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Abstract

This paper studies the detrimental effect of sudden stops on the growth of Thai firms' fixed assets. We focus on the fixed assets adjustment that firms undertake at times of financial constraints. We derive our results from balance sheet data for 284 nonfinancial Thai listed firms. Our data demonstrate that Thai firms faced severe declines in the growth of their fixed assets starting in 1996. Regression results demonstrate, after controlling for firms' characteristics and lagged dependent variables, that holding longer-term debt maturity structure is the factor that works in the firms' favor during Sudden Stop episodes, while it is their profitability that matters during tranquil periods.

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I. Introduction

"Sudden Stops" or reversals of capital inflows and the subsequent withdrawal of international capital are considered to be the spark that set off several of the recent crises in countries such as Thailand and South Korea. The IMF[1] asserts that the ensuing declines in asset prices and exchange rates caused by sudden stops during the late 1990s went well beyond what was justified by any reasonable assessment of economic fundamentals. Of all crisis countries, Thailand faced one of the largest capital inflow reversals seen to date, and Figure I demonstrates this graphically. Furthermore, Calvo and Reinhart (2000) estimated that the country had cumulative inflows as a percent of GDP of approximately 51.5% between the period 1988 and 1994 and that it suffered from reversals of 26% between 1996 and 1997.

Sudden stops in capital inflows such as that seen in Thailand need to be offset by either reserve losses or lower current account deficits, and in general lead to contractions in output because of large and unexpected swings in relative prices. Reserve losses tend to increase a country's financial vulnerability, whereas contractions in the current account tend to have serious effects on production and employment. Moreover, the interest rate increases following a sudden stop episode—due to country and exchange rate risk, for example—lead to a higher incidence of nonperforming loans (NPLs) because the cost of servicing the debt rises and debt burdens surge if debt is denominated in foreign currency. Firms in this situation tend to face a decline in net worth. The effects on the exchange rate of the sudden stop, accompanied by a likely currency mismatch between liabilities and income at the firm level, cause creditors to require higher rates of return or limit the amount of new debt issued to these firms.[2] In this situation banks become more cautious and cut lending, especially to small- and medium-size firms, giving rise to what the literature has labeled a "credit crunch" (Ito and Pereira da Silva, 1999).[3]

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[1] IMF, World Economic Outlook, 1998.
[2] Bleakley and Cowan (2002).
[3] Ito and Pereira da Silva (1999), using a survey of 15 Thai banks, demonstrate empirically the existence of a credit crunch in Thailand during the period between 1997 and 1998 characterized by the factors described above.

As Thailand faced one of the most abrupt sudden stops of capital inflows, highly leveraged firms as compared with those in other regions of the world[4] found themselves credit constrained and with increasingly damaged balance sheets. Consequently, they found themselves forced to cut investment and/or undertake distress sales of physical capital to fulfill their debt obligations. Thailand was particularly characterized by a large number of firms having to engage in distress sales of physical capital or fire sales as they became popularly known.

In spite of this dramatic event, very little is known about the precise determinants of investment at the microeconomic level during this Sudden Stop period. Our paper aims at shedding some light in this direction by characterizing the factors that exacerbated financial constraints—proxied by adjustment of fixed assets—experienced by Thai firms due to Sudden Stop episodes. Our goal is to analyze, in particular, various balance sheet and firm-level characteristics that induced firms to meet debt obligations through the adjustment of fixed assets.

There are particular firm characteristics that in general contribute towards determining how constrained a firm might be, and consequently, how likely it would be to engage in distressed sales of physical capital. Some of those characteristics include the level of internal resources that would allow a firm to finance its production internally, the size of the firm, the issuance of American Depository Receipts (ADRs), the type of commodity a firm produces (tradable/nontradable), the degree of foreign ownership, the fact that a firm might be a multinational company or not, the degree of macroeconomic instability, and the industry to which the firm belongs. The degree of deterioration of a firm's balance sheet in terms of profitability and debt maturity structure is also considered. We pay particular attention to the short-term debt exposure to gauge the level of obligations that the firm must fulfill in a short time frame, while we also consider fluctuations in domestic demand because they affect revenues from sales and consequently influence financing needs.

Data analysis reveals that Thai nonfinancial firms[5] suffered from a significant decline in their fixed assets throughout the capital outflow period. Furthermore, descriptive statistics and graphic

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[4] According to Pomerleano (1998), the debt–equity ratios seen in Asian firms, particularly Thai and Korean, were substantially larger than those seen in Latin American, German and US companies. Debt–equity ratios of US firms averaged 90% by the end of 1996, Latin American firms averaged 31%, while Thai firms averaged 155%.

analysis demonstrate that sector-macro and firm-specific variables behaved significantly differently during sudden stop and non-Sudden Stop episodes. Regarding domestic demand, sector consumption growth, for example, averaged 6.2% during the 1990s except during the sudden stop episode when it declined to an average growth rate of –9%. At the firm level, the tradable sectors were taking significant amounts of short-term debt—about 80% of total debt prior to the crisis period, which significantly worsened their balance sheets once capital inflow reversals took place.

Regression results bring to light the fact that adjustment of fixed assets during a tranquil period can be mostly explained by lagged variables, profitability, domestic consumption demand, and firm size. During Sudden Stop episodes, however, two additional factors come into play in the firms' favor: first, being a tradable goods producer, and secondly, having a longer-term maturity structure of debt. Interestingly, profitability—the significant factor in tranquil times—no longer matters in Sudden Stop periods.

Some additional key findings reveal that:

- Thai ownership in tradable sectors will help firms to be less financially constrained during Sudden Stop episodes.

- Multinational firms decelerate their fixed asset growth during tranquil times, but only for firms producing nontradable output.

- The growth of fixed assets of <u>nontradable</u> output firms is more affected by domestic consumption growth than that of tradable firms.

- ADR issues play in a firm's favor but only during tranquil times.

This study relates to a growing literature on currency crises that stresses shocks to firm balance sheets, and, more broadly, on the effect of balance sheet health on investment, where much work has been done on the role of financing constraints in investment decisions. Examples include Fazzari et al. (1988) and Hoshi et al. (1991) among others. It is a classic but still an unsettled question (Gomes, 2001). In the context of the Asian crisis, Kim and Stone (1999) is one of the few studies that examine this subject theoretically. As for empirical investigation, there are a handful of studies—some focusing on mergers and acquisitions activities (Aguiar and Gopinath, 2002, and Mody and Megishi,

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[5] As in other papers in the field, we concentrate on the nonfinancial sector of the economy, because it

2001), others such as Aguiar (2004), and Bleakley and Cowan (2004), similar to ours, working on the adjustment of physical capital.

