

**Two Business Cycles within the Industrial Cycle of 1991-2009:
A Marxist Analysis of the Real Economic Ground of the 2008 Financial Crisis**

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Abstract

There were two bubble economies in the recent U.S. economy, that is, IT bubble in the last 1990s and housing bubble in the 2000s. The result of the former was the mild recession in 2001, but that of the latter was the severe crisis in 2008-09. This paper will show the reason why they were so different. Behind phenomenon of two business cycles, there was one industrial cycle in 1991-2009. After WWII, the government interventions in order to avoid crises have impeded adjustments of excess capital, which has prolonged the length of industrial cycles. The economy of the 2000s was the stagnant phase of the prolonged industrial cycle of 1991-2009, which is called “Secular Stagnation” today. Due to such stagnant economy, the investment bankers had to use CDOs and take risks by themselves in order to generate the housing bubble. That was the real economic ground of the 2008 financial crisis.

Keywords

financial crisis, reproduction schema, expanded reproduction, industrial cycle, excess capital

Introduction

The financial crisis in 2008-09 was the most serious economic downturn in the U.S. after the Great Depression in 1929. It is one of the most noteworthy issues of economics and many Marxian economists have argued on the cause of the crisis. Most of them share the idea that the crisis has close relations to following features of in recent thirty years even though they insist much different theoretical interpretations, that is, stagnant productive investment, wage compression, poverty, globalization, and financialization¹.

These discussions are very meaningful, but they have two shortages. First: every crisis has its own industrial cycle. Industrial cycle is the process in which the contradictions (excess capital) are generated, piled up, and erupt resulting in crisis. Few economist, however, clarify specific figure of industrial cycle of the 2008-09 crisis. Second: every uptrend phase (expanded reproduction) in industrial cycles has its own growth mechanism, that is, specific structure of industrial linkage among production, investment, and demand. Most economist, however, don't analyze it but track on aggregated indicators only, for example, GDP growth rate, profit rate, organic composition of capital, and so on.

The main purpose of this paper is filling these two shortages. By filling them, this paper will show such findings as follows. There were two business cycles across the 1991-2009 period, but these were encompassed by one industrial cycle (that is, a single capital investment cycle). The business cycle of 2001-2009 was the final and stagnant phase of the long industrial cycle of 1991-2009. Economic growth during 2001-2007 relied mostly on such "exogenous demand" as the housing bubble, crude oil speculation, and military spending. In order to generate huge bubble in such stagnant condition, the investment bankers had to assume big risks of their own, as well as sell many high-risk financial instruments. That activity was the immediate cause of the serious credit crunch in 2008-09. Thus, stagnation in the non-financial sector in the 2000s was the real ground of the financial crisis.

¹ For example, see Moseley (2011), Smith and Butovsky (2012), Brenner (2009), and Duménil and Lévy (2012). While sharing this general assessment, these analysts advance very different theoretical interpretations. Moseley and Smith-Butovsky see Marx's law of the tendency of the rate of profit to fall as the root of the crisis. Brenner identifies the cause in overcapacity and "asset price Keynesianism." Duménil-Lévy emphasize cumulative disequilibria fostered by U.S. global hegemony. On the close interconnection of neoliberalism, stagnant productive capital accumulation, and "financialization," see Bakir and Campbell (2010), as well as Orhangazi (2008).

Arguments are set forth in the following order. In section 1, I examine the economic growth mechanisms over the period 1991-2007. First, I will propose a method to analyze economic growth mechanism based on Karl Marx's "reproduction schema." Next, by using macro economic statistics, I will show the actual industrial linkage among production, investment, and demand in the period of 1991-2007. Finally, I will show how "endogenous growth" and "exogenous growth" mixed during that period. In section 2, I examine the specific figure of industrial cycle in 1991-2009. First, I will examine the dynamism of the capital investment of Manufacturing industry and IT industry, which was similar to Marx's "industrial cycle." Second, I will show industrial cycles after the World War II were prolonged by the government interventions. Finally, I will explain the real economic ground of the financial crisis in 2008-09.

1. Expanded reproduction and the circulation of the total social capital, 1991-2007

1.1 Method of Analyzing economic growth

I derive my method of analyzing economic growth from Marx's own theory. In chapters 20-21 of *Capital*, volume II, Marx described the necessary conditions for satisfactory and continuous capitalist reproduction in his so-called "reproduction schema."² He distinguished two fundamental economic sectors: Department I, which produces means of production, and Department II, which produces means of consumption. An expansion of production in either department requires investment of both variable capital (labor power) and constant capital (facilities and materials). Investment in variable capital increases the demand for Department II products, and investment in constant capital increases the demand for Department I products. If the expansion of production in the two departments corresponds to the actual increases in the two types of demand (in both material and value terms), the process of expanded reproduction will be satisfactory and continuous.

This schema suggests that there are three elements in the expanded reproduction process: 1) the expansion of production, 2) capital investment (additional objects of labor, means of labor, and labor power), and 3) the increase in demand (for raw materials, fixed capital, and means of consumption). These three elements form an "autonomous" engine of economic growth. The increase in demand spurs expansion of production, the expansion of production requires capital investment to

² See Marx (1978).

increase capacity, and capital investment further increases demand. The end of this cause-and-effect sequence is the same as its starting point. Accordingly, this sequence is an autonomous circuit functioning as an engine of economic growth.

Marx argued that if the increase of demand and the expansion of production match each other, expanded reproduction will be satisfactory and continuous. However, they actually do not match. But rather expanded production is following to cyclical fluctuations in general. Excess production and excess capital accumulation are generated in prosperity phases, and then they are adjusted in crises and stagnant phases. These cycles make demand and production be match each other roughly in the long term. Marx called them “industrial cycle.”

The reason why excess production and excess capital are generated is that there are two different motives for capital investment. The first motive is captured in the “reproduction schema”: heightened demand leads firms to invest to increase their capacity. In this regard, the capacity is adjusted to more or less match the demand. The second motive is related to competition among firms, which causes relative surplus value, being described in chapter 12 of *Capital*, volume I. Firms must invest to become more efficient than their competitors to earn special surplus value.³ This competition is endless and enforce firms to invest their capital endlessly. As a result, excess production and excess capital are generated. Furthermore, this kind of investment generates so-called “the rise in the organic composition of capital” that causes two historical trend of capitalist economy, that is, firstly the progressive production of a relative surplus population and accumulation of poverty, secondly a falling tendency of the rate of profit.

Let us now apply these ideas to the analysis of modern macroeconomic statistics. In Marx's theory, capital investment is defined as the addition of variable capital and constant capital to production via the reinvestment of profits. The annual turnover of invested variable capital forms employees' compensation, which are the main source of household funds standing behind “Personal Consumption Expenditures.” On the other hand, invested constant capital is “Gross Investment” and “Intermediate Demand.” However, Value Added,⁴ which plays the central role in System of National

3 See Marx (1976).

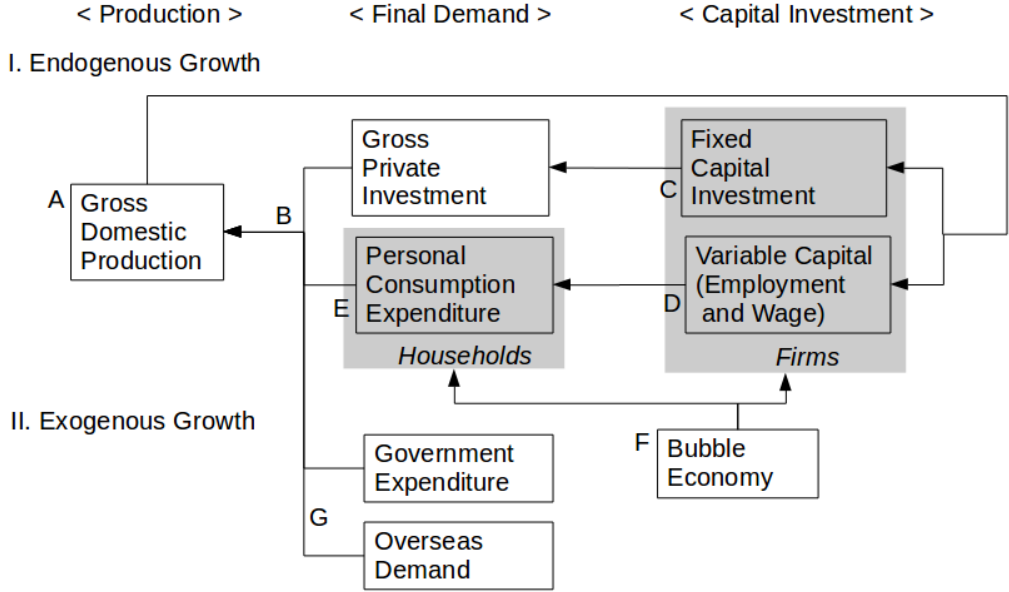
4 Value Added is roughly equivalent to Marx's Value Product. The biggest difference between them is that Value Added includes depreciation of fixed capital, but Value Product does not.

Accounts (SNA), does not take account of “Intermediate Value.” In fact, Gross Domestic Product (GDP) estimates encompass only Personal Consumption Expenditure and Gross Investment in the domestic private sector. Capital investment generates these two forms of economic demand, which together form the core of the four final demands that bring about economic growth. Accordingly, we can conclude that these two core demands, which are generated by capital investment, are the determining factors in GDP growth and its dynamics. Let us call the demands generated by capital investment “endogenous demand” and the growth flowing from these demands “endogenous growth.”

There are “Overseas Demand (Net Exports)” and “Government Expenditures” among the four final demands defined in SNA. We can’t find them in Marx’s Capital, but it is worth noting that they were supposed to be considered in later (uncompleted) stages of his plan of Critique of Political Economy, that is, “The states” and “Foreign trade.” These demands are independent of investments by capitalist firms and can be regarded as forms of “exogenous demand.” Elements of Gross Investment and Personal Consumption can also be considered “exogenous demand” whenever they are generated for reasons other than capital investment; for example, when they are generated by wealth effects in a bubble economy. Naturally, we shall call growth arising from these particular types of demand “exogenous growth.”

Thus economic growth can be decomposed into "endogenous growth" and "exogenous growth," and their relationship can be summarized as Fig1. Concrete analysis with using macro economic statistics take two steps as follows. First step: grasping the appearance and features of each of A to G with statistics. Second step: assembling them into mechanisms like Fig.1. To begin we will examine whether five parts of A to E are interconnected in one circuit. If they are, we can see “endogenous growth” there. Next, we will need to search for other sources of demand increase among parts of F or G. If they supported economic growth, we can see “exogenous growth” there. In this step, we should know lots of informations about related industries from not only statistics but also many literatures.

