Profit, Accumulation, and Crisis: Long-Term Movement of the Profit Rate in China, Japan, and the United States

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China has emerged as the center of global capital accumulation. But, there have been few studies on the movement of the profit rate in the Chinese economy. This article measures China’s economy-wide profit rate and its contributing factors from 1980 to 2015. The measurement is based on the construction of China’s business sector capital stock series, estimation of China’s labor income share, and the profit share of economic output. The movement of China’s profit rate is compared with the long-term movement of the profit rate in the United States and Japan. A comparative analysis of the three largest economies in the world helps to illustrate important developments of the global capitalist economy over the late twentieth and the early twenty-first century. This article finds that China’s profit rate is approaching a level that historically was associated with major crises in the United States and Japan. The decline of the profit rate is likely to continue in the coming years.

Keywords: capital accumulation, Chinese economy, economic crisis, global economy, profit rate

Capitalist businesses are driven by the pursuit of profit. In Marxian economics, profit rate (a broad measure of the rate of return on business capital stock) is considered to be one of the most important indicators that help to determine the performance of capitalist economies. High and stable profit rate encourage high levels of investment and rapid capital accumulation, leading to rapid economic growth; rapid economic growth in turn contributes to political and social stability. Conversely, low and falling profit rate lead to low levels of investment and a sluggish pace of accumulation; economic stagnation or crisis in turn contributes to political and social instability.

In Capital, volume 3, Marx proposed the famous “law of the tendency for the rate of profit to fall.” What Marx called the “law” can be more usefully considered as an intellectual hypothesis. According to Marx’s hypothesis, capitalist technological progress tends to be capital-intensive, leading to rising “organic composition of capital” (rising capital-output ratio); the tendency, if not checked or mitigated by other factors (such as rising “rate of surplus value” or rising profit share of economic output), will result in falling profit rate, undermining the foundation of the capitalist economic system (Marx, 1967[1894], p. 211–266).

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A significant literature has established that the fall of the profit rate played an important (if not a decisive role) in the structural crisis of global capitalism in the 1970s and 1980s and the revival of the profit rate contributed to the relative boom of the advanced capitalist economies from 1995 to 2007 (see Armstrong, Glyn, & Harrison, 1991; Dumenil & Levy, 2007; Gordon, Weisskopf, & Bowles, 1987; Kotz, 2015; Moseley, 1991; Shaikh & Tonak, 1994).

Since then China has emerged as the center of global capital accumulation. However, there have been few studies on the movement of the profit rate in the Chinese economy (for an earlier study on the profit rate in the Chinese manufacturing sector, see Zhang & Zhao, 2006). This article measures China’s economy-wide profit rate and its contributing factors from 1980 to 2015. The movement of China’s profit rate is compared with the long-term movement of the profit rate in the United States and Japan. A comparative analysis of the three largest economies in the world helps to illustrate important developments of the global capitalist economy over the late twentieth and the early twenty-first century.

The next section discusses the basic argument of Marx’s hypothesis of “the tendency for the rate of profit to fall” and reviews the exiting empirical evidence. Following that, I provide an updated analysis of the profit rate and related indicators for the United States and the Japanese economy. The fifth section reviews China’s economic transition and the impact of China’s deepening integration into the global capitalist economy. This is then followed by a discussion of the measurement of China’s profit rate and related indicators. Then a comparison of the long-term movement of the output-capital ratio and the profit share in China, Japan, and the United States is discussed. The article concludes with a discussion of the possible coming economic crisis in China.

**PROFIT, ACCUMULATION, AND CRISIS**

In *Capital*, volume 3, Karl Marx proposed the hypothesis that in the long run, the average rate of profit in a capitalist economy tended to fall, undermining the foundation of capitalist accumulation. Marx defined the profit rate as the ratio of “surplus value” over “advanced total capital.” Marx’s “surplus value” is a broad measure of capitalist profit that includes all forms of capitalist property incomes (business profits, interests, and rents). Marx’s “advanced total capital” includes “constant capital” (capital invested on the means of production) and “variable capital” (capital invested on labor power).

Marx argued that capitalist technological progress tended to be characterized by rising labor productivity made possible by mechanization (rising “technical composition of capital” or rising physical capital-labor ratio). Marx believed that rising “technical composition of capital” was likely to be associated with rising “organic composition of capital” (defined as the ratio of the value of the invested means of production over the value of labor power). It can be demonstrated that if the rate of surplus value is relatively stable, rising organic composition of capital would lead to falling profit rate.

In the modern Marxian literature, profit rate is often defined as the ratio of capitalist profit over the stock of fixed capital invested in capitalist production. Capitalist profit may be defined broadly to include all forms of capitalist property income or narrowly to include only business profit in a particular sector. Stock of fixed capital is used as the proxy for Marx’s “advanced total capital,” as the advanced “circulating capital” (the advanced purchase of raw materials
and advanced wage payments) tends to be a small part of the “advanced total capital” in a modern capitalist economy and empirical data on the advanced circulate capital are more difficult to collect.

The profit rate is often disaggregated into the profit share and the output-capital ratio:

\[
\text{Profit Rate} = \frac{\text{Profit}}{\text{Capital Stock}} = \left(\frac{\text{Profit}}{\text{Output}}\right) \times \left(\frac{\text{Output}}{\text{Capital Stock}}\right)
\]

The movement of the profit share (profit/output) and the output-capital ratio (output/capital stock) can be analyzed using alternative Marxist theories of crisis and accumulation (see Devine, 1987; Li, 2015). For example, a prolonged period of rapid capitalist economic expansion may substantially reduce the pool of unemployed and underemployed workers (what Marx called “reserve army of labor”), changing the balance of power between the workers and capitalists to the favor of workers, leading to more militant working class struggles that bring about not only rapid increase in wages but also growing difficulty for the capitalists to discipline the workers in the labor processes (because the workers are less concerned about losing their jobs). Higher wages and less effective capitalist control in labor processes result in rising wage share and falling profit share. This is known as the “profit squeeze” or social conflict approach to capitalist accumulation and crisis.

