CIRJE-F-862

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September 2012; Revised in November 2012

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How Strongly Do "Financing Constraints" Affect Firm Behavior?: Japanese Corporate Investment since the Mid-1980s

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Forthcoming in *Public Policy Review* of the Ministry of Finance, Japan

[1] Email:yoshiro.miwa794@gmail.com. This is an English version of Miwa[2012b]. Together with Miwa [2012a], a companion piece, it is based on Miwa [2011d]. I gratefully acknowledge the helpful comments and suggestions of Tomio Arai, Yoshitaka Fukui, Masazumi Hattori, Hidehiko Ichimura, Keimei Kaizuka, Takashi Kano, Motonari Kurasawa, Kazuhiko Nishina, Takashi Obinata, Hiroshi Ohashi, Wataru Ohta, Daisuke Tsuruta, Noriyuki Yanagawa, and other members of University of Tokyo CARF Financial System Research Forum, and J. Mark Ramseyer. The research on which this article is based was supported by MEXT KAKENHI, Grant-in-Aid for Scientific Research (C) 23530271.

[Abstract]

Research on Japanese corporate finance typically starts from the premise that banks decisively affect corporate behavior. Crucial to this premise in the Japanese context are two claims: that the strength of a firm's relationship with a specific bank (and the funds that the bank makes available to it) determines its financing constraints, and that those constraints decisively condition the way it behaves.

Using firm-level data from the *Corporate Enterprise Annual Statistics*, I ask whether financing constraints significantly affected corporate investment in land and other fixed assets. I take firms in the real-estate-related industries and for comparison the manufacturing industry, and examine their investments during 1983-2009. The data suggest two conclusions. First, financial constraints did not significantly affect medium- and long-term investment in equipment. Second, most firms have not faced serious financial constraints during the decades since 1983. Many scholars argue that such constraints contributed both to the "Bubble" during the second half of 1980s and the following recession since the 1990s, the "Lost Two Decades". The data, however, show no evidence that financing constraints prevented firms from investing in real estate or other tangible fixed assets.

These conclusions are consistent with those in other papers by Miwa, including Miwa [2011a]. They raise serious questions about the premises relating to Japanese financial markets that many scholars bring to their study of the Japanese economy. Investigating empirically the effectiveness of "financing constraints", they also have important implications for current research into macro-economic fluctuations.

I. Introduction

Research on Japanese corporate finance typically starts from the premise that banks decisively affect corporate behavior. Crucial to this premise in the Japanese context are two claims: that the strength of a firm's relationship with a specific bank (and the funds that the bank makes available to it) determines its financing constraints, and that those constraints decisively condition the way it behaves.

Using firm-level data from the *Corporate Enterprise Annual Statistics* (*Hojin kigyo tokei nenpo*, hereafter, CEAStat), I ask whether financing constraints significantly affected corporate investment in land and other fixed assets. I take firms in the real-estate-related industries and for comparison the manufacturing industry, and examine their investments during 1983-2009. The data suggest two conclusions. First, financial constraints did not significantly affect medium- and long-term investment in equipment. Second, most firms have not faced serious financial constraints during the decades since 1983. Many scholars argue that such constraints contributed both to the "Bubble" during the second half of 1980s and the following recession since the 1990s, the "Lost Two Decades". The data, however, show no evidence that financing constraints prevented firms from investing in real estate or other tangible fixed assets.

These conclusions are consistent with those in other papers by Miwa, including Miwa [2011a]. They raise serious questions about the premises relating to Japanese financial markets that many scholars bring to their study of the Japanese economy. Investigating empirically the effectiveness of "financing constraints", they also have important implications for current research into macro-economic fluctuations.

This view, symbolically written in Hoshi and Kashyap, [2001, p.310] that banks "were the only game in town", is widely accepted as the conventional wisdom[2] about the financial markets in Japan not only before the (alleged) process of "financial liberalization" in the 1980s, but also remains as true for most Japanese firms at present with the exception of small number of exceptionally excellent big companies which are allowed to use bond markets effectively.[3]

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[2] Corporations simply "did not have alternative sources of funding until the mid 1970s," explained Ito [1992, p.119]; "the domestic market was underdeveloped, and loans from abroad were not allowed." Consequently, "Japan's financial system was one of the most regulated and administratively controlled in the world" (Ito, 2000, pp.95-96). For a contrasting view, see Miwa [1996] and Miwa and Ramseyer [2004, 2006]. Also see Miwa and Ramseyer [2002] for the prewar Japan.

[3] See Miwa and Ramseyer [2006] for the defects of the conventional wisdom about the Japanese economy which includes this view as a part. Policy topics which have been

"Financing constraints" and the conventional wisdom about the Japanese financial markets

An important part of the premise (or the conventional wisdom) that banks play a decisive role in conditioning corporate behavior is a view that the strength of firm's relationship with financial institutions, a specific bank in particular, and the funds the bank make available to it, that is, the strictness of "financing constraints", decisively condition the firm behavior. Popular basic building blocks of the conventional wisdom of the Japanese economy, such as "corporate groups" (or "affiliation with major banks"), "*keiretsu* bank" (or *Main-bank*), and the dual structure in financial markets are all based on this view. It suggests that firms belonging to mighty "corporate groups" or big bank's *keiretsu* (or those backed by strong relationship with major "*keiretsu* banks" or *Main-banks*) enjoy an advantage in raising funds over firms without such advantageous conditions, and also expect bank's invaluable assistance in unforeseen circumstances. For this reason, those firms are aggressive in various fronts such as equipment investment, R&D, and sales promotion, becoming predominant in market competition, it implies.[4]

The view may be understood to be not as schematic as the ones mentioned above that contrast two control groups. Rather, it is widely accepted that, although the degree differs greatly, firms are placed under strict "financing constraints[5]" that decisively condition the firm behavior. The real issues here are the concrete content of the view and its realistic relevance. Rarely the view has been expressed with the concrete content of "financing constraints" and their working mechanism, firm's choice

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repeatedly emphasized over a long time as causes of and necessary remedies for the "Lost Two Decades", such as the banks' reluctance to extend loans to firms, small firms in particular, banks' delayed disposals of bad loans, delayed strengthening of the banks' financial bases, and increase in bank loans through additional (quantitative) monetary easing, are all based on this conventional wisdom. Miwa [2011a], demonstrating with evidence that the position of banks in the financial markets have been lower and the roles they actually played smaller than it has supposed, concludes that this conventional wisdom is a misperception of facts and a misunderstanding. We face a serious situation. Obviously it is a misfortune and tragedy to consume time and energy in prescription and treatment based on a wrong diagnosis. Liberating from the spell of the wrong conventional wisdom, we have to begin our work for appropriate prescription and treatment, posing problems and agenda upon new premise and foundations. See also Miwa [2011b, c, d, and 2012a].

[4] In fact, however, various versions seem to coexist side by side as the basic schemas in the conventional wisdom, each version of which is wrapped in obscurity in its definition, criteria for determination, and substance.

[5] Quite often it is expressed as "liquidity constraints" or "financial constraints". In this paper, I adopt "financing constraints".

set of alternatives under "constraints", firm's capacity to effectively accommodate the "constraints", or the description of details of and degree in "decisively conditioned" and "seriously influenced". There have been fewer chances to find the view with empirical evidence. On each individual issue over the view a broad consensus among supporters seems never to have been established.[6][7]

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[6] See "9.10 Empirical Application: Cash Flow and Investment" of Romer [2012, pp.447-51]. Referring to Fazzari, Hubbard, and Petersen [1988] and a series of researches that follow, he concludes: "the results support the importance of imperfect financial markets"(p.449). In the next "Kaplan and Zingales's Critique" at the front he summarizes: "The findings described above are representative of the results that have been obtained in this area. Indeed, for the most part the literature on financial-market imperfections is one of unusual empirical consensus. The bulk of the evidence suggests that cash flow and other determinants of access to internal resources affect investment, and that they do so in ways that suggest that the relationship is the result of financial-market imperfections." He continues, "Kaplan and Zingales (1997), however, challenge this consensus both theoretically and empirically", introduces their points and the controversy that followed. He concludes (p.451): "As this discussion makes clear, Kaplan and Zingales's work raises important issues concerning the impact of financial-market imperfections on investment".

Fazzari, Hubbard, and Petersen [1988] attracted attention primarily because (allegedly) they open a way to empirically test the conventional wisdom about "financial-market imperfections" and successfully prove the validity of the view. Immediately we witnessed a flood of empirical researches that support their conclusion, and, as mentioned above, "the literature on financial-market imperfections is one of unusual empirical consensus." Hoshi, Kashyap, and Scharftein [1991], well-known as a discovering report of the Japanese main-banks, is one of the representatives. (On this point and for the details of the defects of their paper, see Miwa and Ramseyer [2001, pp.342-50, and notes 11 and 12 on p.367], or briefly Chapter 4 of Miwa and Ramseyer [2006]. For the flowering in past years of main-bank research, see Horiuchi and Yoshino eds. [1992] and Aoki and Patrick eds. [1994].)

Since the first appearance, doubts and criticisms have been raised to Fazzari, Hubbard, and Petersen [1988], on various points. The first point of Kaplan and Zingales [1997] that their theory (hypothesis) is founded on an ad hoc and therefore unacceptable assumption is absolutely important. (Hubbard[1998], Figure 1 on p.196, by one of the authors of 1988 paper is useful for readers to understand the effectiveness of this criticism.)

The next point that appears at the end of Kaplan and Zingales's theoretical part is also important: "In sum, even in a one-period model, investment-cash flow sensitivities do not necessarily increase with the degree of financing constraints. In a multiperiod model, precautionary savings motives make it even more difficult to assess the theoretical relationship between investment-cash flow sensitivities and the degree of financing constraints" (p.176). As precautionary behavior of firms under "constraints" greatly alleviates their influence, the importance of those "constraints" might depend both on the firm's choice of countermeasures and on the length of time for preparations. I think also this point important, to which supporters of the view seem to pay little attention.

[7] On the current state of macroeconomics that has achieved rapid development and transformation in recent decades, Blanchard[2009, p.216] writes (underline by the

In this paper I focus on the corporate (equipment) investment behavior for acquiring and maintaining "land" and "tangible fixed assets other than land". Specifically, with reasons shown below, focusing on the "three real-estate-related industries" including the real estate industry and also the manufacturing industry during the second half of 1980s and the following "Lost Two Decades", I investigate the realistic relevance and validity of the conventional wisdom that the "financing constraints" have decisively conditioned the equipment investment behavior of Japanese firms.

'Three real-estate-related industries' during the second half of 1980s

With following reasons I pay particularly close attention to "three real-estate-related industries", that is, real-estate-, construction-, and distribution (wholesaling and retailing) industry, during the second half of 1980s.

About the financial markets and the corporate behavior in Japan during the 1980s, the following view is widely accepted as the conventional wisdom.[8] In the first half of 1980s Japan made a big progress in financial market liberalization, with which large excellent companies greatly expanded the active use of capital markets both at home and abroad, reducing their dependence on bank borrowings. As a result, particularly large excellent firms reduced borrowings from big banks. Losing loans to large excellent firms, big banks instead increased loans to firms they had placed little emphasis in the past, such as small firms and "not so excellent" ones. Expanding bank borrowing explosively, those firms alleged to have been under stricter financing

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present author): "Much of the current research on macro fluctuations can be thought of an exploration of the implications of various imperfections: Beyond nominal rigidities, what are the imperfections that matter the most for macro? How do they affect the dynamic effects of shocks? How do they introduce at least the possibility of additional shocks? What do we know about these dynamic effects, and how important are these shocks? With these questions in mind, I organize this section, going market by market (from labor markets to credit and financial markets and on to goods markets), and then take up some issues that cut across markets and that I see as largely unsolved."

"Frictions" is a fashionable jargon frequently used in combination with phrases like financing constraints, liquidity constraints, and financial-market imperfections. In his presidential address to the American Finance Association, after declaring, "models that emphasize frictions are becoming more and more popular, especially since the financial crisis", Cochrane [2011], on the recent trend to incorporate "irrational" agents, comments, "these agents are usually just convenient shortcuts rather than central to the vision". He argues it useful to classify frictions into three categories, that is, (1) segmented markets, (2) intermediated markets or "institutional finance", and (3) liquidity, and discusses the related topics (pp.1069-72).

[8] See Chapter 1 of Miwa and Ramseyer [2007] for the validity of this conventional wisdom.

constraints played the key roles as the leading players in the "Bubble" during the second half of the 1980s, from its emergence and expansion to collapse.

The conventional wisdom continues about the development of the Japanese economy after the collapse of the "Bubble". Both large excellent firms that expanded active use of capital markets and other firms that could obtain huge bank loans at much more favorable terms than in the past actively took part in "bubbly" activities, real-estate-related investment in particular. Notably among the latter many firms lost a huge money with the "Bubble" collapse, some of which became insolvent, resulting in a tremendous amount of banks' bad loans. Delayed disposals of those banks' bad loans by way of various routes hindered recovery of the Japanese economy, becoming a potent source of the "Lost Two Decades".[9]

It is necessary for this conventional wisdom to be valid that the Japanese financial markets satisfy either of the following two conditions. First, setting the interest rate (terms of trade) much below the market rate that balances demand and supply and thus creating vast excess demand, banks (or financial institutions) effectively ration credit in the market. Second, credit allocation by interest rate does not work well and instead banks (or financial institutions) ration credit in the market. As part of the credit allocation (or rationing) scheme by banks, quite often the importance of relationship between firm and specific bank ("main-bank" or *keiretsu* bank, for instance) is emphasized. It is the conventional wisdom about the financial markets in Japan not only before the (alleged) process of "financial liberalization" in the 1980s, but also for most Japanese firms at present with the exception of small number of exceptionally excellent big companies which are allowed to effectively use bond markets.

As shown in Miwa [2011a, b], at least since the 1960s firms have maintained dependence on financial institutions (=the ratio of total borrowing from financial institutions to total assets, hereafter, the "bank dependence ratio") well below the level that the conventional wisdom has claimed. Under the recent "zero-interest-rate, quantity easing" monetary policy, this "independence of the firm from banks" has increased further. This tendency is clearest among the smaller firms. At the mere mention of this concise observation, many readers would raise serious doubts on the conventional wisdom.[10]

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[9] Caballero, Hoshi, and Kashyap [2008] and Ogawa [2009] represent the conventional wisdom that delayed disposal of banks' bad loans was a potent source of the "Lost Two Decades". See Miwa [2011c] about the validity of this conventional wisdom and for a critical review of the literature supporting the view including those articles.

[10] Also on seeing the number of financial institutions, many would wonder, "How banks

As mentioned above, rarely this conventional wisdom has been expressed with the concrete content of "financing constraints" and their working mechanism, firm's choice set of alternatives under "constraints", firm's capacity to effectively accommodate the "constraints". There have been fewer chances to find the view with empirical evidence. On individual issues over the view a broad consensus among supporters seems never to have been established. The real issues here are the concrete content of the view and its realistic relevance. It is easy neither to critically review the conventional wisdom nor to empirically investigate the validity of the view of "financing constraints" as its part.

Focusing on the "three real-estate-related industries" including the real estate industry and also the manufacturing industry during the second half of 1980s and the following "Lost Two Decades", in this paper I investigate the realistic relevance and validity of the conventional wisdom that the "financing constraints" have decisively conditioned the equipment investment behavior of Japanese firms.

Firm decides its behavior taking various factors and constraints into consideration. However important they might be, "financing constraints" are part of them. As a result, even when they are decisive, in quiet times it is not easy to successfully identify the effectiveness of "financing constraints". In Japan during the second half of 1980s, with "liberalization" in financial markets and resulting change in banks' lending behavior, the firms' equipment investment behavior drastically changed, resulting in the emergence and expansion of the "Bubble" (and its collapse in the 1990s), the conventional wisdom argues. I focus on this period, recognizing it as a useful and valid "laboratory" to empirically investigate the effectiveness of "financing constrains".

Under the (allegedly) strict "financing constraints", during this period the funding behavior of large excellent firms changed with "liberalization" and at the same time banks' lending behavior greatly changed. By closely studying the relationship between firms' funding behavior, borrowings from banks in particular, and their equipment investment behavior, it is possible to successfully identify the reality and effectiveness of the "financing constraints" (see below for the specific approaches of this paper). The "three real-estate-related industries" during this period are expected to be the best stage to observe the relationship most clearly, and therefore the most suitable for this study. It is a research design to identify and investigate the details and function of "financing constraints", first by choosing the most suitable stage (period, spot,

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could have maintained an effective rationing scheme the conventional wisdom suppose?" At a conference held in London 15 years ago, a prominent economist just returned from the US was simply shocked at my presentation: "What is this? I have thought for a long time that there are only six big banks in Japan…"

variables) for study, and then by studying the influence of an exogenous shock provided to this stage.[11]

As shown in detail in Miwa [2012a], the Japanese economy during the second half of 1980s was an "equipment investment boom" era when many firms in many sectors actively invested in "tangible fixed assets other than land", that is, equipment (or capital) investment, rather than the "Bubble Era" when many firms in some sectors made frantic efforts in real-estate-related investment as the conventional wisdom argues. Based upon this standpoint, I add the manufacturing industry as representative of "other industries" to the examination object for comparison with the "three real-estate-related industries". I investigate also the relationship between the "tangible fixed assets other than land" investment and the "financing constraints".

This paper studies corporate (equipment) investment both in "land" and "tangible fixed assets other than land", and I use firm-level data from the "Corporate Enterprise Annual Statistics" (CEAStat), rather than the "Corporate Enterprise Quarterly Statistics" which I used in Miwa [2011a, b] for example.

In CEAStat, "borrowings from financial institutions" is classified into "short-term-" that shall be repaid within a year and "long-term-". I use the data on "Total Borrowings" (= "short-term-" + "long-term-") rather than those on "long-term borrowings". "Long-term debt" that shall be repaid within a year is classified into "short-term debt" and quite often "short-term" debt (loan) is provided on a tacit agreement to roll over after the loan limit.

Five attention points for investigation and two important conclusions

About the conventional wisdom neither the content nor the supporting logic and evidence are clear. Therefore, it is not easy to straightforwardly test the "hypotheses" or predictions drawn from the conventional wisdom. Reader frustrated with this paper's approaches, maybe arguing that the present author mistook and distorted the conventional wisdom, should clarify its content and confirm the validity alternatively with data.