Figure 1. Mechanism of economic growth (endogenous and exogenous growth)



Note:

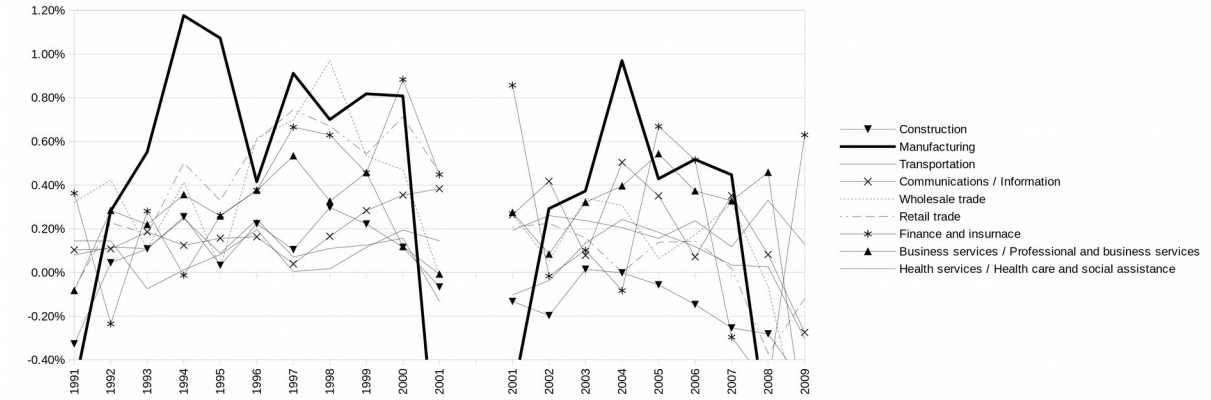
- A. Production expansion (GDP growth) by industry.
- B. Growth contribution rate of demands by industry.
- C. Fixed capital investment. As a part of constant capital investment and as a main source of “Gross Domestic Investment” demand. On calculation method, see Appendix.
- D. Employment and wages. As a result of variable capital investment and as a main source of “Personal Consumption Expenditure” demand.
- E. Personal Consumption Expenditure.
- F. Bubble economy. Its wealth effects may increase firms’ fixed capital investment and households’ personal consumption.
- G. “Government Expenditure” and “Overseas Demand” as exogenous demands.

1.2 Making components from the U.S. statistics

First of all, we will create seven components (A to G) by processing macroeconomic statistics. I will show Figures and Tables first, and then write items to be read from them in bullets.

A. Production Expansion

Figure 2. Contribution to real GDP growth by industries



Source: U.S. Department of Commerce, GDP by Industry
 Note: (1) Industries are classified by Standard Industry Classification (SIC) during 1991-2001 and North America Industrial Classification (NAICS) during 2001-2009.
 (2) “Communications / Information” means “Communications” in SIC during 1991-2001 and “Information” in NAICS during 2001-2009.

Figure 3. Contribution to real GDP growth of sub-sectors in Manufacturing industry



Source: U.S. Department of Commerce, GDP by Industry
 Note: (1) Industries are classified by SIC during 1991-2001 and NAICS during 2001-09.
 (2) “Industrial Machinery and Equipment” and “Electronic and Other Electric Equipment” in SIC during 1991-2001 were reorganized into “Computer and Electronics Products” and “Machinery” in NAICS during 2001-09.

- Figure 2 shows that the appearance is much different between the first half and the second half of the 1990s: until 1995 only Manufacturing industry had grown remarkably, other sectors have been rapidly expanding production after 1995. Such an imbalance can not be seen in the 2000s (except 2004).
- Figure 3 also shows the appearance is much different between the first half and the second half of the 1990s: until 1995 several sub-sectors in Manufacturing expanded their production together, only IT hardware industry (“Industrial machinery and equipment” and “Electronic and electric equipment”) had grown remarkably after 1995. In the 2000s, similar feature was reproduced, but the contribution of IT hardware industry (“Computer and electronic products”)

in the period was lower than that in the late 1990s. We will find later that these features were regulated by the subject of demand (see B).

B. Increase of Demand

Table 1. Growth contribution rate of demands by industry, 1991-2000 and 2002-07

1991-2000	Contribution rate of final and intermediate input						Contribution rate of final demands				
	Personal Consumption Expenditure	Fixed Capital Investment	Change in Private Inventories	Net Exports	Government Expenditure	Intermediate	Personal Consumption Expenditure	Fixed Capital Investment	Change in Private Inventories	Net Exports	Government Expenditure
Construction	0.0%	65.3%	0.0%	0.0%	17.4%	17.3%	12.8%	70.6%	0.1%	-1.5%	18.0%
Manufacturing	27.9%	26.0%	4.4%	-21.8%	1.7%	61.8%	67.3%	64.9%	5.8%	-43.1%	5.2%
Food and kindred products	59.02%	0.00%	4.33%	-6.05%	3.73%	38.96%	100.64%	-1.40%	4.70%	-8.39%	4.45%
Fabricated metal Products	3.4%	3.2%	2.3%	-7.8%	1.3%	97.7%	38.9%	79.9%	5.4%	-31.9%	7.6%
Industrial Machinery	7.5%	65.0%	1.7%	-28.5%	2.7%	51.5%	24.1%	111.0%	2.3%	-40.8%	3.4%
Electric and electronic equipment	9.7%	25.9%	5.2%	-13.9%	2.1%	71.1%	42.0%	78.9%	9.2%	-37.1%	7.0%
Motor vehicles and equipment	35.2%	53.6%	6.3%	-30.7%	2.1%	33.6%	55.8%	74.9%	8.6%	-42.5%	3.2%
Chemicals and allied products	47.8%	-0.2%	4.2%	-24.0%	5.8%	66.5%	111.9%	36.0%	2.1%	-51.9%	1.9%
Transportation	26.5%	2.6%	0.4%	3.2%	2.4%	64.9%	69.2%	32.7%	0.8%	-7.1%	4.4%
Communications	38.6%	2.3%	0.0%	1.1%	4.3%	53.7%	77.1%	16.0%	0.3%	-0.7%	7.2%
Wholesale trade	27.6%	13.1%	1.4%	8.8%	2.8%	46.3%	58.3%	39.7%	2.0%	-4.3%	4.3%
Retail trade	86.7%	4.8%	0.0%	0.0%	-0.2%	8.7%	89.3%	10.0%	0.0%	-0.4%	1.1%
Finance and insurance	48.0%	0.0%	0.0%	2.8%	1.1%	48.1%	90.6%	5.9%	-0.1%	1.3%	2.2%
Real estate	51.5%	5.4%	0.0%	3.4%	1.0%	38.7%	98.3%	2.2%	3.6%	-16.0%	11.9%
Business services	5.4%	22.3%	0.0%	1.4%	7.5%	63.4%	42.2%	44.2%	0.9%	2.2%	10.5%
Computer and data processing services	3.6%	54.7%	0.1%	0.8%	13.8%	27.0%	18.1%	65.3%	0.3%	0.5%	15.8%
Legal, engineering, accounting, and related services	12.7%	4.2%	0.0%	3.9%	2.4%	76.8%	58.3%	34.5%	0.7%	-1.4%	7.9%
Other business and professional services	3.7%	0.0%	0.0%	0.7%	3.9%	91.6%	57.5%	28.8%	1.7%	5.4%	6.7%
Health services	113.1%	0.0%	0.0%	0.1%	-15.3%	2.1%	115.6%	0.0%	-0.1%	-0.1%	-15.5%

2002-2007	Contribution rate of final and intermediate input						Contribution rate of final demands				
	Personal Consumption Expenditure	Fixed Capital Investment	Change in Private Inventories	Net Exports	Government Expenditure	Intermediate	Personal Consumption Expenditure	Fixed Capital Investment	Change in Private Inventories	Net Exports	Government Expenditure
Construction	0.0%	59.4%	0.0%	0.0%	23.9%	16.7%	9.8%	60.7%	0.4%	-1.5%	30.6%
Manufacturing	37.1%	10.0%	7.3%	-26.9%	2.4%	70.1%	94.4%	43.6%	21.5%	-95.7%	36.2%
Food and beverage and tobacco products	69.28%	0.00%	4.10%	-10.18%	-0.09%	36.89%	103.92%	0.74%	5.49%	-13.73%	3.58%
Primary metals	-0.18%	0.00%	3.29%	-31.95%	0.00%	128.85%	65.59%	68.28%	16.61%	-70.04%	19.56%
Computer and electronic products	-61.8%	-70.7%	-46.7%	229.9%	-40.9%	90.2%	-383.7%	-431.8%	-306.4%	1656.8%	-434.9%
Motor vehicles, bodies and trailers, and parts	49.7%	53.8%	12.0%	-54.2%	6.8%	31.9%	71.4%	72.7%	16.9%	-77.5%	16.3%
Chemical products	35.0%	-0.3%	1.2%	-9.3%	0.0%	73.3%	100.5%	13.9%	8.1%	-41.5%	19.0%
Transportation and warehousing	19.8%	3.0%	1.4%	15.4%	0.2%	60.2%	61.3%	17.6%	6.3%	-1.8%	16.7%
Information	20.7%	4.9%	0.2%	2.3%	1.5%	70.4%	72.6%	16.1%	4.5%	-14.6%	21.3%
Wholesale trade	27.7%	6.4%	2.3%	14.6%	0.6%	48.4%	57.5%	16.1%	3.7%	15.3%	7.3%
Retail trade	85.2%	3.1%	0.0%	0.0%	0.0%	11.7%	89.0%	8.4%	0.1%	-0.4%	2.9%
Finance and insurance	37.4%	0.0%	0.0%	2.1%	0.0%	60.5%	88.2%	6.0%	1.7%	-3.2%	7.3%
Real estate and renting and leasing	48.2%	3.6%	0.0%	5.9%	0.0%	42.3%	83.2%	10.1%	2.4%	-4.9%	9.2%
Professional and business services	7.1%	0.2%	0.0%	4.2%	0.9%	87.7%	64.2%	15.1%	3.8%	-8.8%	25.6%
Professional, scientific, and technical services	5.2%	-3.7%	0.0%	0.4%	0.0%	98.1%	66.2%	12.1%	3.9%	-12.0%	29.8%
Computer systems design and related services	0.0%	31.6%	0.0%	6.7%	11.2%	50.5%	24.0%	38.0%	2.3%	-3.2%	39.0%
Miscellaneous professional, scientific and technical services	5.5%	-5.4%	0.0%	0.3%	0.0%	99.6%	63.1%	11.7%	4.0%	-12.6%	33.7%
Administrative and waste management services	4.7%	0.0%	0.0%	0.6%	0.0%	94.7%	72.9%	12.8%	3.5%	-10.7%	21.3%
Health care and social assistance	96.6%	0.0%	0.0%	0.1%	0.0%	3.3%	98.1%	0.2%	0.1%	-0.1%	1.8%

