Foreign borrowings equal to the export–import balance. As shown in Table 4, this balance was, in the case of Meiji Japan, negative, but relatively modest except at the time of major wars. Thus, the foreign debt problem was not a major source of concern to Japan (the exception being foreign debt incurred for the war with Russia). To a large extent, Meiji Japan self-financed its own development.

Stock Balance

Labor

To create modern industry, it is necessary to create wage labor, most typically workers employed in factories. Through the Tokugawa period, the majority of workers were self-employed in either farming, handicrafts, or retail stores. They were their own masters. By contrast, factories needed workers who accepted the discipline imposed by management.

The leading Meiji industry—the raw silk industry, followed by the cotton textile industry—employed young females from farms. Less skilled and more docile than men, managing them may probably have not been much of a problem. More important for this industry was that as the industry expanded, the extent of the labor market expanded as well from villages to counties, to prefectures, and finally beyond prefectures. Eventually, the national labor market was to emerge.

For male workers, the creation of industrial labor was a much more

time-consuming process. They had to spend their late teens as apprentice workers while they received on-the-job training. The training period, which lasted until young workers reached maturity (twenty-one years old when they were to be conscripted into military service), was not much different from feudalistic master-apprentice relationships. Young workers must have put up with low pay and hard work. Naturally, the labor mobility among them was quite low. Once independent after the training period, they became highly mobile, changing jobs very frequently. This suggests that the labor market of male workers consisted of two segments. One segment was for junior workers in training, whose mobility was low and whose wages were on the subsistence level. This segment may correspond to what Arthur Lewis (1954) called the state of unlimited supply of labor (i.e., the supply of labor to industry being infinitely elastic at the subsistence level determined by the average product of labor in agriculture). By contrast, the segment for adult male workers was quite different. Workers were quite active in job searches, moving from one job to another if they found wages more attractive elsewhere. This segment looked like a neoclassical market, as textbooks describe. Wages responded sensitively to market conditions.[19]

Thus, the labor market that finally emerged in Meiji Japan consisted of (1) the market for young female workers in textile industries; (2) the market for juvenile male workers; and (3) the market for adult male workers.

Capital

We have already discussed the main sources of investment funds. Here, let us take note of a simple arithmetic fact: for an economy to grow, it needs capital formation. How much gross capital formation it needs depends on the capital–output ratio (K/Y) and the depreciation ratio δ, given the growth rate according to the formula[20]

$$\frac{I}{Y} = (g + \delta)\frac{K}{Y}.$$

Suppose that K/Y is 1.5 and δ is 5.5 percent [see Appendix 2 in "Historical Heritage" in this issue].[21] Then, for the annual growth rate of 3 percent, I/Y is to be 13 percent. This figure is roughly what we find in Table 4. (It is interesting to note that the capital–output ratio is still around 2 as of 1990.)

Technology

The government took a leading role in promoting technology transfers from abroad. As early as 1872, the government invited French engineers to give technical guidance at a newly opened pilot plant in silk reeling at Tomioka (Gumma prefecture). The government also opened the Yahata Steel Mill in northern Kyushu in 1897. Also active were the government's research labs in agriculture and engineering. The labs helped to disseminate technical information to the private sector.

In discussing technological change in general in this period, one cannot miss the important role of motive power that was needed for running machines. In this respect, the Meiji era witnessed a big change; that is, the Electricity Revolution, which started toward the end of the nineteenth century. Electricity was put to industrial use in the United States in the 1890s, and Japan followed suit very soon. The greater contribution of electricity in the industrial field was to replace the traditional mode of motive power (water wheels, wind mills, and the like) with electric motors, which were much more dependable as a source of power and highly space-saving.[22] Electricity spread rapidly in Japan,[23] following on the heels of the United States. The diffusion process follows a logistic curve. When the United States and Japan are compared in this regard, one finds that the Japanese logistic curve was behind the American one only by five years. However, one significant feature of the Japanese diffusion process is that the spread of electric motors was limited to relatively large plants. Small plants were resistant to the adoption of electric motors. The Electricity Revolution was thus responsible, to some extent, for the emergence of the dual structure which differentiates large and small manufacturing firms [see "Economic Changes to Catastrophe" in this issue].[24]

Entrepreneurship

Meiji Japan needed labor qualified as wage labor, had to supply industrial capital (as distinct from financial capital), and brought in new techniques imported from abroad. Although necessary, they were not sufficient by themselves for creating a new business-oriented state. Labor, capital, and technology had to be combined into an organic unit, namely, the firm. The entrepreneur was the new breed who was essential for pushing the capitalist system forward. Where did entrepreneurs

come from?[25] In Meiji Japan, some came from the ranks of Tokugawa merchants (such as the Mitsui family) or financiers (such as the Kounoike family). Others had been engaged in production activities (such as the Sumitomo family in mining). But quite a few came from the *samurai* class, a break from the age-long tradition that disdained profit-making as a lowly occupation. One of the most well-known cases is Yataro Iwasaki (1834–85), the founder of the Mitsubishi *zaibatsu.*[26]