Little information is available about the concrete content of "financing constraints", how the "constraints" take shape and function, and how they differ by purpose of loan, industry, time, firm size, and other environmental conditions. For this reason, I list below the basic attention points for investigation, along which I prepare

[11] This paper and Miwa [2012a] are both based on Miwa [2011d]. They are mutually complementary and for beginning what I anticipate will become a full-fledged study of corporate behavior and the Japanese economy during this period and the following so-called the "Lost Two Decades".

the variables and data set in Section II and conduct empirical studies in the following sections. Also I briefly introduce below two important conclusions of this paper.

Any part of what follows does not support the conventional wisdom. To readers unhappy either with the approaches and conclusions of this paper, or the interpretation of the conventional wisdom, choice of approaches or their design, I hope to clarify the content in detail, and present new investigation results based on alternative empirical grounds. Raising strong doubts upon the simple and concise investigation, I have no other choice than to conclude that what seems to be a "myth" grossly deviating from the reality has long been widely accepted as the conventional wisdom about the "financing constraints".

I focus on five points for empirical investigation, which form three sets of attention points. The first three points, from point (1) to point (3), as a group goes hand in hand. Point (4) and point (5) respectively represent alternative sets, each consisting of three points corresponding to point (1) to point (3). For more details see the pertinent parts below.

[point (1)]: First, if "financing constraints" seriously condition the corporate behavior, bank loans must be more favorable for firms than other funding sources. Hence, the bank dependence ratio (=ratio of bank loans to total assets) of firms with the same (or similar) characteristics including "financing constraints" would be the same (similar). Reader may wonder, "Why firms without urgent fund-raising needs would borrow?" Funding with favorable loan condition enables the firm to expand the investment opportunity including the increase in trade credit supply. For this reason, particularly from medium- and long-term perspective, this criticism does not hold.

[point (2)]: Second, if banks' lending behavior greatly changed, easing the "financing constraints", like in Japan during the second half of 1980s, many firms would have raised the bank dependence ratio. If banks made a course correction after the collapse of the "Bubble", firms' bank dependence ratio would have fallen in chorus.

[point (3)]: Third, as its part the conventional wisdom argues that "financing constraints" have been consistently stricter for small businesses and firms in the "three real-estate-related industries" than for big firms and in other industries. Then, on average in the long-run the bank dependence ratio has been lower in firms in smaller size category and in these industries, and it rose faster there during the second half of 1980s and fell faster in the 1990s.

[point (4)]: Fourth, if "financing constraints" differ depending on loan purpose and they are stricter (or looser) for real-estate-related loans, it would be informative to apply those three points, from point (1) to (3), to the relationship both between the ratio

of real-estate-related investment to bank borrowing and the ratio of change in real-estate-related investment to change in bank borrowing.

[point (5)]: Fifth, as shown in Miwa [2012a], the Japanese economy during the second half of 1980s was an "equipment investment boom" era rather than the "(land) Bubble" era. Based on this point, it would be informative to apply the three points, from point (1) to (3), to the relationship between the (narrowly defined) equipment investment behavior in building, possessing, and using "tangible fixed assets other than land" and bank borrowing. The same holds also to the (widely defined) equipment investment behavior in "total fixed assets (=tangible fixed assets other than land + land).

Following examinations reach two important conclusions.

First, at least in relation to corporate behavior in medium- and long-term perspectives like equipment investment, I find no supporting evidence for the view that the strict "financing constraints" have decisively conditioned the corporate behavior in Japan. Concerning with these sides of the corporate behavior, we need to be careful in accepting the conclusions and claims based on the effectively strict "financing constraints".

Second, the conventional wisdom about the diagnosis and treatment both on the process of the emergence, expansion, and collapse of the "Bubble" during the second half of 1980s and the following long-lasting stagnation called the "Lost Two Decades" has been based on the premise of the effectively strict "financial constraints". Throughout the period, however, I find no evidence that supports this premise, in relation to investment behavior for tangible fixed assets including real estate. We need to clarify the content and carefully examine the grounds for the conventional wisdom and its acceptance.

The conclusions of this paper are consistent with the ones of a series of Miwa's papers including Miwa [2011a]. They raises serious questions over the conventional wisdom about the financial markets in Japan which is constructed upon this premise and maintained for a long time, suggesting that research, policy and related discussions developed and enforced upon this conventional wisdom have been fatally flawed. Much of the current research on macro fluctuations emphasizes frictions in credit and financial markets, to which, investigating empirically the effectiveness of "financing constraints", also the conclusions have important implication.[12]

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[12] Particularly the recent "financial crisis" has raised interest in theoretical models with key phrases like "financial fragility", "impact of illiquidity at one link in the credit chain", including Kiyotaki and Moore [1997] and Allen and Gale [2007, Ch.5]. As with the case of financing constraints, liquidity constraints, and financial-market

Structure and Roadmap

Section II provides the basic information on data and variables. Sections from III to V examine the realistic relevance and validity of the "financing constraints" view of the conventional wisdom. Section III studies "Ratio of Total Bank Borrowings to Total Assets." Total borrowings is the sum of short-term- and long-term borrowings. The primary focus of this Section is placed upon the first 3 points, from point (1) ~ point (3), mentioned above. Sections IV and V become paired. Section IV, "Distribution of land/TLoan and dland/dTLoan: real estate-, manufacturing-, and distribution industry", studies the relationship between real-estate-related investment and bank borrowing, that primarily focuses on the point (4). Section V, "Distribution of fixedA/TLoan and dfixedA/dTLoan: manufacturing-, distribution-, and real estate industry", studies the relationship between equipment investment (both in narrowly- and broadly-defined) and bank borrowing, that primarily focuses on point (5). Section VI briefly concludes.

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imperfections, in applying models with those key phrases to the analysis and interpretation of phenomena and observations, it is essential to clarify the substance and carefully discuss the appropriate applicability. The conclusions of this paper raise serious questions over the validity and applicability of the conventional wisdom about "financing frictions" to studying corporate investment behavior for "tangible fixed assets", suggesting that careful discussion is essential for applying models with those key phrases.

For the choice of "frictions" as research object and the evaluation and measurement of its effectiveness, see Chari, Kehoe, and McGrattan [2007, 2008]. The former begins as follows: "In building detailed, quantitative models of economic fluctuations, researchers face hard choices about where to introduce frictions into their models to allow the models to generate business cycle fluctuations similar to those in the data. Here we propose a simple method to guide these choices, and we demonstrate how to use it" (p.781).

More generally, see the description quoted below and the following part at the opening of "Price Adjustment in the Long Run" of Barro [2008, p.397] "Chapter 16. Money and Business Cycles II: Sticky Prices and Nominal Wage Rates": "Our analysis of the new Keynesian model applies in the short run, when we do not allow for adjustments in the prices, P(*j*), set by each firm *j*. In the longer run, the prices adjust, and these adjustments tend to undo the real effects from a change in the nominal quantity of money, M." By association, see point 3 of "Alternative diagnosis"? in "X. Conclusion" of Miwa [2011c].

II. Data and Variables

In this research I use firm-level data from the *Corporate Enterprise Annual Statistics* (CEAStat), from Fiscal Year(FY)[13]1983 to FY2009.

Hojin kigyo tokei (Corporate Enterprise Statistics, CEStat) of the Ministry of Finance, consisting of *kiho* (Quarterly Statistics) and *nenpo* (Annual Statistics), is an excellent and useful statistics that provides basic information about financing behavior of Japanese firms. Indeed, there are few comparable sources available in the world.

First, and above all, it provides information about financing behavior of firms that are on the demand side of financial market, rather than institutions in fund management like financial institutions on the supply side. Second, CEStat (CEAStat) is the only random-sampled statistics in Japan that provides well-balanced balance-sheet information about financing behavior of firms on the demand side of financial markets. On small businesses in particular, it is the only reliable statistics. Third, CEAStat surveys outstanding amount of items on firm's balance-sheet both at the beginning and at the end of each fiscal year. In contrast, most other data-sets like securities filings of listed firms have a collection of firm's accounting (annual) reports. It is based on each firm's choice of accounting term (year), which inevitably varies among firms.

Fourth, firms raise funds from a wide variety of sources, and, as shown in Miwa [2011a], the ratio of funds from financial institutions like banks to the total assets has not been so high as is widely perceived. Traditionally, however, in the case of Japan primary source of financial data have been provided by the Bank of Japan, most of which is collected from financial institutions. As a result, they place the greatest focus on the activities of financial institutions, like bank lending and deposit. A wide variety of financial activities and transactions in financial markets tend to be out of their direct concerns, and little information about so many important items on firm's balance-sheet is available in widely used financial data-sets (or statistics). In contrast, by directly collecting data from financing firms, CEStat (CEAStat) provides rich information about items, which have been neglected or viewed as unimportant by the authorities and researchers of financial markets.[14]

CEAStat classifies firms into several size categories, by the size of paid-in capital at the beginning of fiscal year, of which I use 5 size categories with paid-in

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[13] In Japan the fiscal year begins in April and ends in March, and FY1983 began in April 1983.

[14] For detailed information of CEStat (CEAStat), firm-level data in particular, and more detailed discussion of its advantage mentioned in the text, see Section II of Miwa [2011a or 2012b].

capital over ¥10 million. The five categories include 10~20, 20~50, 50~100, 100~1,000, respectively in million yen, and more than ¥1 billion. Hereafter, I use notation from 5 to 9, respectively, for each size category (v4). CEAStat calls the three smaller categories "small firms (literally, small and medium firms)", those which are in v4=8 "mid-sized firms", and those in v4=9 "big firms".[15]

CEAStat is a sample survey, whose sample rates greatly differ across size categories. With the exception of the category for the big firms (v4=9) where survey is a census, the samples surveyed are all renewed at the beginning of each fiscal year, at the beginning of April. Particularly during the 1980s the number of firms in v4=9 remarkably increased. In addition, although considerably high, response rate is below 100% (on average 80% in 2004).

In this research I use two types of variables, "level variables" and "difference variables". Suppose y^i_t stands for the outstanding amount of financial item i at time t, total borrowings from financial institutions, for instance, and w_t the total assets. The first type of variables, level variables, l^i_t, is y^i_{t-1}/w_{t-1} (*100), and the second one, d^i_t is $(y^i_{t-1} - y^i_t)/w_{t-1}$ (*100).

Note that I use the ratios of financial items, typically "level variables", l^i_t, like the ratio of total borrowings to total assets ("bank dependence ratio"), at the beginning of the fiscal year, in which the ratio at FY2004 stands for the one at the end of FY2003. Therefore, $l^i_t = y^i_{t-1}/w_{t-1}$ (*100). Also for "difference variables", d^i_t, the ratio at FY2004 stands for the ratio of change during FY2004 to the total assets at the beginning of FY2004. Therefore, $d^i_t = (y^i_{t-1} - y^i_t)/w_{t-1}$ (*100).

Table 1 shows the list of variables.

	Table1. List of Variables			
		outstanding amount	level variable	difference variable
		(at the end of the fiscal year)	dependence ratio	change in dependence ratio
			composition ratio	change in composition ratio
		at time t	at time t	at time t
	variable (in value): y^i	y^i_t	$l^i_t=y^i_{t-1}/w_{t-1}$	$d^i_t=(y^i_{t-1}-y^i_t)/w_{t-1}$
1	land (real estate)	$land_t$	$lland_t=land_{t-1}/w_{t-1}$	$dland_t=(land_{t-1}-land_t)/w_{t-1}$
2	tangible fixed assets other than land	$fixedA_t$	$lfixedA_t=fixedA_{t-1}/w_{t-1}$	$dfixedA_t=(fixedA_{t-1}-fixedA_t)/w_{t-1}$
3	total tangible fixed assets	$TFixedA_t = land_t + fixedA_t$	$lTFixedA_t=TFixedA_{t-1}/w_{t-1}$	$dTFixedA_t=(TFixedA_{t-1}-TFixedA_t)/w_{t-1}$
4	total borrowing from financial institutions*	$TLoan_t$	$lTLoan_t=TLoan_{t-1}/w_{t-1}$	$dTLoan_t=(TLoan_{t-1}-Tloan_t)/w_{t-1}$
5	inventry**	$TInventry_t$	$lTInventry_t=TInventry_{t-1}/w_{t-1}$	$dTInventry_t=(TInventry_{t-1}-TInventry_t)/w_{t-1}$
6	total assets	w_t		
	v4: firm size category (=5, 6, 7, 8, 9)			
	*: total borrowing = short-term- + long-term borrowing			
	**: inventory (stock on hand) = "products" + "goods-in-process" + "raw materials and supplies"			

Variables (1)~(4) and their combinations form the basis. "Level variables" and

[15] The average number of persons engaged in firms in the manufacturing industry at the third quarter of FY2004 in each size category is for v4=5~9, 17, 45, 101, 200, and 1,333, respectively. For more information, see Miwa [2012b] Table 3b on page 277.

"difference variables" for variables (1) ~(4), their ratios to the total assets form the basis. In addition, the ratios of variables (1)~(3) to variable (4), such as level variables (=lland/lTLoan) and difference variables (=dland/dTLoan) for the ratios of variables (1)~(3) to variable (4), play key roles. I use variable (5) only in Subsection IV-3 (reference).

Basically, both level variables and difference variables are the ratios of y^i_{t-1} and $(y^i_{t-1} - y^i_t)$ to w_{t-1}, respectively. The ratios for land (l^1_t and d^1_t) and those for tangible fixed assets other than land (l^2_t and d^2_t) are on the common denominator, and therefore directly comparable. The same holds for comparison between firms across different size categories.

The difference variable for y^i_t, d^i_t, is defined as $(y^i_{t-1} - y^i_t)/w_{t-1}(*100)$, and therefore it becomes negative when y^i_t increases during the fiscal year.

The CEStat (CEAStat) surveys firms on a single entity base, rather than a combined one. For example, neither provision of security for affiliated company's bank borrowings nor land acquisitions through affiliated companies are surveyed.

In this paper, for instance both for l^i_t ($lTLoan_t$) and d^i_t ($dTLoan_t$), respectively, in Section III I show the transition of p10, p25, p50, p75, and p90 (p stands for percentile).

III. Ratio of Total Bank Borrowings to Total Assets: Distribution of lTLoan and dTLoan – the case of real estate industry, and the cases of construction, distribution, and manufacturing, and also entertainment and lodging

The strength of firm's relationship with banks, particularly the one with a specific bank, and the funds the banks make available to it, together with loan conditions, determines its financing constraints, and those constraints decisively condition the way it behaves. During the second half of 1980s, firms under relaxed financing constraints intensified real-estate-related investment, generating and expanding the "Bubble". With the elimination and disappearance of conditions that enabled it, the "Bubble" collapsed, resulting in the explosion of non-performing bank loans (or "bad loans"). This series of phenomena (or this process) is a major cause of the long recession, the "Lost Two Decades", since the 1990s. About the Japanese economy since 1980s, a view like this has been influential as the conventional wisdom, and obtained a broad support both from academics and the public.[16]

Section III studies the distribution of the ratios of total bank borrowings to the total assets, both $lTLoan_t$ and $dTLoan_t$. Total borrowings ($TLoan_t$) is the sum of short- and long-term bank borrowings. (In the following sections I study the cross-relationship among lland、dland、lTLoan、and dTLoan.) Thus,

$lTLoan_t = TLoan_{t-1}/w_{t-1}(*100)$, and

$dTLoan_t = (TLoan_{t-1} - TLoan_t)/w_{t-1}\ (*100)$.

The view that, focusing on the funds that banks make available to it, Japanese firm is placed under strictly binding financing constraints has long been broadly accepted as the conventional wisdom. It has contributed mush to the formation, acceptance, and establishment of the conventional wisdom about the "Bubble". Along the longstanding conventional wisdom about the "financing constraints", it claims that

[16] About the Japanese economy, a view symbolically expressed as banks "were the only game in town" (Hoshi and Kashyap, 2001, p.301) has been irresistibly influential. As a result, the primary focus of study and discussion about the "Bubble" during the second half of 1980s and the "Lost Two Decades" has been placed upon banks and bank loans. Backed also by the conventional wisdom about the Japanese economy such as corporate groups, *keiretsu*, and main banks, this tendency (or the deflection) is the Japanese characteristic of the "Bubble". This view, however, is fundamentally flawed in that it is a "myth" decisively deviating from the reality. See Miwa [2011a, b]. For the defects of the dominant view of the "Lost Two Decades", see Miwa [2011c].

the quantitative explosion of bank lending and change in its direction of allocation during the second half of 1980s brought on (some) firms' "bubbly" real-estate-related investment, generating and expanding the "Bubble", the collapse of which through a dramatic accumulation of bank bad loans contributed much to the recession since the 1990s, the "Lost Two Decades".

Focusing on the distribution of lTLoan and dTLoan, in Section III I examine the real relevance of the conventional wisdom that the Japanese firms have been placed under strict "financing constraints". Expecting the "three real-estate-related industries" during the second half of 1980s to clearly observe and identify the phenomena it claims, I consider them as "laboratory" for examining the real relevance of the conventional wisdom. Here I place focus on the three points, points (1)~(3), mentioned above in Section I. Upon the conclusions in Section III, in Section IV I investigate the relationship between the "financing constraints" and the real-estate-related investment, along the point (4), and in Section V the relationship between the "financing constraints" and equipment investment, along the point (5). All the investigation results in Sections III~V in unison raises strong doubts on the real relevance of the conventional wisdom that Japanese firms have been placed under strict "financing constraints".

III-1. Distribution of lTLoan and dTLoan in the Real Estate Industry: all firms and by firm size

Predictions of the conventional wisdom

The conventional wisdom that Japanese firms have been placed under strict "financing constraints", symbolically written in Hoshi and Kashyap [2001, p.301] that banks "were the only game in town", is unclear in concrete content, theoretical foundation, and empirical evidence, and it is not easy to examine its real relevance.[17]

The content, theoretical foundations, and empirical evidence of the claim are all unclear. There is no broad consensus about the claim even among its advocates and supporters. It is reckless and futile to directly examine the claim closely, and impossible to effectively examine its real relevance. In this paper, I first list a set of predictions drawn from the conventional wisdom, and then contrast them with the observations drawn from the data.