On the other hand, the under-consumption theory (a traditional Marxist theory of economic crisis) argues that excessive capitalist exploitation reduces the workers’ purchasing power and eventually brings about a crisis caused by insufficient effective demand. An underconsumption economic crisis may be established if a capitalist economy experiences falling wage share and rising profit share during the economic expansion followed by a sudden, sharp decline of the output-capital ratio at the time of crisis (reflecting sharp declines of capacity utilization caused by shortfalls in aggregate demand).

Marx’s argument that capitalist technological progress tends to result in rising “organic composition of capital” can be evaluated by the long-term trend of the output-capital ratio. When the rate of surplus value is relatively stable, the organic composition of capital (the ratio of the value of the means of production over the value of labor power) roughly moves in proportion with the ratio of the value of the means of production to the new value produced by the workers’ labor; the latter corresponds to the capital-output ratio. Thus, the hypothesis that the organic composition of capital tends to rise can be evaluated as the hypothesis that the capital-output ratio tends to rise or the output-capital ratio tends to fall.

Empirical evidence generally suggests that the output-capital ratios stabilized in the advanced capitalist economies in the twentieth century. Among the mainstream economists, Goldsmith (1985) conducted one of the most comprehensive studies of historical national accounts. Based on Goldsmith’s data, the output-capital ratios (measured by the ratio of the gross national product to the nonresidential fixed capital stock) in five advanced capitalist economies (the United Kingdom, France, Germany, Italy, and the United States) did tend to fall in the early phase of industrialization (between the mid-eighteenth century and the early twentieth century). However, between the early twentieth century and the 1970s, the output-capital ratios had either increased or stabilized.

Among the economists using the Marxian methods, Dumenil and Levy (1993) studied the long-term movement of the output-capital ratio and the profit rate in the United States from the 1870s to the 1990s. According to Dumenil and Levy’s finding, while the U.S. output-capital
ratio and the profit rate did tend to fall in the late nineteenth century, the decline was mostly offset by the surge of the output-capital ratio and the profit rate in the mid-twentieth century. Li, Xiao, and Zhu (2007) studied the long-term movement of the output-capital ratios in the United Kingdom, the United States, and Japan between the mid-nineteenth century and the early twenty-first century. The authors constructed a weighted average output-capital ratio for the three economies and found that the average output-capital ratio fell in the late nineteenth century and fell again between the mid-twentieth century and the late twentieth century. But the declines were offset by strong rises in the early twentieth century and the late twentieth century.

PROFIT RATE AND ACCUMULATION: UNITED STATES

Here and in the next section provide an updated analysis of the movement of the profit rate in the U.S. and the Japanese economy.

Following Li et al. (2007), this article defines the capitalist profit as the after-tax total capitalist property income generated from domestic production. It may be argued that in a time of “globalized” capitalism, a measurement of capitalist profit should include profits earned from overseas investment by the “nationals” of a capitalist economy. In addition to the problem that the measurement of foreign investment (usually measured by “historical cost”) is not compatible with the measurement of domestic capital stock (measured by “replacement cost”), there is also the issue of definitional consistency. A redefinition of the capitalist profit on a “national” rather than “domestic” basis would include profits earned overseas by the “nationals” of a capitalist economy but, for definitional consistency, would have to exclude profits earned by “foreign” capitalists in the economy. Such a redefinition does not bring us any closer to the actual reality of global capitalism.

In the conventional national income and product accounts, gross domestic income (gross domestic product measured by the income approach) consists of compensation of employees, net operating surplus, taxes on production and imports less subsidies, and consumption of fixed capital (depreciation). Net operating surplus includes corporate profits, net interest, rental income, and proprietors’ income. Proprietors’ income includes both labor income (such as income of small business owners who participate in productive work) and capital income (such as profits of unincorporated capitalist businesses). For the United States, data for gross domestic income and its components are from BEA (2016a, table 1.10).

Thus, capitalist property income includes the corporate profits, net interest, rental income, and the capital component of the proprietors’ income. The property incomes that appear in the national income and product accounts are before income taxes. Ideally, both the business income taxes and the individual income taxes paid by capitalists need to be subtracted from the total property incomes in order to assess the total disposable capitalist income available for capitalist investment and consumption. However, from the current national income and product accounts, it is not possible to separate the individual income taxes paid by the capitalists from those paid by other social classes. Thus, this article defines the total capitalist profit as the capitalist property income less the business income tax (or the corporate income tax). The total capitalist profit so defined can be calculated as follows:

\[
\text{Total Profit} = \text{Gross Domestic Product} - \text{Total Labor Cost} - \text{Total Taxation Cost} - \text{Depreciation of Fixed Capital}
\]
Total labor cost is the sum of compensation of employees and the labor component of the proprietors’ income. There are several commonly used methods to split the proprietors’ income between labor and capital. The first is to assign fixed weights to labor and capital income (with labor often assigned a weight of two-thirds and capital assigned a weight of one-third). The second is to assume that the self-employed workers earn the same wage rate as the employees in the rest of the economy. The third is to assume that the capital stock in the proprietor sector earns the same rate of return as in the corporate sector. The fourth is to assume that the labor and capital income share in the proprietor sector is the same as in the rest of the economy. The different methods often yield similar results (Giovannoni, 2015). This article uses the simple assumption that labor income is 70% of the U.S. proprietors’ income.

Total taxation cost includes taxes on production and imports less subsidies (also known as “indirect taxes less subsidies”) and the corporate income tax.

Capital stock is measured by the business sector net stock of fixed assets, which is the sum of the corporate, sole proprietorships, and partnerships net stock of fixed assets (data are from BEA, 2016b, Table 6.1).

Rate of accumulation is defined as growth rate of real business sector capital stock. Real business sector capital stock is calculated using quantity indexes of the net stock of fixed assets in the corporate, sole proprietorships, and partnerships sectors weighted by their weights in the total business sector capital stock in 2009 (data are from BEA, 2016b, table 6.2).

Figure 1 shows the profit rate and the economic growth rate for the U.S. economy from 1929 to 2015 and the rate of accumulation from 1926 to 2015. Economic growth rate is calculated from the real gross domestic product quantity index (BEA, 2016a, table 1.1.3).