Source: U.S. Department of Commerce, NIPA Tables and Input-Output Accounts

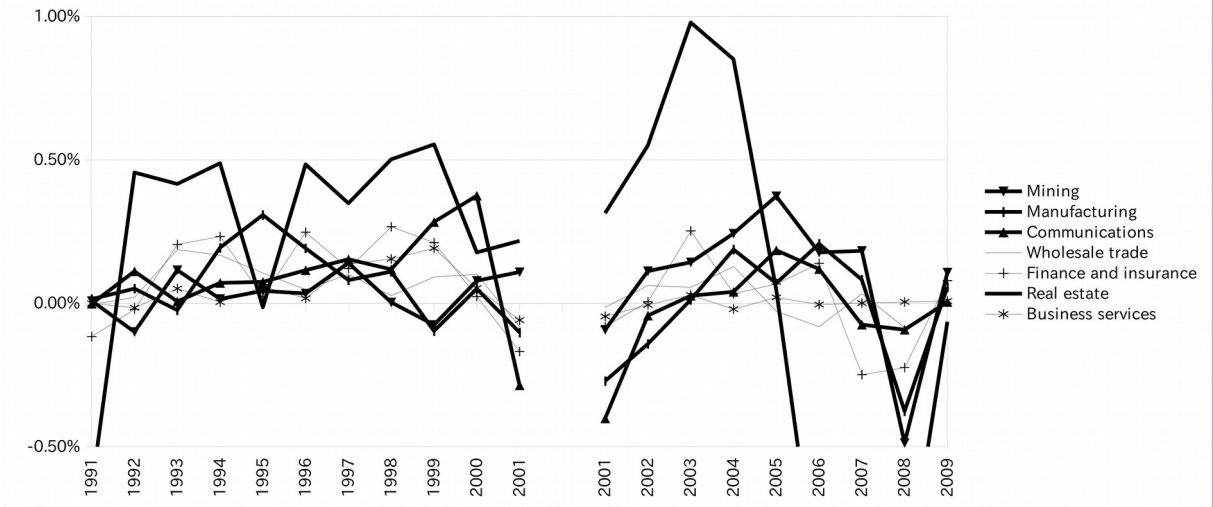
Note: (1) Gray shade shows main demand for the industry. (3) On calculation method, see Appendix.

(2) The year of 2001, which was the recession year, was eliminated from this table.

- The left half of the table 1 shows the contribution rate of each demand (final demands and intermediate input) to the increment of output by industry. As shown in it, most industries were mainly stimulated their production by the intermediate demand. Intermediate input is a secondary demand derived from the final demands. The right half of the table shows the result of decomposing the contribution rate of intermediate input into the final demands that generated it. We can see there were few industries that were mainly stimulated their production by the Fixed Capital Investment: Construction, the half of Manufacturing, and the half of Business Services (especially, “Computer and data processing services”). Other industries were mainly stimulated their production by the Personal Consumption Expenditure.
- Even Manufacturing industry became more to rely on the Personal Consumption in the 2000s than the 1990s.

C. Fixed Capital Investment by Firms

Figure 4. Fixed Investment by industry



Source: Department of Commerce, Fixed Assets

Note: Industries are classified by SIC during 1991-2001 and NAICS during 2001-09.

- As shown in Figure 4, Real Estate industry was the largest fixed asset investment sector throughout the 1990s and 2000s, but it included the imputed service of owner-occupied dwellings and about 80-95% of the investment was residential. Thus, a considerable part of the real-estate investment should be regarded as not fixed capital Investment by firms but consumption demand for dwelling by households. If we exclude the Real Estate industry, the largest fixed asset investment sectors were Manufacturing industry in the first half of the 1990s, the Information industry in the latter half of the 1990s, and the Mining industry in the 2000s.
- Overwhelmingly increase of the Investment by the Real Estate industry in the 2000s was boosted by so-called Housing Bubble, which stimulated the Personal Consumption through “home equity loans” or “cash-out refinancing.”

D. Employment and Wage Payment

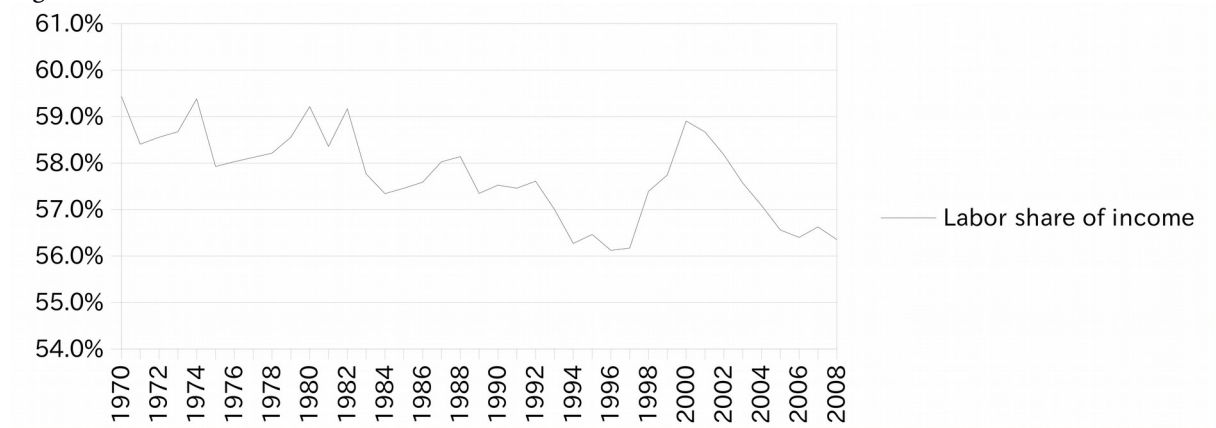
Table 2. Change of employment share and average wage by industry

	1991	1995	Change (percent points)	Average wage	1996	2000	Change (percent points)	Average wage	2001	2007	Change (percent points)	Average wage
Total employees (Thousands, millions of dollars)	116,649	124,783	8,134	31.8	127,047	139,131	12,084	37.8	139,033	145,034	6,001	48.1
Construction	4.2%	4.4%	0.1%	34.2	4.5%	5.0%	0.5%	40.4	5.1%	5.4%	0.3%	50.5
Manufacturing	14.5%	13.7%	-0.8%	40.6	13.5%	12.5%	-1.0%	47.6	11.9%	9.6%	-2.3%	61.9
Machinery	1.2%	1.2%	0.0%	43.8	1.2%	1.1%	-0.1%	49.9	1.0%	0.8%	-0.2%	63.5
Computer and electronic products	1.5%	1.3%	-0.2%	50.2	1.4%	1.3%	-0.1%	68.6	1.3%	0.9%	-0.4%	92.9
Electrical equipment, appliances, and components	0.5%	0.5%	0.0%	40.9	0.5%	0.4%	0.0%	46.2	0.4%	0.3%	-0.1%	62.4
Motor vehicles, bodies and trailers, and parts	0.9%	1.0%	0.1%	58.2	1.0%	0.9%	0.0%	61.3	0.9%	0.7%	-0.2%	76.3
Food and beverage and tobacco products	1.5%	1.4%	-0.1%	33.0	1.4%	1.3%	-0.1%	37.1	1.3%	1.2%	-0.1%	47.0
Apparel and leather and allied products	0.9%	0.7%	-0.2%	20.2	0.7%	0.4%	-0.2%	25.0	0.4%	0.2%	-0.2%	36.6
Chemical products	0.9%	0.8%	-0.1%	55.3	0.8%	0.7%	-0.1%	66.3	0.7%	0.6%	-0.1%	91.8
Plastics and rubber products	0.7%	0.7%	0.1%	35.5	0.7%	0.7%	0.0%	39.4	0.6%	0.5%	-0.1%	48.8
Wholesale trade	4.55%	4.38%	-0.17%	40.50	4.38%	4.22%	-0.16%	50.02	4.19%	4.19%	0.00%	63.84
Retail trade	11.23%	11.21%	-0.02%	19.73	11.24%	11.21%	-0.02%	23.24	11.28%	11.04%	-0.23%	28.72
Information	2.3%	2.3%	0.0%	44.1	2.3%	2.6%	0.3%	59.0	2.6%	2.1%	-0.5%	74.7
Finance and insurance	4.4%	4.1%	-0.3%	44.7	4.2%	4.2%	0.1%	60.9	4.2%	4.3%	0.1%	85.4
Real estate and rental and leasing	1.5%	1.5%	0.0%	26.0	1.5%	1.5%	0.0%	32.8	1.5%	1.5%	0.0%	44.2
Professional and business services	10.1%	11.3%	1.2%	35.3	11.6%	12.5%	0.9%	42.8	12.1%	12.6%	0.5%	56.8
Professional, scientific, and technical services	4.7%	4.7%	0.1%	43.2	4.8%	5.4%	0.6%	56.5	5.3%	5.6%	0.3%	74.6
Computer systems design and related services	0.4%	0.5%	0.1%	55.6	0.6%	0.9%	0.4%	75.0	0.9%	0.9%	0.0%	93.9
Administrative and waste management services	4.3%	5.3%	1.1%	19.7	5.5%	5.8%	0.3%	23.9	5.6%	5.8%	0.2%	31.7
Educational services, health care, and social assistance	10.4%	11.0%	0.6%	29.1	11.1%	11.2%	0.2%	33.1	11.6%	13.0%	1.4%	41.4
Educational services	1.6%	1.7%	0.1%	22.4	1.7%	1.8%	0.1%	26.4	1.9%	2.1%	0.2%	34.1
Health care and social assistance	8.8%	9.3%	0.5%	30.3	9.4%	9.4%	0.1%	34.4	9.8%	10.9%	1.2%	42.8
Arts, entertainment, recreation, accommodation, and food services	7.8%	8.4%	0.6%	14.7	8.4%	8.6%	0.1%	16.8	8.7%	9.4%	0.6%	20.9
Government	18.7%	17.7%	-1.0%	35.5	17.4%	16.6%	-0.8%	41.2	16.9%	16.9%	0.0%	53.0

Source: U.S. Department of Commerce, GDP by Industry

Note: (1) Average wage = Compensation of employees (Millions of dollars) / Full-time and part-time employees (Thousands). (2) Gray shade in employment share change means “increase,” and gray shade in average wage means “below the average of total employees. “