[17] Using firm-level data from Corporate Enterprise Quarterly Statistics, in Miwa [2011a, b, and 2012b] I pointed a series of phenomena to be called the "further independence of the firms from the banks" and raised a fundamental doubt to the real relevance of this conventional wisdom.

In Section III I focus on the three predictions.

First, for all firms bank borrowing is relatively advantageous funding method, and bank loans are allocated as if they are "rationed" by banks. As all firms increase bank borrowings to the credit line, the lTLoan of firms distribute on the same (or similar) level. (Firms that do not borrow to the credit line do not take advantage of making profit by relending the unused credit line to other firms.)

Second, the dTLoan of firms reflect the change in "rationing" quotas, and for most firms both its value and direction is the same (or similar), the variance of which is smaller than that for lTLoan. It is unlikely to observe an extreme value of dTLoan on only a small proportion of firms.

Third, small businesses and firms in the "three real-estate-related industries" have been placed under stricter "financing constraints". During the second half of 1980s, however, banks, losing important borrowers with financial liberalization, relaxed the credit line and increased explosively loans to those firms as alternative borrowers. As a consequence, in normal times the values of lTLoan of those firms are relatively low, and during this period the value of lTLoan dramatically increased and the dTLoan showed a big negative value. Since the 1990s we observe the opposite.

In Miwa [2011d] on which this paper is written, using figures both on all firms and on by five firm size, I reach the following conclusions. I find no remarkable difference in distribution figures by size, implying little importance in displaying them comprehensively. Because of space limitations, for industries other than the real estate industry I show below only figures for v4=8. For other figures on all firms and by size, see Section V of Miwa [2011d].[18]

Summary of the study on the real estate industry

All three predictions of the conventional wisdom mentioned above significantly deviate from the data. Here I summarize the study of the real estate industry in Subsection III-1, and readers should note that the following studies of other industries including the manufacturing industry are rarely different.[19]

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[18] For information on the number of firms under survey by industry and by size, see VI-2 and VIII-1 of Miwa [2011d], or in brief Miwa [2012a].

[19] Particularly in recent Japan, in parallel with an expression "deflations", we observe an increasing number of references to the "Debt-Deflation Theory" of Irving Fisher [1933] (Yoshikawa [2009], for example). If firms plunge into over-indebtedness during boom periods and also if they experience fall of prices during recessions, there appears a vicious circle of deflation and increasing debt, it argues. (So, quite often it is called "deflation-spiral theory".) Unfortunately, however, "over-indebtedness" is ill-defined. Moreover, as shown below, in Japan during the boom of the second half of 1980s we

In the real estate industry, $lTLoan_t$ consistently dispersed widely, and there was no difference in its pattern by firm size. With the exception of v4=9, not only the values of p10 but also those of p25 were consistently 0.

Note four points for $dTLoan_t$.

First, with some exceptions in v4=9, the values of p50 were consistently 0.

Second, the absolute value of p25 rarely exceeded 10% even during the second half of 1980s.

Third, as the movement of p10 and p25 values shows, in the real estate industry most firms that dramatically increased bank borrowings during the second half of 1980s were not small businesses. Rather, many such companies in this industry were big.

Fourth, the values of p90 consistently stayed at plus 10% level (rather than minus).

The second point implies that the number of real estate companies that dramatically increased total bank borrowing during this period, if any, was not large. The third point runs contrary to the conventional wisdom that the leading players of the "Bubble" were small-scale real estate businesses that could drastically increase bank borrowing. The fourth point shows that every year more than 10% of firms under survey decreased bank borrowing in the amount more than 10% of the total assets, for which the second half of 1980s was no exception.

From the second half of 1980s to the end of 1990s, the distribution of lTLoan rather consistently rose, getting away from 0. Since around 2000, however, it consistently declined toward 0. Since the beginning of 1990s the government imposed tighter regulations on real estate investment financing loans, and since the beginning of 2000s the Bank of Japan adopted a quantitative ultra-easy monetary policy. So, this observation might surprise many readers familiar with those well-known events.[20]

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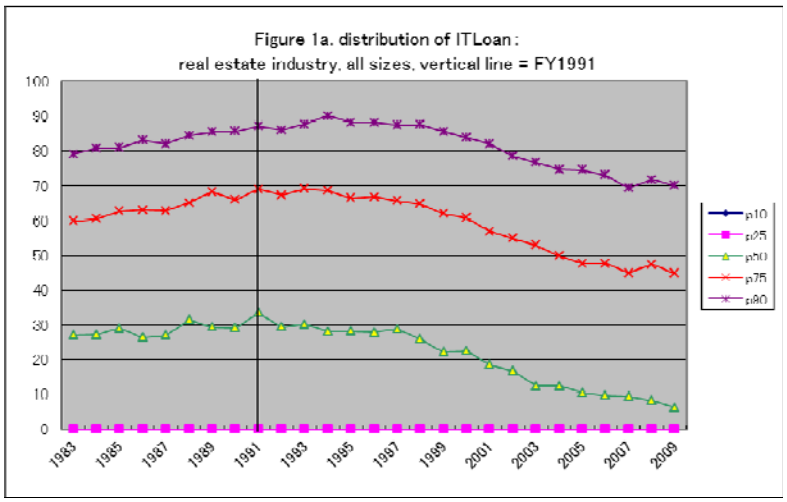
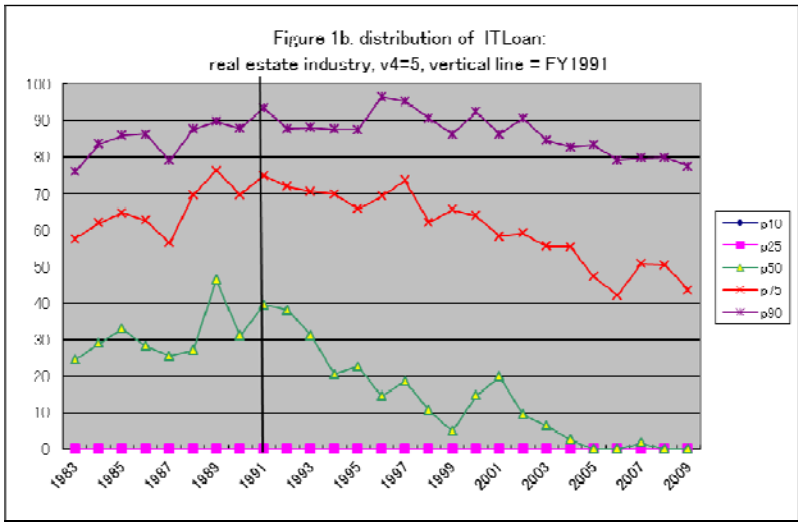
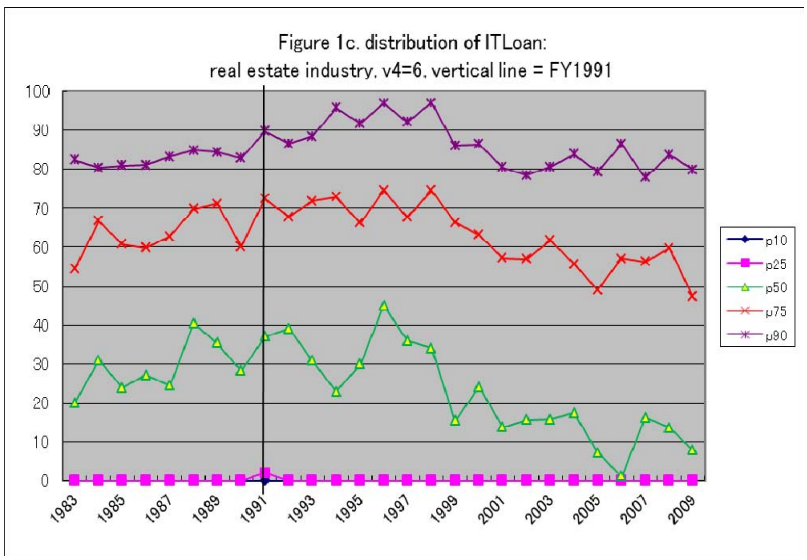
observe no dramatic increase in chorus in lTLoan (bank dependence ratio) in industries attracting attention. We find no opposite movement in the 1990s. The same applies either when we see those industries by firm-seize or when we focus on the p75 or p90 values rather than the median. Even when Fisher's "theory" is clear and correct, clearer reasoning and persuasive evidence seem to be absolutely necessary to claim that it applies to the Japanese economy since the second half of 1980s, since the 1990s in particular. Incidentally, Fisher emphasizes "over-investment and over-speculation" (p.341). However, he argues that "new opportunities to invest at a big prospective profit" is "a prime cause leading to the over-indebtedness of 1929"(p.348), rather than "financing constraints".

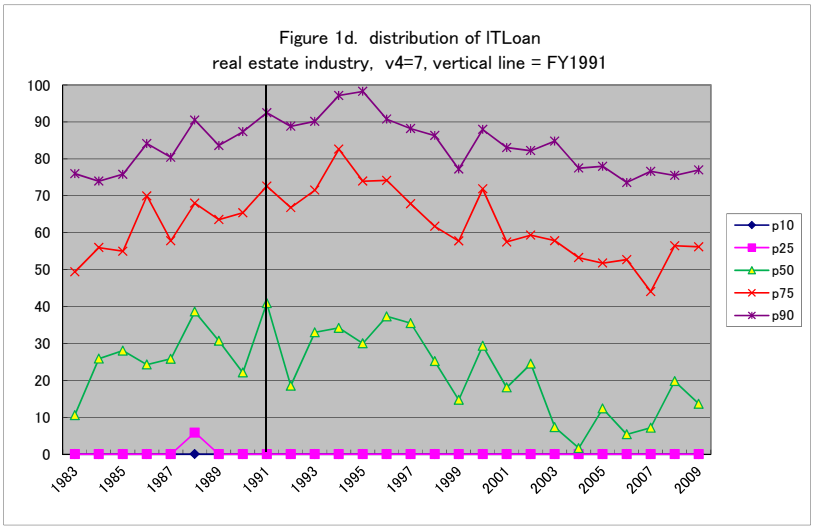
[20] It is part of the observations which I called in Miwa [2011a, b] the "(further) independence of the firms from the banks".

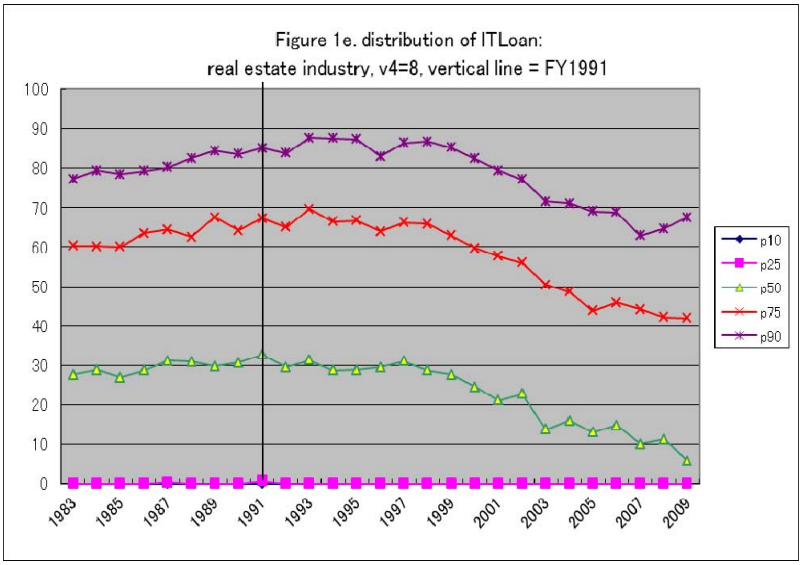
Distribution of lTLoan in the real estate industry

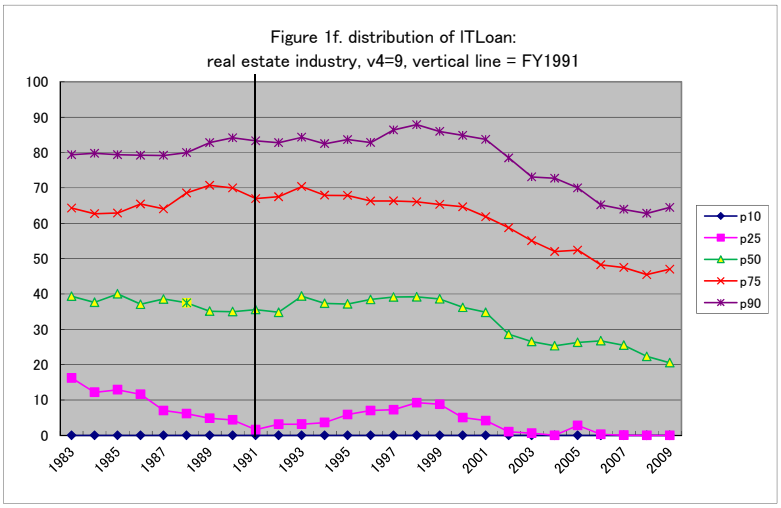












Distribution of dTLoan in the real estate industry

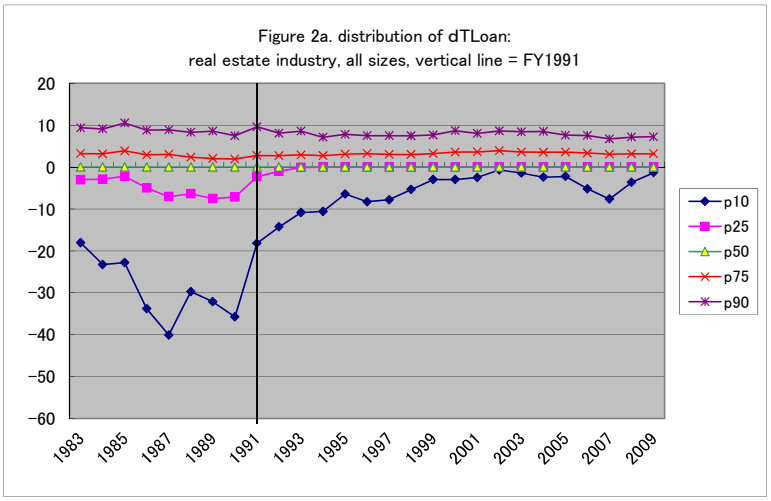


Figure 2a. distribution of dTLoan:
real estate industry, all sizes, vertical line = FY1991
20
10
0
−10
−20
−30
−40
−50
−60
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
p10
p25
p50
p75
p90

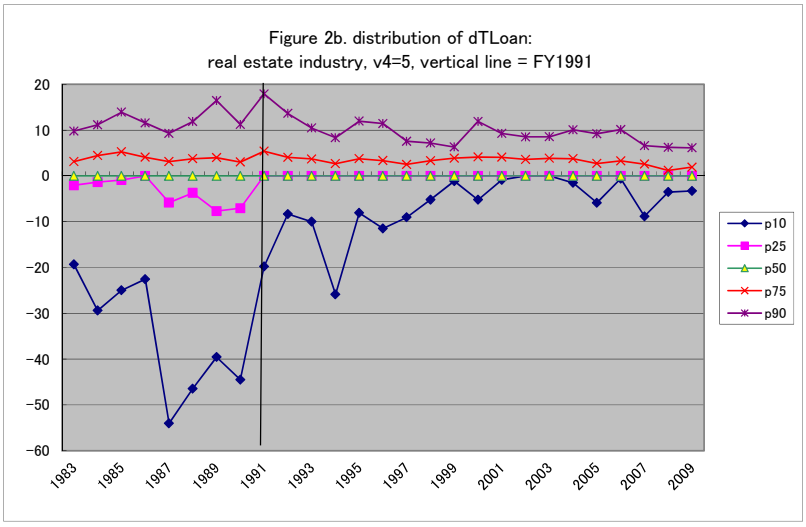


Figure 2b. distribution of dTLoan:
real estate industry, v4=5, vertical line = FY1991
20
10
0
−10
−20
−30
−40
−50
−60
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
p10
p25
p50
p75
p90

