

Discussion Paper No.273

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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February 2017



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## **Abstract**

There were two bubble economies recently: IT bubble in the last-1990s and housing bubble in the 2000s. The result of the former was the mild recession in 2001, but the one of the latter was the severe crisis in 2008-09. Why were they so different? Behind phenomenon of two business cycles, there was one industrial cycle in the real economy in 1991-2009. After WWII, with interventions by the government, U.S. economy have prevented from crises. That has delayed the excess capital adjustments and prolonged the length of industrial cycles. There were two industrial cycles after 1960 at least: the cycles of 1960-1990 and 1991-today. The 2000s was the stagnant phase of the industrial cycle after 1991. For that reason, the bankers had to use CDOs and take risks by themselves in order to generate bubble. That was the real economic ground of the 2008 financial crisis.

## **Keywords**

financial crisis, reproduction schema, industrial cycle, excess capital

## Introduction

The financial crisis and recession in 2007-09 was the most serious economic downturn in the U.S. since the Great Depression. Many Marxian economists have argued that this crisis was closely related to certain defining features of the neoliberal economic order that had prevailed over the previous three decades, above all, the combination of stagnant productive capital accumulation and the phenomenon of “financialization.”<sup>1</sup> While I am in general agreement with this argument, I wish to suggest that further investigation is necessary to clarify how and why that specific configuration of economic phenomena underwent a significant transformation in the 1990s and the 2000s. The reason for this should be apparent: the so-called “New Economy” and IT bubble of the 1990s were conjuncturally “successful” and culminated only in the mild recession of 2001, while the housing bubble of the early to mid-2000s issued in the severe financial crisis of 2008. In short, neoliberalism succeeded in the 1990s and failed in the 2000s. In this paper, I compare the two business cycles of 1991-2001 and 2001-09 in order to illuminate the real economic ground of the first cycle’s success and the second’s failure.

The principal postulates of this paper are as follows. Actual capitalist economic growth is a mixture of “endogenous growth” and “exogenous growth.” The former is growth supported by Personal Consumption Expenditure and Gross Investment: growth generated by productive capital investment. It proceeds through cycles of capital accumulation, that is to say, the activation of capital investment, the generation of excess capital, recession, and the stagnation of capital investment. Karl Marx called this the “industrial cycle.” Exogenous growth, by contrast, is growth supported by Keynesian aggregate demand control policies, expenditures by foreign residents, and ephemeral bubble economies. Such stimulants to aggregate demand can reinforce the boom phase of the so-called “business cycle.”

There were two business cycles across the 1991-2009 period, but these were encompassed by one industrial cycle (that is, a single cycle of capital accumulation). Growth during the business cycle of 2001-09 relied for the most part on the “exogenous” demand generated by the housing bubble in the final and stagnant stage of the industrial cycle. Investment bankers had to assume big risks of their own, as well as sell many high risk “financial instruments,” in order to generate a bubble economy under otherwise stagnant conditions. That activity was the immediate cause of the credit crunch in 2007-09. Thus, stagnation in the “real” (“non-financial”) economy in the 2000s was the real “ground” of the

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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). The analysis presented here, it should be noted, can be articulated with and seen as complementary to such a variety of contemporary theories of crisis as above. It is offered not as an “alternative” Marxist theory of crisis but as a supplement to the controversy amongst Marxist political economists surrounding the roots of the current global slump.

financial crisis.

My arguments are set forth in the following order. In section 1, I examine the mechanisms of economic growth over the period 1991-2007 by dividing the latter into two components: “endogenous growth” and “exogenous growth.” Then, by using macroeconomic statistics, I show that economic growth in the first half of the 1990s was entirely endogenous; that in the latter half of the 1990s it involved a mixture of endogenous and exogenous factors (above all, the Information Technology bubble); and that in the 2000s it was mostly exogenous – more specifically, that it was driven by financial speculation in crude oil and housing.

In the first half of section 2, I show, through detailed empirical analysis, that the “endogenous growth” looks very similar to what Marx called the “industrial cycle,” and, furthermore, that the economy of 1991-2009 experienced a *single* industrial cycle. In addition, in the latter half of section 2, I show that, since World War II, industrial cycles have become much longer than business cycles and that the principal reason for this has to do with increased government interventions (in evolving ways) to stimulate “exogenous demand” – always with a view to preventing economic crisis and spurring growth. Capitalist states have acted to *postpone* excess capital reduction (what Marx called the “slaughtering” of capital values) and have thereby brought about significantly prolonged industrial cycles.

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

### **1.1 Analytical method**

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”.<sup>2</sup> 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 the products of Department II, 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 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

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<sup>2</sup> See Marx (1978).

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, in general, they do *not* match, precisely because they involve 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 investment is adjusted to more or less match the demand. The second motive is related to competition among firms, as described in chapter 12 of *Capital*, volume I, and pertains to the concept of relative surplus value. Firms invest to become *more efficient* than their competitors.<sup>3</sup> Firms strive to achieve efficiency above the social average in order to earn *excess profits*, generating a dynamic of endless competition. Owing to the competitive motive, investments tend to create excess capacity, which must be adjusted sooner or later. The upshot is that the process of expanded reproduction becomes a *cycle*, one in which excess capacity is generated during prosperity and then destroyed in order to adjust it to reduced levels of demand during periods of crisis and stagnation. Marx called this the “industrial cycle.”

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,<sup>4</sup> which plays the central role in every System of National 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 (including its cyclical fluctuation). Let us call the demands generated by capital investment “endogenous demand” and the growth flowing from these demands “endogenous growth.”

It is worth noting that “Net Exports” and “Government Expenditures” are among the four final demands defined in SNA, and Marx had planned to address them in later (uncompleted) stages of his larger “Critique of Political Economy.” The demands generated by export trade and government expenditures, which are independent of investments in capitalist firms, 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.”

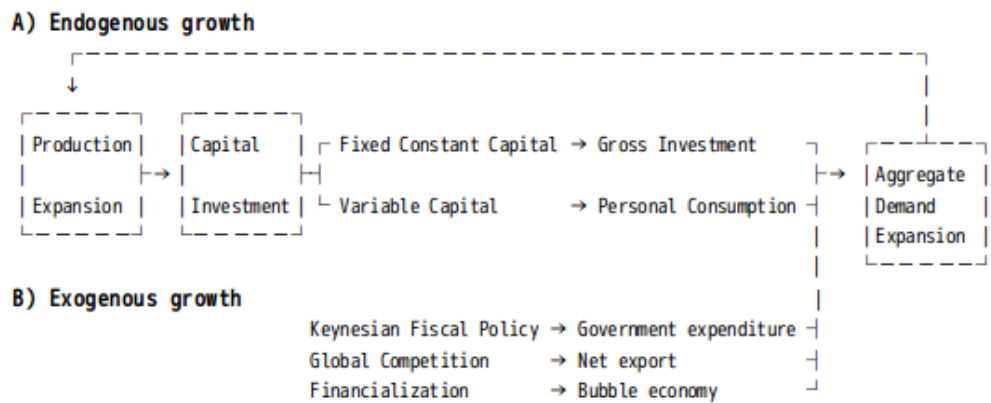
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<sup>3</sup> See Marx (1976).

<sup>4</sup> 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.

Economic growth can now be divided into “endogenous growth” and “exogenous growth,” as shown in Figure 1. The former is an autonomous cause-and-effect sequence of 1) production, 2) investment, and 3) demand. To begin we will examine whether these three factors are interconnected in one circuit. If they are, “endogenous growth” can be observed there. However, if they are not, we will need to search for sources of expanded demand appearing independently of “exogenous growth.”