Figure 5. Labor share of income



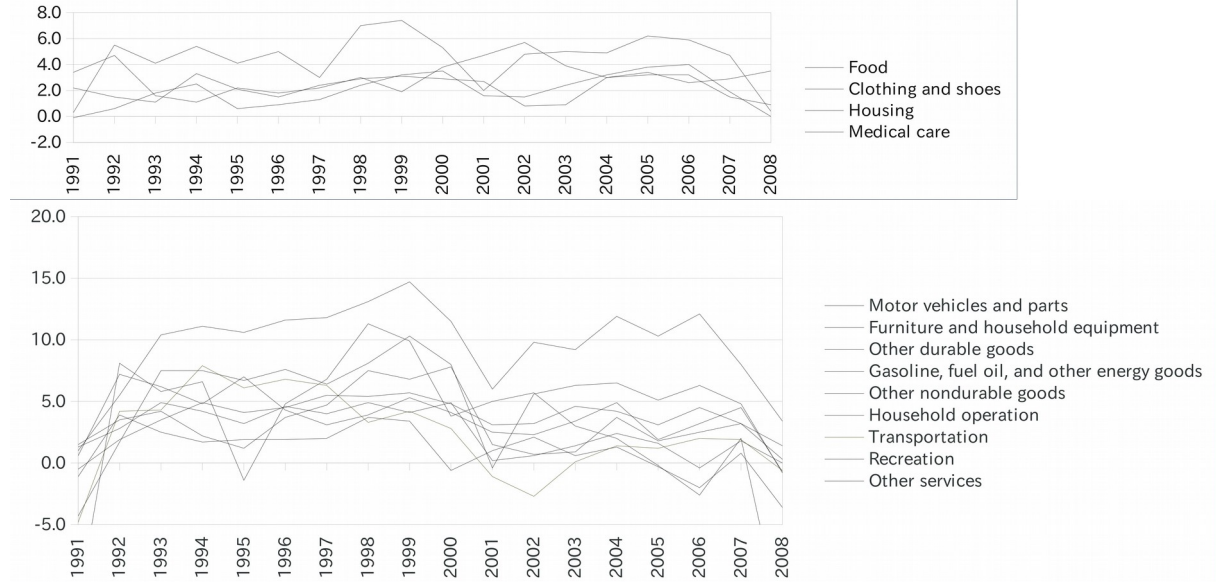
Source: U.S. Department of Commerce, NIPA

- Table 2 shows that Manufacturing industry has decreased the employment share most throughout the 1990s and the 2000s, and Service industry absorbs that. Most of Manufacturing industry paid relatively higher wages, while most of the Service industry paid lower wages. Thus, we can say that the labor force of society is moving from the relative higher wage sector to the lower wage sector. This created a declining trend of labor share of income seen in Figure 5.
- We can see one adverse tide against this trend: two higher-wage industries, that is “Information industry” and “Computer and data processing services”, increased their employment share in the latter half of the 1990s. As a result of that, labor share of income was sharply upward at that time. This change, however, was disappeared in the 2000s. This was

only transient change caused by IT Bubble in the late 1990s.

E. Personal Consumption Expenditures

Figure 6. Growth rate of personal consumption expenditure by goods and services

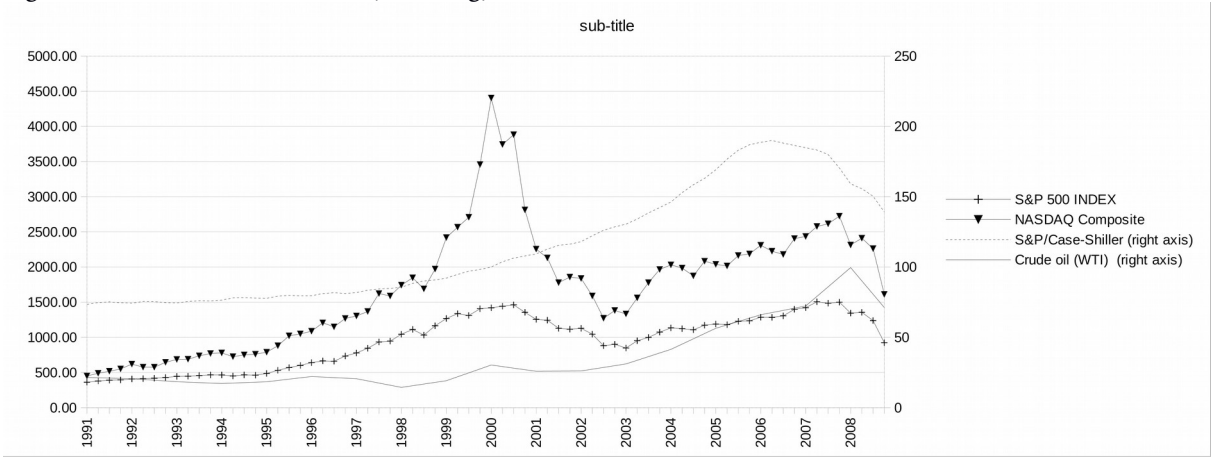


Source: U.S. Department of Commerce, NIPA Tables

- We can divide goods and services for personal consumption into two groups according to their growth rate: four necessities for living and other nine items.
- Upper figure shows that the growth rate of four necessities for living were relatively constant.
- Lower figure shows that the growth rate of other nine items were fluctuating as follows: rapidly upward in 1992-93 implying a spurt of deferred demand, concavity in 1993-1997 implying worsening of conditions of employment and wages (see E), soaring in 1997-2000 implying wealth effect of IT bubble (see E and F), and generally lower rate in the 2000s than 1990s in spite of housing bubble implying more severe conditions of employment and wages.

F. Bubble Economy (prices indexed of speculation targets)

Figure 7. Price indexes of stocks, housing, and crude oil



Source: Stock price indexes, Yahoo! Finance (<http://finance.yahoo.com/>); US National Home Price Index (Case-Shiller), <http://data.okfn.org/data/core/houseprices-us>; Crude oil price (WTI), http://ecodb.net/pcp/imf_group_oil.html#index02

- Figure 7 shows price indexes of three speculation targets: stock, housing, and crude oil. Although all of them were stable in the first half of the 1990s, the stock price indexes started to rise rapidly since 1995, and house and crude oil did since 1998.

G. Overseas Demand (Net Exports) and Government Expenditure

Figures or Tables are omitted. Even without them, we can understand the following points.

- Overseas Demand: current account deficit of the U.S. had been increasing since 1991 and came to be called “global imbalance” in the 2000s. It had been a big negative factor for domestic production expansion. On the other side, the capital account surplus continued to increase, which became one of the factors that created the bubble since the late 1990s.
- Government Expenditure: Since 1993, the Clinton administration struggled to reduce the fiscal deficit, finally achieving the 1998 fiscal surplus. At this time, the contribution rate of government expenditure to domestic production is low. In the 2000s, the W. Bush administration rapidly increased the military expenditure for the Afghanistan-Iraq wars, which has become a major exogenous demand for domestic production.

Table 3 provides a summary of the main findings above. Up to now we've seen seven components (A to G) along the row (horizontal direction) on this table. We can see there that many of them changed their appearances synchronously in three periods: the first half of the 1990s, the latter

half of the 1990s, and the 2000s. Next, we will read this table along the column (vertical direction, that is, by period) and verify whether these parts can be assembled as an "endogenous growth" mechanism or not.

Table 3. Summary of findings for three distinct periods in relation to specific growth mechanisms

		1991	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	2009
Major production expansion industries	Manufacturing (Their main demand)	Several manufacturing sectors (Gross domestic investment)					IT hardware manufacturing sector only (Gross domestic investment)					IT hardware manufacturing sector only ()								
	Other industries (Their main demand)	Stagnant (Personal consumption)					Expanding their production (Personal consumption)					Expanding their production (Personal consumption)								
Major investors of fixed capital		Manufacturing					Communications					Mining								
Employment and wage		The share of Manufacturing was decreasing, while that of Services was increasing. Wage of Manufacturing was higher than the average, while that of Services was lower.																		
Growth rate of personal consumption expenditure		Upward			Downward			Upward			Lower than in 1990s.									
Price index of	Stock	Low stability		Starting to rise			Peak			Downward		Starting to rise again			Peak					
	Housing	Low stability			Starting to rise			Starting to rise			Peak			Peak						
	Crude oil	Low stability			Starting to rise			Starting to rise			Peak			Peak						
Overseas demand		The current account deficit was increasing and came to be called "global imbalance".																		
Government expenditures		The federal fiscal deficit was reducing.										The military expenditure was increasing.								

Note: Gray shade means "recession."

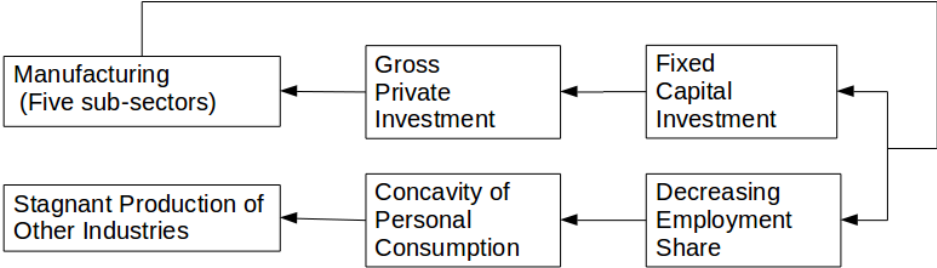
1.3 Assembling the components of growth into expanded reproduction mechanisms

[The first half of the 1990s]

Figure 8. Mechanism of economic growth in the first half of the 1990s

< Production > < Final Demand > < Capital Investment >

I. Endogenous Growth



II. Exogenous Growth

- Nothing Special
- Stagnant Speculation
- Decrease of the Federal Fiscal Deficit
- Increase of the Current Account

In the first half of the 1990s, "endogenous growth" was evident in Manufacturing sector. Manufacturing progressed to expand production outstandingly, while the production of other sectors was relatively stagnant. In Manufacturing, the top five production expansion sub-sectors were Computer and Electronic Products, Motor Vehicles, Chemical Products, Fabricated Metal Products, and Machinery. Gross Private Investment was the main demand spurring Manufacturing's production expansion. Four of the five sub-sectors cited above, excepting chemical products, were spurred by Gross

Private Investment. On the other hand, Manufacturing was the biggest investor in fixed capital, with the Computer and Electronic Products, Machinery, Motor Vehicles, Chemical Products, and Other Transportation Equipment industries investing most. In this way, production expansion, fixed capital investment, and increased demand were articulated into one circuit in Manufacturing, especially five sub-sectors.

There are two reasons why production expansion has progressed synchronously among the five sub-sectors in Manufacturing. First, they were closely interconnected through intermediate inputs. Second, their products were utilized mutually as their production facilities. Even though the production expansion of individual sub-sectors was small, Manufacturing as a whole had a large production expansion as a result of synchronous production expansion. Gross Private Investment demand is only about 35% of Personal Consumption Expenditure in the 1990s, but the former was divided into a small number of sectors whereas the latter was distributed to a large number of sectors. The above nature of Manufacturing and Gross Private Investment made possible "endogenous growth" inside Manufacturing sector.