The U.S. profit rate fell sharply in the early years of the Great Depression. The economy-wide profit rate fell from 16.3% in 1929 to 6.9% in 1933. By 1944, the U.S. profit rate surged to near 17% as the U.S. economy was fully mobilized for war effort.

In response to the major crisis of the 1930s, American capitalism underwent institutional transformations. In the early postwar years, there was a consensus for Keynesian macroeconomic policies, big government institutions, and various forms of economic and social regulations. The formation of these new institutions contributed to high and stable profit rates as well as rapid accumulation of capital, leading to a “golden age” of capitalism (Gordon et al., 1987; Kotz, 2015).

In the 1950s, the U.S. profit rate stabilized around 12%. The profit rate rose strongly during the first half of the 1960s, reaching near 16% in 1965–1966. The rate of accumulation (growth rate of real capital stock) averaged 2.8% in the 1950s and 4.0% in the 1960s. The U.S. economic growth rate averaged 3.6% in the 1950s and 4.3% in the 1960s.

A long economic boom, high levels of employment, and welfare state institutions strengthened the working class’s bargaining power. As wage share of the economic output rose, profit share and profit rate fell. After the mid-1960s, the profit rate declined precipitously. The United States was forced to abandon the Bretton Woods fixed exchange rate system in 1971–1973. Conflicts between the workers and the capitalists for a bigger share of the purchasing power led to upward spirals of nominal wages and prices. In the 1970s, as the average annual economic growth rate declined to 3.2%, the capitalists initially responded by maintaining rapid pace of accumulation (the rate of accumulation averaged 3.8% in the 1970s). Individual capitalists hoped to stay ahead of the investment game by driving other capitalists out of business but at the cost of further driving down the economy-wide profit rate. In the deep recession of 1980–1982, the U.S. profit rate fell to about 10%.
In response to the economic crises of the 1970s and the early 1980s, the big business shifted to support the neoliberal economic policies (Kotz, 2015). Contractionary monetarist policy and restraint on fiscal spending tended to increase unemployment and undermine the workers’ bargaining power; financial liberalization, deregulation, and privatization of public sector functions reduced capitalist costs and opened up new profit opportunities; tax cuts for the corporations and the wealthy boosted the capitalist profits directly (Kotz, 2015).

The neoliberal policies succeeded in reviving the profit rate. The U.S. profit rate recovered to 13.3% by 1985 and rose further to 14.6% by 1997 (as will be discussed later, globalization and especially the massive supply of labor force from China made an important contribution to the profit rate recovery in the neoliberal era). Although the profit rate recovered, the American workers’ real wages declined and economic and social inequality surged. By the early 2000s, the U.S. economy was characterized by growing macroeconomic imbalances that eventually became unsustainable.

The Great Recession of 2008–2009 was the deepest economic crisis the U.S. economy has had since the World War II. Despite the depth of the crisis, the economy-wide profit rate recovered strongly and had stayed above 14% during 2012–2015. On the other hand, the overall economy stagnated. The rate of accumulation averaged only 1.6% for the period 2001–2015 as the economic growth rate hovered around 2%. While the neoliberal institutions continued to succeed in raising the profit share and the profit rate, they could no longer bring about historically normal pace of capital accumulation and economic expansion. This throws doubt
on the sustainability of the high profit rates and the stability of the neoliberal institutional structure (Kotz, 2015).

**PROFIT RATE AND ACCUMULATION: JAPAN**

Japan’s Statistics Bureau, Ministry of Internal Affairs and Communications published historical capital stock data in *Historical Statistics of Japan, National Accounts* (Statistics Bureau, Ministry of Internal Affairs and Communications of Japan, 2012a).

In *Historical Statistics of Japan*, capital stock data for 1954–1969, 1969–1998, and 1980–2003 are found in Table 3-14-a, Table 3-15, and Table 3-33, respectively. For the period 1969–1998 and 1980–2003, Table 3-15 and Table 3-33 provide net stock of fixed assets for the nonfinancial corporate sector, the financial institutions sector, and the household sector. The household sector includes both households and unincorporated nonfinancial enterprises. The assumption is that one-quarter of the total household sector capital stock is capital stock owned by unincorporated business enterprises (this is roughly comparable to the share of the unincorporated business sector in the U.S. personal sector capital stock). As the estimated unincorporated business sector capital stock accounts for a small fraction of Japan’s total business sector capital stock (about one-tenth), alternative assumptions within the reasonable range (such as assuming that the unincorporated business sector capital stock accounts for about one-fifth to one-third of the household sector capital stock), this does not significantly impact the trend or the level of the overall business sector capital stock.

Japan’s business sector capital stock from 1969 to 2003 is therefore calculated as follows:

\[
\text{Business Sector Capital Stock} = \text{Non-Financial Corporate Sector Net Stock of Fixed Assets} + \text{Financial Institutions Net Stock of Fixed Assets} + 0.25 \times \text{Household Sector Net Stock of Fixed Assets}
\]

There are small inconsistencies between the capital stock data in Table 3-15 (based on 1968 System of National Accounts) and Table 3-33 (based on 1993 System of National Accounts). The two series are linked at the year 1980 by multiplying the business sector capital stock for pre-1980 years calculated from Table 3-15 by 1.021.

For years before 1969, *Historical Statistics of Japan* does not publish capital stock data by institutional sectors. The assumption is that the business sector capital stock is 56.5% of the total net stock of fixed assets for the years from 1955 to 1968 (based on the observed ratio in 1969).

For the year 2009, the business sector capital stock is calculated using the same method described above using data from *Japan Statistical Yearbook 2012* (Statistics Bureau, Ministry of Internal Affairs and Communications of Japan, 2012b, tables 3-12). The business sector capital stock for the years 2005–2008 is estimated by assuming that the business sector capital stock is 56.7% of the total net stock of fixed assets (the calculated business sector capital stock is 56.7% of the total capital stock both in 2003 and 2009). Total net stock of fixed assets is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012b, tables 3-11-a). The business sector capital stock in 2004 is assumed to be the average of that in 2003 and 2005.
In the latest Japan Statistical Yearbook 2016, the Statistics Bureau made major revisions. The latest capital stock data for the years 2010–2013 are not compatible with the pre-2010 capital stock data. To extend the pre-2010 business sector capital stock series to 2013, multiply the total net stock of fixed assets for the years 2010–2013 from the new series by 0.446 (based on the ratio between the business sector capital stock estimated from the old series and the total net stock of fixed assets in the new series for the year 2005). Total net stock of fixed assets in the new series is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2016a, tables 3-11-a).