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



## 1.2 Decomposing the statistics

The following figures and tables depict the major aspects of the two business cycles of the period 1991-2007. Table 1 shows the major industries that experiences expanded production as well as their “demand composition” during two distinct conjunctures: 1991-2001 and 2001-07. The data indicate that the top 18 industries accounted for 104.4% of real GDP growth in 1991-2001, whereas the top 16 industries represented 113.6% of that growth during 2001-07. Furthermore, Personal Consumption boosted the production of most industries directly or indirectly, while Gross Investment did so for only a few industries, above all, construction, manufacturing, and business services.

Table 1. Major “production expansion” industries and their demand composition, 1991-2000 and 2002-07

	Contribution rate	Production increased directly by below demand							Production induced directly or indirectly by below demand							Total output
		Personal Consumption Expenditure	Fixed Investment	Change in Private Inventories	Net Exports	Government Expenditure	Intermediate	Personal Consumption Expenditure	Fixed Investment	Change in Private Inventories	Net Exports	Government Expenditure				
1991-2000																
Agriculture, forestry, fishing, and hunting	1.9%	22.2%	0.0%	-13.7%	-26.4%	5.1%	112.6%	181.9%	19.5%	27.5%	-89.3%	15.3%		41,654		
Mining*	-0.2%	0.1%	26.6%	20.2%	-686.7%	4.5%	731.5%	1657.7%	-2669.7%	410.9%	-460.5%	1161.6%		2,954		
Construction	3.5%	0.0%	65.3%	0.0%	0.0%	17.4%	17.3%	12.6%	70.6%	0.1%	-1.5%	18.0%		387,041		
Manufacturing	19.5%	27.9%	26.0%	4.4%	-21.8%	1.7%	61.8%	67.3%	64.9%	5.8%	-43.1%	5.2%		1,130,961		
Fabricated metal Products	1.1%	3.4%	3.2%	2.3%	-7.8%	1.3%	97.7%	38.9%	79.9%	5.4%	-31.9%	7.6%		77,702		
Machinery	6.3%	7.5%	65.0%	1.7%	-28.5%	2.7%	51.5%	24.1%	111.0%	2.3%	-40.8%	5.4%		144,690		
Electric and electronic equipment	9.8%	9.7%	25.9%	5.2%	-15.9%	2.1%	71.1%	42.0%	78.9%	9.2%	-37.1%	7.0%		159,661		
Motor vehicles and equipment	2.0%	35.2%	53.6%	6.3%	-30.7%	2.1%	33.6%	55.8%	74.9%	8.6%	-42.5%	3.2%		177,610		
Chemicals and allied products	1.3%	47.8%	-0.2%	4.2%	-24.0%	5.8%	66.5%	111.9%	56.0%	2.1%	-51.9%	1.9%		94,023		
Rubber and miscellaneous plastics products	1.1%	11.6%	0.3%	1.5%	-8.3%	2.3%	92.6%	69.9%	45.4%	5.2%	-27.6%	7.2%		58,151		
Transportation and public utilities	10.3%	35.2%	2.1%	0.2%	1.7%	5.1%	55.7%	71.9%	20.7%	0.2%	0.7%	6.6%		422,264		
Transportation	4.1%	26.5%	2.6%	0.4%	3.2%	2.4%	64.9%	69.2%	52.7%	0.8%	-7.1%	4.4%		177,941		
Communications	5.3%	35.0%	2.3%	0.0%	1.1%	4.3%	53.7%	77.1%	16.0%	0.3%	-0.7%	7.2%		181,806		
Electric, gas, and sanitary services*	0.9%	59.5%	0.0%	0.0%	-0.9%	15.3%	35.2%	64.1%	0.4%	-1.8%	26.7%	10.6%		62,517		
Wholesale trade	14.3%	27.6%	13.1%	1.4%	8.8%	2.8%	46.3%	58.3%	39.7%	2.0%	-4.3%	4.3%		314,053		
Retail trade	14.1%	86.7%	4.8%	0.0%	0.0%	-0.2%	8.7%	89.3%	10.0%	0.0%	-0.4%	1.1%		270,181		
Finance and insurance	11.9%	48.0%	0.0%	0.0%	2.8%	1.1%	48.1%	90.6%	5.9%	-0.1%	1.3%	2.2%		584,235		
Real estate	10.2%	51.5%	5.4%	0.0%	3.4%	1.0%	38.7%	98.3%	2.2%	3.6%	-16.0%	11.9%		854,416		
Services	18.7%	44.6%	10.8%	0.0%	1.2%	0.9%	42.4%	71.6%	24.1%	0.7%	0.7%	2.8%		1,589,850		
Business services	8.0%	5.4%	22.3%	0.0%	1.4%	7.5%	63.4%	42.2%	44.2%	0.9%	2.2%	10.5%		767,479		
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%		301,667		
Legal, engineering, accounting, and related services		12.7%	4.2%	0.0%	3.9%	2.4%	76.8%	58.3%	54.5%	0.7%	-1.4%	7.9%		144,700		
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%		321,112		
Health services	2.6%	113.1%	0.0%	0.0%	0.1%	-15.3%	2.1%	115.6%	0.0%	-0.1%	-0.1%	-15.5%		235,412		
Other services	2.9%	n.a.														
Government	3.2%	31.4%	0.0%	0.0%	0.2%	4.1%	64.3%	87.4%	10.4%	0.1%	-4.5%	6.6%		45,242		
2002-2007																
Agriculture, forestry, fishing, and hunting	1.9%	17.2%	0.0%	6.5%	1.1%	0.3%	75.0%	89.3%	4.4%	11.9%	-12.5%	6.9%		110,595		
Mining*	-0.2%	0.1%	33.3%	0.7%	-74.0%	0.1%	139.9%	120.9%	54.3%	8.8%	-122.4%	30.3%		230,467		
Construction*	-4.9%	0.0%	59.4%	0.0%	0.0%	25.9%	16.7%	9.6%	60.7%	0.4%	-1.5%	30.6%		369,677		
Manufacturing	16.6%	37.1%	10.0%	7.3%	-26.9%	2.4%	70.1%	94.4%	43.6%	21.5%	-95.7%	36.2%		1,178,699		
Computer and electronic products	16.8%	-61.8%	-70.7%	-46.7%	229.9%	-40.9%	90.2%	-383.7%	-431.8%	-306.4%	1656.8%	-434.9%		-35,872		
Motor vehicles, bodies and trailers, and parts	3.1%	49.7%	53.8%	12.0%	-54.2%	6.8%	31.9%	71.4%	72.7%	16.9%	-77.3%	16.3%		54,991		
Chemical products	2.7%	35.0%	-0.3%	1.2%	-9.3%	0.0%	73.3%	100.5%	13.9%	8.1%	-41.5%	19.0%		225,313		
Transportation and warehousing	4.3%	19.8%	3.0%	1.4%	15.4%	0.2%	60.2%	61.3%	17.6%	6.3%	-1.8%	16.7%		217,504		
Information	12.2%	20.7%	4.9%	0.2%	2.3%	1.5%	70.6%	72.6%	16.1%	4.5%	-14.6%	21.3%		355,850		
Utilities	1.5%	49.2%	0.0%	0.0%	-0.7%	0.0%	51.4%	88.4%	6.9%	2.5%	-11.7%	13.9%		145,439		
Wholesale trade	4.0%	27.7%	6.4%	2.3%	14.6%	0.6%	48.4%	57.5%	16.1%	3.7%	15.3%	7.3%		376,500		
Retail trade	13.4%	85.2%	3.1%	0.0%	0.0%	11.7%	89.0%	89.0%	8.4%	0.1%	-0.4%	2.9%		348,765		
Finance and insurance	10.6%	37.4%	0.0%	0.0%	2.1%	0.0%	60.5%	88.2%	6.0%	1.7%	-3.2%	7.3%		640,643		
Real estate and renting and leasing	10.7%	48.2%	3.6%	0.0%	5.9%	0.0%	42.3%	83.2%	10.1%	2.4%	-4.9%	9.2%		748,075		
Professional and business services	16.3%	7.1%	0.2%	0.0%	0.9%	0.9%	87.7%	64.2%	15.1%	3.8%	-8.8%	25.6%		890,085		
Professional, scientific, and technical services	13.3%	5.2%	-3.7%	0.0%	0.4%	0.0%	98.1%	66.2%	12.1%	3.9%	-12.0%	29.8%		448,935		
Computer systems design and related services	3.0%	0.0%	31.6%	0.0%	6.7%	11.2%	50.5%	24.0%	38.0%	2.3%	-3.2%	39.0%		69,770		
Miscellaneous professional, scientific and technical services	11.1%	5.5%	-5.4%	0.0%	0.3%	0.0%	99.6%	63.1%	11.7%	4.0%	-12.6%	33.7%		379,165		
Administrative and waste management services	3.3%	4.7%	0.0%	0.0%	0.6%	0.0%	94.7%	72.9%	12.8%	3.5%	-10.7%	21.3%		174,355		
Health care and social assistance	8.7%	96.6%	0.0%	0.0%	0.1%	0.0%	3.3%	98.1%	0.2%	0.1%	-0.1%	1.8%		640,078		
Accommodation and food services	2.7%	71.6%	0.0%	0.0%	0.0%	0.0%	28.4%	92.6%	4.4%	1.5%	-6.2%	7.6%		480,545		
Government	4.5%	2.3%	0.0%	0.0%	0.0%	95.9%	1.8%	3.7%	0.2%	0.1%	-0.2%	96.2%		740,479		