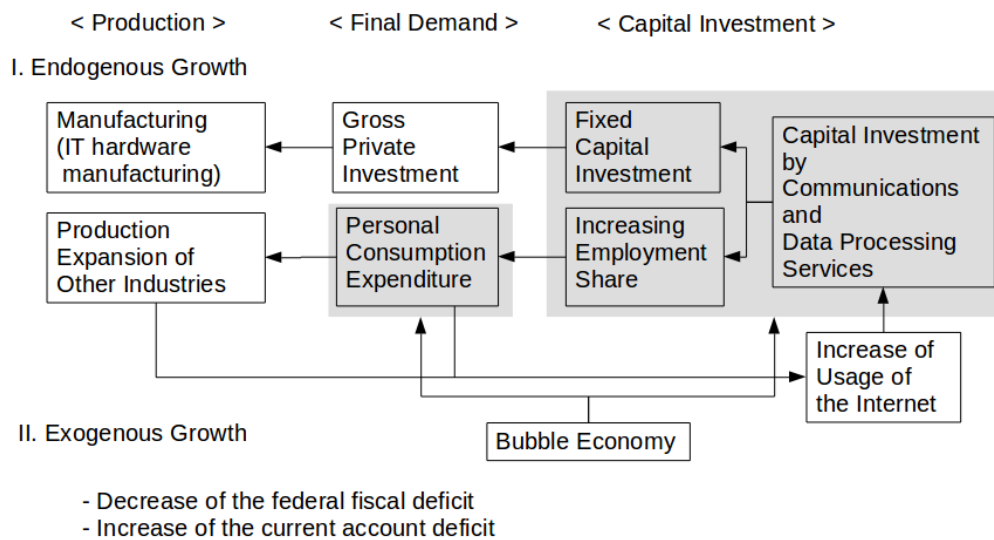
The relatively stagnant production of other sectors than Manufacturing (that is, Communication, Wholesale, Retail, Finance and Insurance, Business Services, Health Care Services, and so on) was also due to behavior in Manufacturing. In contrast to strong fixed capital investment, Manufacturing sector reduced its employment share significantly. The main acceptor of labor-force discharged from Manufacturing was Service sector, but their wage level was much lower than Manufacturing's. These trends lowered the labor share and the growth rate of Personal Consumption Expenditure has declined towards the bottom of 1995, following a sharp rise immediately after the economic recovery (1992). As a result, production of other sector than Manufacturing whose main demand was Personal Consumption Expenditure was stagnant.

This is the "endogenous growth" mechanism seen in the first half of 1990s. Looking at exogenous demand, price indexes of three speculative targets (that is, stocks, houses, and crude oil) are all low-level stable and there is no sign of bubble economy. Regarding Overseas Demand, the current account deficit has started to increase from 1991, and its contribution to growth is low. Even in Government Expenditure, since 1993, White House continued to reduce the Federal budget deficit, and fiscal contribution to the economic growth was also low. It can be said that these mechanisms of

“exogenous growth” have hardly worked.

[The latter half of the 1990s]

Figure 9. Mechanism of economic growth in the latter half of the 1990s



In the latter half of the 1990s, many industries other than Manufacturing expanded their production actively, spurred primarily by a tremendous increase in Personal Consumption Expenditure. On the other hand, Manufacturing, in which only IT manufacturing (that is, two sub-sectors of Industrial Machinery, and Electric and Electronic Equipment) became the main player in the expansion of production, also remained one of the high growth sector, spurred mainly by Gross Private Investment. Thus, it can be said that two types of demand spurred the expansion of production in the main growth sector. Then, what factor produced these two types of demand? The biggest investing industries in the latter half of the 1990s were Communications and Business Services (including Computer and Data Processing Services). Their fixed capital investments involved IT hardware and services to a large extent, so their investments spurred production of IT manufacturing (Industrial Machinery, and Electric and Electronic Equipment) and IT services (Computer and Data Processing Services). These two sectors also increased their employment share, and their wage levels were higher than the average in all industries. As a result of increase in higher-wage employment, the growth rate of Personal Consumption Expenditure started to recover since 1996. In this way, investment in fixed capital and employment by Communications and Business Services generated two types of demand and spurred the production expansion of many industries, including Manufacturing.

Figure 10. Composition of IT industries

IT Industries

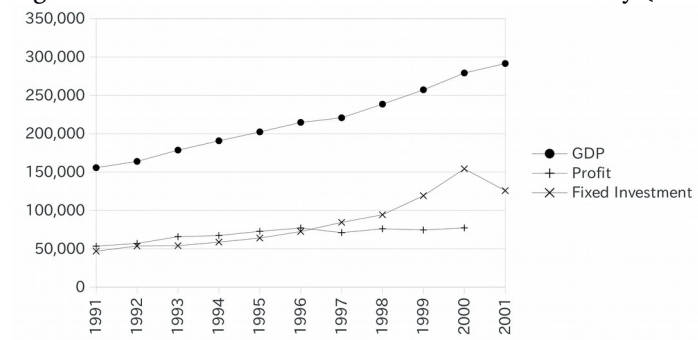
- ┆ IT Manufacturing (Industrial Machinery and Electric and Electronic Equipment)
- ┆ IT Services (Computer and Data Processing Services)
- ┆ Communications

Next question is that: what factor caused Communications and Business Services to make such a massive capital investment? The Communications Industry expanded its production mainly with two types of demand: Intermediate Demand and Personal Consumption Expenditures. On the other hand, Computer and Data Processing in the Business service sector grew mainly alongside Gross Investment. Since the early 1990s, an increasing number of firms and households had begun to access to the Internet. As a result, the usage of communication lines increased, and more and more firms had constructed Internet and intranet information systems as a part of their fixed capital. This had two consequences. First, many firms and households generated demand for the goods and services offered by the Communications Industry and by Computer and Data Processing Services. Second, the fixed capital investment and the increase in higher-wage employment within these two industries generated Gross Investment and Personal Consumption Expenditures, which spurred expansion of many other industries. Thus, the existence of "endogenous growth" can be confirmed in the latter half of the 1990s too.

Nevertheless, the size of the investment by Communications was so enormous that the above "endogenous" interpretation of that investment does not suffice. The reasons for our skepticism are as follows. First, as shown in Figure 11, the growth of fixed capital investment accelerated after 1996, even as profit size was slowing. The magnitude of investment grew faster than the mass of profit after 1997, eventually doubling it in 2000. Second, although the larger investment relative to profit could be rationalized if enormous demand was being generated, the well-known fact was that the communications industry had achieved extreme excess capacity. The capacity utilization rate was often in the single digits, particularly in broadband services.⁵ In light of this, not only "endogenous demand" but also "exogenous demand" must be considered in order to explain this investment.

⁵On the IT bubble and excess capacity in the broadband services, see Sterling, Phyllis, and Martin (2006), Blumenstein (18 June 2001), and Pearce ed. (2005) .

Figure 11. Indicators of the Communications Industry (millions of dollars)



Source: U.S. Department of Commerce, GDP by Industry, Fixed Assets Account

Note: Industries are classified by SIC.

Indeed, there are two factors that caused Communications to make such excessive fixed capital investment: the Telecommunications Act of 1996 and the bubble economy at the end of the 1990s. The 1996 Act defined the deregulations for the telecommunications and broadcasting markets, so many investors expected a fusion of the two industries, a rush for large-capacity communication network construction, and a flurry of mergers and acquisitions (M&As). These expectations reinforced and helped IT venture companies, including long-distance telecommunication carriers, to invest huge amounts of money into facilities and M&As. These companies were faced with two choices. On one hand, if IT companies failed to launch far-sighted business plans, they would be evaluated as incompetent, their stock prices would decrease, and they would become vulnerable to acquisition by others. On the other hand, if they launched fantastical plans to lift their stock prices, a great deal of money could be attracted, and fantasy could become reality. In this way, huge investments became detached from the growth of actual demand. Thus, we regard much of the demand that generated the huge fixed capital investment by Communications in this period as “exogenous.”

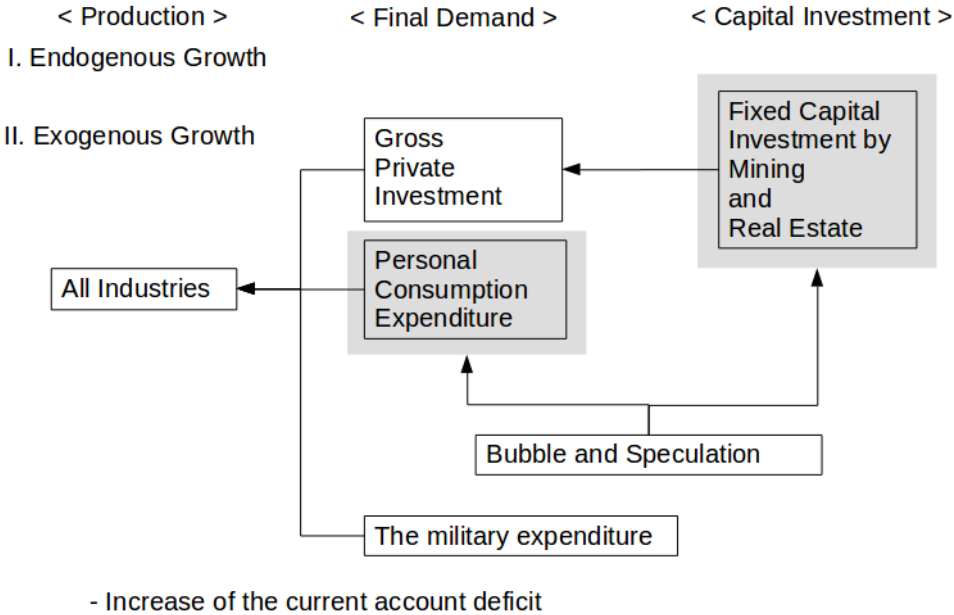
Not only Gross Private Investment but also some part of Personal Consumption Expenditure is “exogenous.” The vigorous increase in personal consumption in the latter half of the 1990s was supported by two factors: the wealth effect of the IT bubble (that is, the expansion of the financial assets of households) and the increase in higher-wage employment in the Communications industry and in Computer and data processing services. This increase in employment was closely related to the increase in fixed capital investment; indeed, they were two faces of one capital investment, also driven by the IT bubble.

Therefore, we can conclude that the economic growth of the latter half of the 1990s was a

mixture of “endogenous” and “exogenous” growth. However, most of the exogenous growth is attributable to the IT bubble, and the contribution of Government Expenditure and Overseas Demand continued to be low.

[the 2000s]

Figure 12. Mechanism of economic growth in the 2000s



In the 2000s, many industries were expanding their production, and the demand that boosted such expansion was predominantly Personal Consumption Expenditure. The contribution rate of Gross Private Investment to real GDP growth was only 4.4% in 2001-07, whereas that of Personal Consumption Expenditure was as much as 88.7%. Even in Manufacturing, the main demand in the 2000s came from Personal Consumption Expenditure. However, the increasing employment share of higher-wage industries in the latter half of the 1990s disappeared in the 2000s, and the trend in the labor share of real GDP shifted from upward in 1997-2000 to downward in 2000-2006 (See Table 2 and Figure 5). The average growth rate of private employee compensation in 2001-2007 (4.2%) was lower than that in 1991-95 (4.9%) and 1996-2000 (7.2%). Therefore, Personal Consumption Expenditure in this period was not supposed to be increased endogenously. Indeed, looking at the exogenous demand, the wealth effect of the housing bubble had positive effect on Personal Consumption Expenditure. The price index of housing moved upward rapidly from 85.7 in 1998 to

189.9 in 2006,⁶ leaving the consumer price index (CPI) trend. Skyrocketing housing prices allowed homeowners to withdraw or borrow money through “home equity loans” or “cash-out refinancing,” which supported their consumption expenditures. Furthermore, the sub-prime housing loan increased the number of homeowners. Thus, Personal Consumption Expenditure during 2001-07 was exogenous, and compensated by the explosion of household debt.