This paper provides new evidence on balance sheet effects on Thai firms' investment adjustments, an addition to existing work such as Aguiar (2004), and Bleakley and Cowan (2004). Our findings reinforce and extend the results for Mexico given in Aguiar (2004), who finds a significant effect of weak balance sheets—as captured by heavy exposure to short-term foreign currency debt— on investment. Our analysis of fixed asset adjustment by Thai firms similarly suggests that the substantial shares of short-term debt were translated into subsequent slow growth of investment during the Sudden Stop episode.

More importantly, this paper contributes by adding extra findings on tranquil periods and on nontradable sectors. Comparison across the Sudden Stop and tranquil periods reveals that debt maturity structure matters only during the Sudden Stop period, and it is profitability that explains most during the tranquil period. The rest of the paper is organized as follows. Section II describes the data and provides summary statistics. Section III discusses the empirical evidence. Finally, Section IV concludes. The Appendix provides detailed definitions of variables used and their sources.

II. Data Description and Analysis

Our primary data source for the empirical analysis is *Datastream*, which contains historical data for a variety of securities markets worldwide, covering equity, index, commodity, currency, bond and economic data. For our sample, we use annual corporate balance sheet and income statement data for 284 nonfinancial Thai firms publicly listed on the local stock market between the years 1992 and 2001.[6] Table I provides a detailed description of the composition of the sectors that we have

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is in these sectors that investment decisions are undertaken.

[6] Because of data limitations, sample firms are limited to those that remained in business (bankrupt/de-listed firms are not included) during the period of analysis, so it could be argued that we are capturing the behavior of "high quality/best performing" firms in Thailand. Furthermore, the actual number of firms varies per year as new firms are listed in the Thai stock market and incorporated in the database. The actual number of firms per year in the dataset is: 1992=150, 1993=183, 1994=225, 1995=249, 1996=275, 1997=278, 1998=275, 1999=273, 2000=266, and 2001=250.

identified and divided between tradable good producers and nontradable good producers. Services and real estate are categorized as nontradable sectors while primary commodities, manufactures, household products and food are classified as tradable sectors.

The service sector is the largest, represented by 68 firms, while the real estate sector is the smallest, consisting of 28 firms[7]. Furthermore, it is interesting to note that the primary product sector has the highest level of sales on average while the real estate sector has the lowest (See Table II). The real estate and primary product sectors tend to be largest in terms of size[8], while the food[9] and household product sectors are the smallest. When it comes to after-tax profits, the food sector has the highest profitability levels. In terms of tradable and nontradable sectors, Table II reveals that the tradable sector is characterized by having higher profits than the nontradable sector and by being more exposed to short-term debt. The nontradable firms, in turn, tend to be of relatively larger size.

Table III reveals that the Sudden Stop episode led to a significant decline—of close to 50%—in the average growth of firms' fixed assets. Graph A in Figure II depicts the decline that begins in 1996 and does not reverse until mid 1999. By mid 1999 that trend gradually reverses, revealing signs of growth at a relatively slower rate.[10] Table III also reveals that macro and firm-specific variables behaved significantly differently during sudden stop and non-sudden stop episodes. GNP growth, for example, in Thailand averaged 5.6% during the non-sudden stop episode but declined to an average growth rate of –4.2% during the sudden stop period. Average consumption growth in Thailand for example averaged 6.2% during the 1990s except during the sudden stop episode when it declined to an average negative growth rate of –9%. Alternatively, the average growth rate of exports and sectoral inflation increased during the sudden stop period as a consequence of the devaluation of the Thai baht. Export growth across tradable industries increased from an average of 2.5% during tranquil

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[7] "Software and computer services" is categorized as nontradable service, as one firm, "DATAMAT, Thailand", that falls into this category mainly engages in retail sales of the software products of other companies, such as Infosys from USA.

[8] We use market capitalization as a proxy for size.

[9] Food sector is one of the major exporting sectors in Thailand, e.g., exporting frozen seafood, noodles, rice, etc.

[10] Given that substantial declines in the growth of firms' fixed assets occurred around the time of the capital inflow reversals and abrupt devaluation, we argue that a large portion of sales must have been the result of increasing levels of uncertainty and financial constraints, which forced firms to sell their assets at a discount by engaging in fire sales.

periods to 4.5% after the devaluation. Sectoral inflation rates also increased from an average of 2.8% during tranquil times to 5.9% after the devaluation.

At the firm level, the average interest coverage ratio, which describes the ability of the firm to fulfill debt obligations with its earnings, declined from an average ratio of 21.9 during good times to 7.3 during the sudden stop period (see data Appendix for the definition).[11] An important sign of increasing levels of firm financial distress was either decreasing earnings or increasing interest payments as debt rose or a combination of both. Furthermore, graphical analysis in Table II reinforces the prior statistical results by demonstrating that there are particular firm characteristics that behave differently during sudden stop episodes and consequently increase/decrease the chances that a firm might be forced to engage in the sale of its fixed assets. The literature also demonstrates that these characteristics tend to be highly correlated with the likelihood that a firm will face financial constraints.

For example, we see that those firms that had a relatively shorter debt-maturity structure suffered from a steeper decline in their fixed assets as a consequence of the sudden stop episode.[12] This is intuitive and goes hand in hand with the literature describing the characteristics of a liquidity crunch, which demonstrates that firms with short-term liabilities tend to face higher degrees of financing constraints and consequently more pressing needs to find either renewed financing or liquidity to fulfill debt obligations. Moreover, financing is scarce and extremely costly in situations of capital inflow reversals, thus leaving firms with two alternatives, defaulting and/or entering into bankruptcy proceedings or selling assets, probably at a discount, to cover the cost of the maturing debt.

Alternatively, multinational firms seemed to adjust their fixed assets downward drastically starting in 1997, and unlike their domestic counterparts, they do not show clear recovery in investment during subsequent years, at least during our sample period.[13] A likely explanation is that these firms may not feel as financially constrained after a drastic Sudden Stop episode, but may withhold new investment until macroeconomic uncertainty recedes and stability is regained. However, generally speaking, multinationals can cover their financing needs by channeling funds from their subsidiaries

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[11] The interest coverage ratio between tranquil and sudden stop episodes are not statistically significant at conventional levels.
[12] Figure II-graph B.

located in countries not affected by the downturn. Moreover, multinationals tend to be larger and better known than domestic firms and as a consequence enjoy greater financing alternatives at the domestic and international level. Work by Samphantharak (2003) demonstrates that belonging to a business group in Thailand, which would imply a higher likelihood of resorting to intra-firm financing, has a similar effect.