Aspirations Achieved

The national catchword, "fukoku kyohei" (a rich nation with a strong military force), exemplifies the *zeitgeist* of the Meiji era most vividly. Japan's records in the forty-five years of the Meiji era clearly show that the national aspirations were achieved with flying colors. For the era as a whole, labor productivity rose at about 2 percent a year, or by nearly 150 percent by the end of the era. Modern industry, nonexistent at the beginning, was successfully created. Not only a strong military force was created but it successfully won two major wars, one with China (1894–95) and the other with Russia (1904–5). Japan's territory expanded with the annexation of Taiwan (1885) and Korea (1910). Most remarkably, in achieving these successes in the economic and military spheres, Japan relied mostly on its own means. In its very early stage of development, Japan invited a number of foreign technicians, teachers, and doctors to guide the Japanese, but they were very quickly replaced by indigenous professionals. Foreign borrowing continued, but it was in relatively small amount, nothing like the contemporary less developed countries (LDC) do. Japan financed most of its capital formation from domestic sources of saving. Japan was able to expand exports through the promotion of raw silk production and the creation of the cotton textile industry. At the same time, import substitution went on so that the dependence on foreign-made manufactured products steadily decreased. The nation building was brought to a successful finish by the end of the Meiji era.

What is striking in the success story of Meiji Japan is the high degree of adaptability of the Japanese to the new environment. Radical changes in males' hair style and clothing are one instance of such adaptability. Japanese men gave up the *samurai* hair style and the *samurai* dress almost overnight. The same goes with more substantive matters such as education and business management. The adaptability helped Japan enor-

mously in accepting Western technology, in sharp contrast to its close neighbors, China and Korea, which were resistant to change. If an informed foreigner compared Japan and China in 1868, he may have looked at China more favorably. China had been an intellectual teacher to Japan. China was favored with natural resources. Yet China remained a sleeping giant. (Its Qing dynasty [1644–1911] was chronologically a close parallel to the Tokugawa family.) Japan transformed itself completely into a modern state through absorbing foreign technology and institutions avidly. This strong capacity to absorb is one trait that still noticeable today.

While Westernization went on in full force in public life, Japan retained its traditions in private life. While Japanese men wore Western clothes outside, they kept Japanese clothes at home. Their lifestyle remained as Japanese as before in the Tokugawa period. Blending the old and the new is another important trait of Japan. It was quite noticeable in Meiji Japan.

Having nearly achieved "the cloud over the slope," as one eminent Japanese novelist described, the nation was now going to a new era, which turned out to be as confused as the decade preceding the Meiji era.

Notes

1. His father, Emperor Kōmei (1831–1866) died suddenly under suspicious circumstances, and Emperor Meiji came to the throne at the age of fifteen in 1867.

2. Most of them were in their late twenties and the early thirties. The most prominent and oldest among them, Takamori Saigo, was forty-one in 1868.

3. Bonds (*kinroku kosai shōsho*) were to be redeemed by lottery from the sixth year to the thirteenth year. The number of recipients was 313,000 and the total value of bonds was ¥173.84 million or ¥555 per recipient (Ando 1975, p. 51). Compare this amount with the average annual salary per government employee, which was ¥108 in 1881 after the severe inflation of 1877–80 (Emi et al. 1966, table 15).

4. The civil war (Seinan Senso) was staged by former *samurais* of Kagoshima prefecture (e.g., Satsuma Han) who were unhappy with the central government. Mr. Saigo, who had resigned from the top position of the central government in a political dissention with his colleagues, was persuaded to lead the rebellion with the intention of marching to Tokyo for a protest. The group advanced as far as North Kyushu, but was defeated by the government army, which was manned by conscripts from the commoner class. Having retreated home, Saigo committed suicide and the rebellion was suppressed.

5. The Meiji constitution was put into force in November 1890. Under the constitution, a national parliament, or the Diet, was formed, consisting of two Houses—the House of Peers and the House of Representatives. The House of Peers consisted

of those who were appointed for lifetime, composed of former *daimyo* and a few *samurai* who were given aristocratic titles, and of those appointed for fixed tenure, composed of large tax payers. The House of Representatives was by popular election (by "qualified" voters). The first general election was held in July 1890, and the first session of the Diet opened in November 1890 along with the new constitution. However, the government remained under the steerage of the Meiji oligarchy, with prime ministers appointed from among its ranks. Hirofumi Ito (1841–1909), originally from Choshu Han, was the first prime minister (December 1885 to the spring of 1888).

6. The *samurai*-commoner distinction was still recorded in the family register until it was repealed after World War II.