In the previous section, total capitalist profit is defined as gross domestic product less the sum of total labor cost, total taxation cost, and depreciation of fixed capital. This is equivalent to “net operating surplus” less the labor component of “mixed income” (called proprietors’ income in the U.S. national income accounting) and the corporate income tax.

Japan’s net operating surplus from 1955 to 1979 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012a, tables 3-4). Net operating surplus from 1980 to 2003 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012a, tables 3-29-a). Net operating surplus from 2005 to 2009 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012b, tables 3-3a). Net operating surplus in 2004 is assumed to be the average of that in 2003 and 2005. Net operating surplus from 2010 to 2013 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2016a, tables 3-3a).

For the period 1955–1979, the assumption is that the “mixed income” equals the household sector net operating surplus (net of the imputed service from the owner-occupied dwellings). The household sector net operating surplus is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012a, tables 3-11-d). The mixed income from 1980 to 2003 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012a, tables 3-29-a). The mixed income from 2005 to 2009 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012b, tables 3-6). The mixed income in 2004 is assumed to be the average of that from 2003 and 2005. The mixed income from 2010 to 2013 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2016a, tables 3-6). Following the assumption used for the calculation of the U.S. profit rate, the assumption is that 70% of Japan’s mixed income is the labor component.

Japan’s corporate income tax from 1955 to 2004 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012c, tables 5-6). Corporate income tax from 2005 to 2009 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2012d, tables 5-7-b) and from 2010 to 2013 is from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan (2016b, tables 5-7-b).

Figure 2 shows Japan’s profit rate and the rate of accumulation from 1955 to 2013 and Japan’s economic growth rate from 1961 to 2015. The rate of accumulation is the growth rate of real business sector capital stock. The real business sector capital stock is calculated by deflating the business sector capital stock in current prices by the private business fixed investment deflator index (constructed using data from Statistics Bureau, Ministry of Internal Affairs and Communications of Japan, 2012a, tables 3-1, tables 3-19; 2016a, tables 3-1-c). The economic growth rate is from World Bank (2016).
In the period 1961–1970, Japan’s profit rate averaged 30.6%, more than double the average U.S. profit rate in the same period (14%). Japan’s very high profit rate provided both the funding and the motivation for Japan’s accumulation miracle. In the 1960s and 1970s, Japan’s real business sector capital stock grew at an average annual rate of 15.7% and 9.9%, respectively, and the Japanese economy grew at an average annual rate of 9.2% and 4.5%, respectively.

After 1970, Japan’s profit rate collapsed, falling from 32.8% in 1969 to 13.4% in 1975. In the second half of the 1970s, Japan’s capital accumulation slowed down and the profit rate stabilized around 14%. However, in the second half of the 1980s, Japan’s capital accumulation reaccelerated amid real estate and stock market bubbles. Rate of accumulation surged from 2.2% in 1983 to 12% in 1989.

As the bubbles collapsed, the Japanese economy entered into permanent stagnation. During the first decade of this century (2001–2010), Japan’s profit rate fell to about 10%, the rate of accumulation averaged 1.7%, and the economic growth rate averaged a miserable 0.8%.

One of the most interesting questions confronting the Chinese economy and the global economy today is whether China will follow Japan’s footsteps in overaccumulation and falling rate of profit that will ultimately take both the Chinese economy and the global economy down the path of long-term structural crisis.
China began the market-oriented economic reform in the early 1980s. Agricultural production was privatized and the central planning system was gradually replaced by market mechanisms. By the 1990s, most small- and medium-sized state-owned enterprises were privatized.

In 2000, state-controlled industrial enterprises (referring to the industrial enterprises in which the state-owned capital has a “controlling stake,” a “controlling stake” is usually defined as being the single largest equity owner, not necessarily owning more than 50% of the equity) still accounted for 50.2% of the total sales revenue of all industrial enterprises “above designated sizes” (referring to industrial enterprises with an annual sales revenue of 5 million Yuan or above). By 2010, the share of the state-controlled enterprises in industrial sales revenue fell sharply to 27.9%. By 2014, the state-controlled share fell further to 23.7% (see National Bureau of Statistics, People’s Republic of China, 2015, tables 13-3 and tables 13-4).

In 2014, all state-controlled units accounted for 32.2% of the total fixed investment, “collective” units (in China, “collective” units technically refer to economic units owned by urban or rural communities; although in practice, many “collective” units are disguised private enterprises) accounted for 4.8%, officially recognized domestic private enterprises accounted for 50.4%, foreign invested enterprises and enterprises with investments from Hong Kong, Macao, and Taiwan together accounted for 4.6% (National Bureau of Statistics, People’s Republic of China, 2015, tables 10-11).

In 2014, China’s total employment was 773 million. The agricultural workforce was 228 million; almost all of them were self-employed laborers farming on small, private plots. State-owned units (mainly government and government agencies) employed 63 million, collective units employed 5 million, corporations and share-holding companies (including state-controlled enterprises) employed 81 million, officially recognized domestic private enterprises employed 144 million, urban and rural nonagricultural self-employed was 106 million, foreign enterprises and enterprises with investments from Hong Kong, Macao, and Taiwan employed 30 million. The remaining 116 million were “migrant workers” (who have their official residence in the rural areas but work primarily outside their home areas) who worked in the informal sector (National Bureau of Statistics, People’s Republic of China, 2015, tables 4-1).

Thus, after three decades of market-oriented transition, the Chinese economy has been fundamentally transformed and private capitalist enterprises have become the dominant forces in industrial production, investment, and employment. Some Marxist economists argue that China has completed the transition from socialism to capitalism (Burkett & Hart-Landsberg, 2005; Li, 2009).