In addition, Figure II-D reveals that small firms suffer from a steeper decline in the growth of their fixed assets than larger ones. Current works demonstrates that small and medium enterprises in Thailand have had relatively less access to formal financing, as lending was skewed towards large firms, and the cost of financing limited their growth potential. Furthermore, Figure II-G demonstrates that having access to external financing through the issuance of ADRs[14] allows firms to have a higher growth rate of fixed assets during tranquil times and a faster recovery during downturns.

There also seems to be a difference between tradable and nontradable sectors when it comes to fluctuations in the growth of firms' fixed assets during the Sudden Stop episode. Figure II-graph E reveals that nontradable firms suffered from a more pronounced and longer decline in the growth of their fixed assets after 1997 relative to that felt by nontradable firms. A plausible explanation is that while nontradable firms are severely affected by declines in demand due to economic fragility and uncertainty, tradable firms partially compensate for this situation by being able to sell their products abroad. The possibility of selling products abroad allows them to gain foreign exchange, which is particularly desirable during devaluation episodes, thus preventing them from having to engage in the sale of fixed assets to curb liquidity constraints.

This data analysis revealed interesting trends and characteristics of firm behavior during sudden stop vs. non-sudden stop episodes, clearly revealing that across sectors, firms tended to be significantly hurt by the Sudden Stop episode in terms of profitability, ability to repay debt, and debt structure. Furthermore, what seems evident is that the tradable and nontradable sectors behave significantly different. In the next section, we explore in greater detail the investment adjustment of Thai firms as a response to increasing financial constraints during times of financial distress.

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[13] See Figure II-graph F.

III. Empirical Estimations and Results

In this section, we gauge the importance that shocks to firms' balance sheet play on the adjustment of fixed assets using a random effects model[15]. We estimate a reduced form investment equation (1) where lagged investment, profitability, and financing costs (or shocks to balance sheet) account for fixed asset growth (see Blanchard et al, 1993).

$$I_{ijt}/K_{ijt-1} = Constant + \beta_1 X + \zeta_{ijt} \tag{1}$$

where ζ_{ijt} is the error term and I_{ijt}/K_{ijt-1} stands for the adjustment of fixed assets of firm i, in sector j at time t. **X** represents a vector of firm-specific variables, which vary by firm i or sector j and over time t. As previously discussed, **X** is a vector of balance sheet health as well as lagged dependent, domestic demand as captured by sectoral consumption, and other firms' characteristics variables.[16] For the balance sheet variables capturing shocks to net worth, values in profitability and debt maturity structure are used with one lag as they could be affected by current investment opportunity variables.[17] As for profitability, unlike Aguiar (2004) which looked at "exports", we use "profit" instead as our sample includes non-tradable sector firms. [18]

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[14] ADRs, which stand for American Depositary Receipts, are certificates evidencing ownership in one or several American Depositary Shares (ADSs). ADSs are a US dollar denominated form of equity ownership in a non-US company—a Thai company in our case (www.adr.com).

[15] The random effects estimator fits cross-sectional time-series regression models using a GLS estimator. Breusch-Pagan and Lagrange multiplier tests attest to the appropriate selection of the random effects estimator.

[16] It is important to note that we tested for a potential two-way direction of causality between firm-specific variables and the dependent variable (percentage changes in fixed assets) in order to determine if right-hand-side variables need to be lagged in order to avoid potential endogeneity. The tests strongly rejected the hypothesis of causality in both directions for all firm-specific variables in the system.

[17] To control for investment opportunities, a proxy such as total market value to its book value—a rough proxy for Tobin's Q—could be introduced. However, the variable may not be very relevant in our case as the asset markets in Thailand are not very liquid. Further, the sample includes the period of excessive speculation, thus the market valuation may have deviated from fundamentals. Nonetheless, we consider the variable in an alternative specification as part of the robustness analysis to test if it is binding in Thai firms' decision on investment.

[18] Additionally, interest coverage ratio—as a factor affecting balance sheet—is also tested for its explanatory power, but does not turn out to be a significant factor in our sample.

Firms' characteristics that we consider include firm size (as measured by market capitalization), degree of Thai ownership (dummy variable),[19] whether firms are tradable goods producers or not (dummy variable), whether a multinational firm or not (dummy variable), and whether an ADR issuer or not (dummy variable).

The analysis distinguishes between periods of Sudden Stops of capital inflows, tradable and nontradable sectors, and short- and long-term maturity holders.[20] The benchmark model to be estimated is of the following form:[21]

$$I_{ijt}/K_{ijt-1} = \beta_1(Constant + X) + \gamma_0 SS + \gamma_1 (SS*(Constant + X)) + \zeta_{ijt} \qquad (2)$$

SS is a dummy variable that identifies the Sudden Stop episode (1997 and 1998),[22] and is interacted with a constant and the vector **X** to determine whether the variables behaved differently during the Sudden Stop episode. The β_1 coefficient captures the average effect of variables considered on a firm's fixed assets growth, while the $(\beta_1 + \gamma_1)$ coefficient captures the effect during the Sudden Stop episode.

Main Results—Tranquil vs. Sudden Stop Episodes

Results in **Table IV** – A-C reveal that shocks to net worth—profitability and maturity structure, variables of our interest—exhibits interesting regularities in affecting fixed assets adjustment. The two variables, however, appear important in different periods—profitability in a tranquil period but maturity structure in a Sudden Stop period. This result is both intuitive and robust across different specifications.

As **Table IV** – C reveals, aside from lagged dependent variables and sectoral consumption, during tranquil periods, fluctuations in a firm's fixed assets depend primarily on its profitability, size, whether it is a multinational, and whether it is an ADR issuer. Alternatively, during Sudden Stop

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[19] For the degree of Thai ownership, we tried using a continuous variable reflecting the actual percentage of ownership. For the size of the firm in addition to market capitalization, we tried a proxy asset size. None of them changes our main results.

[20] Exact variable descriptions and sector descriptive statistics are in the Appendix.

[21] We tested for a potential two-way direction of causality between firm-specific variables and the dependent variable. The tests strongly rejected the hypothesis of causality in both directions for all firm-specific variables in the system.

episodes, firms' characteristics such as holding long-term maturity debt and being a tradable goods producer become the factors that reduce the chances of having to postpone new fixed asset investment, or sell fixed assets to reduce financing constraints.