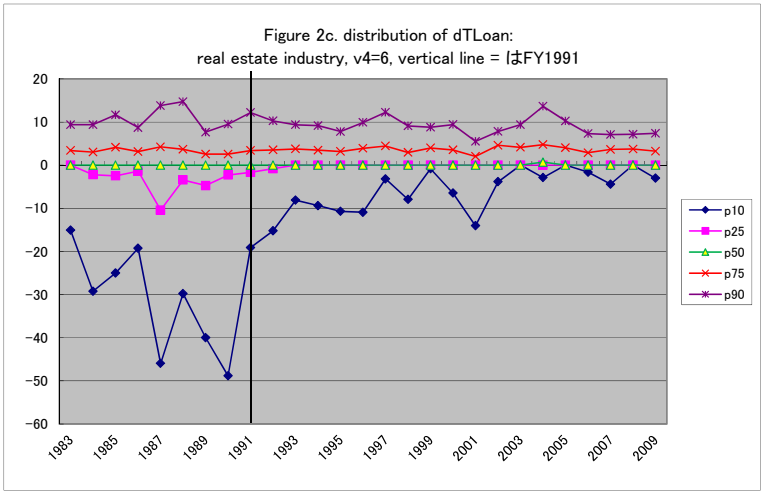
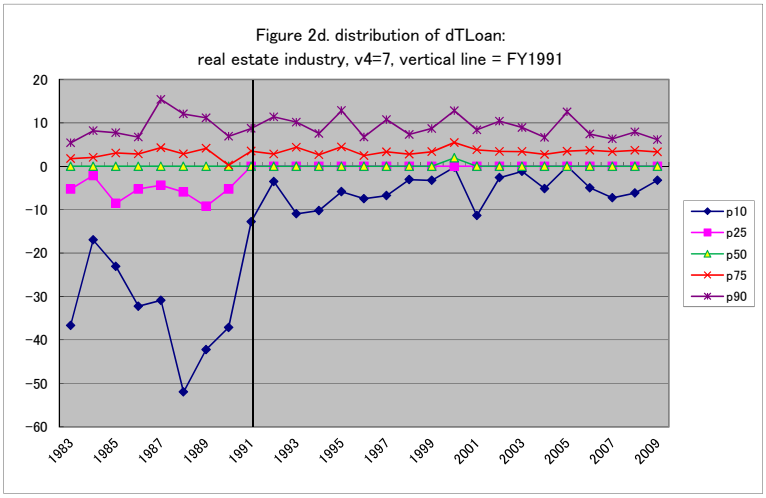
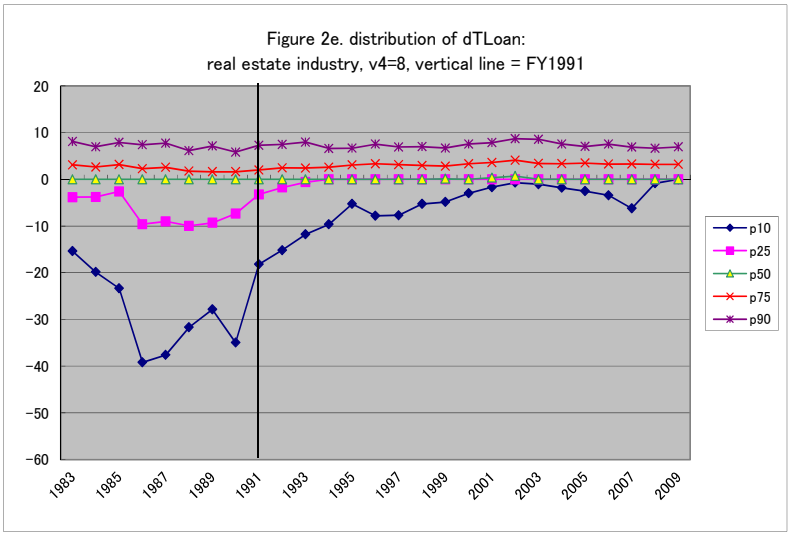
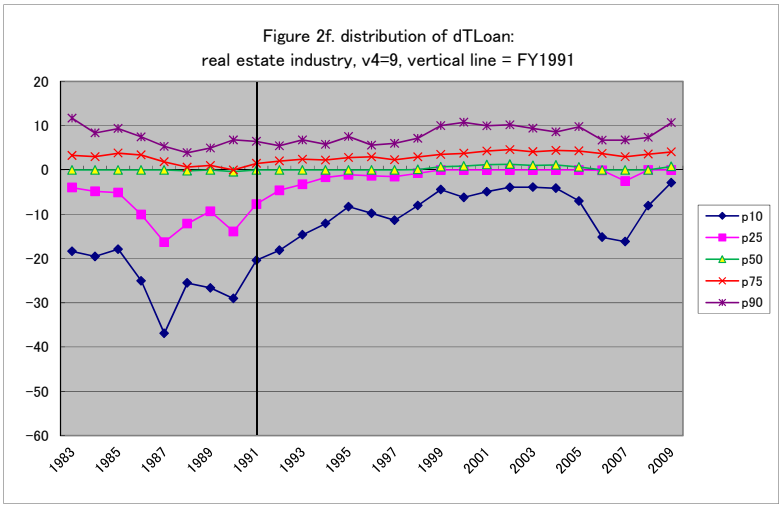


Figure 2c. distribution of dTLoan:
real estate industry, v4=6, vertical line = はFY1991
20
10
0
−10
−20
−30
−40
−50
−60
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
p10
p25
p50
p75
p90

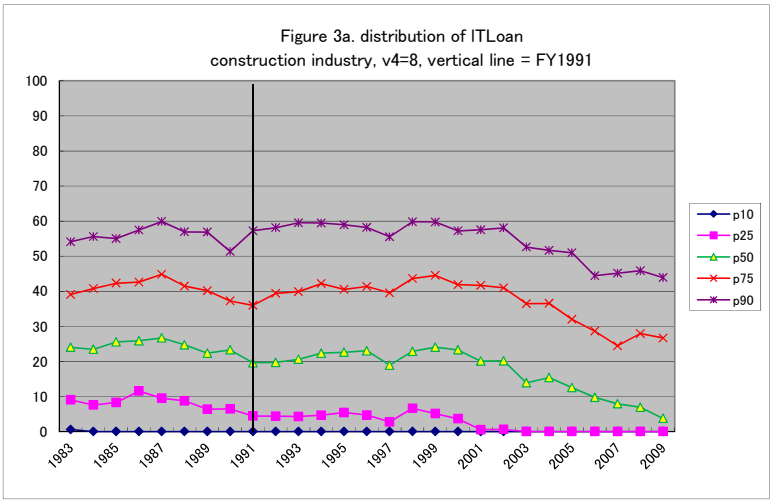


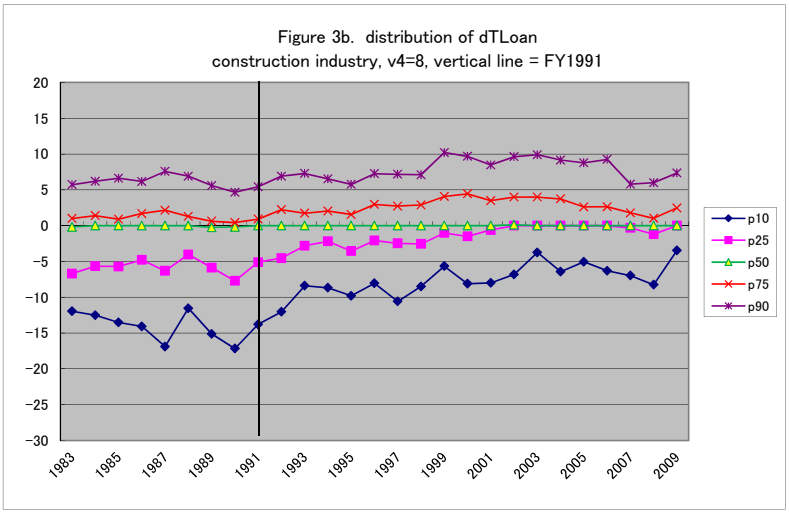




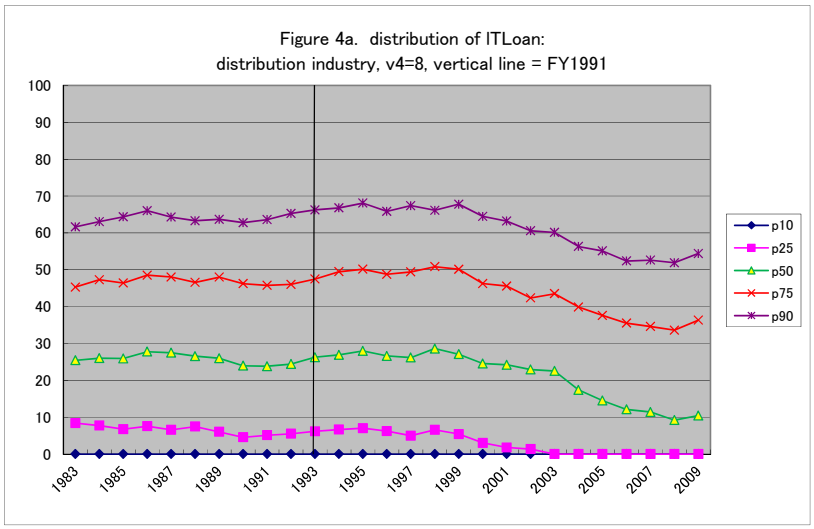
III-2. Distribution of lTLoan and dTLoan in the Construction-, Distribution-, and Manufacturing Industry: v4=8

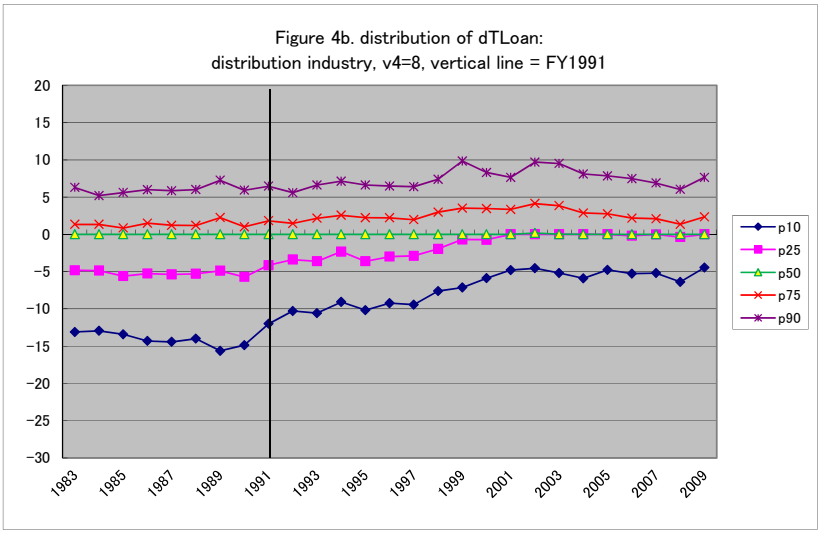
Construction industry



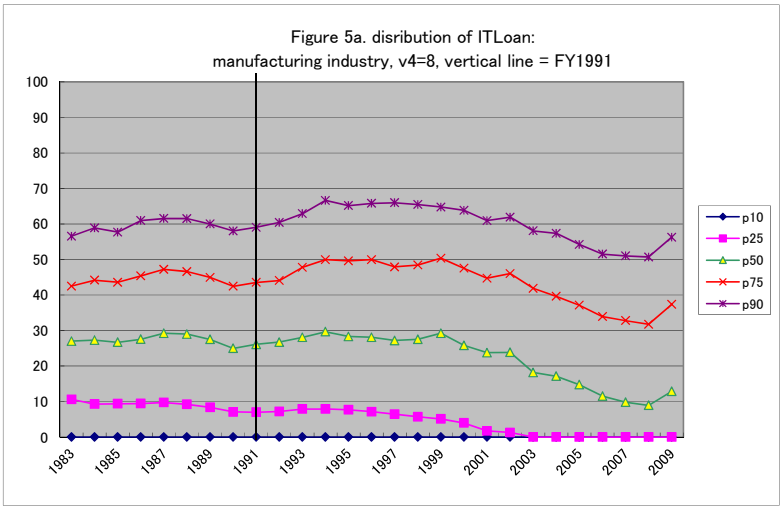


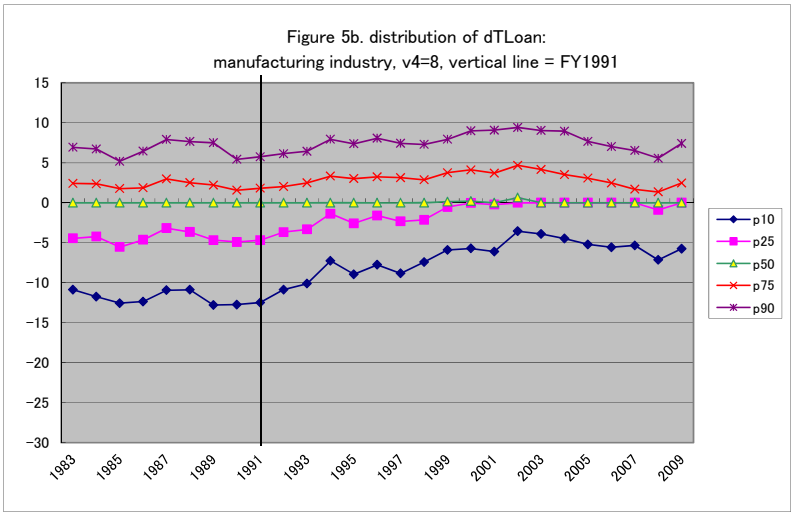
Distribution industry





Manufacturing industry

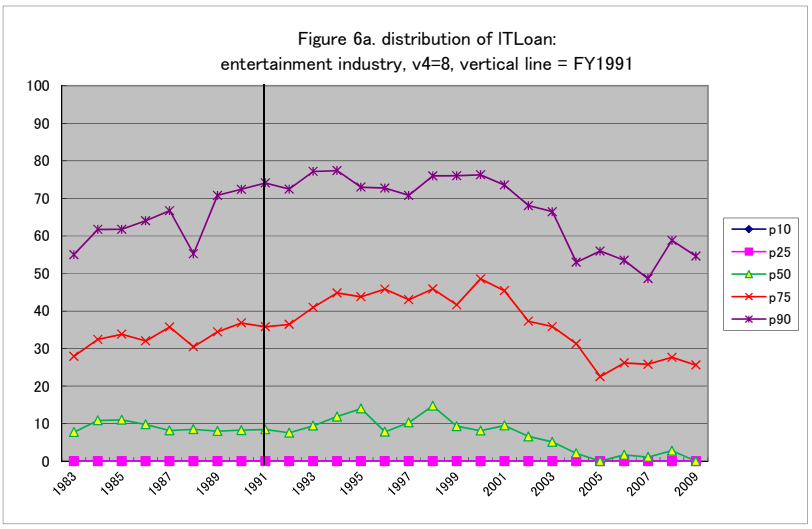


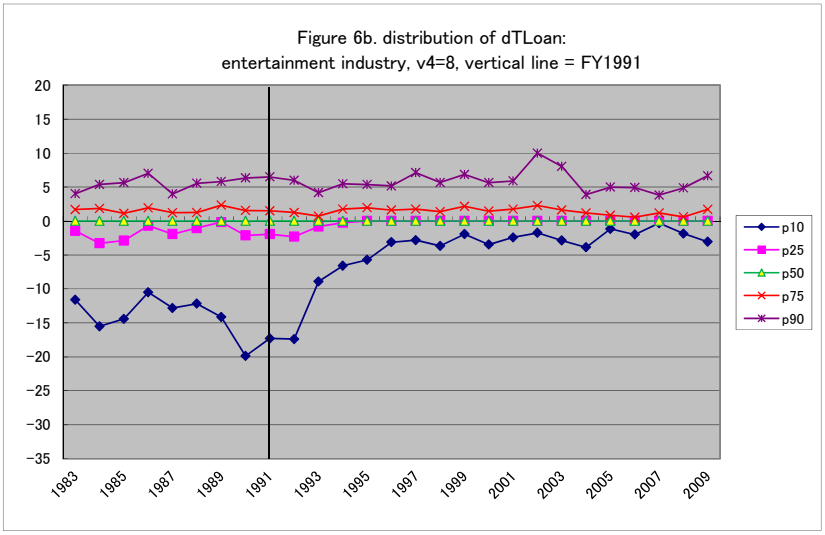


III-3 (for reference). Distribution of lTLoan and dTLoan in Entertainment- and Lodging Industry: v4=8

In the context of the "Bubble", a wide variety of resort facilities and accommodation facilities like hotels built both in resort areas and in urban areas attract attention. Correspondingly, for reference I show the figures of the distribution of lTLoan and dTLoan in entertainment- and lodging industry. The basic patterns of the transition of distributions in those industries are little different from those of four industries shown above. Here I show the cases for v4=8, too.[21]

Entertainment industry

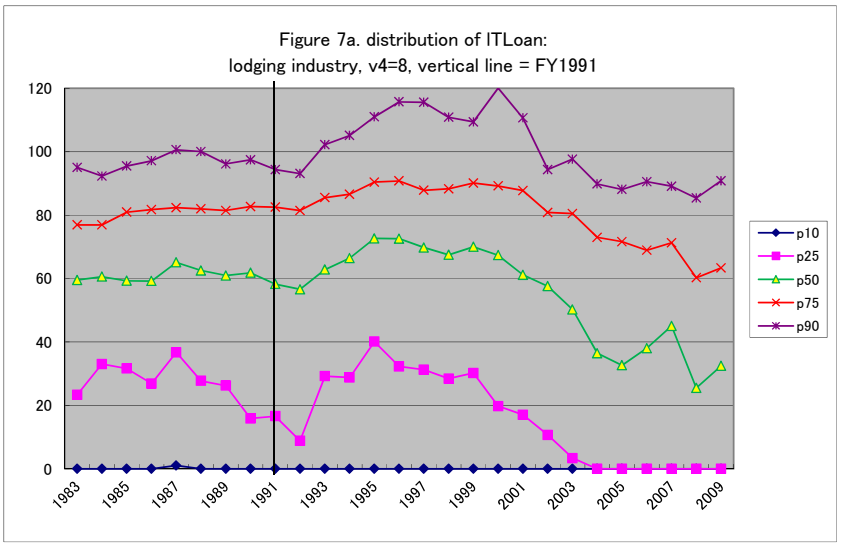


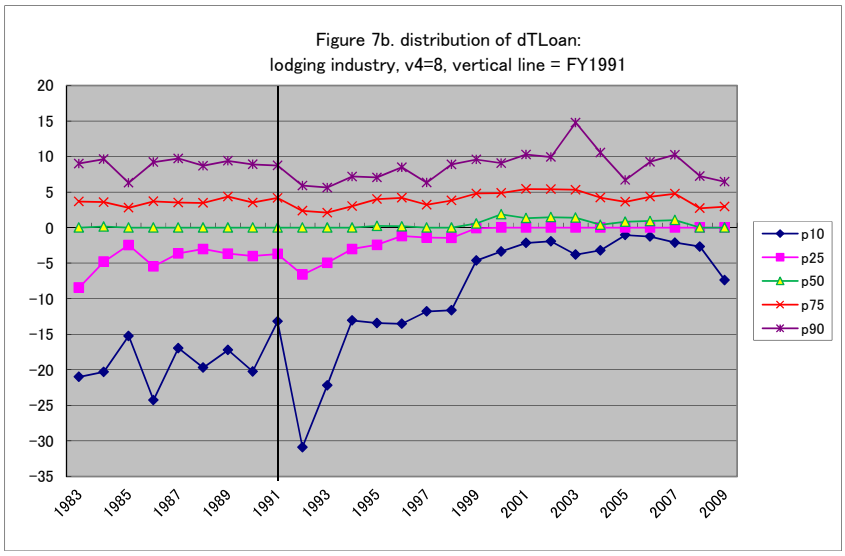


Lodging industry

[21] For more details, see V-5 of Miwa [2011d].

Note that the upper limit of scale in Figure 7a on lTLoan in the lodging industry is 120, rather than 100.[22]





[22] One outstanding characteristic of the lodging industry is that the p90 values of lTLoan exceeded 100, for v4=8 exceeding 120 in FY2000. The peak value lasted for five years until FY2000. It means that more than 10% of firms surveyed not only were insolvent but also borrowed from banks 20% larger amount than the total assets.