In the meantime, China has emerged as the driving force of global trade. China’s exports of goods and services accounted for only 0.5% of the world exports in 1980. China’s share in the world exports rose to 1.3% in 1990, 3.1% in 2000, 8.5% in 2010, and 11.4% in 2015. China overtook the United States to become the world’s largest exporter in 2013 (data are from World Bank, 2016).

By the early 2000s, China has emerged as the world’s new manufacturing export platform. China’s deepening integration into the global capitalist economy had the effect of supplying the world with a massive increase in cheap labor force. Stephen Roach, former Morgan Stanley chief economist, named this effect as the “global labor arbitrage” (Roach, 2004). According to Roach, through outsourcing and foreign direct investment, Western transnational
corporations were able to take advantage of lower Chinese and Indian wages that were 10%–25% of those of comparable quality workers in the United States and the rest of the developed world. This led to large savings of labor cost for the transnational corporations but at the expense of the working classes in the developed world in the form of lost jobs and lower wages. According to Foster, Chesney, and Jonna (2011), labor cost savings for the Apple Corporation by outsourcing iPhone manufacturing to China contributed up to 14% of its huge gross profit margin of 64%.

However, the Chinese labor force is unlikely to remain “cheap” forever. As the rural surplus labor force shrinks, the Chinese workers’ bargaining power has been growing and since about 2010, wages have grown more rapidly than labor productivity, depressing both the profit share and the profit rate. In the coming years, the shifting balance of power between the workers and the capitalists may undermine not only China’s current regime of accumulation but also the entire global system of “labor arbitrage” that favors the transnational capitalist profits.

MEASURING THE PROFIT RATE IN THE CHINESE ECONOMY

Estimating the Business Sector Capital Stock

A major difficulty for estimating the Chinese profit rate has to do with the lack of official measurement of capital stock series. Nevertheless, business sector capital stock can be constructed using the perpetual inventory method:

\[ K_n = K_0 + \sum_{t=1}^{n} NI_t \]

where \( K_n \) is the real capital stock in year “n,” \( K_0 \) is the real capital stock in the initial year, \( NI_t \) is the real net investment in year “t” (t = 1, 2, 3, … n). This formula says that real capital stock in any year is the sum of the initial real capital stock and the cumulative real net investment between the initial year and the current year.

China Statistical Yearbook 1985 (National Bureau of Statistics, People’s Republic of China, 1985) provides net value of fixed assets of state-owned enterprises in the industrial sector, which stood at 10.08 billion Yuan in 1952. In 1952, state-owned industrial enterprises accounted for 41.6% of China’s industrial gross output value (National Bureau of Statistics, People’s Republic of China, 1985). Assuming that the nonstate industrial enterprises had the same capital-output ratio as the state industrial enterprises, the industrial sector’s net stock of fixed assets in 1952 is estimated to be 24.25 billion Yuan.

In 1952, China’s industrial gross output value was 34.4% of China’s total society gross output value (National Bureau of Statistics, People’s Republic of China, 1985). “Total society gross output value” is a statistical concept used in the former socialist net material product accounting system; it measures the sum of gross output value in agriculture, industry, construction, transportation, and trade. Assuming that other economic sectors had the same capital-output ratio as the industrial sector, China’s total business sector net stock of fixed assets in 1952 would be 70.51 billion Yuan.

As the capital stock grows, the capital stock in the initial year becomes an increasingly smaller fraction of the capital stock in the later years. Alternative assumptions on the capital
stock in 1952 have little impact on the levels of capital stock after 1980, which mainly depend on the levels of cumulative net investment that have taken place since 1952.


For the years 1993 to 2015, I first estimated the total economy net investment in fixed assets and then applied a business sector share to the total economy net investment to estimate the business sector net investment in fixed assets.

Total economy net investment in fixed assets is the difference between China’s gross fixed capital formation and depreciation of fixed capital. Gross fixed capital formation from 1952 to 2015 is from China Data Center, University of Michigan (2016a, “Gross Domestic Product by Expenditure Approach of China”).

China’s National Bureau of Statistics provides depreciation of fixed capital by province from 1993 to 2015 (National Bureau of Statistics, People’s Republic of China, 2016a). Depreciation of fixed capital of provinces is added up to derive China’s total depreciation of fixed capital.

China’s Flow of Funds Account provides gross fixed capital formation by institutional sectors. The business sector’s share in the total net investment in fixed assets can be estimated by assuming that the business sector share in the net investment is the same as the business sector’s share in the gross fixed capital formation. The business sector share in the gross fixed capital formation is calculated as the sum of the gross fixed capital formation in the nonfinancial business sector and the financial institutions divided by the total domestic economy gross fixed capital formation. Flow of Funds Accounts from 1993 to 1999 are from National Bureau of Statistics, People’s Republic of China (1999, table C-23, table C-25, table C-27, table C-29; 2000, table C-21; 2001, tables 3-21; 2002, tables 3-21). Flow of Funds Accounts from 2000 to 2014 are from National Bureau of Statistics, People’s Republic of China (2016b). For 2015, it is assumed that the business sector accounted for 63.2% of the total gross fixed capital formation and total net investment (the same share as in 2014).

The business sector net investment calculated above is in current prices. This is deflated into real net investment in constant 1952 prices by using a fixed investment price index. National Bureau of Statistics, People’s Republic of China (2016b) provides fixed investment price index from 1990 to 2015. For 1953–1989, I use the national fixed investment price index calculated by Zhang, Wu, and Zhang (2004) and reported by Jin (2012, table 1). For 1952–1953, I use the Shanghai fixed investment price index reported by Zhang and Zhang (2003, table 2) as the proxy for the national fixed investment price index.

Using the above data, China’s real business sector net stock of fixed assets from 1952 to 2015 can be calculated. The real capital stock is then reinfated by having it multiplied by the fixed investment price index. The result is China’s business sector net stock of fixed assets in current prices. This is the capital stock series used for calculating the output-capital ratio and the profit rate.
Estimating China’s Labor Income

There are four separate official sources of labor income. Each suffers from certain limitations or inconsistencies. The Flow of Funds Account provides compensation of laborers from 1992 to 2014. But there are no data before 1992. Moreover, while the post-2000 Flow of Funds Accounts have been updated to reflect the latest revisions of gross domestic product, the Flow of Funds Accounts from 1992 to 1999 have not been updated.