As one would expect, Thai firms will be less likely to feel financially constrained if the firms experienced high profitability—defined as after-tax profit divided by total assets—in the previous period. Our results in Table IV-C reveal that during tranquil periods a unit increase in profitability leads to a 0.4% increase in fixed assets growth in the following period. Contrary to general understanding, however, being multinational has negative effects on a firm's fixed assets during good times. As being multinational represents additional financing alternatives, one would expect positive effects. As the graphical analysis suggests, however, this negative relationship may be because multinational firms' fixed assets did not recover following the Sudden Stop episode. In our sample of Thai firms, being multinational leads to a 0.1% decline in firms' fixed assets growth during tranquil times, but was not a significant factor during the Sudden Stop period. Firms' fixed asset growth is also accentuated when firms are of larger size. This is reinforced by the regression results, which reveal that when a firm becomes on average larger than the median, its fixed assets tend to grow by 0.1%. This effect is significant even during Sudden Stop episodes and is of practically similar magnitude, which clearly demonstrates that being better known provides apparently more financing alternatives.

Alternatively, having a longer-term debt maturity structure seems to play an important role at times of crisis and when there are severe liquidity constraints, i.e., when interacting with the dummy variable that represents Sudden Stop episodes. This is certainly intuitive during times of liquidity constraints, as was the case in Thailand during the crisis. Having more time to repay debts saves firms from having to postpone desired investment or resort to sales of assets to fulfill maturing debt obligations or to find expensive financing, if at all available, to roll over maturing debt. A shorter-term debt maturity structure led Thai firms during the sudden stop episode to a 0.2% decrease in their annual fixed asset growth.

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[22] For the sudden stop dummy variable we tried identifying those periods of negative capital inflows (after 1997quarter 1) vs. just 1997 and 1998, as the current sudden stop dummy depicts. Both yield similar results.

Further, **Table IV** – D presents an estimation result for tradable goods producers by including lagged growth of sectoral exports. The possibility of selling products abroad could allow tradable sector firms to gain foreign exchange, which is particularly desirable during devaluation episodes thus preventing them from having to engage in forced fixed assets to curb liquidity constraints. Contrary to Aguiar (2004),[23] however, our results reveal that the sectoral export growth does not matter for the growth of fixed assets both during tranquil and Sudden Stop periods.

Tradable vs. Nontradable Producers

Descriptive statistics revealed significantly different behavior between tradable and nontradable good producers, which was also apparent in the previous regression results and which are worth exploring further. The different behavior could arise because tradable firms partially compensate for the declines in demand, during a sudden stop/crisis episode, by being able to sell their products abroad. Nontradable firms, alternatively, could find themselves more constrained due to the slowdown in domestic sales, economic fragility and uncertainty.

The benchmark model is slightly modified to incorporate differences between tradable vs. nontradable firms during tranquil and Sudden Stop times:

$$I_{ijt} /K_{ijt-1} = \beta_1(\textbf{Constant+X}) + \gamma_1\ (\textbf{SS* (Constant+X)}) + \eta_1\ (\textbf{Nontradable*(Constant+X)})$$
$$+ \lambda_1\ (\textbf{Nontradable*SS*(Constant+X)}) + \zeta_{ijt} \qquad (3)$$

In this case, the β_1 coefficient captures the average response of sector- and firm-specific characteristics on **tradable** firms' fixed assets during good times, while $(\beta_1+\gamma_1)$ captures their average response during the sudden stop episode. Alternatively, $(\beta_1+\eta_1)$ captures the average response of sector- and firm-specific characteristics on **nontradable** firms' fixed assets during good times, while $(\beta_1+\gamma_1+\eta_1+\lambda_1)$ captures the average response of sector- and firm-specific characteristics on nontradable firms' fixed assets during the sudden stop episode (see **Table V**).

Results reinforce the outcome of the previous specification in that profitability matters only during a tranquil period while exposure to short-term maturity debt becomes a significant factor in a Sudden Stop period—both after controlling for persistency with lagged dependent variables. These relationships appear quite robust. Additionally, an intuitive finding from this estimation is such that for

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[23] Note that Aguiar (2004) considers firm-level exports/sales while our data is at the sectoral level.

both profitability and maturity structure, the impacts are much larger for nontradable sector firms. This result supports our prior suggestion of nontradable firms being more sensitive to balance sheet fluctuations.

Further, in the case of nontradable goods producers, increases in domestic consumption are important. Annual percentage increases in consumption lead to increases in the growth of firm fixed assets of 1.8% (2.0%) during tranquil (Sudden Stop) periods. Such impacts are more significant and four times larger than those for tradable firms. The strong influence of the domestic variable on nontradable producers is intuitive, as revenues of nontradable goods producers are largely determined by domestic consumption.

As for firm characteristics, size continues to be significant in all cases, but there are some other variables that come into effect. For tradable sector firms, having a high degree of Thai ownership helped to increase fixed assets growth by 0.1% during the Sudden Stop period. Meanwhile, for nontradable firms, being multinational reduces the growth of fixed assets during tranquil times. That is to say that the significant effect with the multinational variable previously found in Table **IV** – C was due to the nontradable sector firms. It is the multinational firms in nontradable sectors that cause this negative relationship.

Debt Structure, Long- vs. Short-term Maturity

Since having a longer debt maturity structure seems to be beneficial at times of economic fragility, we explore this relationship further. We divide the sample between those firms that have a longer-term maturity structure of debt and those that have a shorter one,[24] to analyze how they are affected by certain sector- and firm-specific characteristics during tranquil and tumultuous episodes.

We adjust the benchmark model as follows:

$$I_{ijt}/K_{ijt-1} = \beta_1(\textbf{\textit{Constant+X}}) + \gamma_1 (\textbf{\textit{SS* (Constant+X))}} + \eta_1 (\textbf{\textit{LongMaturity *(Constant+X))}} + \lambda_1 (\textbf{\textit{LongMaturity *SS*(Constant+X))}} + \zeta_{ijt} \qquad (4)$$

In this case, the β_1 coefficient captures the average response of sector- and firm-specific characteristics on the fixed assets of firms holding debt with a short-term maturity structure during tranquil times, while $(\beta_1+\gamma_1)$ captures their average response during the sudden stop episode.

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[24] The sample is divided based on a median value of a ratio, short-term borrowing over total debt.

Alternatively, $(\beta_1+\eta_1)$ captures the average response of sector and firm characteristics on fixed assets of firms holding debt with a long-term maturity structure during good times, while $(\beta_1+\gamma_1+\eta_1+\lambda_1)$ captures their average response during the sudden stop episode (see **Table VI**).

Firms that have a longer-term debt maturity structure should be less financially constrained than those holding debt with short-term maturity. Consequently, in general terms they should be less likely to rely on constrained physical capital adjustment to fulfill debt obligations because they have more time to look for alternative ways of finding either financing or other means to repay debt.