IV. Distribution of land/TLoan and dland/dTLoan: real estate-, manufacturing-, and distribution industry

IV-1. Introduction

Following the study of the distributions of lTLoan and dTLoan in Section III, in Section IV, focusing on the corporate behavior in Japan during the second half of 1980s, I investigate the relationship between "financing constraints" and real-estate-related investment. The focus of investigation is the effectiveness of "financing constraints": How strongly have "financing constraints", the funds that banks make available to firms, affected the real-estate-related investment of Japanese firms since the Mid-1980s? In Section V I study the relationship between "financing constraints" and equipment investment.

Both in Sections IV and V, I assume that the severity and effectiveness of "financing constraints" borrowing firms face differs significantly depending on the purpose of loans. In Section IV I assume a view: Real-estate-related loans are special, and the severity and effectiveness of "financing constraints" for those loans are different from those for other purposes. The study focuses on the fourth of attention points, point (4), mentioned in Section I. Bearing in mind the collateral value of long-term trend of soaring land price, some might consider that "financing constraints" are relatively loose for real-estate-related loans. Conversely, estimating the risk of making bad loans higher, others might think the "financing constraints" severer in real-estate-related loans.

In Subsections from IV-2, I study the distributions of land/TLoan (=lland/lTLoan) and dland/dTLoan. If "financing constraints", the funds that banks make available to firms, decisively affect firms' real-estate-related investment, at any time the values of firm's land/TLoan concentrate around the value of 100(%) or some other value close to 100 (hereafter, "concentration around 100"). Particularly, the values of dland/dTLoan, the ratio of differences, more strongly concentrate around 100. Moreover, even when observations of firms with no-real-estate-related investment work as noise, study of firms with dland<0 must show the concentration of dland/dTLoan values around 100. As shown in Subsections from IV-2, not only during the second half of 1980s but also during the following decades, the data do not support these predictions.

IV-2. Distribution of land/TLoan and dland/dTLoan: v4=8, real estate-, manufacturing-, and distribution industry

In Subsections IV-2~IV-5, I use land/TLoan (=lland/lTLoan) and dland/dTLoan. lland, lTLoan, dland, and dTLoan are all defined upon the same denominator in common, the total assets, and therefore the values both of land/TLoan and dland/dTLoan are free of the influence of extreme values of total assets and its variations.[23]

If, as the conventional wisdom argues, firm's real-estate-related investment is placed under strict "financing constraints and the funds banks make available to it decisively affect it, the distribution of land/TLoan values concentrates around a certain level, close to 100. Even when land/TLoan values show some variance, dland/dTLoan values concentrate around 100. If the data do not support those predictions, the study raises strong doubts over the conventional wisdom about "financing constraints".

As shown below, the data rarely support the predictions.

In Subsection IV-2, in the order corresponding to the real estate-, manufacturing-, and distribution industry I show the distribution figures on land/TLoan and dland/dTLoan for v4=8.[24] Some claim that particularly for the "Bubble Era" we should pay attention to small real estate firm's investment on property for sale (of "liquid assets"), rather than "real estate" of "tangible fixed assets". With this claim in mind, in IV-3 (for reference) I study the distribution of the ratios both of inventory to TLoan and of difference in inventory to difference in TLoan for the real estate industry. The "financing constraints" may work differently between firms that increase real-estate-related investment and those otherwise. Many observations of firms with no real-estate-related investment as a noise may make it difficult to identify the influence of the "constraints". With these factors in mind, in IV-4 and IV-5, limiting the firms with dland<0 or dland>0, respectively, I study the relationship additionally. The investigations in Subsections from IV-3 do not affect the basic conclusions of Subsection IV-2.

Real estate industry

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[23] Use of correlation coefficients among variables first comes to our mind as a means to investigate whether there is a relation between variables and its strength. See VI-3 of Miwa [2011d] for the reason why I do not use it. For firms with extremely small or radically varying (making an adjustment) wealth (total assets), which is often negative, lland, lTLoan, dland, or dTLoan, the common denominator of which is total assets, often take extreme values, making the correlation coefficients unstable and its use dangerous. Like in Section III, focusing on the values of p10 and p90, with the sample numbers not so small, such extreme values of the total assets rarely affect the investigation seriously.

[24] For other figures on all firms and by size, see Subsection VI-4 of Miwa [2011d].

Note three points for land/TLoan and one point for dland/dTLoan .

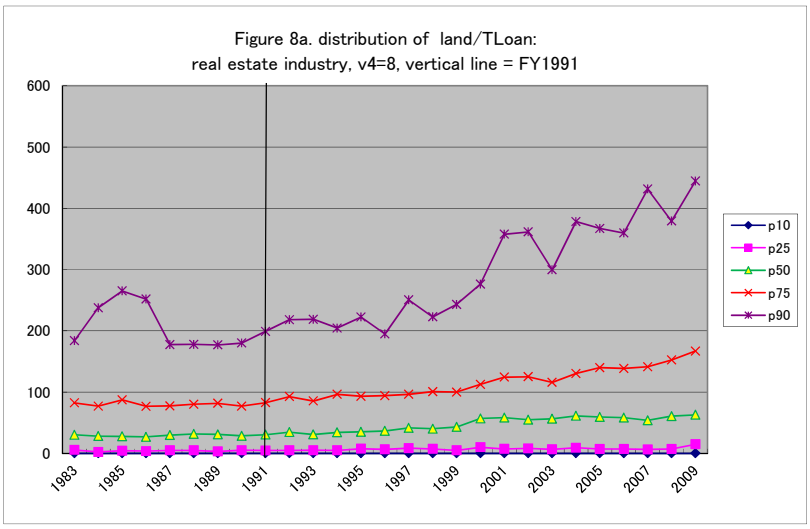
First, during the second half of 1980s not only p50 but also p75 of land/TLoan never exceeded 100.

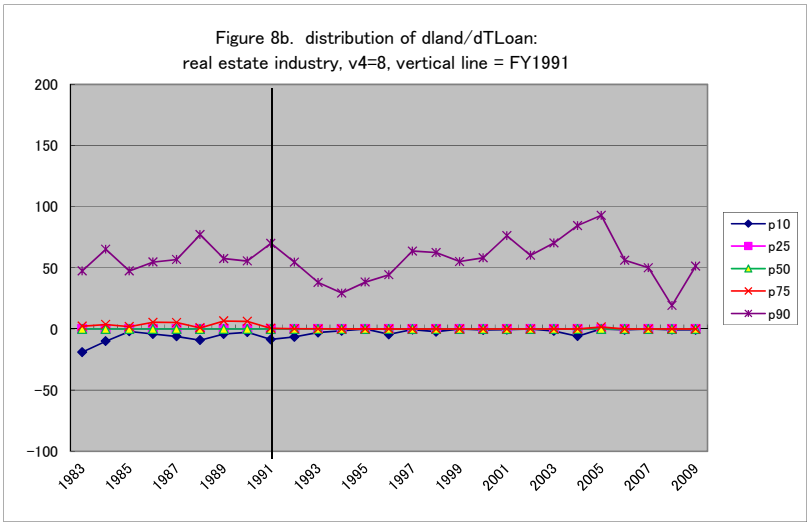
Second, compared to the second half of 1980s, the ratios tend to be higher in the following decades, and the upward trend accelerates in the 2000s. Even in the 2000s, however, p75 stays at the level over 100 and p50 stays far below 100.

Third, always the ratios vary widely.

Due partly to the high proportion of firms with no real-estate-related investment, I draw not much notable information about dland/dTLoan.

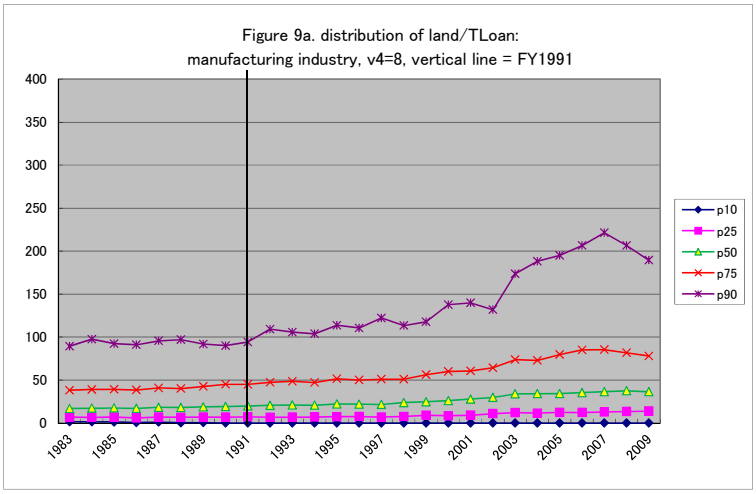
Fourth, much the same is true on dland/dTLoan. Almost always the value of p90 stays far below 100. For v4=9, p10 constantly stayed negative.[25]

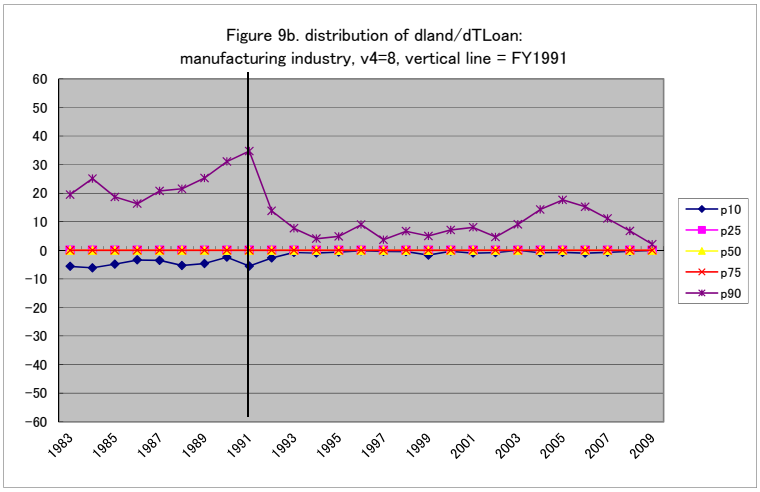




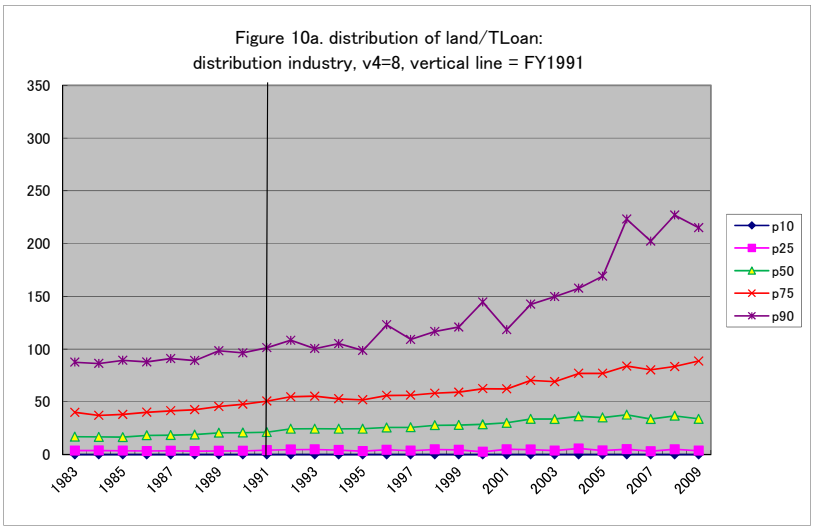
[25] Also in the manufacturing- and distribution industry, for v4=9, p10 constantly much below 0. See VI-4 of Miwa [2011d].

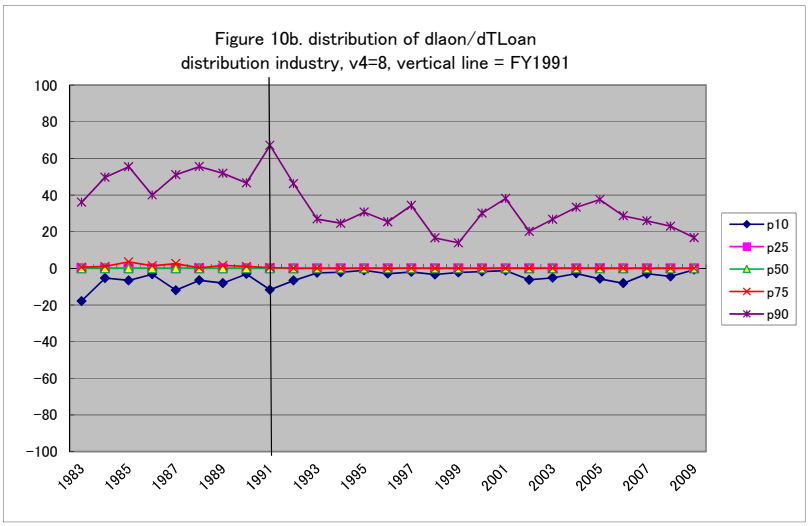
Manufacturing industry





Distribution industry





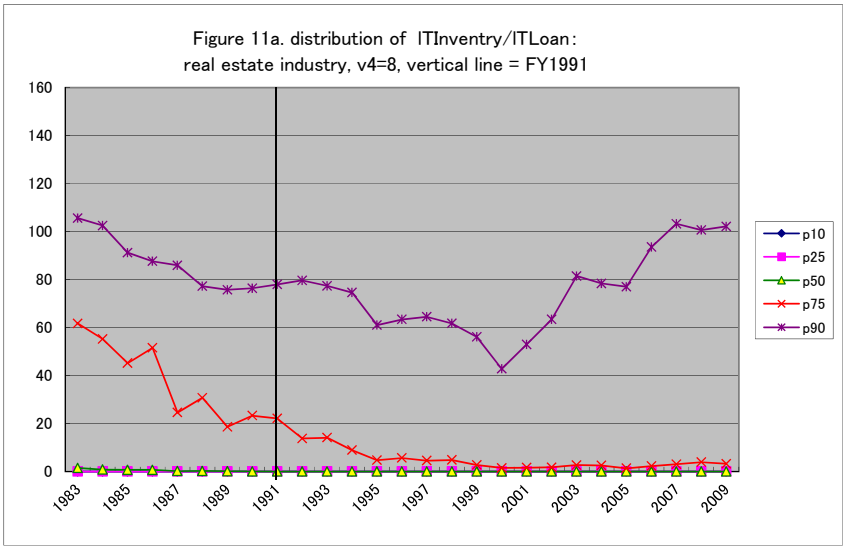
IV-3 (for reference). Distribution of the Ratios both of Inventory to TLoan and of Difference in Inventory to Difference in TLoan: real estate industry, v4=8, 9

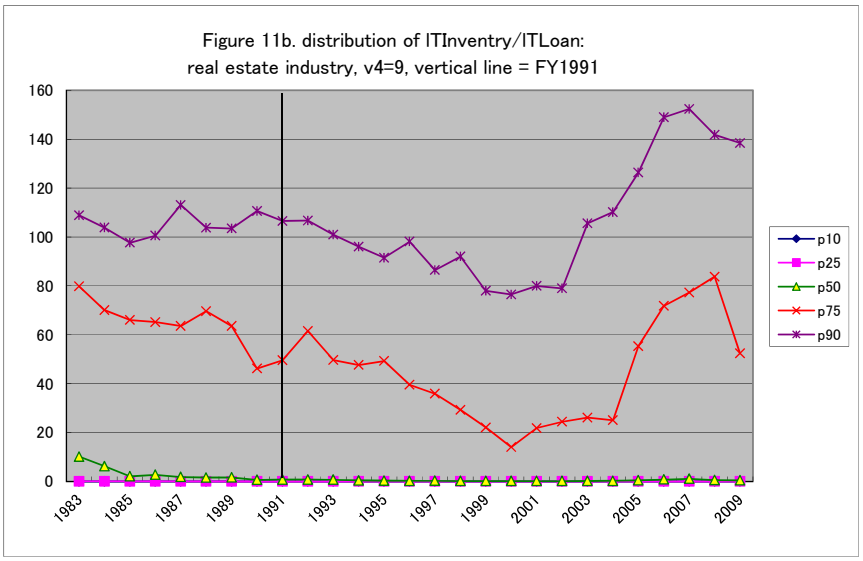
In IV-3 for reference I study the effectiveness of the "financing constraints", focusing on the relationship between the real estate firm's investment in property for sale and total borrowings. Here I show the distribution figures for v4=8 and 9.

At any point of time and firms of any size, I find no result that suggests that the "financing constraints" strongly affected the real estate firms' investment in property for sale.[26]

Distribution of inventory/TLoan (=lTInventory$_t$/lTLoan$_t$=TInventory$_{t-1}$/TLoan$_{t-1}$) in the real estate industry

[26] For more details, see VI-4-a of Miwa [2011d]. Also see VI-1-a(supplement), which is complementary to this Subsection.