The Input-Output Table provides distribution of China’s gross domestic product between compensation of laborers, net operating surplus, net producer taxes, and depreciation of fixed capital in two- or three-year intervals from 1990 to 2012.

Gross domestic product by income approach by province provides distribution of gross domestic product between compensation of laborers, net operating surplus, net producer taxes, and depreciation of fixed capital for each year from 1993 to 2015. But the total sum of the provincial gross domestic product has exceeded the national gross domestic product by significant margins in recent years.

Finally, the household survey provides per capita wage and entrepreneurial incomes in the urban and the rural areas starting in 1978. But the incomes reported by the households may have underrepresented their true incomes.

There are large discrepancies between the labor incomes calculated from the four different sources, making it difficult to evaluate both the trend and the level of China’s total labor income.

In this section, I provide an independent estimate of China’s total labor income by using transparent concepts that are consistently applied to the entire period studied. China has undergone major institutional changes since the 1980s. Before the 1980s, China had a socialist economy that behaved very differently from a capitalist market economy. Concepts such as profits and wages had different economic implications. For the purpose of the current research, I focus on the market reform period and study how China’s national income distribution has evolved since 1980.

For the rural labor income, I use the rural family entrepreneurial income and wage income from the official household surveys. In the Chinese context, most of the rural family entrepreneurial income is what the peasants earn from their small, private plots (technically owned by the rural “collectives”). The income from farming alone is often substantially below what a rural household needs to make a normal living. Thus, I consider the entire rural family entrepreneurial income to be labor income.


China’s urban employment is divided between the formal sector (known as the “urban units”) and the private and informal sector. Total urban employment from 1980 to 2015 is from National Bureau of Statistics, People’s Republic of China (2016b).

“Urban units” include state-owned units, urban collective owned units, corporations and share-holding companies, economic units with foreign investments, and economic units with investments from Hong Kong, Macao, or Taiwan. Total urban units employment from 2003


Urban private and informal employment includes officially recognized “urban private units” employment, urban self-employment, and other urban employment (urban informal employment). In this section, urban private and informal employment is simply defined as the difference between China’s total urban employment and the urban units employment. In 1980, there were only 810,000 persons in the urban self-employed sector, accounting for 0.8% of the urban employment. By 1990, total employment in the urban private, self-employed, and informal sectors reached 29.8 million, accounting for 17.5% of the urban employment. By 2010, China’s urban employment was dominated by the private and informal sector as the urban private and informal employment reached 216 million, accounting for 62.4% of the urban employment. Since then, there has been some re-formalization of China’s urban employment. In 2015, the urban private and informal employment stood at 223 million, accounting for 55.3% of the urban employment.

For the period 1980–2008, I assume that the workers in the urban private and informal sector received the same average wage as the urban collective “staff and workers.” Workers in the urban collective units had similar working conditions as those in the private sector and many collective units were in fact disguised private enterprises. Average wage of “staff and workers” in urban collective units from 1980 to 1994 is from National Bureau of Statistics, People’s Republic of China (1993, tables 4-35; 1995, tables 4-24). Average wage of employed persons in urban collective units from 1995 to 2008 is from National Bureau of Statistics, People’s Republic of China (2014, tables 4-11).

National Bureau of Statistics, People’s Republic of China (2016b) provides the average wage for employed persons in the urban private units (which are not a part of “urban units”) from 2009 to 2015. For the period 2009–2015, I assume that the workers in the urban private and informal sector received the same average wage as the urban private units employed persons. The total wages in the urban private and informal sector is then calculated by multiplying the employment by average wage.

In addition to wage payment, the employers’ labor cost includes social insurance contributions and other workers’ benefits paid by the employers. *China Statistical Yearbook 1999* provides total insurance and welfare funds paid by urban units from 1980 to 1998 (National Bureau of Statistics, People’s Republic of China, 1999, tables 21-54). For the period 1980–1998, I use the total insurance and welfare funds as the proxy for the employers’ social insurance contribution and workers’ other benefits.

currently does not have a nationally unified social insurance system. Different provinces have different policies regarding the social insurance contribution ratios. But most provinces require the employer pay contributions that equal about 20% of the employee’s wage in the previous year and the employee pay contributions that equal about 10% of the employee’s wage in the previous year. The government also provides some subsidies to the social insurance funds. I assume that 60% of the social insurance receipts come from the employers’ contributions.

The difference between the urban units’ total insurance and welfare funds and 60% of the social insurance receipts in 1998 equals 25% of the urban units total wages in 1998. To make the post-1998 social insurance and benefits estimates roughly comparable to the pre-1998 estimates, I assume that for the post-1998 period, the urban workers’ other benefits equal 25% of the urban units total wages. For the private and informal sector, I assume that the workers receive no other benefits.

Figure 3 shows China’s labor income as a share of gross domestic product from 1980 to 2014. The labor income includes the following categories: rural labor income, urban units wages, urban private and informal sector wages, and employers’ social insurance contributions and workers’ other benefits.

Estimating China’s Total Profit

Total profit is gross domestic product less the sum of labor cost, taxation cost, and depreciation of fixed capital. Total labor cost equals total labor income estimated in the last subsection.

For the period 1980–1992, depreciation of capital is calculated as the difference between gross fixed capital formation and the total “accumulation” of fixed assets (including both productive and nonproductive accumulation). Gross fixed capital formation is from China Data Center, University of Michigan (2016a). “Accumulation” of fixed assets is from National Bureau of Statistics, People’s Republic of China (1994, tables 2-19). For the period 1993–, the sum of provincial depreciation of fixed capital is used.

Taxation cost is the sum of indirect taxes and business income tax. This is equivalent to total tax revenue less individual income tax. China’s total tax revenue from 1980 to 2015 is from China Data Center, University of Michigan (2016a, “Government Tax Revenue”). Individual income tax from 1990 to 2015 is from National Bureau of Statistics, People’s Republic of China (2016b).

Figure 4 shows China’s profit rate, rate of accumulation (growth rate of real capital stock), and economic growth rate from 1980 to 2015. Economic growth rates are from China Data Center, University of Michigan (2016a, “Indices of Gross Domestic Product of China”).