There are certain firm-specific characteristics that influence decisions regarding these firms' fixed asset growth. For example, firms holding mostly short-term debt tend to focus primarily on firm size during both good and bad times to make decisions regarding the fixed assets adjustment. Both during good and bad times, being a large firm leads to positive fixed asset growth rates in spite of the shorter debt maturity structure. Furthermore, during tranquil periods being a tradable producer also works favorably, leading to fixed asset growth and consequently to a lower likelihood of having to resort to the sale of fixed assets to fulfill financing constraints.

Though still a significant factor, the firm size matters less for firms holding a long-term debt—significant at 9% as opposed to 0% for short-term debt holders. During tranquil times, with a less financially constrained macroeconomic environment in general, our results demonstrate that for firms with long-term debt maturity structures, additional factors such as being a multinational firm or an ADR issuer matter in firms' fixed assets adjustment. Having additional sources of financing, such as through the issuance of ADRs, reduces the likelihood of having to resort to adjustment of fixed assets, but this is so only in tranquil times. This is very intuitive especially during good times. During crisis times, alternatively, fixed assets adjustments of firms holding long-term debt depend solely on firm size.

Robustness Tests

To assess the robustness of these findings, we conducted extensive sensitivity analysis. Some variables of particular interest are market-to-book value, firm age, and the quadratic sector

macroeconomic variable (consumption), which will be discussed in this section. [25] Reassuringly, however, this analysis revealed that the significance of variables did not change given alternative specifications. Table VII A-C presents results.

We first test the significance of market-to-book value as this could be an important factor affecting firms' incentive to invest. Myers (1977) noted that high market-to-book ratios indicate the presence of growth opportunities, which can be thought of as real options. Hence, we can possibly expect a positive impact on the balance sheet, and hence an increase in fixed assets growth. Meanwhile, past empirical studies assert that the relationship is mostly negative (Booth et al., 2001) due to agency costs attached to the real options as well as to short-run market movements, and a lack of immediate reaction by corporations. Probably due to these conflicting elements, we find the variable to be insignificant (Table VII - A), and exclude it from our benchmark specification.[26]

Further, firm age is an important factor in firms' fixed assets adjustment. Intuitively, younger firms may have more need to invest in fixed assets when they set up their business, but then as firms age, the need for more fixed assets may lessen. Estimation results (Table VII - B) support the prior that firm age and fixed asset growth has a negative relationship, with one year of aging decelerating firms' fixed asset growth by 0.01% during tranquil times. Interestingly, this negative relationship holds only during the tranquil period, and is an insignificant factor during a Sudden Stop period. Although this is potentially an important variable, we do not include it in the benchmark specification given the limited data availability.[27]

Lastly, growth in consumption is replaced with the one in quadratic form in the benchmark specification. This treatment is used to control for any nonlinear responses to the recession that interaction terms (with Sudden Stop) may be picking up. Our main conclusions are unaffected by this inclusion. Estimation results (Table VII - C) virtually remain the same, supporting the main results.

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[25] Another important investment relationship is the one with "uncertainty". Uncertainty as measured by standard deviation of monthly growth in equity price was also tested. Both current and lagged values were incorporated. Results reiterate the importance of profitability in tranquil time, and debt maturity structure during Sudden Stop period, though slightly smaller magnitude than that with the benchmark specification. We left the variable out of the benchmark equation because of the limited data availability.

[26] Additionally, interest coverage ratio—as a factor affecting balance sheet—is also tested for its explanatory power, but does not turn out to be a significant factor in our sample.

[27] Note that the sample size is reduced significantly to have only 413 observations.

Maturity structure continues to show significant explanatory power during the Sudden Stop period. The only distinction might be that the impact of quadratic consumption growth on firms' fixed asset growth is about half that of the benchmark specification leaving all other parameters the same.

In capturing the capital outflow period, as an alternate to the Sudden Stop dummy, we used lending of Thai banks that report to the Bank of International Settlements (BIS) as a measure of the degree of decline in bank lending during the period of analysis. We did this to evaluate whether changes in BIS lending led to increased fluctuations in firms' fixed asset levels. This variable is an interesting alternative to the Sudden Stop dummy variable chosen for the analysis above, because on the one hand it is continuous and on the other, it interestingly depicts a substantial decline in lending to the Thai nonfinancial private sector during the Sudden Stop episode.[28] Results for the whole sample using the BIS lending variable instead of the sudden stop dummy variable reveal very little difference between the regressions in terms of significance and magnitude of coefficients.[29]

IV. Conclusion

We have explored the relationship between fluctuations in firms' fixed assets growth and financial constraints in the context of the capital inflow reversals and devaluation of the late 1990s in Thailand. We looked at data from 284 nonfinancial firms in tradable and nontradable industries listed in the Thai stock market between 1992 and 2001. Some of the most important patterns that emerged revealed that Thai nonfinancial firms suffered from large declines in the growth of their fixed assets[30] during the Sudden Stop episode. This finding supported our initial belief that a large portion of the decline in firm fixed assets could have been in the form of distressed sales.

Regression results enhanced broad trends, initially identified through graphical analysis, by detailing what were the particular firm-specific factors that accentuate the fixed asset fluctuations.

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[28] Lending by BIS-reporting banks to the Thai private sector reached a peak of approximately US$40 billion during the second quarter of 1996 and then declined without recovering, but stabilized at US$15 billion.
[29] There is, however, a slight increase in the magnitude of significant coefficients in the regression, which uses BIS lending as an interactive variable.

These revealed that firms tend to reduce the rate of fixed assets accumulation if they are of smaller size, in a nontradable sector, and have more short-term debt. Meanwhile, it is firms' profitability, not their debt maturity structure that matters during tranquil periods. Furthermore, we identified important differences between tradable and nontradable firm producers when it comes to resorting to the sale of fixed assets at times of distress. Nontradable firms, for example, were largely affected by whether they are multinational or not, while tradable firms' decisions were affected by the degree of Thai ownership during the Sudden Stop period.

The results are intuitive and in line with the literature that describes situations of financial constraints, the behavior of firms in distress, and, to some extent, the characteristics of fire sales. Future research should aim at detailing forced investment adjustments with price pressure to capture directly the phenomenon of fire sales of fixed assets. Furthermore, our findings are testable in other regions or markets that have undergone similar episodes and some have already been initiated.

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[30] A decline of approximately 30%.