Let us also look at Gross Private Investment even though its contribution to GDP growth was very low; the top two investing sectors in the 2001-07 were Real Estate and Mining. A large part of the gross investment in this period was generated by speculation and can be regarded as “exogenous demand” for the following reasons. First, a considerable amount of investment in Real Estate was made by households, that is, the purchase of homes. So, investment in Real Estate was not capital investment aimed at increasing capacity, but was driven by a mixture of consumption demand by households and housing-market speculation. Second, while firms in Mining invested in fixed capital to increase productive capacity, this investment was driven much more by crude oil speculation than by a quantitative increase in oil demand. This is clearly shown by the fact that the chain-type price index of oil and gas extraction increased by a factor of 10.6 between 1998 and 2007, while the nominal GDP of the same industry went up by a factor of 5.3 during the same period. Thus, although facilities may have reached overcapacity, the profit rate did not decrease due to skyrocketing prices.

As a result of the above circumstances, most of the growth in 2001-07 was generated by the “exogenous demand” spurred by speculation in housing and crude oil under the stagnant conditions prevailing after the recession of 2001. In addition to that, National Defense Expenditure due to the Afghanistan-Iraq wars also made a certain contribution to economic growth. As a result of economic growth stimulated by these exogenous demands, some sectors, in particular Manufacturing and Communications, started to invest in fixed capital after 2005, but their contributions to growth were small overall (see Figure 4). Consequently, almost of the economic growth of 2001-07 was supported by exogenous demand based on speculation and financial bubbles.

So, we have seen three different mechanisms of economic growth of three periods. Summing up, the economic growth in the first half of the 1990s was almost entirely endogenous, that in the latter half of the 1990s was mixture of endogenous and exogenous (IT bubble), and that in the 2000s was

⁶S&P/Case-Shiller U.S. National Home Price Index.

mostly exogenous (speculation in crude oil and housing), as shown in Table 4. The speculation characteristic of this period shared a common precondition, that is, so-called “excess liquidity.” In a speech in March 2005, the Fed chairman, Ben Bernanke, mentioned the Global Saving Glut since 1996 as a cause of asset inflation in the United States.⁷ Although his speech was controversial, several economists agreed that the main cause of the bubble economy was excess liquidity. With regard to the housing bubble, there were other additional factors, including the proliferation of collateralized debt obligations (CDOs), credit default swaps (CDS), excessively high asset evaluations by rating agencies, and proprietary trading by banks. These conditions enabled many financial investors to buy very risky instruments, such as sub-prime mortgage-backed securities, in large amounts.

Table 4. Combination endogenous and exogenous factors in each periods

	1991-1995	1996-2001	2001-2009
Endogenous factors	A virtuous circle of production, investment, and demand in Manufacturing.	Partially a virtuous circle among IT business, other businesses, and households.	(stagnation)
Exogenous factors		Partially IT bubble because of Telecommunications Act of 1996 and speculation.	Mostly boosted by speculation in oil and housing bubble.

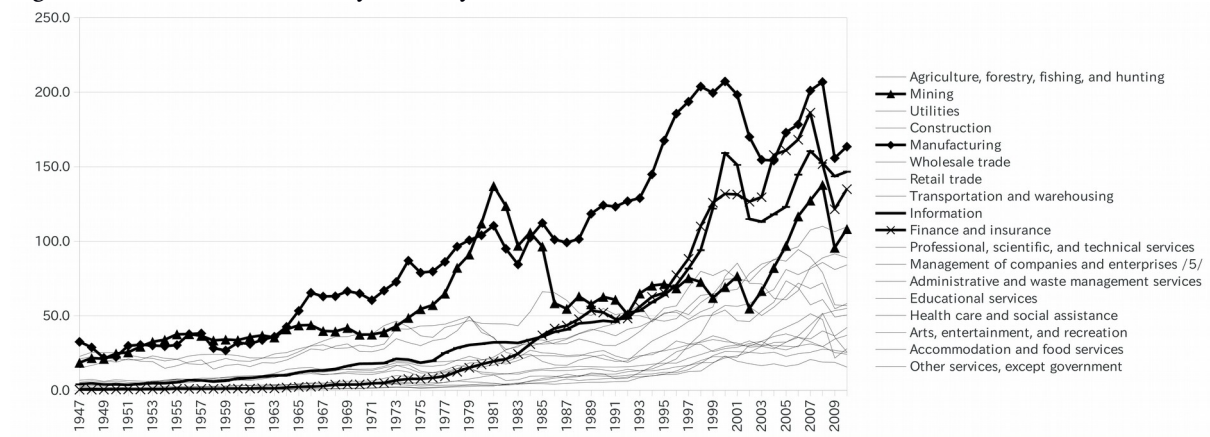
2. The capital investment cycle of the real economy and the financial crisis of 2008

2.1 The capital investment cycle of Manufacturing sector in the period 1991-2009

Our next task is to scrutinize closely the dynamics of Manufacturing sector’s capital investments. First, its fixed capital investment has been the biggest, the most dynamic, and therefore the most influential among all industrial sectors since World War II (see Figure 13). Second, unlike the Information or Mining industries, which have become the second biggest investment industries, Manufacturing investment has been immune to speculation, and therefore, its dynamism reflects the endogenous movement. Third, Manufacturing has a very unique feature, namely, its employment share had been decreasing the most, in contrast to the large size of its fixed capital investment, which is one of the main causes of growing household impoverishment. For these reasons, trends in Manufacturing are among the most influential causes of the changing physiognomy of the U.S. non-financial economy.

⁷See Bernanke (2005).

Figure 13. Fixed investment by industry after World War II (Billions of dollars)

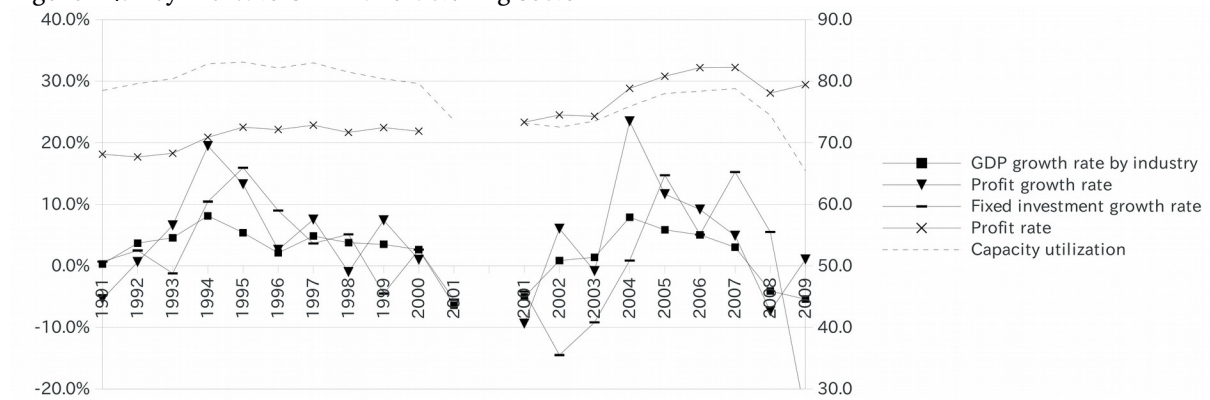


Source: U.S. Department of Commerce, Fixed Assets Account

Note: Industries are classified by NAICS.

Figure 14 presents various indicators of business conditions in Manufacturing sector. All indicators were trending upward in the first half of the 1990s. In this period, several sub-sectors in Manufacturing were expanding their production synchronously, stimulating each other through intermediate input and fixed capital investments. Consequently, within Manufacturing sector, production expansion and profit increases promoted fixed capital investment, and the latter increased demand. One might say therefore that Manufacturing exhibited a “virtuous circle” of production, profit, investment, and demand. At that time, it had yet to face its limit.

Figure 14. Key Indicators in Manufacturing sector



Source: U.S. Department of Commerce, GDP by industry, Fixed Asset, and Board of Governors of the Federal Reserve System, Industrial Production and Capacity Utilization

Note: Industries are classified by SIC during 1991-2001 and NAICS during 2001-2009.

In contrast to the vigorous investment in fixed capital, the employment share of Manufacturing industry was decreasing as a result of so-called “Re-engineering” and “Outsourcing.” Re-engineering was a modified version of the Toyota Production System (lean production system), supplemented with IT. The implementation of the Toyota Production System was not an easy task for U.S. firms because of

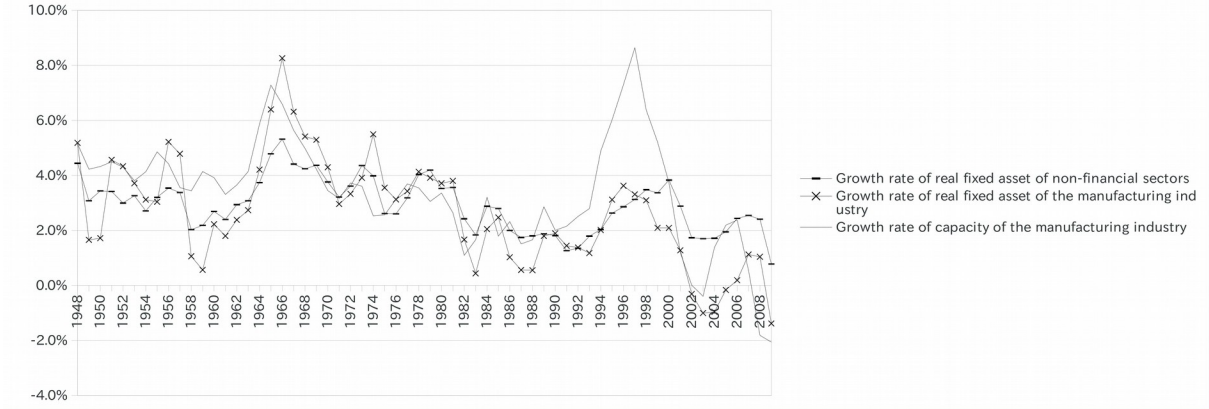
their corporate culture of Taylorism, which allocates managerial authority and job responsibilities strictly. Nevertheless, the firms found the powerful tools to resolve this problem in IT, which enabled employees of different job classifications, functional departments, or even firms to communicate and cooperate with each other. The Toyota Production System included supply-chain management, which was mostly restricted to parts production; however, the U.S. firms expanded the latter's application to include the whole of the production process. This was called "Outsourcing." Thus, Outsourcing was an aspect of Re-engineering applied to the interactions between firms and their suppliers. Re-engineering and Outsourcing increased labor productivity in U.S. Manufacturing firms and narrowed the productivity gap between the U.S. and Japanese firms, but did not reverse it. When firms cannot increase production in proportion to growth of labor productivity, they have to decrease their employment.⁸

According to Figure 14, the capacity utilization rate of Manufacturing sector reached its peak in 1995, and turned downward after 1997. The profit rate also began levelling off or slightly declining in 1995. These measures indicate that excess capacity was generated in Manufacturing industry at that time, which influenced the trend of fixed capital investment. The inflection point of fixed capital investment in Manufacturing sector was 1995; the speed of investment turned from "rapid" to "slow," and investment levelled off or shifted downward slightly after 1997.