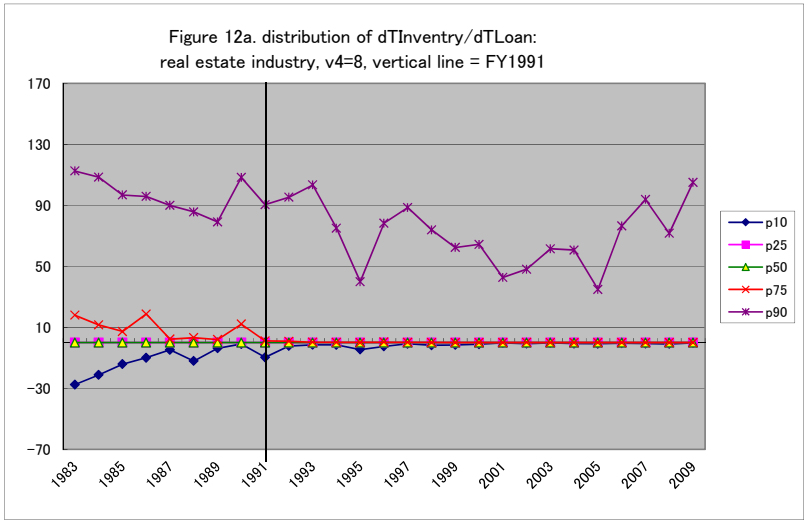


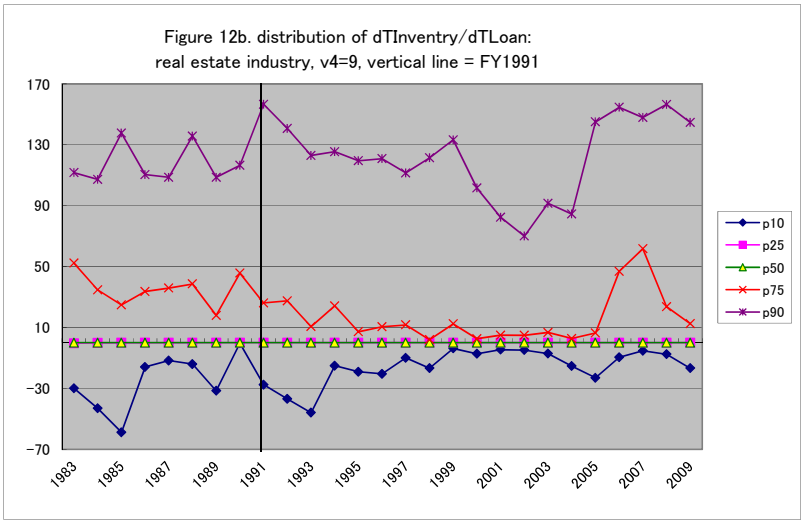


Distribution of (difference in inventory)/(difference in TLoan)

{=$dTInventory_t/dTLoan_t=(TInventory_{t-1}-TInventory_t)/(TLoan_{t-1}-TLoan_t)$}

in the real estate industry



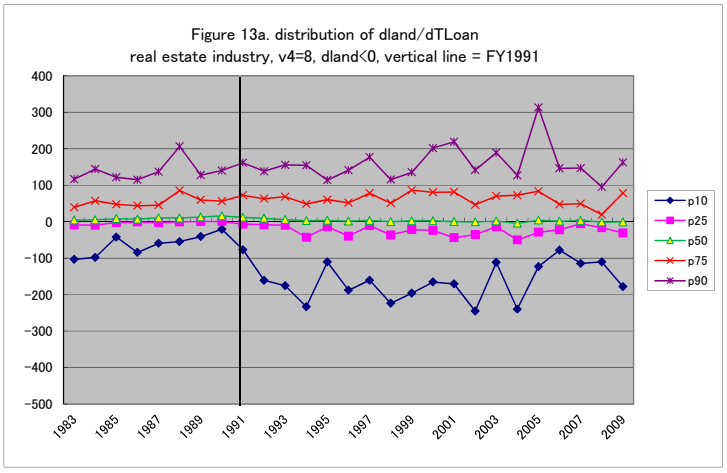


IV-4. Distribution of dland/dTLoan: firms with dland<0, v4=8, real estate-, manufacturing-, and distribution industry

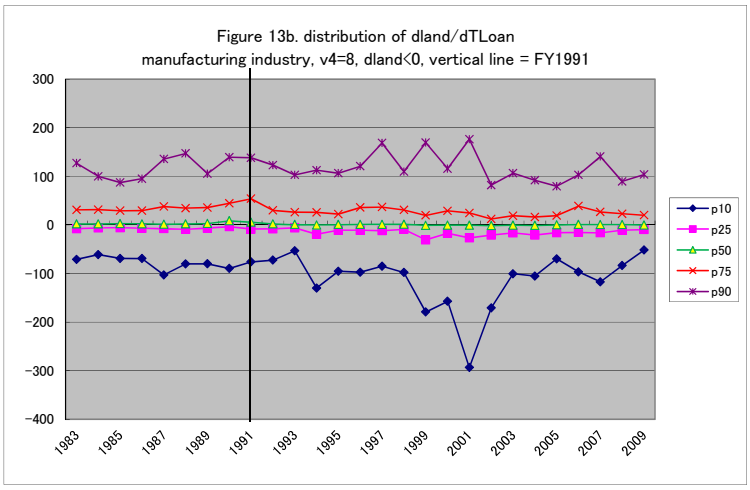
The high proportion of firms with no real-estate-related investment may make it difficult to identify the influence of "financing constraints" from the distributions of dland/dTLoan. With this point in mind, in IV-4 and IV-5, limiting the firms with dland<0 or dland>0, respectively, I study the distributions of dland/dTLoan. Here I show the figures for v4=8.

The conventional wisdom predicts that the distribution of the ratios concentrates around 100. Even for firms with dland<0, firms with positive real-estate-related investment, in any firm-size category and industry, the distribution of the ratios consistently varied widely, around 0, which significantly deviates from the predictions of the conventional wisdom about strict "financing constraints".

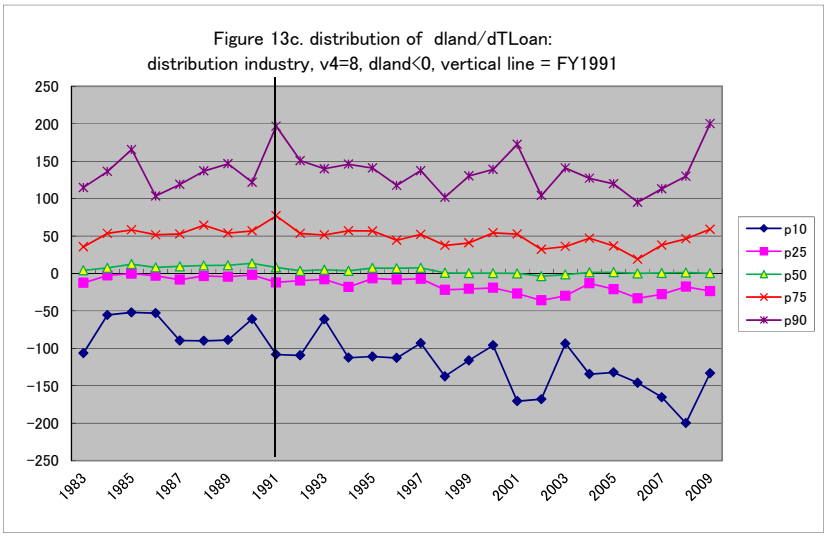
Real estate industry



Manufacturing industry



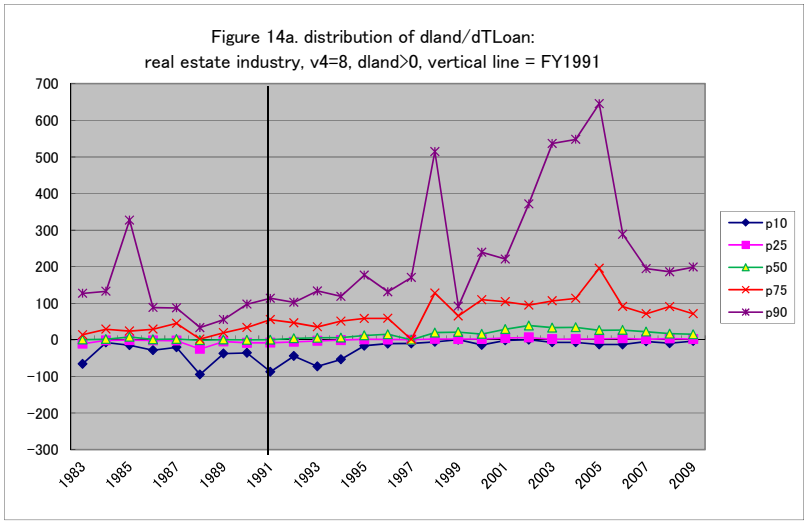
Distribution industry



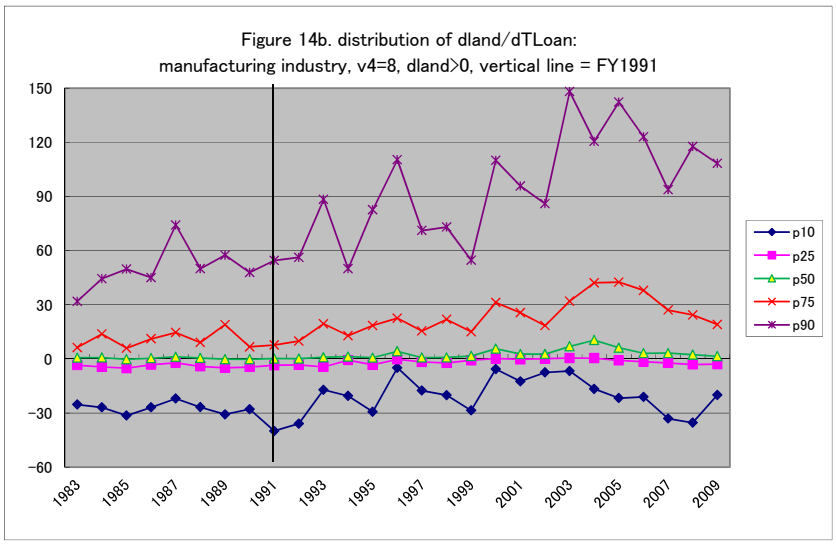
IV-5. Distribution of dland/dTLoan: firms with dland>0, v4=8, real estate-, manufacturing-, and distribution industry

Limiting firms with dland>0, I find no different results from the study.

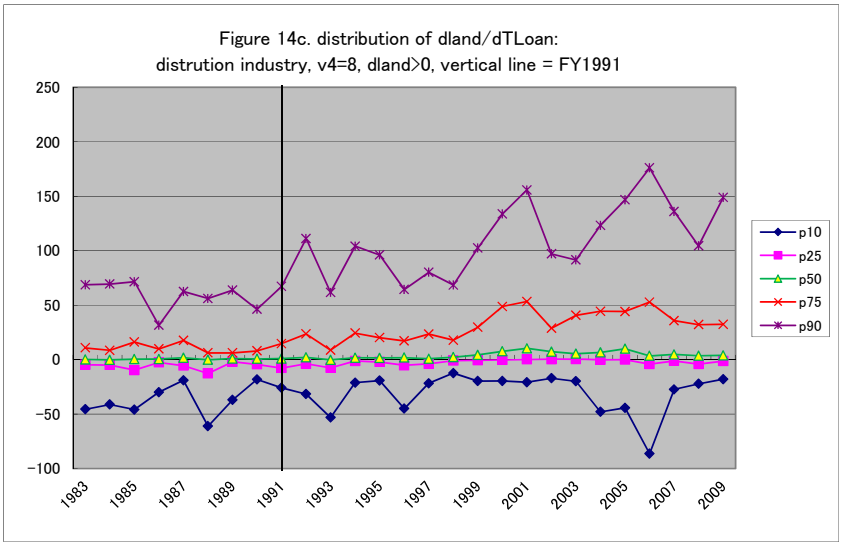
Real estate industry



Manufacturing industry



Distribution industry



V. Distribution of fixedA/TLoan and dfixedA/dTLoan: manufacturing-, distribution- , and real estate industry

As in Section IV, in Section V I assume that the severity and effectiveness of "financing constraints" borrowing firms face differs significantly depending on the purpose of loans. In Section V, I assume a view: Equipment investment loans, loans for investment both in "tangible fixed assets other than land" and/or "tangible fixed assets including land", are special, and the severity and effectiveness of "financing constraints" for those loans are different from those for other purposes. The study focuses on the fifth of attention points, point (5), mentioned in Section I. Bearing in mind the collateral value, some might consider that "financing constraints" are relatively loose for equipment investment loans. Conversely, estimating the risk of making bad loans higher, others might think the "financing constraints" severer in equipment investment loans.

The conventional wisdom argues that the "financing constraints" and change in banks' position and their credit allocation policy much contributed to the generation, expansion, and collapse of the "Bubble". In Sections III and IV, focusing on the firms' real-estate-related investment during the second half of the 1980s, I show that the data are not consistent with the conventional wisdom and therefore do not support it. Immediately after its collapse, focusing on firms' real-estate-related investment, it became the conventional wisdom to call the Japanese economy during the second half of 1980s the "Bubble Era". In Miwa [2012a], upon detailed empirical investigation, I point it more appropriate to call the period the "Equipment Investment Boom Era" when many firms in many sectors were active in equipment investment.

In Section V, I examine the relationship of firm's equipment investment with the severity of "financing constraints" and changes in banks' position and credit allocation policy.

First, I study the distributions of fixedA/TLoan and dfixedA/dTLoan. If, as the conventional wisdom claims, the "financing constraints" strongly affect the equipment investment behavior of Japanese firms, not only during the second half of the 1980s but also throughout the period under study, we will observe consistently the same (or similar) phenomena as the predictions of land/TLoan and dland/dTLoan I presented at the opening of IV-2. As in Sections III and IV, however, the data do not support the claim that the "financing constraints" strongly affected the corporate equipment behavior, which applies both to the "Bubble Era" and the following "Lost Two Decades". This conclusion is consistent with a view that the "financing constraints" do not strongly

affect the corporate behavior in Japan.

As part of studying the effectiveness of "financing constraints", in IV-3 and IV-4, limiting firms with dland<0 or dland>0, respectively, I studied the distributions of dland/dTLoan. Likewise, in V-2, limiting firms with dfixedA<0 or dfixedA>0, respectively, I study the distributions of dfixedA/dTLoan. I find no necessity of modification on the basic conclusions of V-1 and the ones in previous Sections.

Upon the study up to V-2, some might wonder, "Why, in examining the effectiveness of financing constraints, does the author distinguish land investment from investment in tangible fixed assets other than land? Does it involve no risk that the results depend on this distinction? Bearing this in mind, in V-3, using the total tangible asset investment (outstanding amount) TFixedA=land+fixedA and its difference, I study the distributions of TFixedA/TLoan and dTFixedA/dTLoan. I find no necessity of modification on the previous conclusions.

V-1. Distribution of fixedA/TLoan and dfixedA/dTLoan

Predictions of the conventional wisdom

In V-1, I focus on four predictions of the conventional wisdom.

First, the values of lfixedA/lTLoan concentrate around 100.

Second, the values of dfixedA/dTLoan more strongly concentrate around 100.

Third, during the second half of 1980s when with relaxed credit line firms could borrow from banks more easily, both for lfixedA/lTLoan and dfixedA/dTLoan the concentration became stronger, of which for the latter it was stronger..

Fourth, the "financing constraints" are severer, and above mentioned three points apply more clearly to small businesses.

Because the focus of the study is on the relationship between the corporate equipment investment and the "financing constraints", in Section V I place a primary focus on the manufacturing industry.

The data are not consistent with those predictions and therefore do not support the conventional wisdom about the "financing constraints". Here I show the figures only for v4=8. For more details see X of Miwa [2011e].

Summary of the study on the manufacturing industry

All four predictions of the conventional wisdom listed above significantly deviate from the data. Here I summarize the study of the manufacturing industry in four points, and I find no remarkable difference in the results on other industries. (As

fixedA/TLoan=lfixedA/lTLoan, in figures I write fixedA/TLoan.)

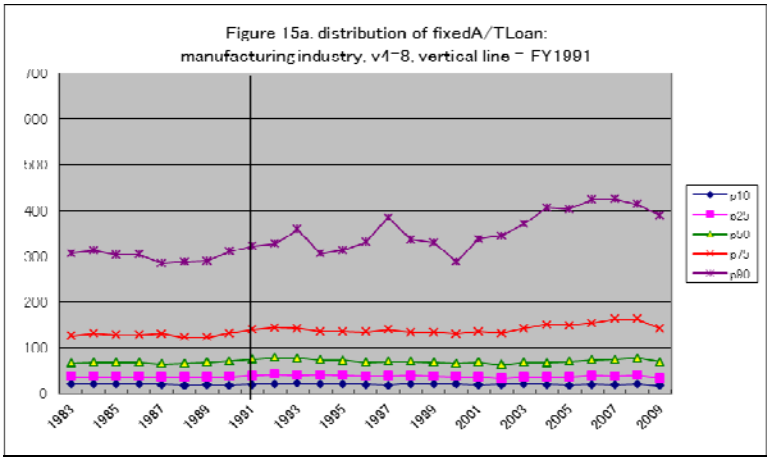
First, either for all firms or for each size category, the values of lfixedA/lTLoan consistently vary widely. For all firms during the second half of 1980s, p90 and p75 stayed at 300 and 130, respectively, and p50 and under far below 100.

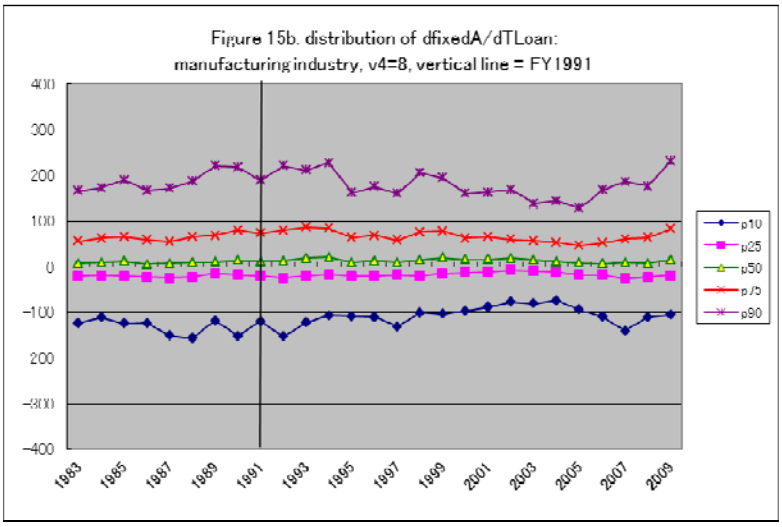
Second, either for all firms or for each size category, the values of dfixedA/dTLoan consistently vary widely. For all firms during the second half of 1980s, p90 and p75 stayed at somewhat below 200 and 70, respectively, and p50 nearly 0, p25 a bit below 0, and p10 below -100.

Third, either on lfixedA/lTLoan or dfixedA/dTLoan, during the second half of 1980s I find no strong concentration around 100. What I find is a tendency that since the 1990s lfixedA/lTLoan consistently increased, the direction of which is the opposite of the prediction of the conventional wisdom that as a counter movement to the "Bubble Era" banks contracted credit lines for a period of time at least.

Fourth, I find no strong concentration around 100 for firms in v4=5 representing "small businesses", either.