Data Appendix

Variable	Construction	Source
Fire Sales	Growth of Total Fixed Assets	Datastream
Capital Flow	Current account (line 78ALD) + Exceptional finance (line 79DAD)	International Financial Statistics, IMF
ADRs	Dummy variable denoting 1 if ADR is issued by the Thai firm in question and zero otherwise. Our dataset includes all ADRs outstanding as quoted in the NYSE as of 9/2002.	JP Morgan's www.adr.com
Sectoral Inflation	Growth rate of producer price or consumer price by sector	Department of Internal Trade, Ministry of Commerce
Real Sectoral GNP	Percentage change of variable in local currency	National Economics and Social Development Board of Thailand.
Sectoral Consumption	Percentage change of variable in local currency.	National Economics and Social Development Board of Thailand.
Sectoral Exports	Percentage change of variable in local currency.	Customs Department, Bank of Thailand
Sectoral Capital Formation	Percentage change of variable in local currency.	National Economics and Social Development Board of Thailand.
BIS Bank Claims	Consolidated claims of BIS-reporting banks on Thai nonbank private sector	Bank of International Settlements (BIS 9_a)
Profitability	After-tax Profit/Total Assets	Datastream
Interest Coverage Ratio	Earnings before interest and taxes divided by net interest charges. nm1300/nm2408	Datastream
Debt Maturity	Short-term debt/Total Debt ratio.	Datastream
Tradable vs. nontradable	Dummy variable based on the sector classification (Tradable: Food, Household, Manufacture, and Primary, Nontradable: Real Estate and Service)	Datastream
Size	Total Market Capitalization (=1 if greater than median, =0 otherwise)	Datastream
Market-to-book ratio	Stock price over book value per share	Datastream
Firm Age	Number of years after establishment	Firms' websites
Ownership	Percentage of Thai ownership (100% being highest Thai ownership)	Thailand's Department of Commerce
Multinational	Dummy variable (=1 if multinational, =0 otherwise)	Financial Times Multinational Index, The Directory of Multinationals, and Worldwide Branch Locations of Multinationals
Total Fixed Assets	The net total (after deducting accumulated depreciation) of land and buildings, plant and machinery, construction in progress and other fixed assets. Assets leased out are excluded.	Datastream nm339
Total Assets	The sum of tangible fixed assets, intangible assets, investments (including associates), other assets, total stocks & WIP, total debtors & equivalent and cash & cash equivalents. Common adjustments: deferred tax, if shown as an asset, is offset against any deferred tax liability, goodwill carried in reserves is transferred to intangible assets, advances on work in progress if disclosed as a liability by the company has been offset against stocks and work in progress	Datastream nm392
Total Sales	The amount of sales of goods and services to third parties relating to the normal industrial activities of the company. It is net of sales-related taxes and excludes any royalty income, rental income and other operating income. For those countries (mainly in the Far East and Australia) where a total recurring revenue figure is stated on the	Datastream nm104

	face of the income statement, the notes to the accounts will exclude income not directly related to the trading activities of the company, such as proceeds from sale of assets, dividend income and interest income.	
Total Debt	The total of all long- and short-term borrowings, that is, the total of: Bank overdrafts and other short term borrowings; Loan capital, including debentures; Finance leases and hire purchase agreements (short and long term); Obligations under capital leases (short and long term); Loans from associated companies; Notes payable - finance companies **Short-term Debt** (nm309): Shows bank overdrafts, loans and other short-term borrowing. The current portion of long-term loans is included. (Banks, insurance and miscellaneous financials: not supported for Hong Kong, Indonesia, Korea, Malaysia, New Zealand, Philippines, Singapore, South Africa, and Thailand).	Datastream nm1301
Operating Profits	This is the profit derived from operating activities, i.e., before the inclusion of financial income /expense, financial and extraordinary provisions and extraordinary profits/losses. **Published after-tax profit** (nm623): The profit after tax for the financial period as reported by the company, before minority interest, pre-acquisition profits, and provision for preference and ordinary dividends. The after-tax share of profits of associated companies is included, where applicable. **Pre-tax profit** (nm154): The pre-tax profit for the financial period when reported by the company. Many Thai companies do not show a pre-tax profit in their published accounts. In these instances, a pre-tax profit is provided by aggregating the reported values for "Net Income" and "Income Tax".	Datastream nm993
Net Interest Charges	Normally loaded as reported by the company, it represents the aggregate value of interest paid (after capitalized interest) less interest received. It includes interest on hire purchase and leasing.	Datastream (nm2408)
Earnings before Interest and Tax	Earnings before Interest & Tax (EBIT). All industry groups The earnings of a company before interest expense and income taxes. Calculated by taking the pre-tax income and adding back only the total interest expense on debt. For the following countries net interest charges (total interest expense minus interest income) is used: Hong Kong, Indonesia, Korea, Malaysia, New Zealand, Philippines, Singapore, South Africa, Thailand.	Datastream (nm1300)
Total Stock and Work in Progress	Forming part of the current assets this item includes: the reported figure for stocks under current assets or its constituents such as raw materials, supplies, finished goods, etc.; development property and properties held for sale if disclosed separately from the reported figure for stocks; WIP and cost of completed contracts in excess of billings if disclosed separately from the reported figure for stocks.	Datastream (nm364)

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Table I: **Summary Statistics by Industry**

Industry Description	Num of Firm	% of Total	Num of Observation	Tradable - Non Tradable
Generators and distributors of electricity	1		7	Non - Tradable
Companies responsible for the provision of water and the removal of sewage.	1		3	Non - Tradable
Gas Distribution	1		8	Non - Tradable
Software & Computer Services	1		10	Non - Tradable
Telecom Services	7		57	Non - Tradable
Hospital Management & Long Term Care	11		92	Non - Tradable
Support Services	1		10	Non - Tradable
Food & Drug Retailers	1		9	Non - Tradable
Retailers, General	8		69	Non - Tradable
Leisure, Entertainment & Hotels	14		123	Non - Tradable
Media & Photography	13		97	Non - Tradable
Transport: Airlines & Airports, Rail, Road & Freight, Shipping & Ports	9		73	Non - Tradable
Service	**68**	**23.9**	**558**	
House Building	3		30	Non - Tradable
Other Construction	1		8	Non - Tradable
Real Estate	24		187	Non - Tradable
Real Estate	**28**	**9.9**	**225**	
Non-Tradable	**96**	**33.8**	**783**	
Mining	4		33	Tradable
Oil - Integrated	1		8	Tradable
Oil & Gas - Exploration & Production	1		9	Tradable
Providers of services, including drilling, for oil and natural gas exploration and production.	1		10	Tradable
Building & Construction Materials	20		169	Tradable
Steel & Other Metals	5		40	Tradable
Producers, converters and merchants of all grades of paper.	13		111	Tradable
Primary Commodities and Raw Materials	**45**	**15.8**	**380**	
Chemicals	19		154	Tradable
Information Technology Hardware	6		49	Tradable
Engineering & Machinery	5		38	Tradable
Automobiles & Parts	9		79	Tradable
Diversified Industrials	4		38	Tradable
Electronic & Electrical Equipment	13		106	Tradable
Manufactured	**56**	**19.7**	**464**	
Household Goods & Textiles	42		394	Tradable
Personal Care & Household Products	5		44	Tradable
House Hold	**47**	**16.5**	**438**	
Soft Drinks	2		20	Tradable
Food Producers & Processors	38		338	Tradable
Food	**40**	**14.1**	**358**	
Tradable	**188**	**66.2**	**1640**	
Total	**284**	**100.0**	**2423**	