7. In the 1870s, the Ministry of Education hired about eighty foreign teachers (Emi et al. 1966, p. 277). In 1878 there was only one university in Japan. Fewer than 100 "higher" schools existed. All fields together, the number of foreign employees reached to a peak of 915 in 1876, divided equally between the public and private sectors. Of publicly employed foreign nationals, the largest group was Britons (51 percent), followed by Americans (13 percent), Germans (11 percent), and French (11 percent) (1876–85 averages). Nearly half were in the Ministry of Industry, followed by the Ministry of Education and the Ministry of Foreign Affairs. In 1881, the average annual salary was ¥293 (public sector) and ¥75 (private sector) for foreign employees as compared to ¥184 (central government) and ¥54 (local governments) for Japanese employees.

8. The proportion was 73.5 percent in 1872 (Ohkawa and Shinohara 1979, Table A53).

9. In a less developed economy, nontraded goods and services tend to be relatively cheaper. Thus, its gross national product (GNP) becomes larger in terms of purchasing power parity (PPP) than in terms of the exchange rate. In 1979–88, the U.S. per capita GNP was US$205 in current prices (Department of Commerce, *Historical Statistics of the United States,* Washington, DC: Government Printing Office, 1975, series F 1–5). In 1885–88, Japanese per capita GNP was US$16.8 in current prices and exchange rate. The income differential is therefore 12 to 1 in the exchange rate.

10. The year 1885 is the first year for which the long-term economic statistics (LTES) estimate is available and 1934–36 is the last peak of the pre–World War II period.

11. This table is based on the 1874 prefectural census of production, the first in the Meiji period.

12. The labor force grew at a rate lower than the population because housewives in farm households were in the labor force, but those in nonfarm households were not.

13. According to the estimates of Shinohara (1967), table 1, food expenditure was about two-thirds of total consumption expenditure in the 1870s. The share continued to fall toward one-half in the late 1930s. Over the same period, the total consumption (per capita) increased 2.5 times and food consumption (per capita) 2.0 times. The apparent income elasticity of food demand then was three-fourths.

14. The LTES estimates begin at 1885; 1875–79 and 1880–84 are backward extrapolations.

15. The deflation was named after the then-prime minister, Masayoshi Matsukata (1835–1924), who engineered this deflation as an antidote by enforcing measures of fiscal austerity.

16. The first railroad was laid between Shinbashi (Tokyo) and Yokohama (some

30 kilometers) in 1872 and between Osaka and Kobe in 1974. The latter was extended to Osaka-Kyoto in 1877. The Tokaido Line between Tokyo and Kobe (some 600 kilometers) opened in 1886–89. In the number of railroad cars (passenger and freight) the expansion was remarkable.

17. It must be noted that trade agreements with foreign powers gave no right to Japan to impose tariffs on imports. It took the Meiji government almost its entire period before it could obtain the tariff right (in 1899). It must also be noted that foreign trade was handled almost exclusively by foreign trading merchants in the beginning.

18. For the product cycle thesis, see Vernon (1966). Much earlier, Kaname Akamatsu (1937) presented the same thesis in the form of the "flying geese" pattern (see Shinohara 1962, p. 57).

19. Ryoshin Minami (1973) argues that the Japanese labor market was predominantly Lewisian in prewar Japan. On the contrary, Koji Taira (1970) assets that it was of a neoclassical type. Both are partially correct.

20. The relation obtains from

$$I = \Delta K + \delta K$$

or

$$\frac{I}{Y} = \left(\frac{\Delta K}{K} + \delta \right) \frac{K}{Y},$$

where we set $g = \Delta Y/Y = \Delta K/K$.

21. If we apply the double-declining balance method, we have $\delta = 2/T$, where T is the economic lifetime of assets. T then must have been thirty-six years.

22. See du Boff (1967) for the evaluation of the Electricity Revolution.

23. See Minami (1965) for historical statistics.

24. The Electricity Revolution created the electric machinery industry. Shibaura Electric (now Toshiba) was set up in 1887. Technical tie-ups with American firms were concluded in this field (e.g., Tokyo electric with General Motors in 1905).

25. See Hirschmeir and Yui (1981).

26. Iwasaki was a low-class *samurai* of Tosa Han in Shikoku. He established and managed a joint venture in trading with the *han* government. After the Meiji Restoration, the firm went private and was named Mitsubishi Shokai. The Meiji government established a semipublic company called the Kaiun Kaisha (Marine Transport Company) in 1870 and started a regular route between Osaka and Tokyo in 1872. At this point, the government decided to sell off the company at a discount. Iwasaki took this opportunity; he bought the company and made it part of the Mitsubishi Company. It opened a route to Shanghai in 1875 and to Hong Kong in 1879. After this initial phase, the company grew and then diversified into many fields to form a conglomerate that became a *zaibatsu* second only to the Great Mitsui.

[References missing from original—Ed.]