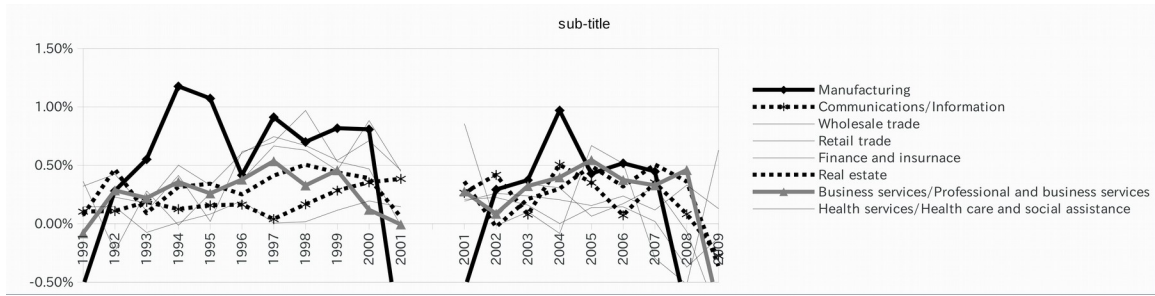
Source: Department of Commerce, NIPA Tables and Input-Output Accounts

Note: (1) Industries with asterisk(\*) are not included in “major production expansion industries.” (2) Gray shade shows main demand for the industry.

Figure 2 reveals the dynamic trend in the expansion of major industries, that is, the contribution of each industry to the real GDP growth. The data indicate that growth trends were very different as between Manufacturing and many other industries. Manufacturing was the only industrial sector that was expanding rapidly in the first half of the 1990s, while also remaining one of the top sectors in the subsequent period. On the other hand, many other industries expanded their production only after the mid-1990s.

Figure 3 shows the trend in the productive expansion of detail industries in the Manufacturing sector. In the first half of the 1990s, several manufacturing industries were expanding one after another. The expansion achieved by each individual detail industry was not so great, but together they accounted for a large expansion. In the latter half of the 1990s, however, almost all were in decline; only Computer and Electronic Products continued to expand, and it was the latter that kept the manufacturing sector as a whole expanding. A similar trend emerged again in the 2000s, with several detail industries expanding in the early 2000s, while Computers and Electronic Products did so only after 2004.

Figure 2. Contribution to real GDP growth of major industries

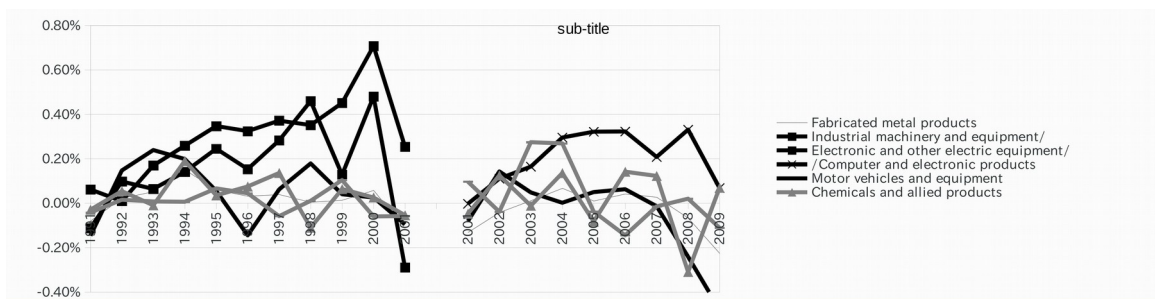


Source: Department of Commerce, GDP by Industry

Note: (1) Industries are classified by SIC during 1991-2001 and 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 detail industries in the Manufacturing industry



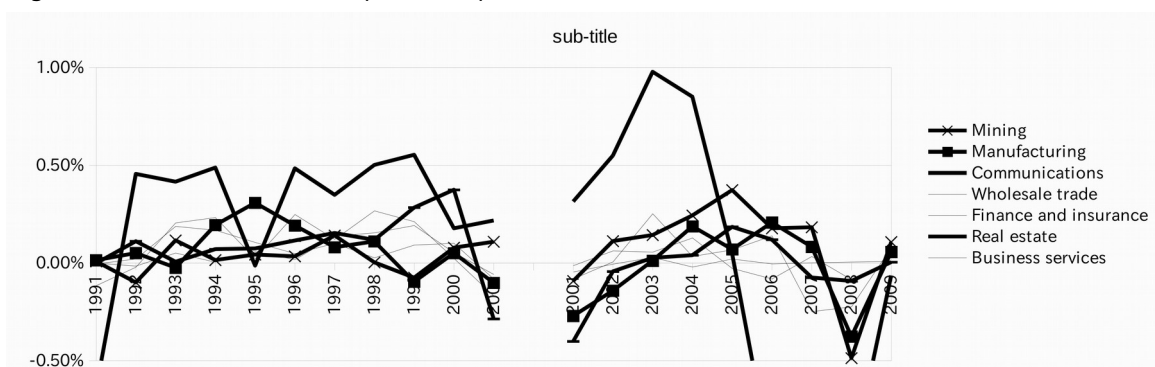
Source: Department of Commerce, GDP by Industry

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 4 shows the trend in fixed asset investment by industry. Throughout the 1990s and 2000s, the Real Estate sector seemed to be the biggest investor in fixed assets. However, this sector 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 was generated not by firms but by households. The next biggest sector changed over time : it was Manufacturing in the first half of the 1990s, Information in the latter half of the 1990s, and Mining in the 2000s.

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.

Table 2 shows the employment share and wage level by industry. Throughout the 1990s and into the 2000s, the Manufacturing sector had the biggest decrease in employment share, whereas Services registered the biggest increase. However, most of the detail industries in Manufacturing offered wages that were higher than the average, whereas most of the detail industries in Services paid out comparatively low wages. Therefore, wage earners were migrating from the relatively high-wage manufacturing sector to the relatively low-wage service sector. In addition to this basic trend, two other specific changes should be pointed out. First, in the latter half of the 1990s, two higher-wage industries, that is, the Information industry and the Computer Systems Design and Related Services industry, increased their employment share. This change was very significant, resulting in a sharp increase in the labor share of GDP during this period (See Figure 5). Second, however, this change disappeared in the 2000s, and the longer-term trend became stronger than it had been in the 1990s. Thus, the compression of employee compensation was the main predominating trend during the 1990s and 2000s, albeit with some fluctuation.