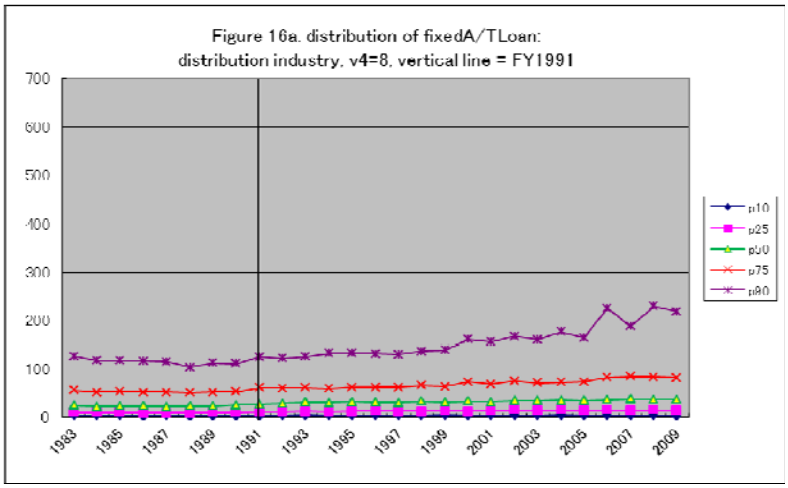
Manufacturing industry

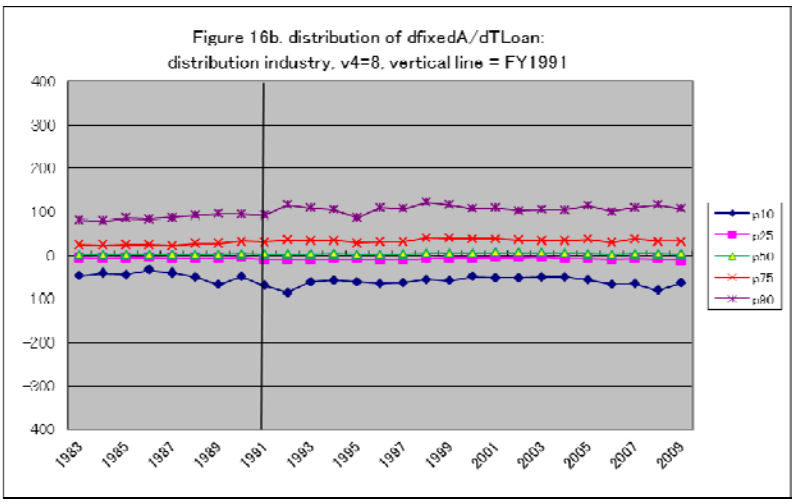




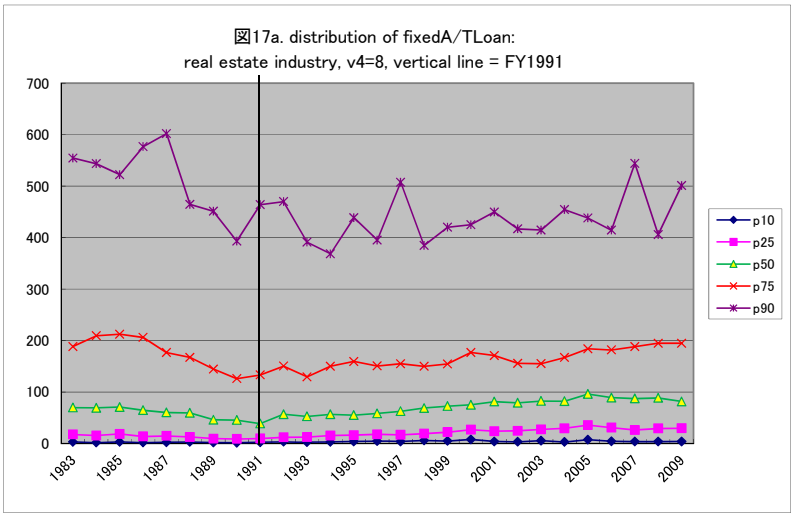
Distribution industry

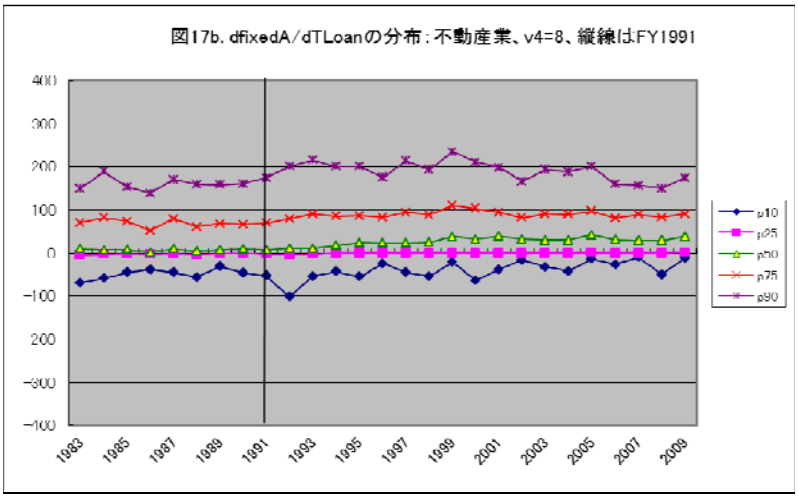
Compared to the manufacturing industry, the data both on the distribution- and real estate industry reveal no remarkable difference.





Real estate industry





V-2. Distribution of dfixedA/dTLoan: firms with dfixedA<0 or dfixedA>0

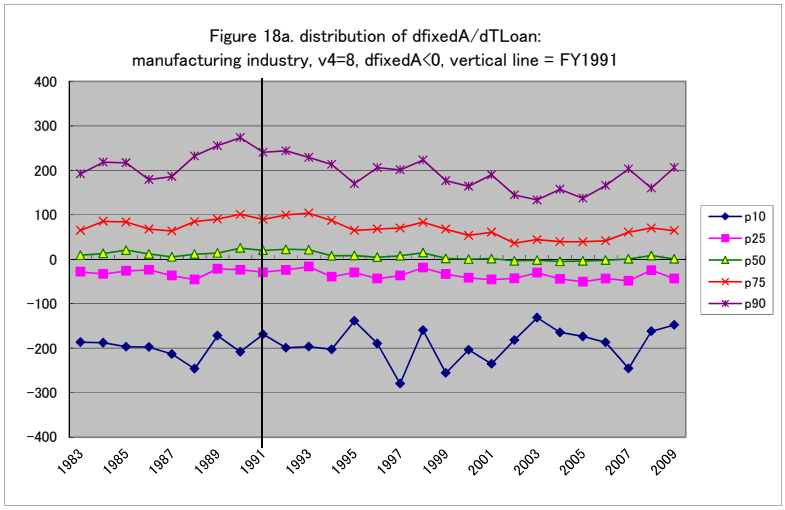
In Subsection V-2, limiting firms with dfixedA<0 or dfixedA>0, respectively, I examine the distributions of dfixedA/dTLoan.

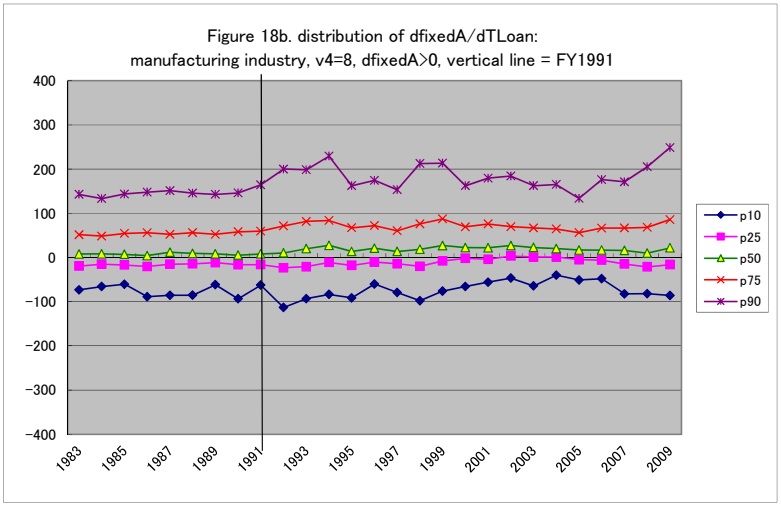
Focusing on (narrowly defined) equipment investment, fixedA = investment in tangible fixed assets other than land, in V-2, I show for v4=8 in the manufacturing-, distribution-, and real estate industry in the order corresponding to firms with dfixedA<0 or dfixedA>0.

In any industry or by any firm size category, the imposition of condition either of dfixedA<0 or dfixedA>0 results in no new finding, and there is no need of adding modification on the results of V-1.

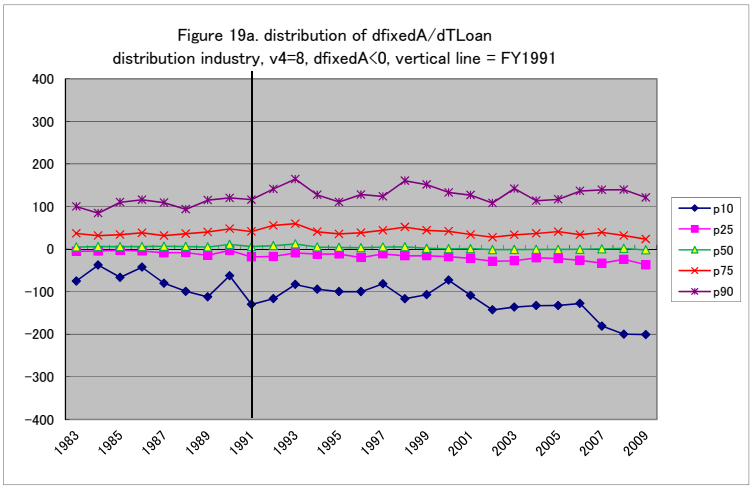
Nowhere I find the tendency (even a hint of presence) of the values of dfixedA/dTLoan to concentrate around 100, that draws most attention. In most cases, almost without exception, for fairly high proportion of firms this value was negative.

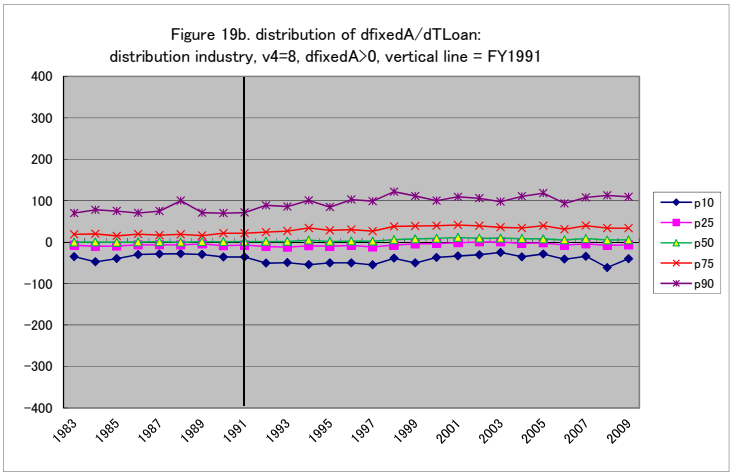
Manufacturing industry



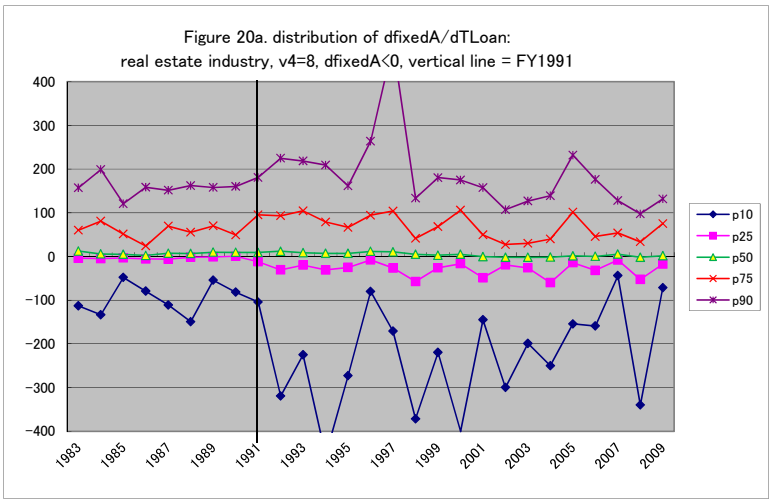


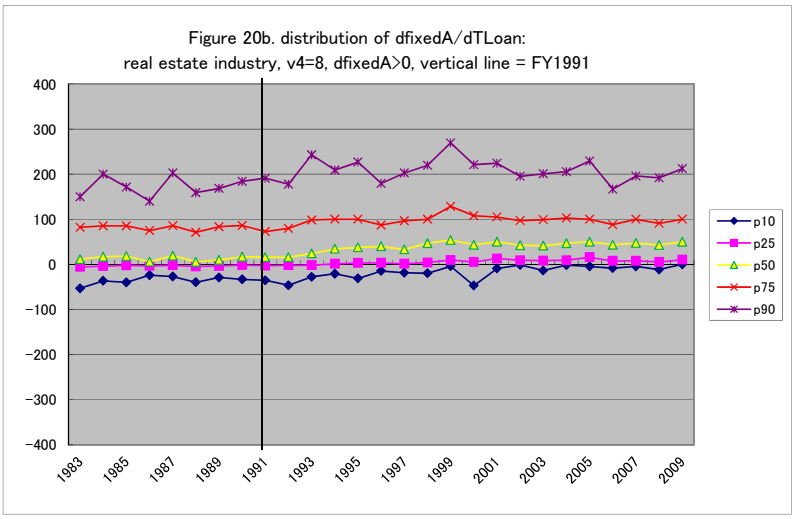
Distribution industry





Real estate industry





V-3. Distribution of TFixedA/TLoan and dTFixedA/dTLoan

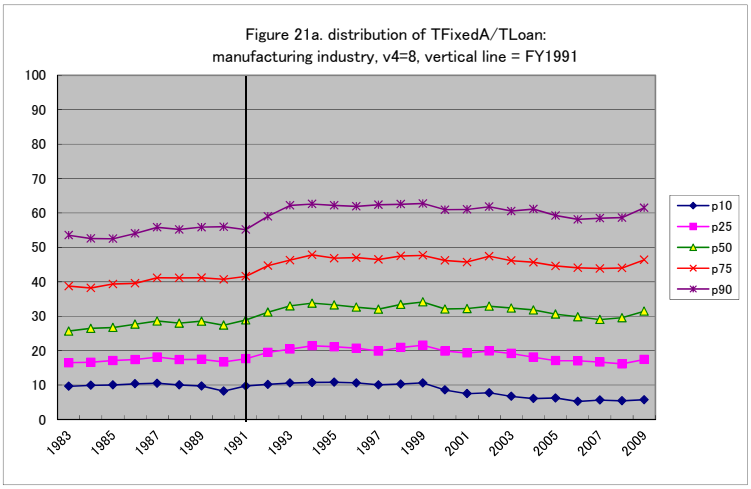
The CEAStat classifies "tangible fixed assets" into "land" and "tangible fixed assets other than land", on which, calling the difference of the latter "(narrowly defined) equipment investment" and its ratio to total assets dfixedA, I investigate the distribution of dfixedA/dTLoan, comparing with the distribution of dland/dTLoan. In many cases equipment investment coincides with real estate investment. For this reason, readers are interested in the study of the relationship of "financing constraints" with the sum of the two categories of equipment investment, the distribution of the ratios of dTFixedA (=dfixedA+dland) to dTLoan in particular. Some may wonder as follows and hesitate in accepting the conclusions of this paper: "Focusing on the distributions both of dland/dTLoan and dfixedA/dTLoan, the author reaches the conclusion that the data do not support the assumption of severe 'financing constraints'. This conclusion, however, might heavily depend on the choice of review method in adopting an ad hoc and inappropriate classification of 'equipment investment'."

In V-3, focusing on TFixedA (=fixedA+land) and dTFixedA (=dfixedA+dland), I briefly investigate the distributions of TFixedA/TLoan and dTFixedA/dTLoan.

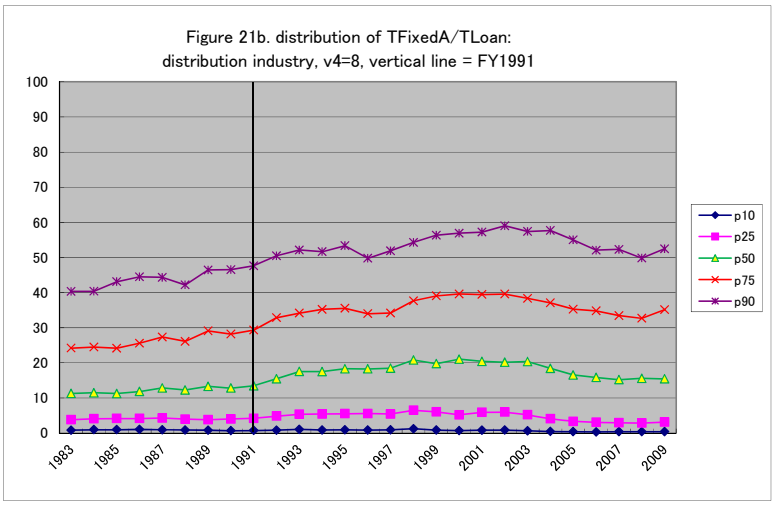
I find no necessity of modifying previous conclusions.

