

JAPANESE ECONOMIC INNOVATIONS

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Introduction Japanese society created a stable, high-functioning and integrated economy in the iron age and early post classical period. As was true of all early societies, its foundation was a thriving and well-managed agricultural sector. Farming sustained stable populations and provided a reliable basis for taxation. It produced excess in most years, which allowed for significant segments of society to specialize in sectors other than farming. Japanese growers were extremely capable and worked in concert with the government to build and manage infrastructure projects that all used to their advantage. For more than a millennium, Japan was largely self-sufficient in agriculture and enjoyed a thriving commercial sector (when the country was at peace). At the beginning of the 19th century, however, conditions changed worldwide and Japan entered a short period of economic contraction and humiliation. It had missed the industrial revolution. In the post Meiji Restoration era which began in 1868, Japan began a crash course of economic transformation and industrialization. It was extremely successful in catching up to the west. By the 1930s, Japan's economy produced more and the nation was wealthier than European countries such as Italy and Hungary. After the war, Japan turned its attention to reconstruction and the export economy and was again extremely successful. The economic recovery is a testament to the thrift, hard work and sacrifice of the Japanese labor force. As of this writing, the Japanese economy is a world leader and ranks third in the world in GDP output.

PREHISTORY-- The Neolithic age (10,000 BCE-2000 BCE)

Innovation and Agriculture. Neolithic era Japanese did not engage in agriculture early in the period. They gathered berries, roots, nuts, and other readily available foodstuffs based on the season. Nuts, such as walnuts and chestnuts, have been found in archaeological digs. These and other such items could be stored to help them get through a winter that was longer and colder for most of the period than is the case today (the last ice age was coming to a close). There is some evidence that during the warmer periods of 2500 BCE—1500 BCE that large villages might have just begun to cultivate some food stuffs because it would have been extremely difficult to forage enough food in the immediate vicinity to sustain a large village. But this was toward the end of the period and did not become a primary food source for late neolithic/early bronze age Japanese.

Diet. In addition to the nuts, berries, roots and other seasonal bounty readily available to the Jōmon people, hunting provided the protein needed to sustain most of the population. Early in the period, large game such as bear, deer, and wild boar were regular food items for inland people groups. For groups near to the coast and to fresh water sources, fishing was the primary source of protein. Virtually anything aquatic could be prepared and consumed to provide sustenance. Later in the period, smaller game such as squirrels, rabbits, and birds of all varieties were trapped and/or hunted

IRON AGE (1000 BCE-500 CE)

Innovation. Like every other element of society during the iron age, the cultivation of rice transformed the economy. In the Neolithic period, most Japanese were hunter-gatherers and it is difficult to speak of an economy of any size or scale. However, the cultivation of rice in the iron age changed that because it required new forms of technology and innovative ways of thinking. In general terms, Japanese transitioned from stone to bronze to iron during the period of three or four centuries—likely through the importation of technology from Korea. Bronze, as a metal, was stronger and more utilitarian than stone or wood—media still found in period sites. The forging of bronze required special knowledge and intensive quality control. However, the casting of iron did not require intensive specialization and could be carried out by those with little training and access to a rudimentary furnace. It is believed that bronze and iron were produced side-by-side during this period. Among the iron tools discovered in period archaeological sites were farming implements such as shovels, hoes, axes, fish hooks, chisels and knives. The natural resources needed to forge these new tools (and weapons) were in short supply and it is believed that those who controlled iron in its raw form were able to charge a premium for it. Indeed, given its

importance in agriculture and warfare, a number of anthropologists have argued that gaining access to iron may well have been the impetus for the creation of regional population centers of the Yamato Plain and northern Kyūshū.

In order to cultivate rice, paddies had to be created. Paddies had to be flooded during the transplantation stage of development for a period of several weeks. This required land to be transformed as well because paddies must be flat and ringed by small dykes, a condition that rarely if ever exists in a state of nature. Shovels, hoes and other earth moving tools were necessary to prepare the land. Canals, ditches and other irrigation infrastructure had to be tied in to rivers and creeks. Finally, sluice gates and a drainage mechanism had to be in place in order to remove water from the paddies at the appropriate time. In short, wet rice agriculture is very labor intensive and was facilitated by technological advances in metallurgy. Labor demands of this magnitude required villages to become larger, well led and more socially sophisticated.

Alongside advancements in agriculture, Japanese continued to forage and hunt. Iron spear tips, arrows and knives made the taking of large game easier. Iron fish hooks made it easier to catch fish and rudimentary iron traps made ensnaring small game possible. Iron therefore became the foundation of the economy. Those who had a ready supply of raw materials and the technical knowledge of how to forge it came to dominate society and likely emerged as some of the first elites in Japan.

POST-CLASSICAL AGE (500-1500)

Innovation and Agriculture. The economy of post classical Japan was based on agriculture, and in particular, the production of rice. Rice was (and is) the single most important food stuff in Japan. This was facilitated because the crown supported the dispersal of knowledge of advances in agriculture such as crop and field rotation, the use of fertilizers and the like. Irrigation and flood control projects were high priorities. The government took seriously the problem of security and sought to end enduring problems with banditry and the like. Rice also acted as the basis of land holding for much of Japanese history. Land holdings were not only determined by geographic measurement, but by the fertility of land under wet rice cultivation. This is because Japan is mostly mountainous and is largely unsuitable for cultivation. Therefore, wealth (and one's tax bill every year) was determined as a percentage of that which was produced. For example, a large and successful landowner might own land that produced 1,000 koku (1 koku equals approximately 5 bushels and is normally enough to feed one man per year) of rice. The yearly tax rate might be 300-400 (or more) koku. Rice was then traded for silver and made its way into the treasury. It should be noted that the average peasant didn't cultivate more than a few koku of rice per year nor did he regularly eat rice before the modern era. It was simply too dear to be consumed by the producers. Instead, peasants often ate millet and vegetables. Meat was rarely consumed, largely because of its expense and because of Buddhist considerations. If close to the coast or fresh water sources, fish and other aquatic life provided protein, as did tofu. As might be expected, industries grew up in Japan to support tertiary agricultural pursuits such as fishing and sericulture.