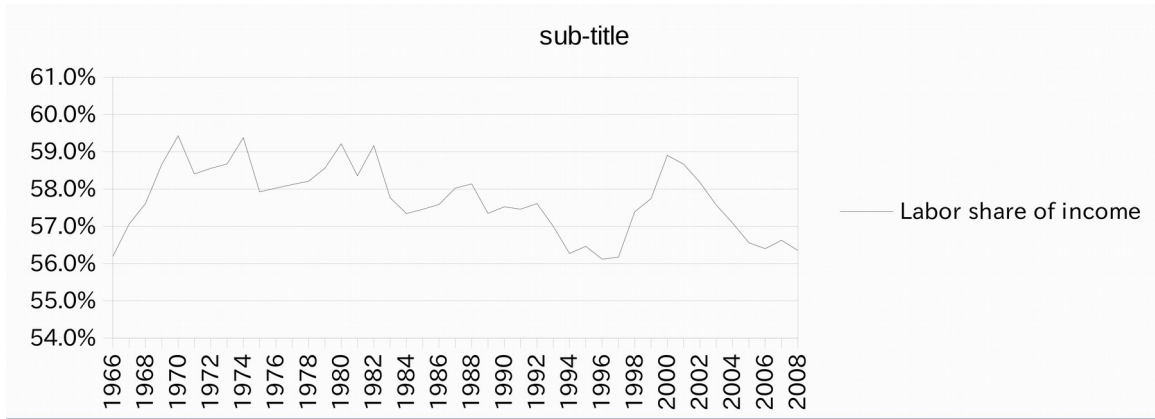
Table 2. Change of employment share and average wage by industry

	1991	1995	Change (percent points)	Average wage (thousand dollars/year)	1996	2000	Change (percent points)	Average wage (thousand dollars/year)	2001	2007	Change (percent points)	Average wage (thousand dollars/year)
Total employees (Thousands)	116,649	124,783	8.134	31.81	127,047	139,131	12.084	37.83	139,033	145,034	6.001	48.06
Private Industries	81.27%	82.31%	1.03%	30.99	82.63%	83.40%	0.77%	37.15	83.15%	83.10%	-0.05%	47.04
Agriculture, forestry, fishing, and hunting	1.21%	1.13%	-0.07%	18.07	1.10%	1.06%	-0.04%	21.56	1.14%	0.99%	-0.14%	25.55
Mining	0.55%	0.45%	-0.10%	53.01	0.44%	0.38%	-0.06%	62.26	0.39%	0.46%	0.07%	83.63
Utilities	0.63%	0.53%	-0.10%	53.09	0.50%	0.44%	-0.07%	67.67	0.43%	0.38%	-0.05%	95.62
Construction	4.23%	4.36%	0.13%	34.16	4.50%	5.02%	0.53%	40.39	5.09%	5.41%	0.33%	50.51
Manufacturing	14.53%	13.74%	-0.79%	40.60	13.51%	12.55%	-0.96%	47.61	11.89%	9.63%	-2.26%	61.90
Fabricated metal products	1.29%	1.29%	0.00%	38.56	1.29%	1.28%	-0.02%	42.64	1.21%	1.08%	-0.13%	51.78
Machinery	1.17%	1.16%	-0.01%	43.77	1.16%	1.06%	-0.10%	49.90	0.99%	0.82%	-0.16%	63.48
Computer and electronic products	1.52%	1.34%	-0.18%	50.23	1.36%	1.30%	-0.06%	68.59	1.26%	0.88%	-0.38%	92.93
Electrical equipment, appliances, and components	0.49%	0.47%	-0.02%	40.95	0.46%	0.43%	-0.03%	46.22	0.40%	0.30%	-0.10%	62.42
Motor vehicles, bodies and trailers, and parts	0.90%	0.98%	0.09%	58.17	0.96%	0.95%	-0.01%	61.34	0.87%	0.69%	-0.18%	76.27
Food and beverage and tobacco products	1.47%	1.40%	-0.07%	33.05	1.38%	1.28%	-0.10%	37.08	1.28%	1.17%	-0.11%	47.01
Apparel and leather and allied products	0.89%	0.74%	-0.15%	20.19	0.67%	0.42%	-0.25%	25.05	0.36%	0.18%	-0.18%	36.64
Chemical products	0.85%	0.79%	-0.07%	55.35	0.77%	0.71%	-0.06%	66.33	0.69%	0.59%	-0.10%	91.80
Plastics and rubber products	0.66%	0.72%	0.06%	35.52	0.71%	0.69%	-0.02%	39.35	0.64%	0.52%	-0.12%	48.85
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
Transportation and warehousing	2.95%	3.11%	0.16%	36.41	3.12%	3.21%	0.10%	41.43	3.18%	3.15%	-0.03%	50.50
Information	2.30%	2.29%	-0.01%	44.09	2.33%	2.62%	0.29%	58.97	2.60%	2.10%	-0.50%	74.70
Finance and insurance	4.39%	4.14%	-0.25%	44.74	4.15%	4.21%	0.06%	60.88	4.21%	4.27%	0.06%	85.35
Real estate and rental and leasing	1.50%	1.47%	-0.02%	26.01	1.48%	1.51%	0.03%	32.81	1.52%	1.54%	0.02%	44.20
Professional and business services	10.13%	11.30%	1.17%	35.30	11.58%	12.50%	0.92%	42.75	12.10%	12.65%	0.55%	56.78
Professional, scientific, and technical services	4.70%	4.75%	0.05%	43.22	4.81%	5.40%	0.59%	56.51	5.26%	5.56%	0.29%	74.59
Legal services	1.06%	0.99%	-0.08%	46.05	0.98%	0.98%	0.00%	56.38	0.90%	0.92%	0.02%	79.83
Computer systems design and related services	0.42%	0.54%	0.12%	55.64	0.59%	0.95%	0.35%	74.97	0.93%	0.94%	0.02%	93.87
Miscellaneous professional, scientific, and technical services	3.22%	3.23%	0.01%	40.49	3.24%	3.48%	0.24%	52.33	3.44%	3.69%	0.26%	68.41
Management of companies and enterprises	1.17%	1.24%	0.07%	65.45	1.24%	1.29%	0.05%	75.00	1.23%	1.27%	0.04%	95.28
Administrative and waste management services	4.25%	5.31%	1.05%	19.74	5.53%	5.81%	0.28%	23.95	5.60%	5.82%	0.22%	31.66
Educational services, health care, and social assistance	10.37%	11.01%	0.64%	29.06	11.05%	11.22%	0.17%	33.11	11.64%	13.05%	1.40%	41.36
Educational services	1.60%	1.70%	0.10%	22.37	1.70%	1.80%	0.09%	26.45	1.86%	2.10%	0.24%	34.07
Health care and social assistance	8.77%	9.31%	0.54%	30.28	9.35%	9.42%	0.07%	34.36	9.78%	10.94%	1.16%	42.76
Arts, entertainment, recreation, accommodation, and food services	7.79%	8.36%	0.57%	14.68	8.44%	8.57%	0.13%	16.79	8.73%	9.37%	0.64%	20.89
Government	18.73%	17.69%	-1.05%	35.50	17.37%	16.60%	-0.77%	41.15	16.85%	16.90%	0.05%	55.02