Table II: Firms' Characteristics by Sector

Sector	Total Sales 1/	Total Asset Size 1/	After tax profit 1/	Profitability	Maturity structure (Short-term Borrowing / Total Debt)	% of Thai Ownership	Multinational (1 if Multinational)
				Mean of			
Food	4,101,828	2,851,679	154,925	0.05	0.80	55	0.07
HouseHold	2,536,282	3,084,162	120,493	0.04	0.77	48	0.06
Manufactured	3,882,950	8,079,078	32,380	0.02	0.73	58	0.12
Primary	5,705,389	11,655,857	152,857	0.00	0.64	55	0.10
RealEstate	2,368,471	11,102,006	-292,876	-0.05	0.56	52	0.08
Service	3,926,990	10,380,353	153,309	0.02	0.57	46	0.16
Non-Tradable	3,866,412	10,591,635	23,604	0.00	0.57	48	0.13
Tradable	3,978,272	6,432,733	110,760	0.03	0.73	54	0.09

t-test
Ho: mean(Tradable) - mean(No Tradable) = = 0

P Value	0.82	0.00	0.20	0.00	0.00	0.00	0.00

1/Million of Baht

Table III: Tranquil vs. Sudden Stop Episodes

	Growth of Fixed Assets	Sector Inflation	Sector GNP growth	Sector Exports growth	Sector consumption growth	Sector Capital formation growth	After tax profits	Profitability growth	Interest Coverage ratio	Maturity
Tranquil	0.073	0.028	0.056	0.033	0.062	0.029	78440.28	-0.061	21.897	0.677
Sudden Stop	0.026	0.059	-0.042	0.057	-0.092	-0.373	95397.08	0.208	7.341	0.691
Ttest (pvalue)	0.0640	0.0000	0.0000	0.0350	0.0000	0.0000	0.8236	0.0000	0.3006	0.3574

Table IV: Regression Results – Entire Sample

$$I_{ijt}/K_{ijt-1} = \beta_1(Constant + X) + \gamma_0 SS + \gamma_1(SS*(Constant + X)) + \zeta_{ijt}$$

β_1	A Coefficient	p-value	B Coefficient	p-value	C Coefficient	p-value	D Coefficient	p-value
Lagged Fixed Assets	-0.05	0.00	-0.04	0.00	-0.10	0.00	-0.11	0.00
Lagged Growth of Fixed Assets	-0.03	0.36	-0.04	0.16	-0.04	0.16	0.00	0.98
Lagged Profitability	0.71	0.00	0.69	0.00	0.40	0.00	0.26	0.03
Lagged Maturity Structure	-0.07	0.10	-0.06	0.22	-0.03	0.58	-0.01	0.90
Lagged Growth of Sectoral Consumption			0.50	0.00	0.39	0.00	0.26	0.05
Lagged Growth of Sectoral Exports							-0.05	0.52
Tradable Sector Dummy					0.03	0.33		
Size (Market Value)					0.09	0.00	0.08	0.00
Ownership Dummy					0.01	0.79	0.02	0.47
Multinational Dummy					-0.11	0.05	0.01	0.85
ADR Dummy					0.13	0.09	0.01	0.95
Constant	0.78	0.00	0.60	0.00	0.03	0.87	0.39	0.06
Number of obs	1791		1648		1648		1113	
R squared: within	0.16		0.17		0.25		0.30	
Between	0.02		0.01		0.01		0.08	
Overall	0.12		0.13		0.17		0.24	

Test Variables Interacted with Sudden Stop Dummy Variable

($\beta_1+\gamma_1$)	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Lagged Fixed Assets	0.00	0.84	0.00	0.80	-0.05	0.01	-0.07	0.01
Lagged Growth of Fixed Assets	-0.47	0.00	-0.47	0.00	-0.45	0.00	-0.59	0.00
Lagged Profitability	0.42	0.05	0.37	0.09	-0.17	0.49	-0.23	0.36
Lagged Maturity Structure	-0.17	0.02	-0.16	0.03	-0.17	0.03	-0.20	0.03
Lagged Growth of Sectoral Consumption			0.34	0.15	0.05	0.04	0.59	0.01
Lagged Growth of Sectoral Exports							-0.07	0.23
Tradable sector Dummy					0.12	0.02		
Size (Market Value)					0.08	0.00	0.10	0.00
Ownership Dummy					0.06	0.16	0.10	0.03
Multinational Dummy					-0.03	0.74	-0.01	0.95
ADR Dummy					-0.02	0.90	0.00	0.99
Constant	0.12	0.66	0.10	0.72	-0.32	0.27	-0.22	0.52

Table V: **Regression Results – Tradable vs. Nontradable Sectors**

$I_{ijt}/K_{ijt-1} = \beta_1(\textbf{Constant+X}) + \gamma_1 (\textbf{SS* (Constant+X)}) + \eta_1 (\textbf{Nontradable*(Constant+X)})$
$+ \lambda_1 (\textbf{Nontradable*SS*(Constant+X)}) + \zeta_{ijt}$

	(β_1) Tradable Producers		($\beta_{1+}\eta_1$) Nontradable Producers	
	Coefficient	p-value	Coefficient	p-value
Lagged Fixed Assets	-0.11	0.00	-0.08	0.00
Lagged Growth of Fixed Assets	0.00	1.00	-0.13	0.00
Lagged Profitability	0.26	0.05	0.60	0.00
Lagged Maturity Structure	-0.01	0.90	-0.06	0.41
Lagged Growth of Sectoral Consumption	0.31	0.01	1.78	0.00
Size (Market Value)	0.08	0.00	0.12	0.00
Ownership Dummy	0.02	0.57	0.00	0.98
Multinational Dummy	0.00	0.95	-0.27	0.00
ADR Dummy	0.04	0.63	-0.17	0.72
Constant	0.40	0.08	-0.58	0.04
Number of observations	1648			
R squared: within	0.27			
between	0.02			
Overall	0.20			