Figure 15 shows the growth rate of fixed capital (real-cost measure) in Manufacturing, that of non-financial industries, and the growth rate of the capacity of Manufacturing. These three growth rates are closely linked to one another, but in the 1990s, the third rose much higher than the others. As seen before, Communications Industry and Business Services increased their fixed capital investment in the latter half of the 1990s and contributed to the increase of Manufacturing sector's capacity due to the fact that Communications Industry and Business Services were the top two industries supporting the Re-engineering and Outsourcing conducted in Manufacturing. Although Manufacturing reduced the growth rate of fixed capital investment, its excess capacity was increasingly elevated by the investments made by these two industries.

⁸On Reengineering and Outsourcing, see Lawler III, Mohrman and Ledford Jr. (1998) .

Figure 15. Growth rate of real fixed assets and capacity



Source: U.S. Department of Commerce, Fixed Asset, and Board of Governors of the Federal Reserve System, Industrial Production and Capacity Utilization.

As shown in Figure 15, Manufacturing sector capacity fell a great deal in the early 2000s. After this reduction, it recovered to some extent; but after levelling off throughout the 2000s, it scarcely grew. As seen in Figure 14, the growth rate of fixed capital investment in Manufacturing increased in 2005-07, whereas the growth rates of production (GDP) and profit decreased. The reason for this strange phenomenon was that only a few sub-sectors in Manufacturing, particularly Computers and Electronics Products, and Oil and Coal Products, invested a great deal, whereas many others remained stagnant. Besides, growth of Computers and Electronics Products industry was supported by Overseas Demand and that of Oil and Coal Products industry was done by the soaring prices of crude oil and gasoline, caused by speculation. They were exogenous demands. Except for these two sub-sectors, Manufacturing sector in general decreased its capacity in the 2000s. Thus, it is clear that the 2000s was, on the whole, a period of stagnant investment and adjustment of excess capital.

The employment share of Manufacturing fell in the 2000s more than in the 1990s (see Table 2), largely due to offshoring. Building large-capacity communication networks globally under the IT bubble economy accelerated offshore production (Foreign Direct Investment) and offshore outsourcing during the latter half of the 1990s and into the 2000s. Information networks, which were the tools of Re-engineering and Outsourcing in the United States, were then used to support firms globally. The large U.S. Manufacturing firms had a long experience of offshore production and offshore outsourcing from the 1960s onward, but it accelerated its growth rate quantitatively and became a global Re-engineering system qualitatively. As a result of these changes, U.S. national employment in Manufacturing decreased drastically.⁹

⁹On offshoring, see Gereffi (2006), Norwood, et al. (2006), UNCTAD (2013), and WTO (2014).

The dynamic cycle of capital investment in Manufacturing industry in 1991-2009 is thus found to have four phases: 1) the activation of capital investment, 2) the generation of excess capital, 3) the piling up of excess capital due to decreasing but continuing investment, and 4) the adjustment of excess capital under the impact of stagnating investment. This actual cycle resembles closely what Marx called the “industrial cycle” in the following passages of Capital:

“The life of industry becomes a series of periods of moderate activity, prosperity, over production, crisis and stagnation.” (Capital, vol.I, chap.15, Sec.7, p.580)

“This growing concentration leads in turn, at a certain level, to a new fall in the rate of profit. The mass of small fragmented capitals are thereby forced onto adventurous paths: speculation, credit swindles, share swindles, crises.” (Capital, vol.III, chap. 15, Sec.3, p.359)

“In the period of overproduction and swindling, the productive forces are stretched to their limit, even beyond the capitalist barriers to the production process.” (Capital, vol.III, chap.30, 19p.621)

“But excessive importing and exporting has taken place in every county (here we are not referring to harvest failures, etc., but rather to a general crisis); that is, overproduction, forced by credit and the accompanying general inflation in prices.” (Capital, vol.III, chap.30, p.623)

Crises are never more than momentary, violent solutions for the existing contradictions, violent eruptions that re-establish the disturbed balance for the time being.”(Capital, vol.III, chap.15, Sec.2, p.357) ¹⁰

In the above quotes, Marx establishes three theoretical points: 1) there is a cyclical sequence of such phases as moderate activity, prosperity, over-production, crisis, and stagnation; 2) overproduction is accompanied with speculation, swindles, or inflation in prices; and 3) crises solve the contradictions of overproduction momentarily and violently. These three characteristics of the industrial cycle and its crisis phase are fully relevant in analyzing the capital investment cycle over the period 1991-2009.

2.2 Two capital investment cycles since 1960

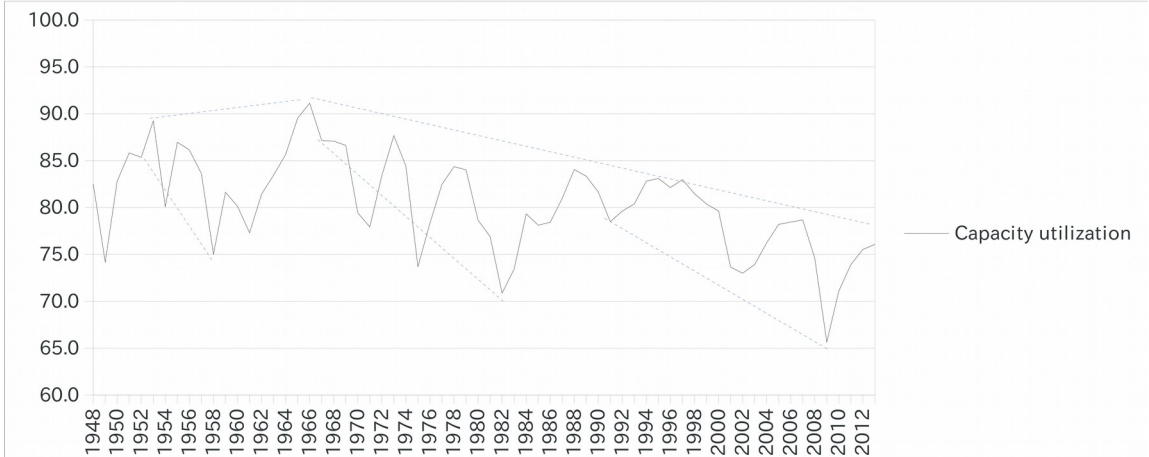
There were two capital investment cycles in the U.S. Manufacturing sector after World War II. As we saw in Figure 15, the growth rates of capacity and fixed capital (Real Cost) of Manufacturing

¹⁰Quoted from Marx (1976) and (1981).

peaked in the 1960s and then again in the 1990s, although the general trend has been for it to decline from the mid-1960s through the 2000s. On the other hand, both rates were quite low at the end of the 1950s, in the 1980s, and in the early 2000s, which were the capacity adjustment periods at the end phase of a capital investment cycle. Thus, Manufacturing sector displayed the following cyclical pattern of capital accumulation: downward toward the end of the 1950s, upward in the 1960s, moderate in the 1970s, downward in the 1980s, upward in the 1990s, and downward in the 2000s.

Let’s examine the two cycles depicted in Figure 16, which reveals the capacity utilization rate of Manufacturing sector. On one hand, when we trace the peaks of the fluctuating trend, we can find a consistently decreasing trend since 1966. On the other hand, when we trace the bottoms of the trend, we can find three, separated decreasing trends in the periods 1952-1958, 1967-1982, and 1991-2009. The two lowest periods shown in Figure 15, namely, one at the very end of the 1950s and the other encompassing the whole of the 1980s, correspond to the period when the capacity utilization rate was increasing (as shown in Figure 16). Consequently, we can conclude that these two periods were ones in which excess capacity was adjusted. Manufacturing sector had two capacity adjustment periods; however, it was increasingly piling up excess capacity in the long run.

Figure 16. Capacity utilization of Manufacturing industry

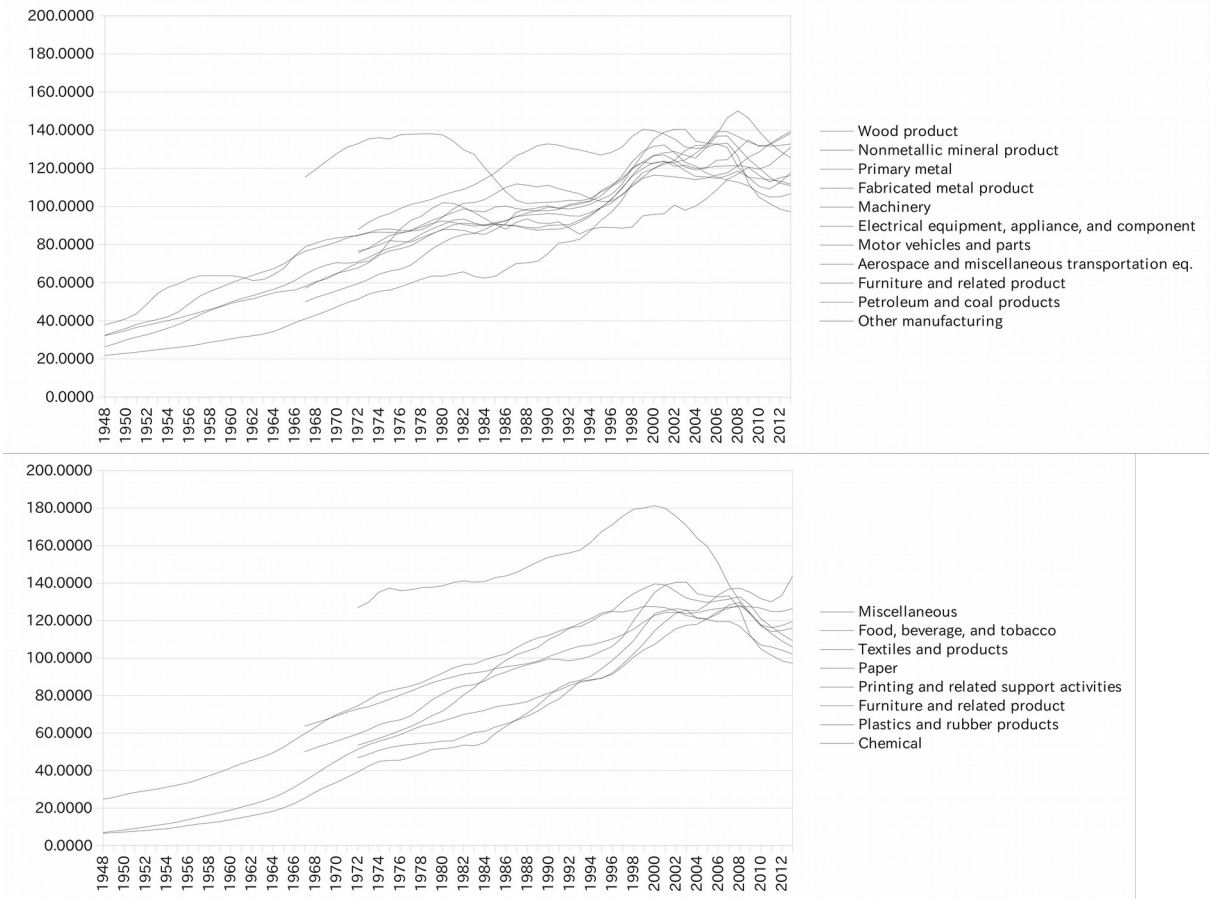


Source: U.S. Board of Governors of the Federal Reserve System, Industrial Production and Capacity Utilization

Figure 17 shows the trends of capacity indexes of Manufacturing industries. The sub-sectors in the upper figure experienced stagnation in the 1980s, but those in the lower figure did not. In the 1980s, many companies in such industries as those in the top figure adjusted their overcapacity by closing factories and firing employees under the severe impact of increasing international competition,

increasing interest rates, and a strong dollar. Later, in the early 2000s, many companies belonging to industries presented in the lower figure also decreased their capacity. As a result, most of the sub-sectors in Manufacturing have not increased their capacity since 2001 – and did not do so until at least 2011. This was the first time that Manufacturing failed to increase its decade-over-decade capacity since World War II.