Source: Department of Commerce, GDP by Industry

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

Figure 5. Labor share of income

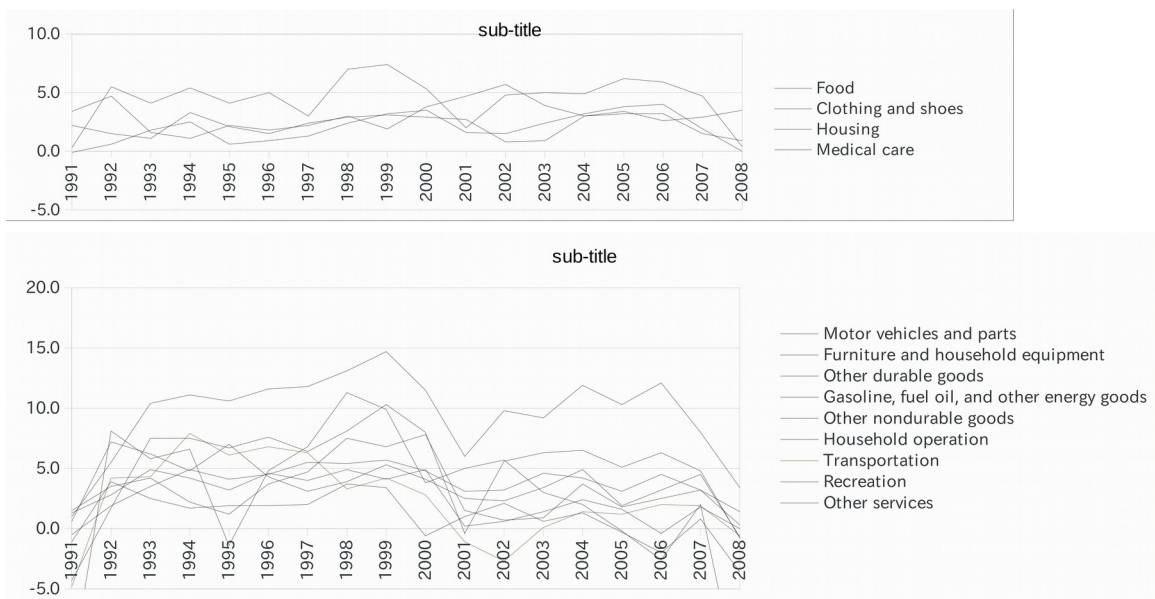


Source: Department of Commerce, NIPA

Figure 6 shows the growth rate of personal consumption expenditure by type of goods and services. The top figure presents the growth rates of expenditure for four types of products and services, namely, food and beverages, clothing and footwear, housing, and health care, which remained at the same level throughout the period. By way of contrast, the lower figure shows growth rates for ten other types of product, which were lower in the 2000s than they had been in the 1990s. This suggests that households suppressed their consumption expenditure, except for four types of necessities. Furthermore, the average annual growth rates of private employee compensation were 4.9% in 1991-1995, 7.2% in 1996-2000, and 4.2% in 2001-2007. Accordingly, Personal Consumption Expenditures during 2001-07 were more stagnant than in the first half of the 1990s.

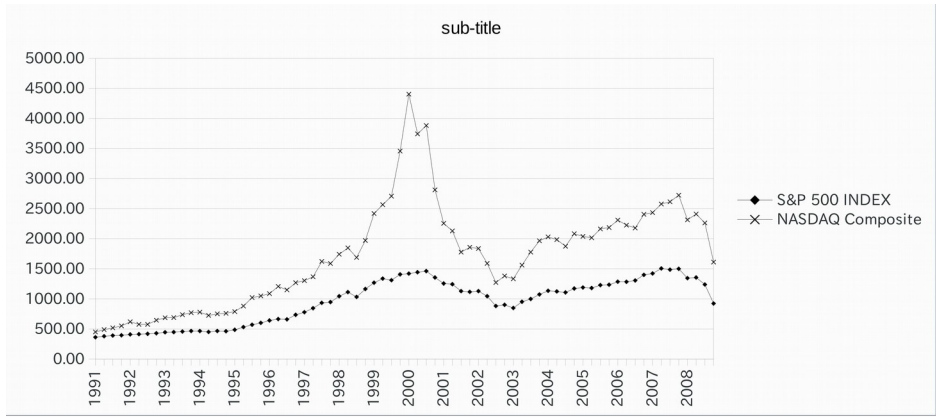
Figures 7, 8, and 9 show the security market, house price, and crude oil price indexes, all of which have skyrocketed since the end of the 1990s, mainly due to speculation.

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



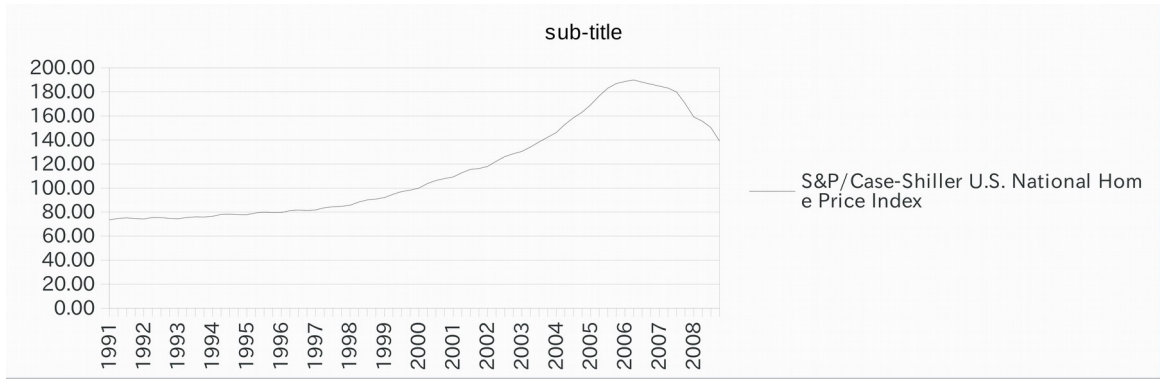
Source: Department of Commerce, NIPA Tables

Figure 7. Security price indexes (S&P 500 index and NASDAQ Composite)



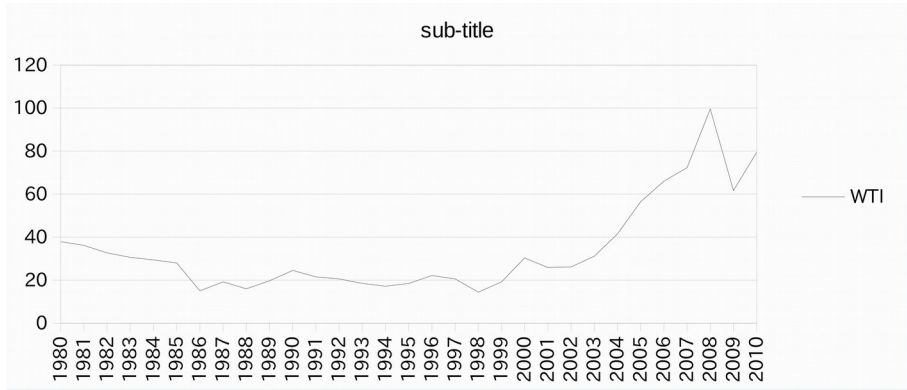
Source: Yahoo! Finance (<http://finance.yahoo.com/>)

Figure 8. House price index (S&P/Case-Shiller U.S. National Home Price Index)



Sources: US House Price Index (Case-Shiller): <http://data.okfn.org/data/core/houseprices-us>

Figure 9. Crude oil price (WTI)



Source: [http://ecodb.net/pcp/imf\\_group\\_oil.html#index02](http://ecodb.net/pcp/imf_group_oil.html#index02)

Table 3 provides a summary of the main findings detailed above. The data indicate that the conditions of productive expansion, fixed capital investment, and employment of major industries varied depending on three distinct periods: the first half of the 1990s, the latter half of the 1990s, and the 2000s. Three distinctively different mechanisms of economic growth characterized each period.