EARLY MODERN PERIOD (1500-1800 CE)

Innovation. Over the course of the 17th and 18th centuries, the economy of Japan grew dramatically in virtually every sector. Though the Tokugawa policy of *sakoku* (seclusion) meant that there was international trade largely with Korea and China only, domestic commerce thrived. Advances in agriculture allowed for a dramatic increase in population from approximately 15 million in 1600 to approximately 30 million in 1800. Silkworm production increased dramatically and sericulture became a thriving element of the economy. Indeed, some scholars argue that Japan had already taken the first step in industrialization because rapid advances in agriculture freed increasingly large segments of the population who were no longer needed in the fields and rice paddies. The Japanese economy suffered from the same cyclical problems that all economies endured. But, in general terms, the Japanese economy grew along with the population and reached a level of maturity that matched a number of western European countries.

19TH CENTURY

Innovation and Industrialization. After the Meiji Restoration in 1868, and in particular the Iwakura Mission which ended in 1873, the new leadership set Japan on a crash course of rapid industrialization. In the realm of finance, the government provided every known incentive to promote its development. Loans were underwritten by the government that offered virtually 0% interest rates in key industries such as steel production and coal mining. Land was set aside to be procured for new factories. In the transportation sector, the government went on a crash course of building railroads (and later encouraging private companies to do the same). Shipbuilding was also emphasized and a merchant marine became a priority. The Meiji government also passed laws mandating education through the 6th grade, providing basic literacy to a new workforce that could move into the burgeoning cities and go to work in the factories. Universities and technical schools were opened to meet the increasing need for new teachers, researchers and technicians. Advances in industry also were applied to agriculture, which freed additional workers for industrial pursuits and allowed for additional increases in population. By the turn of the 20th century, Japan was becoming an industrial power. Though still behind most nations in Western Europe in industrial output, it would soon rival Italy and Hungary as Japan moved into the 20th century. Indeed, by 1905, Japanese industry had developed sufficiently so that it was able to support its military in defeating a major European power in the Russo-Japanese War.

EARLY 20th CENTURY (1900-1949)

Innovation and Industry. As Japan entered the 20th century, its economy was still very much dependent on agriculture. There were continued advances in agriculture, but the easy and quick gains had already been seen in the late 19th century. Japan's agriculture was limited by the amount of land that could be cultivated. In particular, since most of Japan (about 75%) is mountainous, large-scale mechanization (as seen in the flat-lands of the U.S. great plains) was not practical. The vast majority of Japanese farmers still relied extensively on human and animal labor augmented by some mechanization. There was also the persistent problem of absentee landowners who provided little in the way of incentives for those who actually worked the land to increase production. This problem of absentee landownership, a situation that reached nearly 50% of all farm land in Japan, persisted until the end of the war, at which time land was redistributed by occupation officials to those who actually worked it. (This had created a situation in which wealth disparity of that magnitude was understood to be destabilizing factor for society.)

The War Ends. As the war drew to a close, greater and greater percentages of industrial capacity was devoted to the war. At one point in 1944, it is estimated that thirty-five to forty percent of all industrial output in Japan was spent on munitions and other items essential to the war effort. This meant that the civilian sector was neglected and food shortages and shortages of other consumer goods had become a major problem even before the war ended. At the end of the war, Japan was bankrupt and its economy lay in ruins. The bombings had destroyed a large percentage of Japan's industrial capacity. It was estimated by occupation officials that industrial production stood at ten percent of its prewar capacity. Homelessness and starvation were realities for large segments of the population in 1946 and 1947, and many succumbed. Even a year after the war, industrial production remained well below prewar levels. Japan's dream of economic and industrial independence was shattered along with everything else because of the war.

LATE 20th CENTURY (1950-1999)

Innovation and Recovery. The Japanese economy was in no way totally recovered from the ravages of the war in the middle years of the occupation. There was still widespread homelessness, occasional outbreaks of epidemics and disease, hunger, and significant unemployment. These economic conditions (and associated social and medical ills) were not totally eradicated for a generation after the war. Early relief came from an unexpected event: the Korean War. Though Japanese soldiers did not officially participate in the war, the conflict had the benefit of jump-starting Japanese manufacturing in textiles, steel production and other industries. It was cheaper and more efficient for UN forces to buy Japanese manufactured goods than it was to manufacture them (mostly in the US) and ship them across the world. Companies that provided items for the war effort such as trucks, spare parts, clothing, and the like recovered very quickly. Some, such as Toyota, Ajinomoto, Fuji (parent company of Subaru), and Hitachi become major, international conglomerates known the world over for innovation and excellence. During

the Korean War, food production also returned to pre-war levels and widespread malnutrition was vanquished, although very poor areas of the major cities where shanty towns existed still experienced hunger. By 1954, the Japanese economy had surpassed pre-war levels.

In the 1970s, the Japanese electronics industry began to invest heavily in the newest technology. For example, Sony bought the rights to the transistor and miniaturized the cassette player so that it would fit into a coat pocket. It became a worldwide best seller and was manufactured until 2010, transforming the industry. It has also spawned a number of “clones” by other Japanese manufacturers such as Panasonic, Hitachi and Sharp. In the last forty years, Japanese consumer electronics have become synonymous with quality and now lead the world.

Readings

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