Figure 17. Capacity index by sub-sectors in Manufacturing industry



Source: U.S. Board of Governors of the Federal Reserve System, Industrial Production and Capacity Utilization

Note: (1) Industries are classified by NAICS. (2) Capacity index = Production index(2007=100) / Capacity utilization(%). (3) “Computer and Electronic Product” and “Apparel and Leather Goods” are excluded because they are much different from both of above.

Figures 15, 16, and 17 indicate that Manufacturing industry had two cycles of capital investment after 1960, in other words, it made excess capital adjustments twice. Nevertheless, its condition of excess capacity continued to worsen from 1966 to the 2000s. This conclusion raises the following two questions. First, why did the capital investment cycles become longer than the business cycles, unlike in Marx's era? Second, why did the excess capacity condition worsen over such a long period?

These two questions might have the same answer, namely government intervention in markets to prevent crises and boost economic growth. On one hand, crisis prevention delays the adjustment of excess capital. On the other hand, adding “exogenous demand” stimulates more capital investments, and such investments will turn into excess capital after the “exogenous demand” disappears. In other words, government intervention tends to pile up excess capital.

Government intervention was executed as a Keynesian fiscal and monetary policy from World War II and was intensified over time from the 1950s to the 1970s. After the 1980s, economic policy shifted from Keynesianism to neoliberalism, a doctrine that holds that government intervention in markets should be limited. However, government intervention continued ever after the 1980s. The fiscal deficit of the U.S. federal government expanded during that decade even more than in the Keynesian era due to the “national defense” spending of Republican administrations, facilitating aggregate demand management. Moreover, monetary easing was implemented increasingly by two chairmen of the Federal Reserve Board, Alan Greenspan and Ben Bernanke, and reached remarkable levels that promoted bubble economies in the 1990s and the 2000s. Thus, national defense expenditures and bubble economies represented the prime sources of “exogenous demand” in the neoliberal era.

During the 1980s, overlapping adverse conditions caused financial woes for big business in Manufacturing – consecutive severe recessions in 1980 and 1982, increasing international competition, a strong dollar, and rapid increases in imports. The neoliberal fundamentalist monetary policy of Paul Volcker, who was chairman of the Federal Reserve Board under both Presidents Carter and Reagan, did not involve any “monetary easing” to alleviate these significant stresses on big business and profitability. This monetarist, high-interest rate malaise substituted for a genuine “crisis.”

By way of contrast, in the early 2000s, although excess capacity was considerably reduced, government intervention, including national defense expenditure for the Afghanistan -Iraq wars and the monetary easing (low-interest rate regime) that generated the housing bubble, interrupted the excess capital adjustment by half. The declining capacity utilization rate prevailed throughout the 2000s (see Figure 16) and continued after the 2008 financial crisis. The excess capacity obtained in the prior decade was cut in half for each iteration of the business cycle, but was not adjusted enough due to persistent government intervention. This situation in the 2000s was similar, in this regard at least, to

that of the 1970s rather than to that of the 1980s.

2.3 Two bubbles in different phases of one over-arching capital investment cycle

By examining the capital investment cycle discussed above, we can clarify the difference between the IT bubble at the end of the 1990s and the housing bubble in the 2000s. The IT bubble occurred in the middle of the capital investment cycle, a period in which excess capacity was being generated, and investors engaging in speculation were increasing. In this period, it was not difficult for investment bankers to find investors and investment-grade instruments, so they did not have to assume as many risks for themselves; and, for this reason, the banking system was not damaged very much when the bubble burst in 2000.

In contrast, the housing bubble occurred in the last stage of the capital investment cycle, that is, the period of stagnation after recession. Government Expenditure (for the Afghan-Iraq wars) and the bold monetary easing policy of the Fed interrupted the adjustment of excess capital. In addition, the housing bubble initiated a new business cycle under conditions of stagnating capital investment. In the absence of rapidly growing industries and investment-grade instruments, investment bankers had to take on huge risks in order for a financial bubble to occur. They had to resort to CDOs from high-risk sub-prime mortgage-backed securities and undertake the most risky tranche of CDOs through their own Structured Investment Vehicles. All this resulted in the huge credit shrinkage and systemic crisis that occurred in 2008.¹¹ (See Table 5.)

Table 5. Conditioning from the real economy to the bubbles

	1991-1995	1996-2001	2001-2009
Mechanism of economic growth	Entirely Endogenous	Mixture of endogenous and exogenous (IT bubble)	Mostly exogenous (Speculation in crude oil and housing bubble)
Productive capital investment	Activation	Over-production and overcapacity	Stagnation
Industrial cycle	Moderate activity → Over-production → Crisis → Stagnation		
Target of speculation		Stocks of IT business (investment-grade instruments)	Sub-prime mortgage backed securities (high risk instruments)

¹¹ For detailed discussion on the housing bubble, sub-prime mortgage backed securities, CDOs, CDS, Structural Investment Vehicles, and shadow banking in the 2000s, see Roubini and Mihm (2010) and Markham (2011).

In Marx's era, “moderate activity” and “prosperity” took place in the first half of the industrial cycle, “overproduction” in the middle portion, “speculation” and “swindles” in the latter half, and, finally, “crisis” and “stagnation” in the last phase. The 1991-2001 business cycle was similar to such a cycle. The difference between Marx's era and the present one can be summed up in two points. The first concerns government intervention after World War II, which prolonged the span of the capital investment cycle by approximately three times. The second concerns the process of so-called “financialization” after 1975, one that has furnished the necessary conditions for huge bubble occurrences: derivative financial instruments, deregulation of international finance, bold monetary easing, financial conglomerates, the shadow banking system, and so on. These two factors have enabled modern capitalism to start a new business cycle at the final stagnant phase of capital investment cycle with excess capital reduced insufficiently.

Conclusion and implication

We can summarize the main points of this paper as follows.

The capitalist real economy proceeds through capital investment cycles: the activation of capital investment, the generation of excess capital, recession, the stagnation of capital investment, and the reduction (adjustment) of excess capital. Marx called them “industrial cycles.” After World War II, government interventions have prevented from crises. On one hand, they left the adjustment of excess capital half-finished, on the other hand, “exogenous demands” made it possible to start a new business cycle with the half-finished excess capital adjustments. Consequently, the periods of capital investment cycles have been prolonged and spanned a few of business cycles.

In recent years, two business cycles of 1991-2001 and 2001-2009 were encompassed by one capital investment cycle. During the 1980s, several adverse conditions caused financial woes for big business. The malaise substituted for a true crisis and reduced the massive excess capital. As a result, the Manufacturing industry started vigorous fixed-capital investment in the early 1990s. Personal Consumption, however, in the middle of the 1990s was weakened, so excess capacity was generated as soon as 1995. In the latter half of the 1990s, the IT bubble boosted both of Gross Investment and Personal Consumption, and this achieved a record-breaking long business boom. Although the IT

bubble collapsed in 2000, the economic downturn in 2001 was minor due to government intervention (tax cuts, monetary easing, and fiscal stimulus). As a result, the excess capacity was left unadjusted, and the economic expansion since 2001 has been mostly created by “exogenous demands.” This situation is called “Secular Stagnation” now (Summers, 2014).

Why was the collapse of the housing bubble in 2007 caused a serious financial crisis, even though the collapse of the IT bubble in 2000 was a minor recession? One reason for this lies in the capital investment cycle in the real economy. It was easy for the investment bankers to sell investment grade stocks (that is, IT venture business stocks) during the expansion period in the latter half of the 1990s. However, it was difficult for them to sell high-risk instruments (that is, sub-prime mortgage-backed securities) during the business stagnation period of the 2000s. As a result, investment bankers resorted to CDOs and took big risks by themselves, which resulted in the credit crunch and the bank run at the collapse of the housing bubble.

In Marx’s era, crises were violent eruptions of, and momentary solutions for, the contradictions of the capitalist economy. After World War II, contradictions rarely erupted in the form of crises because of government intervention and “exogenous demand.” Today, the typical appearance of capitalism’s inherent contradictions is becoming stagnations rather than crises. Excess capital piled up in the 1960s (and Keynesian policy) caused the “Stagflation” in the 1970s, and excess capital piled up in the 1990s causes the “Secular Stagnation” in the 2000s. The 2008-09 financial crisis was also appearance of contradictions of modern capitalism, but it occurred during the Secular Stagnation, and the latter was one of the reasons why the former couldn’t be avoided despite government interventions.

Appendix: about Table 1.

Table 1 is made from Input-Output Tables which are provided from the U.S. Department of Commerce. I used the tables of 1991, 2000, 2002, and 2007, which were the first and the last year of the two economic expansion periods.

To make the left half of the table, I calculated the increment of the output and the demands (final demands and intermediate input) from the first year to the last year, and derived the contribution ratio of each demand to the increase in output from them.

To make the right half of the table, I created the Leontief inverse matrix of the increment of

input and output from the first year to the last year. When it is multiplied by each final demand, we can get the total output induced by it (that is, the total of the final demand and the intermediate input generated by it). Then, I derived the contribution rate of each final demand from them.

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- . GDP by Industry

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U. S. Board of Governors of the Federal Reserve System. Industrial Production and Capacity Utilization

Yahoo! Finance: <http://finance.yahoo.com/>

S&P/Case-Shiller U.S. National Home Price Index: <http://data.okfn.org/data/core/house-prices-us>

Crude Oil Price: http://ecodb.net/pcp/imf_group_oil.html#index02