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

mechanisms

	The first half of the 1990s	The last half of the 1990s	2000s
Major production expansion industries ← Main demands	Manufacturing (several detail industries) ← Gross Investment	Manufacturing (Computer and Electronic Products) ← Gross Investment	Manufacturing (Computer and Electronic Products) ← Three kinds of demands
		Other industries ← Personal Consumption	Other industries ← Personal Consumption
Fixed capital investment	Real estate Manufacturing	Real estate Communications	Real estate (huge) Mining
Employment and wages	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.		
		Higher wage employment by Communications and Business Services were increasing.	
Personal Consumption	Rapid eruption in 1991-1992, then slow down during 1993-1997.	Rapid growing up again after 1997-2000.	The growth rate in the 2000s was lower than in 1990s.

### 1.3 Assembling the components of growth into expanded reproduction mechanisms

In the first half of the 1990s, the sector with the largest production expansion was Manufacturing. In particular, the top five detail industries in Manufacturing were Computer and Electronic Products, Motor Vehicles, Chemical Products, Fabricated Metal Products, and Machinery. Gross Investment and Personal Consumption Expenditure spurred Manufacturing's production expansion equally. Four of the five detail industries cited above, excepting chemical products, were spurred by gross investment. However, 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. Thus, "endogenous growth" was evident in the Manufacturing sector in the first half of the 1990s.

Production in various manufacturing industries, especially in heavy-chemical industries, was closely interconnected through intermediate input. Furthermore, their products were utilized mutually as were their production facilities. As a result, the production expansion took place consecutively, resulting in a large total expansion. Although Gross Investment demand was only 35% of Personal Consumption Expenditures during 1991-2001. Although Personal Consumption Expenditure went into many industries rather diffusely, Gross Investment went into just a few industries quite intensively.

Despite its strong investment in fixed capital, the manufacturing sector reduced its overall share of employment. At the same time, the service sector gained employment share, while evincing wage levels lower than the average of all industries. For these reasons, Personal Consumption Expenditures did not increase vigorously in the first half of the 1990s, and industries other than manufacturing did not rapidly expand their production.

In the latter half of the 1990s, many industries other than manufacturing expanded

their production vigorously, spurred mainly by a tremendous increase in Personal Consumption Expenditure. Manufacturing, in which Computer and Electronic Products continued to expand steadily, also remained one of the top industrial sectors, spurred mainly by Gross Investment. Although two types of demand spurred the major industries' overall production expansion, the question remains: which industries generated most of these two types of demand? The biggest investing industries in the latter half of the 1990s were the Communications Industry 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 Computers and Electronic Products. These two industries also increased their employment share, and their wage levels were higher than the average in all industries. The increase in higher-wage employment was a major cause of an increase in Personal Consumption Expenditure. In this way, investment in fixed capital and employment by the Communications Industry and Business Services generated two types of demand and spurred the production expansion of many industries, including Manufacturing.

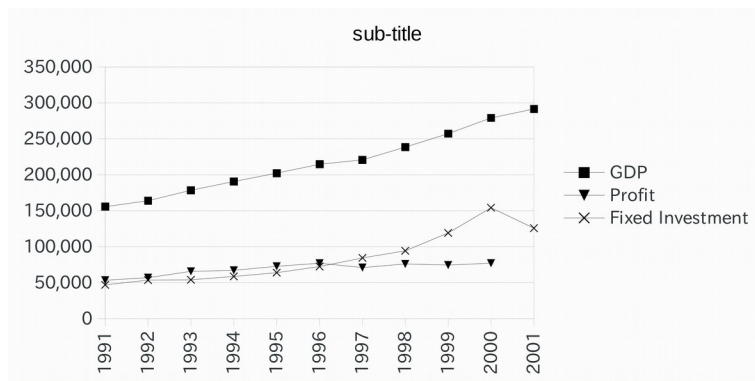
With that established, what caused the growth in the Communications Industry and Business Services? The Communications Industry expanded its production mainly with two types of demand: Intermediate Demand and Personal Consumption Expenditures. On the other hand, Computer and Data Processing in the Business service sector grew mainly alongside Gross Investment. Since the early 1990s, an increasing number of firms and households had begun to gain access to the Internet. As a result, the usage of communication lines increased, and more and more firms had constructed Internet or intranet information systems as 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, “endogenous growth” took place.

Nevertheless, the size of the investment by the communications industry was so enormous that the above “endogenous” interpretation of that investment does not suffice. The reasons for our scepticism are as follows. First, as shown in Figure 10, 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.<sup>5</sup> In light of this, not only “endogenous demand” but also “exogenous demand” must be considered in order to explain this investment.

Figure 10. Indicators of the Communications Industry (millions of dollars)

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



Source: Department of Commerce, GDP by Industry, Fixed Assets Account  
 Note: Industries are classified by SIC.

Two factors led the communications industry to invest excessively in fixed capital, namely, 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 M&As (mergers and acquisitions). These expectations reinforced and helped finance 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 the 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 and higher-wage employment by the IT sector in this period as “exogenous,” inasmuch as it was fuelled by rampant speculation.

Not only Gross Investment, but also some part of Personal Consumption, 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.

In the 2000s, many industries were expanding their production, and the demand that boosted such expansion was predominantly Personal Consumption Expenditure. The proportional contribution of Gross 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 the manufacturing sector, 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, it is difficult for us to suppose that the Personal Consumption Expenditure in this period was generated by only “endogenous demand” of employee compensation increase. Actually, it included the “exogenous” demand of the wealth effect of the housing bubble. The price index of housing moved upward rapidly from 85.7 in 1998 to 189.9 in 2006,<sup>6</sup> 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 subprime housing loan increased the number of homeowners. Thus, “endogenous” Personal Consumption Expenditure during 2001-07 was much more stagnant than before, but was compensated by the explosion of household debt.

The top two investing industries in the 2001-07 period 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. Thus, 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 invested in Mining 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. Later, this exogenous demand stimulated more fixed capital investment in other industries, in particular, the Manufacturing and Communications Industries 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.

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 both endogenous and exogenous (IT bubble), and that in the 2000s was 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.<sup>7</sup> 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

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

<sup>7</sup> See Bernanke (2005).

trading by banks. These conditions enabled many financial investors to buy very risky instruments, such as subprime 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 the Manufacturing.	Partially a virtuous circle among IT business, other businesses, and household.	(stagnation)
Exogenous factors		Partially IT bubble because of “excess liquidity” and Telecommunications Act of 1996.	Mostly boosted by speculation in oil and housing bubble.

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

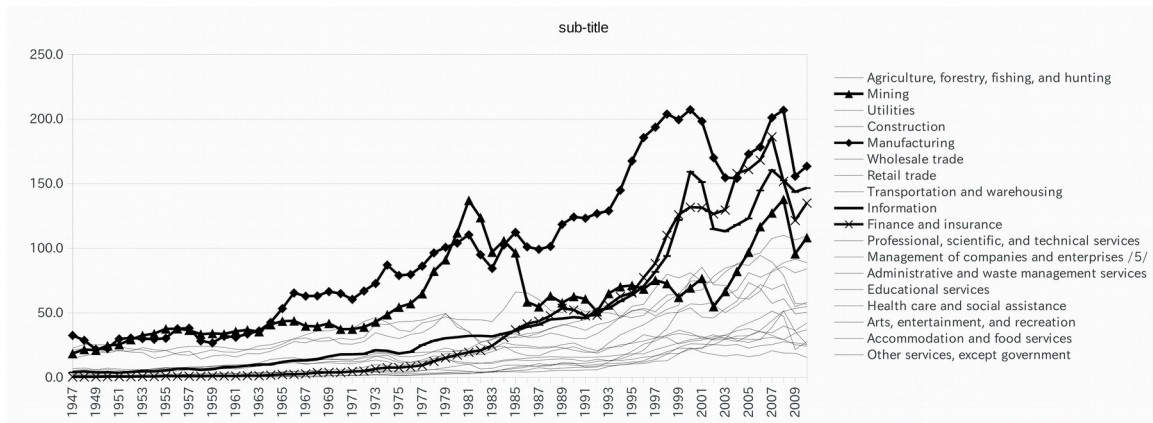
### 2.1 The capital accumulation cycle of the manufacturing sector in the period 1991-2009

Our next task is to scrutinize closely the dynamics of the 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 11). 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 autonomous movement of its own capital accumulation. 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.