![Figure 4: Profit Rate and Accumulation (Chinese Economy, 1980–2015)](image)

OUTPUT-CAPITAL RATIO: UNITED STATES, JAPAN, AND CHINA

Marx hypothesized that capitalist technological progress would bring about rising “organic composition of capital” (falling output-capital ratio) that would in turn drive down the profit rate. What can we learn from the historical experience of the United States, the Japanese, and the Chinese economy regarding Marx’s hypothesis?

Figure 5 compares the long-term movement of the output-capital ratio in the United States, Japan, and China. The output-capital ratio is defined as the ratio of gross domestic product to the business sector capital stock.

The U.S. output-capital ratio was at 0.71 in 1929. It fell to 0.49 by 1933. During World War II, the U.S. output-capital ratio surged, peaking at 1.25 in 1944. There was sustained decline of the output-capital ratio from 1966 to 1982, followed by a recovery in the 1980s and 1990s. From 1947 to 2015, the U.S. output-capital ratio fluctuated within the range of 0.7–1 and averaged 0.87.

Japan’s output-capital ratio reached very high levels in the 1960s, averaging 1.43 during 1960–1969. It fell sharply from 1969 to 1974, fluctuated around 0.9 from 1974 to 1988, and trended down again after 1988, falling to 0.7 by 2013. Between the three major economies, Japan has demonstrated the clearest pattern for the output-capital ratio to fall in the long run.

After an initial surge from 1952 to 1953 (peaking at 1.12 in 1953), China’s output-capital ratio fell during the rapid industrialization of the First Five Year Plan. The output-capital ratio

![Output-Capital Ratio](image)

collapsed during the economic crisis of 1958–1963, falling to 0.49 by 1963. After some recovery in the mid-1960s, the output-capital ratio fell again in the 1970s as China attempted to resume normal industrialization. By 1976 and 1977, China’s output-capital ratio fell to 0.48 during the post-Mao political crisis and economic adjustment.

From 1977 to 2007, China’s output-capital ratio generally tended to increase, rising to 0.69 by 2007. Since then, China’s output-capital ratio has again trended downward, falling to 0.54 by 2015. If China’s output-capital ratio continues to fall, it will approach the level that historically was associated with the American Great Depression (about 0.5).

The future trend of China’s output-capital ratio mainly depends on the relative movement of the economic growth rate and the rate of accumulation (growth rate of real capital stock). Figure 4 shows that China’s economic growth rate currently is about 7% and the rate of accumulation is about 11%. These rates imply that the output-capital ratio is falling at an annual rate of about 4% (7% − 11% = −4%), or by the amount of 0.0216 per year given the current level of 0.54 (0.54 × − 4% = −0.0216).

Unless this trend is reversed or offset by some other factors, China’s output-capital ratio could soon fall below the threshold of 0.5. Can the Chinese economy survive such a low output-capital ratio?

**PROFIT SHARE: UNITED STATES, JAPAN, AND CHINA**

In *The Communist Manifesto*, Marx and Engels famously predicted that as capitalism developed, a new working class (the “proletariat”) would expand to become the majority of the population and eventually become the “gravediggers” of capitalism (Marx and Engels, 1978[1848]). While the world’s proletariat has yet to become the gravediggers of capitalism, Marx’s argument that capitalist development would create favorable economic, technological, and social conditions for the working class to organize; and the idea that the working class would use their newly developed organizational capacity to demand higher living standards as well as social rights has been largely confirmed by later historical development.

Immanuel Wallerstein, the leading world system theorist, argues that prolonged, rapid expansion of capitalist production tends to drive up the costs of production (especially the labor cost). The “core countries” (the developed capitalist world) often respond to rising labor cost by relocating industrial capital to geographic areas with large rural surplus labor force, where labor cost is much lower. However, over time, industrial relocation brings about social transformation in the periphery. Rural surplus labor force is gradually depleted and within about one generation, newly urbanized workers begin to engage in syndical actions (that is, to get organized), demanding higher wages and more social rights (Wallerstein, 2007)

In mainstream development economics, it is well known that once the agricultural surplus labor force is sufficiently depleted, real wage in the urban sector will begin to rise dramatically. The phenomenon is known as the “Lewis Turning Point,” named after development economist W. Arthur Lewis (1954).

Figure 6 compares the long-term evolution of the profit share in the United States, Japan, and China.

U.S. profit share was 23.1% in 1929. In the early years of the Great Depression, the profit share collapsed. Although the profit share made some recovery during the second half of the
1930s, it fell substantially (by nearly one-third) from 1940 to 1945. After World War II, the U.S. profit share did not recover. In the 1950s, the profit share averaged 13.3\% (less than 58\% of the profit share in 1929).

The large decline of the U.S. profit share reflected major institutional changes of American capitalism in the 1930s and 1940s that substantially reduced inequality in income and wealth distribution. In the neoliberal era (from the 1980s to the present), U.S. profit share has steadily increased. By 2012–2014, U.S. profit share exceeded 17\%, the highest level that American capitalism had seen since 1940.

Japan’s profit share averaged 21.6\% in the 1960s and peaked at 23.3\% in 1969. Japan’s profit share collapsed during the first half of the 1970s. From 1975 to 1990, Japan’s profit share fluctuated around 15–16\%. It fell again in the early 1990s and averaged only 13.4\% from 1994 to 2009. But since 2010, Japan’s profit share has recovered to about 15\%.

In 1980, China’s profit share was 28.4\%. In the next two years, the Chinese government drastically increased the state procurement prices of agricultural goods, in effect transferring income from the urban sector to the rural sector. In 1984, another reform redefined some state sector profits as taxes. By 1985, the profit share fell to 15\%.

From 1985 to 1995, several waves of high inflation redistributed income from labor to capital. By 1995, the profit share peaked at 38.8\%. From 2000 to 2010, China’s profit share remained at very high levels, fluctuating around 31\%–33\%, more than twice as high as the U.S. profit share in the same period.