V-3-1. Distribution of TFixedA/TLoan

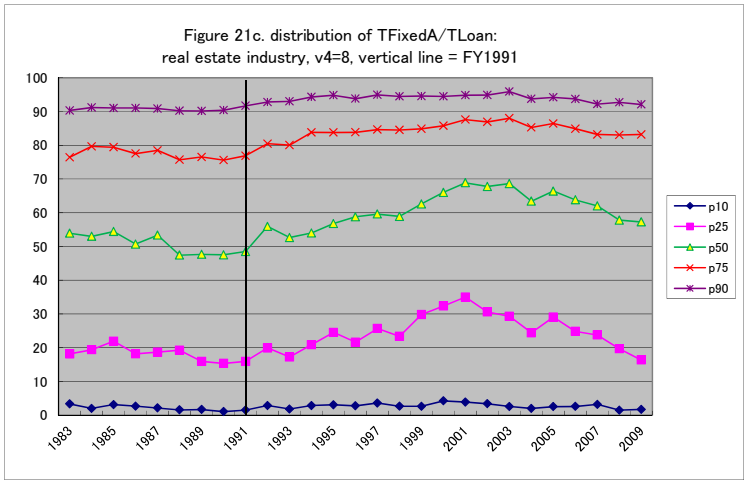
Manufacturing industry



Distribution industry

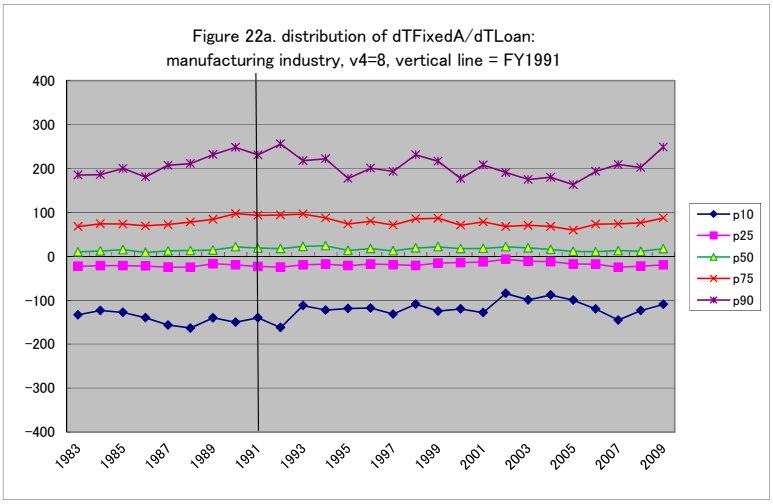


Real estate industry

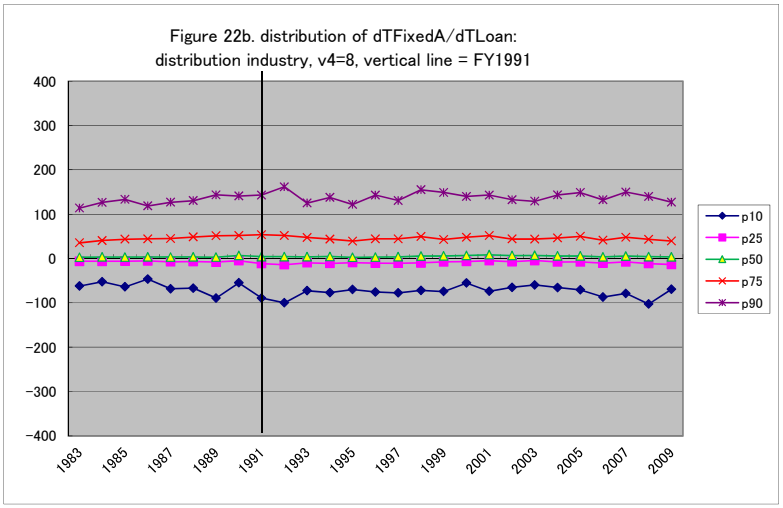


V-3-2. Distribution of dTFixedA/dTLoan

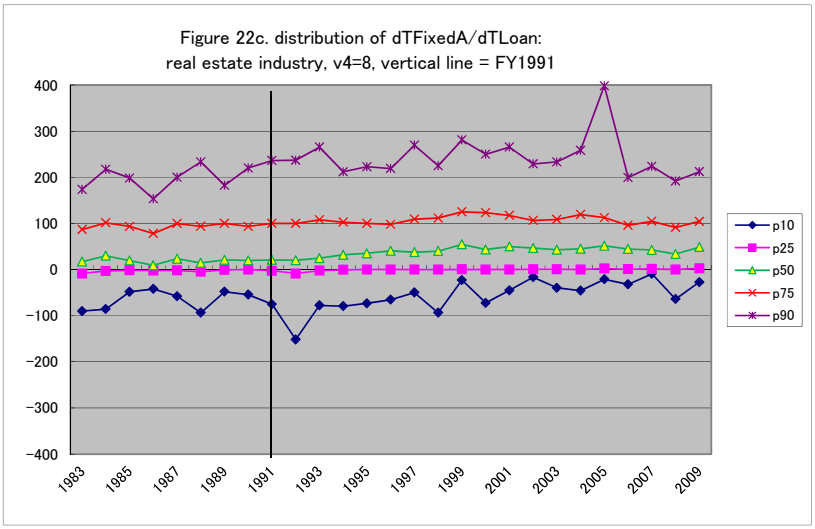
Manufacturing industry



Distribution industry

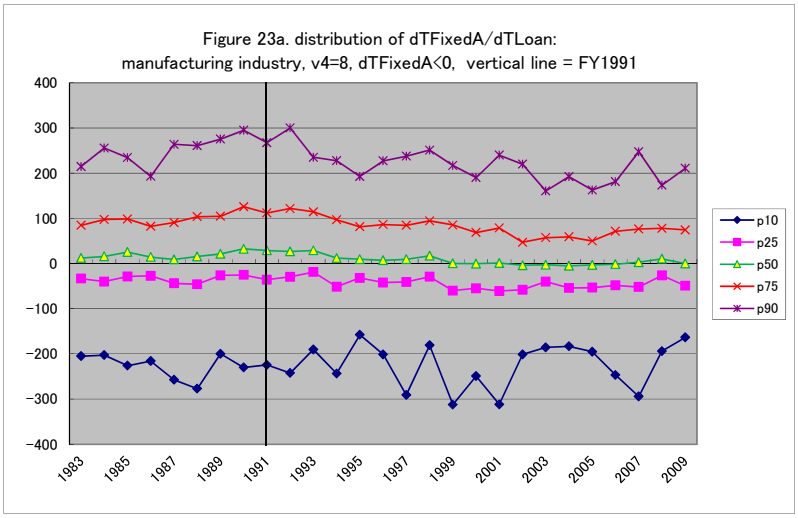


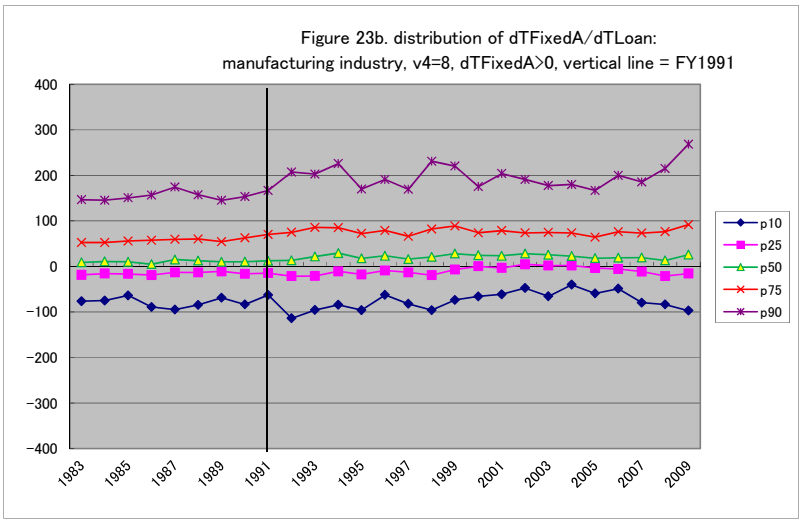
Real estate industry



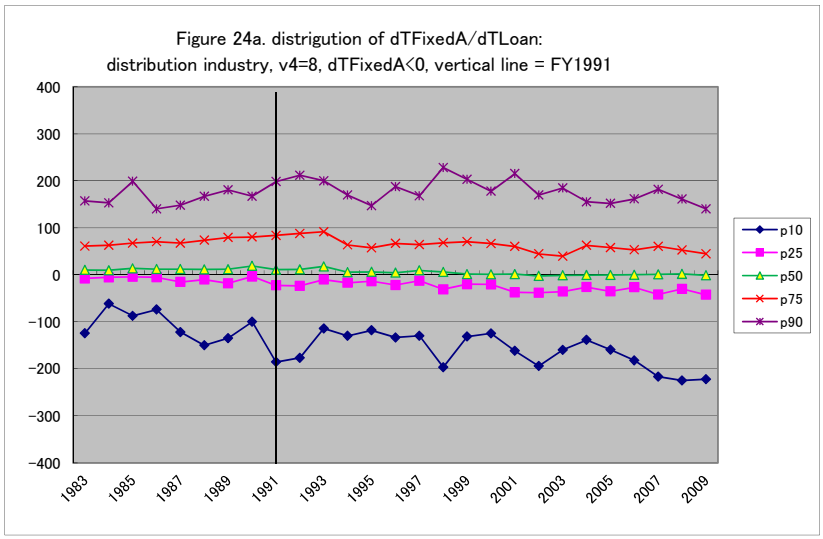
V-3-3. Distribution of dTFixedA/dTLoan: firms with dTFixedA<0 or dTFixedA>0

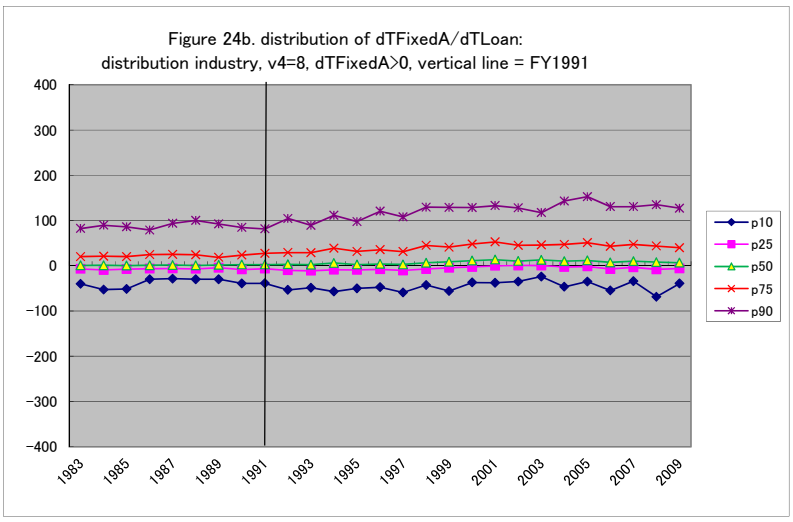
Manufacturing industry



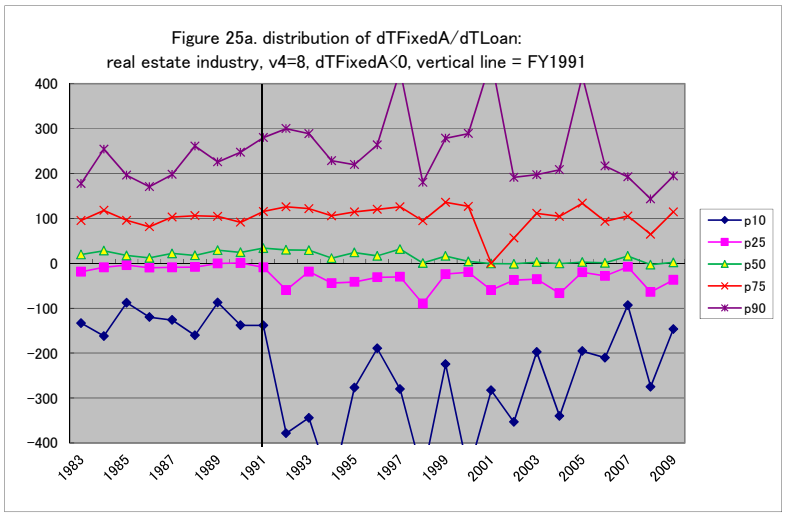


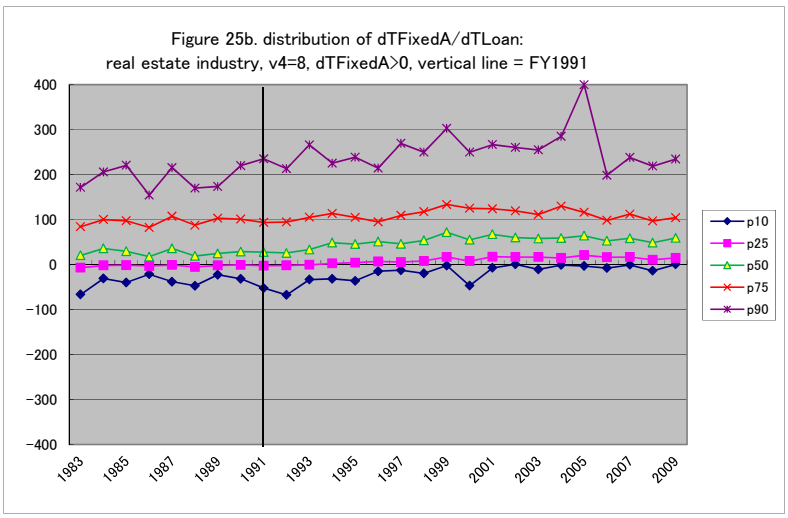
Distribution industry





Real estate industry





VI. Conclusion

Research on Japanese corporate finance typically starts from the premise that banks decisively affect corporate behavior. Crucial to this premise in the Japanese context are two claims: that the strength of a firm's relationship with a specific bank (and the funds that the bank makes available to it) determines its financing constraints, and that those constraints decisively condition the way it behaves.

Using firm-level data from the *Corporate Enterprise Annual Statistics* (CEAStat), I ask whether financing constraints significantly affected corporate investment in land and other fixed assets. I take firms in the real-estate-related industries and for comparison the manufacturing industry, and examine their

investments during 1983-2009. CEAStat provides information about financing behavior of firms that are on the demand side of financial market, rather than institutions in fund management like financial institutions on the supply side. Bearing in mind the conventional wisdom about the "Bubble Era" and the following "Lost Two Decades", I focus on the "three real-estate-related industries" during the second half of 1980s.

The data suggest two conclusions. First, financial constraints did not significantly affect medium- and long-term investment in equipment. Second, most firms have not faced serious financial constraints during the decades since 1983. Many scholars argue that such constraints contributed both to the "Bubble" during the second half of 1980s and the following recession since the 1990s, the "Lost Two Decades". The data, however, show no evidence that financing constraints prevented firms from investing in real estate or other tangible fixed assets.

These conclusions are consistent with those in other papers by Miwa, including Miwa [2011a or 2012b]. They raise serious questions about the premises relating to Japanese financial markets that many scholars bring to their study of the Japanese economy. Investigating empirically the effectiveness of "financing constraints", they also have important implications for current research into macro-economic fluctuations.[27]

This research is a preparation for fully beginning the study and diagnosis on the "Lost Two Decades" of the Japanese economy

Unraveling the reality of the Japanese economy during the 1980s by itself is a matter of great concern for us, on which we expect a future development of full-scale study. At this time, however, observing little sign of recovery from the "Lost Two Decades", greater attention is directed to a serious study on the reality of the Japanese economy since the 1990s. The conventional wisdom that has been dominant since the 1990s, calling the Japanese economy during the second half of 1980s the "Bubble Era", diagnoses the troubles of the Japanese economy primarily as a consequence of the aftereffect or penalty of frenzy and stanpede rampant during the "Bubble Era". Two views represent it: the first view, using key phrases like "bad loans", "delayed disposal of bad loans", and "follow-on and zombie lending", focuses on banks' "bad loans", which I critically reviewed in Miwa [2011c]; the second view focuses both on the aftereffect of

[27] For readers plagued by the view that banks "were the only game in town" (Hoshi and Kashyap, 2001, p.310) and wonder, "Where else in Japan other than banks firms could have raised funds from?", see for example Miwa [2011a, b] that focus on "trade credit" and other financial items. Also see XI of Miwa [2011d] that investigates four "others" liability items of CEAStat. For the relationship between trade credit and bank loan, see Miwa and Ramseyer [2008].

failures in real-estate-related investment and on "excessive production capacity" due to the failures in capacity investment, which I examined in this paper and Miwa [2012a].

In this paper, together with Miwa [2011c, 2012a], I show that both of these two views, and most papers and books advocating them, are full of fuzzy but colorful, and ill-defined and nonsensical phrases and therefore hard to understand the substance. In essence they are logically incomprehensible, and persuasive evidences for them are non-existent, which for many seem to be too good to be true. Liberating the Japanese economy during the second half of 1980s both from the spell of the "Bubble Era" and from the preoccupation of "bubbly" behaviors, these results will enable readers to begin a more serious study of the period. Moreover, research on Japanese corporate finance typically starts from the premise that banks decisively affect corporate behavior. In this paper, together with Miwa [2011a, b, c], I show the premise fatally flawed. It raises strong questions about two claims: that the strength of a firm's relationship with a specific bank (and the funds that the bank makes available to it) determines its financing constraints, and that those constraints decisively condition the way it behaves. ,

The "Lost Two Decades" is a period when, getting blind drunk in "bubble talks", symbolized by such phrases and images as "bubbles, "the Bubble Era", and "aftereffect and penalty" of the "bubble", observers have wasted time and energy, leaving the Japanese economy in the long-run stagnation.[28] The basic aim and role of this paper (and Miwa [2012a]) is to lift the research and discussion, diagnosis and prescription about the Japanese economy out of such a long-lasting dreadful state. With this, liberated also from the basic stance of the conventional wisdom that has sought in the "Bubble Era" the cause of the long-term stagnation since the 1990s, we are well prepared for fully beginning the study and diagnosis of the "Lost Two Decades".

The Japanese government's policy toward the long-term stagnation often called the "Lost Two Decades" has been the diagnosis, prescription, and treatment based on the conventional wisdom that it is the aftereffect and penalty of the "Bubble

[28] In Section IX of Miwa [2011c] I critically reviewed Caballero, Hoshi, and Kashyap]2008], that closes ((2) p.139): "Most literature that have set up the dominant view in 'the Lost Two Decades' debate of the Japanese economy, focusing on 'bad loans' and 'delay in its disposal,' are 'something like xxx' talking about 'fuzzy but colorful issues like ▽▽▽▽' presented at a long-lasting grandiose 'banquet.' Caballero, Hoshi, and Kashyap [2008] and articles in Ikeo ed. [2009] are representative, and the most well-known as its culmination. 'Bad loan,' 'delay in bad loan disposal,' 'follow-on lending,' and 'the Lost Decade' represent '▽▽▽▽.' Those who have been indifferent or critical with the content and atmosphere of the 'banquet' have stayed away from it. Many others joined it once, but since have left."

Era" such as banks' "bad loans" and "excessive production capacity" due to the failures in capacity investment. As a consequence, based on mistaken diagnoses, it has been as the prescription and treatment inappropriate and ineffective. Unfortunately, expecting positive effects from those prescription and treatment, most Japanese have wasted time and energy for escaping from the long-term stagnation.[29]

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[29] I do not argue that under the current government policies there is no possibility of escaping from the long-term stagnation with other factors, which would be called "natural healing" or "self-sustaining recovery".

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