Figure 12 presents various indicators of business conditions in the manufacturing sector. All indicators were trending upward in the first half of the 1990s. In this period, several detail industries in Manufacturing were expanding their production sequentially, stimulating each other through intermediate and gross investment demands. Consequently, within the 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 11. Real Fixed investment by industry after World War II (Billions of dollars)

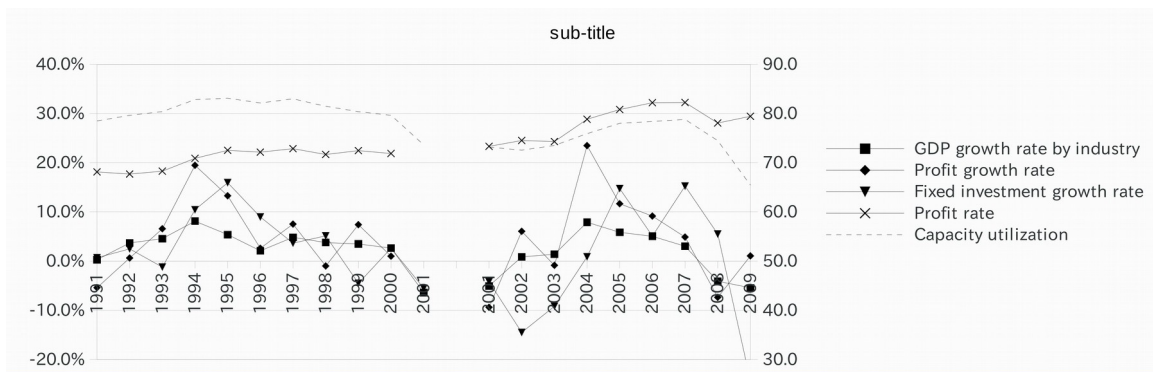




Source: Department of Commerce, Fixed Assets Account

Note: Industries are classified by NAICS.

Figure 12. Key Indicators in the manufacturing sector



Source: 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.

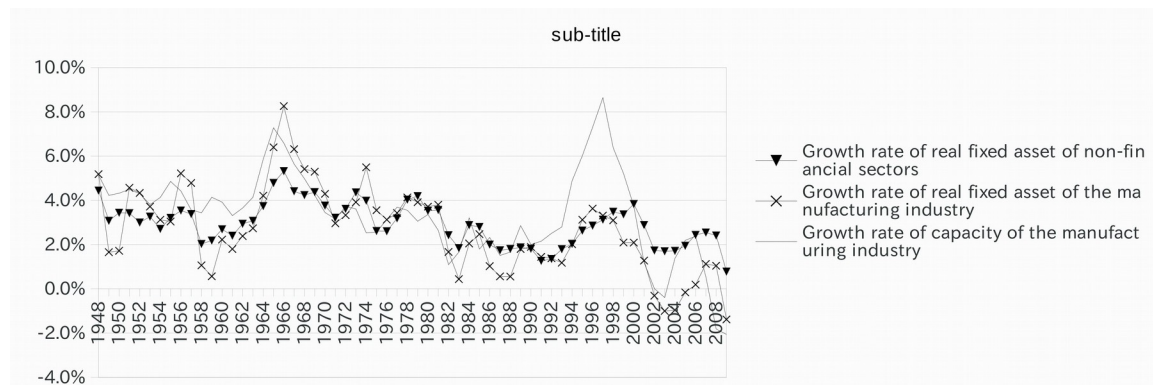
In contrast to the vigorous investment in fixed capital, paradoxically, the employment share of the Manufacturing industry was decreasing as a result of so-called Re-engineering and Outsourcing. Re-engineering was a modified version of the Toyota Production System (lean production system), supplemented 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 necessary 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<sup>8</sup>.

According to Figure 12, the capacity utilization rate of the Manufacturing industry 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 the manufacturing industry at that time, which influenced the trend of fixed capital investment. The inflection point of fixed capital investment in the manufacturing sector was 1995; the speed of investment turned from “rapid” to “slow,” and investment levelled off or shifted downward slightly after 1997.

Figure 13 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. The Communications Industry and Business Services increased their fixed capital investment in the latter half of the 1990s and contributed to the increase of the Manufacturing sector's capacity due to the fact that the 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.

Figure 13. Growth rate of real fixed assets and capacity



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

As shown in Figure 13, 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 12, 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 detail industries in Manufacturing -- particularly Computers and Electronics Products, and Oil and Coal Products -- invested a great deal, whereas many others remained stagnant. The Computers and Electronics Products industry was unique, as it benefitted from three types of demand almost equally: Personal Consumption Expenditure, Gross Investment, and Government Expenditure.

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

The Oil and Coal Products industry expanded production because of the soaring prices of crude oil and gasoline, caused by speculation. Except for these two industries, the 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 sector 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.<sup>9</sup>

The dynamic cycle of capital investment in the 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)<sup>10</sup>

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;

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

<sup>10</sup> Quoted from Marx (1976) and (1981).

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 accumulation cycle over the period 1991-2009.

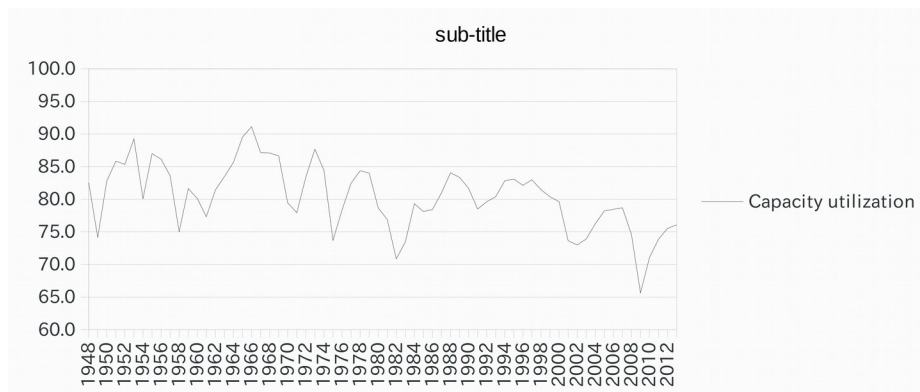
## 2.2 Two capital accumulation cycles since 1960

There were two capital accumulation cycles in the U.S. Manufacturing sector after World War II. As we saw in Figure 13, the growth rates of capacity and fixed capital (Real Cost) of Manufacturing 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 accumulation cycle. Thus, the 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 14, which reveals the capacity utilization rate of the Manufacturing sector. On the 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 13, namely, one at the very end of the 1950s and the one encompassing the whole of the 1980s, correspond to the period when the capacity utilization rate was increasing (as shown in Figure 14). Consequently, we can conclude that these two periods were ones in which excess capacity was adjusted. The manufacturing sector had two capacity adjustment periods; however, it was increasingly piling up excess capacity in the long run.