However, since 2010, a fundamental change has occurred. From 2010 to 2015, China’s profit share fell from 33.3\% to 24.2\%, with an average annual decline of 1.8\% points. The profit

share decline was matched and driven by the labor share increase (see Figure 3). Moreover, labor income growth has been concentrated in the formal sector (“urban units”), suggesting that the formal sector workers have gained stronger bargaining power as the rural surplus labor force shrinks and the informal sector employment stabilizes.

Under the current trend, rather than offsetting falling output-capital ratio with rising profit share, the Chinese economy is struggling to halt the decline of the profit share. The combination of falling output-capital ratio and falling profit share has led to accelerated declines of China’s profit rate.² This trend, if not reversed, may precipitate China into not only an economic crisis but also a social and political crisis.

CHINA: TOWARD ECONOMIC CRISIS?

Since the 1980s, the Chinese economy has undergone fundamental transformations. As China emerges as the center of global capital accumulation, its internal contradictions threaten to undermine not only the Chinese economy but also the global economy.

From 1991 to 2010, China’s economy-wide profit rate averaged 20.9% (see Figure 4). This very high profit rate helped to motivate and sustain China’s rapid capital accumulation and economic growth. From 1991 to 2010, China’s real business sector capital stock grew at an average annual rate of 11% and China’s economic growth rate averaged 10.5%; China’s economic output increased by nearly eightfold.

However, as both the output-capital ratio and the profit share fell, China’s profit rate has suffered large and rapid declines since 2010. The decline of the profit share reflects fundamental changes in Chinese society that have led to rising working class bargaining power. As China’s rural surplus labor force continues to shrink and the Chinese workers continue to demand higher living standards, the trend toward rising labor income share and falling profit share is unlikely to be reversed until China is hit by a major economic crisis.

In recent years, China’s economic growth rate has stayed consistently below the rate of accumulation, dragging down the output-capital ratio. The very high rate of accumulation results from the very high share of business sector net fixed investment in China’s GDP (currently at about 19%). The very high net investment share cannot be radically changed in the short run without some major macroeconomic adjustments (such as a substantial increase in the consumption share of gross domestic product). If a lower net investment share results in further decline of the economic growth rate, it could accelerate rather than prevent the decline of the output-capital ratio.

Thus, neither the decline of the profit share nor the decline of the output-capital ratio can be reversed in the short run, meaning China’s profit rate will continue to fall in the coming years.

Figure 7 compares the long-term movement of the profit rate in the United States, Japan, and China:

From 2010 to 2015, China’s profit rate fell from 21.1% to 13.1%, with an average annual decline of 1.6% points. At this rate, China’s profit rate could fall below the 10% threshold in a few years.

Historically, the U.S. profit rate fell below 10% for multiple years only during the Great Depression. The U.S. profit rate approached 10% in the 1970s when the economy struggled with stagflation and experienced major instabilities. Japan’s profit rate has fluctuated around
10% as the Japanese economy sinks toward zero growth. Thus, for the United States and Japan, an economy-wide profit rate below 10% was historically associated with major economic crisis or prolonged stagnation.

China’s profit rate briefly fell below 10% in 1985. That was caused by a temporary surge of business income tax charged on profits of state-owned enterprises. In the early 1980s, the profit rate was lowered because of a large increase of state procurement prices of agricultural goods which led to a transfer of income from the urban sector to the rural sector. At the time, about 70% of China’s employment was in the agricultural sector and the urban sector was dominated by state-owned enterprises (whose capital accumulation was not very sensitive to the profit rate). Thus, a surge in the agricultural labor income led to a massive increase in mass consumption without undermining the urban capital accumulation.

By the early twenty-first century, China has been transformed into what is basically a capitalist economy. If China were to follow essentially the same economic laws as in other capitalist economies (such as the United States and Japan), a decline of the profit rate would be followed by a deceleration of capital accumulation, culminating in a major economic crisis. China’s downward trend of capital accumulation that has emerged since 2010 seems to confirm this new reality.3

In the coming years, we will observe how China’s profit rate behaves and how the Chinese economy responds to the decline of the profit rate. The answer to these questions will be of great interest not only to people who are interested in Marx’s “law of the tendency for the rate of profit to fall” but to all interested parties.
NOTES

1. In addition to the relative movement of the economic growth rate and the rate of accumulation, the nominal output-capital ratio also depends on the relative movement of the GDP price index and the capital stock price index. Change in relative prices may have significant impact on the short-term movement of the nominal output-capital ratio.

2. In *Capital*, volume 1, chapter 25, Marx discussed the famous “General Law of Capitalist Accumulation” (Marx, 1967[1887], 582–600). According to Marx, by pursuing capital-intensive technological progress (reflected by rising “organic composition of capital”, capitalist accumulation tended to produce an increasingly larger “relative surplus population” or “industrial reserve army of labor,” and thereby intensifying the exploitation of the working class. However, in the actual historical experience of the capitalist economies in the twentieth century, rising “organic composition of capital” (falling output-capital ratio) generally tended to happen in periods when the working class militancy was growing and the profit share was falling. This was the case for the United States and Japan from the 1960s to the 1970s. A similar parallel movement of falling output-capital ratio and falling profit share seems to have been under way in China.

3. In recent years, real estate investment has accounted for a rising share of the Chinese economy. According to National Bureau of Statistics, People’s Republic of China (2016c, tables 10-2), real estate investment accounted for 17% of China’s “total fixed investment” in 2015. For individual capitalist investors, speculation in real estate investment may produce short-term “capital gains” (that is, rising housing prices) that delivers high “rate of return” on paper. But from the Marxist perspective, the real estate sector is essentially a nonproductive sector that helps to realize the value of buildings in the market without producing any new value. Thus, real estate speculation cannot be a mechanism to reverse the decline of the general profit rate. On the other hand, China’s current real estate boom has been accompanied by a surge of the overall level of debt, making a financial crisis more likely to happen. China’s “total social financing” (a measure of the total level of debt in the nonfinancial sector) was 122% of China’s GDP in 2002, 157% in 2010, and 201% in 2015 (National Bureau of Statistics, People’s Republic of China, 2016c, tables 18-4). Japan’s collapse of profit rate in the 1990s was preceded by a real estate boom. It would be interesting to see whether China’s current real estate boom will end with a similar crisis.

REFERENCES