	($\beta_1+\gamma_1$) Tradable Producers during Sudden Stop Episodes		($\beta_1+\gamma_1+\eta_1+\lambda_1$) Nontradable Producers during Sudden Stop Episodes	
	Coefficient	p-value	Coefficient	p-value
Lagged Fixed Assets	-0.08	0.02	-0.04	0.94
Lagged Growth of Fixed Assets	-0.13	0.00	-0.72	0.00
Lagged Profitability	-0.25	0.38	0.09	0.80
Lagged Maturity Structure	-0.20	0.05	-0.26	0.07
Lagged Growth of Sectoral Consumption	0.52	0.05	1.99	0.00
Size (Market Value)	0.10	0.00	0.15	0.00
Ownership Dummy	0.11	0.02	0.09	0.22
Multinational Dummy	0.01	0.94	-0.27	0.07
ADR Dummy	-0.11	0.42	-0.33	0.51
Constant	-0.27	0.48	-1.24	0.02

Table VI: Regression Results – Long- vs. Short-Term Debt Maturity Structure

I_{ijt} /K_{ijt-1} = $\beta_1(Constant+X)$ $+\gamma_1$ $(SS^*$ $(Constant+X))$ $+\eta_1$ $(LongMaturity$ $^*(\,Constant+X))$
$+ \lambda_1$ $(LongMaturity$ $^*SS^*(\,Constant+X)) + \zeta_{ijt}$

	(β_1) Short-maturity Holders		($\beta1+\eta1$) Long-maturity Holders	
	Coefficient	p-value	Coefficient	p-value
Lagged Fixed Assets	-0.11	0.00	-0.07	0.00
Lagged Growth of Fixed Assets	-0.14	0.00	0.05	0.16
Lagged Profitability	0.39	0.00	0.52	0.00
Lagged Growth of Sectoral Consumption	0.43	0.01	0.37	0.04
Tradable Sector Dummy	0.13	0.01	-0.17	0.09
Size (Market Value)	0.11	0.00	0.07	0.00
Ownership Dummy	0.00	0.95	0.01	0.77
Multinational Dummy	-0.06	0.55	-0.11	0.10
ADR Dummy	-0.06	0.70	0.18	0.05
Constant	-0.04	0.89	0.03	0.88
Number of observations	1666			
R squared: within	0.28			
Between	0.00			
Overall	0.20			
	($\beta_1+\gamma_1$) Short-maturity Holders during Sudden Stop Episodes		($\beta1+\gamma1+\eta1+\lambda1$) Long-maturity Holders during Sudden Stop Episodes	
	Coefficient	p-value	Coefficient	p-value
Lagged Fixed Assets	-0.10	0.00	-0.06	0.13
Lagged Growth of Fixed Assets	0.11	0.45	0.30	0.05
Lagged Profitability	-0.32	0.29	-0.20	0.59
Lagged Growth of Sectoral Consumption	0.14	0.67	0.09	0.84
Tradable Sector Dummy	-0.04	0.37	-0.17	0.09
Size (Market Value)	0.10	0.00	0.07	0.09
Ownership Dummy	0.09	0.13	0.10	0.22
Multinational Dummy	0.00	0.97	-0.05	0.78
ADR Dummy	-0.08	0.72	0.16	0.59
Constant	0.01	0.98	0.08	0.89

Table VII: Robustness Analysis

$I_{ijt}/K_{ijt-1} = \beta_1(Constant + X) + \gamma_0 SS + \gamma_1 (SS^*(Constant + X)) + \zeta_{ijt}$

	A		B		C	
β1	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Coefficient**	**p-value**
Lagged Fixed Assets	-0.05	0.00	-0.05	0.02	-0.04	0.00
Lagged Growth of Fixed Assets	-0.03	0.36	-0.04	0.53	-0.04	0.16
Lagged Profitability	0.71	0.00	0.93	0.00	0.69	0.00
Lagged Maturity Structure	-0.08	0.10	-0.27	0.00	-0.06	0.22
Lagged Growth of Sectoral Consumption (Quadratic Form)					0.25	0.00
Market-to-Book Value	0.00	0.19				
Firm Age			-0.01	0.05		
Constant	0.78	0	0.95	0.00	0.60	0.00
Number of observations	1791		413		1648	
R squared: within	0.16		0.11		0.17	
between	0.02		0.04		0.01	
overall	0.12		0.09		0.13	

Test Variables Interacted with Sudden Stop Dummy Variable

|	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
(β1+γ1)						
Lagged Fixed Assets	0.00	0.84	-0.02	0.53	0.00	0.80
Lagged Growth of Fixed Assets	-0.47	0.00	-0.11	0.19	-0.47	0.00
Lagged Profitability	0.42	0.06	0.22	0.68	0.37	0.09
Lagged Maturity Structure	-0.17	0.02	-0.23	0.16	-0.16	0.03
Lagged Growth of Sectoral Consumption					0.17	0.15
Market-to-Book Value	0.00	0.98				
Firm Age			0.00	0.77		
Constant	0.12	0.657	0.48	0.44	0.10	0.72

Figure I: **Behavior of Thai Capital Flows**

Thailand Capital Flow
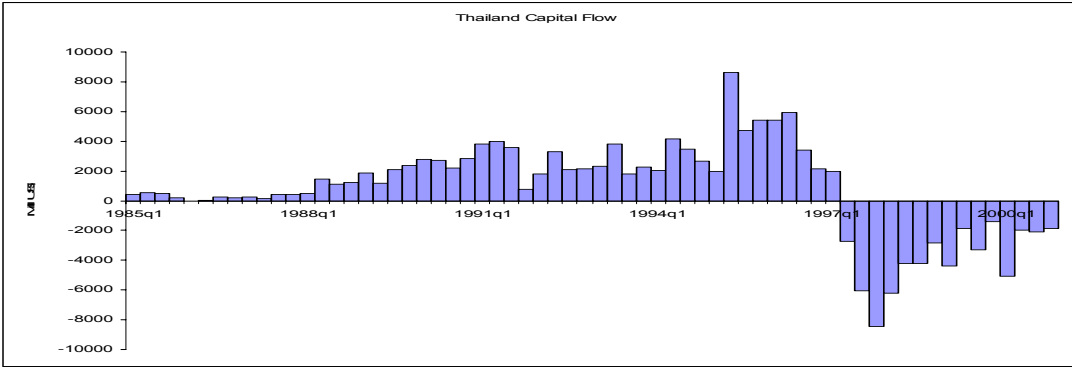
Figure II: Growth in Firm Fixed Assets