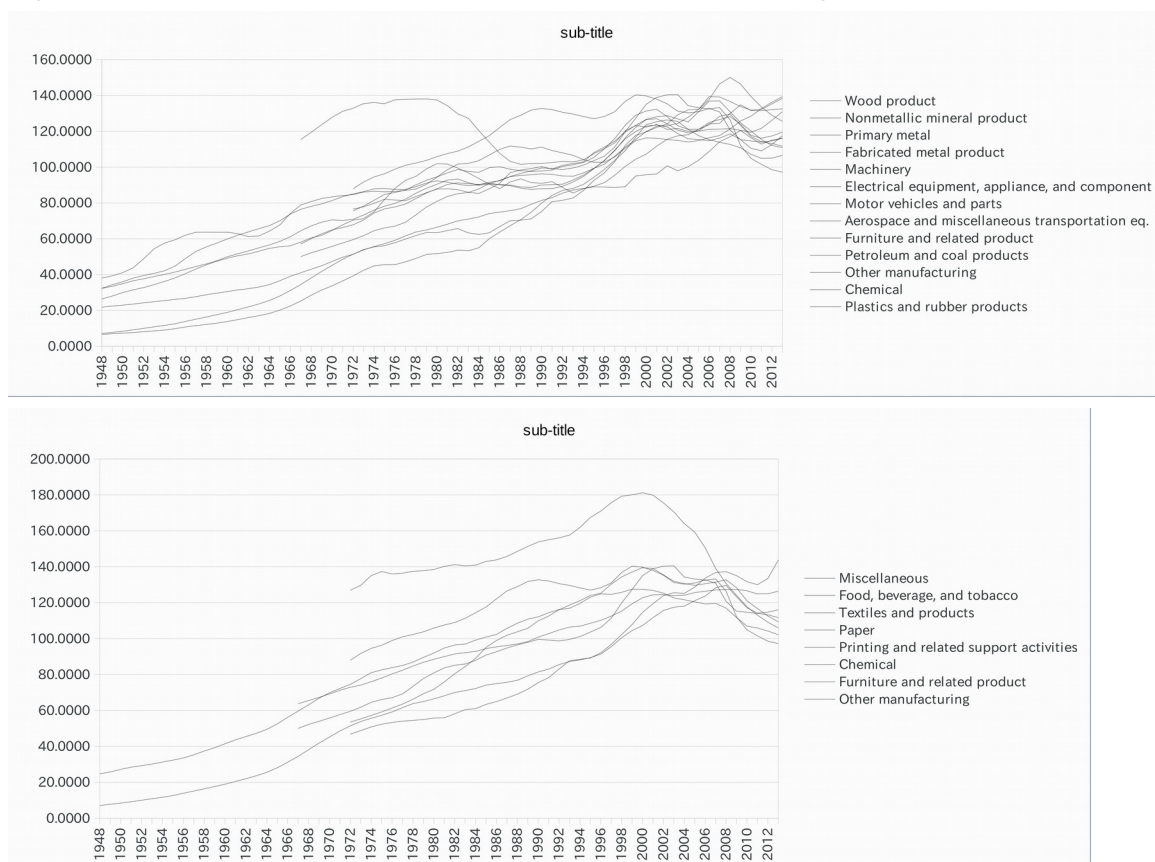
Figure 15 shows the trends of capacity indexes of Manufacturing industries. The detail industries in the upper figure experienced stagnation in the 1980s, but those in the lower figure did not. In the 1980s, many companies in such industries as those in the top figure adjusted their overcapacity by closing factories and firing employees under the severe impact of declining international competitiveness, 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 detail industries 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 14. Capacity utilization of the manufacturing industry



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

Figure 15. Capacity index by detail industry in the Manufacturing industry



Source: 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 13, 14, and 15 indicate that the Manufacturing industry had two cycles of capital accumulation 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 accumulation 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 the 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 until the end of the 1970s, and was intensified over time from the 1950s to the 1970s. After the 1980s, economic policy shifted to neo-liberalism, 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, A. Greenspan and B. 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 neo-liberal era.

During the 1980s, overlapping adverse conditions caused financial woes for big business in Manufacturing – consecutive severe recessions in 1980 and 1982, lagging international competitiveness by U.S. firms, a strong dollar, and rapid increases in imports. The neo-liberal 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” (à la Marx).

By way of contrast, in the early 2000s, although excess capacity was considerably reduced, government intervention, including “national defense” expenditure associated with the wars in Afghanistan and Iraq 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 14) 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 accumulation cycle**

By examining the capital accumulation 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 latter half of the capital accumulation cycle, a period in which excess capacity was being generated, more and more investors were engaging in speculation, and overproduction was mounting. In this period, it was not difficult for investment bankers to find investors and investment-grade securities, 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 accumulation 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 securities, 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 subprime 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.<sup>11</sup> (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 → Prosperity → Over-production → Crisis → Stagnation		
Target of speculation		Securities of IT business (emerging industry)	Subprime mortgage backed securities (high risk instruments)

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 accumulation 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 through mechanisms of "exogenous demand," even when excess capital is not sufficiently decreased (or, to use Marx's language, the slaughtering of capital values is insufficient).

The business cycle of 2001-09 was mostly spurred by "exogenous demand," in particular, the housing bubble. Thus, the 2007-08 financial crisis was not a classic instance of Marx's "overproduction crisis" even though the generation of "exogenous demand" in its lead-

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<sup>11</sup> For detailed discussion of the housing bubble, subprime mortgage backed securities, CDOs, CDS, Structural Investment Vehicles, and shadow banking in the 2000s, see Roubini and Mihm (2010) and Markham (2011).

up might be considered a peculiar new form of “over-production.”

## Conclusion and implications

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

The capitalist real economy proceeds through capital accumulation cycles: the activation of capital investment, the generation of excess capital, recession, the stagnation of capital investment, and the reduction of excess capital. Marx called this the “industrial cycle.” After World War II, government intervention and “exogenous demand” prevented or mitigated crises, which, on the one hand, left the adjustment of excess capital half-finished and prolonged the capital accumulation cycles. On the other hand, these counter-cyclical mechanisms made it possible to start a new business cycle, despite the half-finished excess capital adjustments. Consequently, the business cycle became shorter than the industrial cycle (that is to say, the 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, vigorous capital investment started in the early 1990s. However, Personal Consumption in the middle of the 1990s was weakened by certain features of the “neo-liberal” mode of capital accumulation, such as wage cutting, labor process intensification, and flexible employment. At the end of the 1990s, the bubble economy boosted both Gross Investment and Personal Consumption; this being a result of another feature of the neo-liberal mode of capital accumulation, namely, financialization. In the 2000s, such “exogenous demands” as Government Expenditure, speculation in crude oil, and the housing bubble started a new business cycle under conditions of stagnation in capital investment.

It was easy for 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, subprime mortgage-backed securities) during the business stagnation period of the 2000s. As a result, investment bankers resorted to CDOs and took big risks upon themselves. Thus, the stagnation of the real economy in the 2000s was the background for the 2008 financial crisis.

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.” The typical manifestation of capitalism’s inherent contradictions has become a gradual trend toward stagnation,<sup>12</sup> due to increasing excess capital rather than to overproduction crises. At the beginning of our era, stagnation was easily overcome through government fiscal and monetary policies, or a bubble economy; however, the “exogenous demand” associated with these mechanisms piles up excess capital and steadily weakens its own effects. Despite the neo-liberalist genuflection to “small government,” a large expansion of budget deficits, bold monetary easing, and intensified stagnation have become the most typical features of

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12 This gradual trend was dubbed the “Great Moderation” at first, and now “Secular Stagnation”; see Bernanke (2004) and Summer (2014).



contemporary capitalism.

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## Resources

- U. S. Department of Commerce. NIPA Tables  
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——. GDP by Industry  
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- Crude Oil Price: [http://ecodb.net/pcp/imf\\_group\\_oil.html#index02](http://ecodb.net/pcp/imf_group_oil.html#index02)