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Sudden Stops and Financial Frictions

Evidence from Industry Level Data

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Abstract

The nature of the microeconomic frictions that transform sudden stops in output collapses is not only of academic interest, but also crucial for the correct design of policy responses to prevent and address these episodes and the lack of evidence on this regard is an important shortcoming. This paper uses industry-level data in a sample of 45 developed and emerging countries and a differences-in-differences methodology to provide evidence of the role of financial frictions for the consequences of sudden stops. The results show that, consistently with financial frictions being important, industries that are more dependent on external finance decline significantly more during a sudden stop, especially in less financially developed countries. The results are robust to controlling for other possible mechanisms, including labor market frictions. The paper also provides results on the role of comparative advantage during sudden stops and on the usefulness of various policy responses to attenuate the consequences of these shocks.

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Sudden Stops and Financial Frictions: Evidence from Industry Level Data

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1. Introduction

In the last three decades, episodes of sharp contractions in international capital flows to emerging markets, known as *sudden stops*, have become a common phenomenon. According to Edwards (2007), and Rothenberg and Warnock (2006), a typical emerging market country is affected by one of these episodes roughly once every decade. The increase in capital flows to "frontier" markets during the last decade and the revived interest in emerging markets following the recent global financial crisis suggest that sudden stops may now likely to affect a broader set of countries and may do it in a deeper manner.

In addition to their prevalence, the academic and policy interest in these episodes arises from the fact that they are typically associated with collapses in real activity. Edwards (2007) finds that the current account reversals associated with sudden stops lead to an average drop in GDP growth of about four percent, and Calvo, Izquierdo, and Talvi (2006) document a collapse in GDP associated with systemic sudden stops of about 10 percent. These collapses in real activity are also typically accompanied by large depreciations and unemployment.

The simultaneous occurrence of sudden stops and output contractions is a stylized fact, but from a theoretical point of view, a sudden lack of access to international capital markets does not necessarily have to lead to a decline in GDP, as noticed by Chari, Kehoe, and McGrattan (2005). They study a simple model of a small open economy that suffers a sudden tightening in its international collateral constraint, and show that, in absence of other shocks or frictions, this economy would increase GDP in response to the

sudden stop.[1] The intuition is straightforward: a (borrowing) economy that loses access to international capital markets needs to export goods to repay its initial debt. To reduce the negative impact of this shift on consumption, the representative consumer will work more and increase production. Therefore, this simple model shows that the correlation between sudden stops and output collapses results from other frictions that interact with the lack of access to international capital markets and counterweight the forces leading to an increase in output.[2]

Since additional frictions are required for sudden stops having negative real consequences, the immediate question is what those frictions are. Most theoretical papers emphasize financial frictions at the firm level in the form of working capital financing constraints. For instance, in Neumeyer and Perri (2005), Mendoza (2008) and Christiano et al. (2004), firms must borrow to pay in advance a fraction of the wage bill or intermediate inputs facing some form of financial constraint that induces a wedge between the external and internal cost of funds and distort some of the investment

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[1] Chari, Kehoe, and MacGrattan (2005) show that the impact of a sudden stop is equivalent to the impact of an increase in government consumption in a prototype closed economy, which absent other frictions leads to an increase in output (Aiyagari, Christiano, and Eichenbaum, 1992).

[2] A slightly different view of sudden stops do not take the reversals as an external shock, but tries to derive them endogenously from the interaction of standard productivity or demand shocks and a series of market imperfections. Most of this literature focuses on financial market imperfections (Calvo, 1998; Mendoza, 2002; 2008; Mendoza and Smith, 2002; 2006). In this literature, the sudden tightening of the international borrowing constraint does not trigger a recession, but is the recession (negative productivity shock) that triggers the tightening of the constraint and enhances the initial effect of the shock under appropriate conditions. According to this view, a recession would be more likely to result in a sudden stop in less financially developed countries, but it would still be the case that industries subject to stronger financial frictions and with smaller incentives to export would be the most affected.

margins. Other types of financial constraints are also present in the models of Calvo (1998), Mendoza (2002, 2008), Mendoza and Smith (2002 and 2004), among others. In most of this literature, the sudden tightening of the international borrowing constraint does not trigger a recession, but is the recession (e.g. negative productivity shock) that triggers the tightening of the constraint and enhances the initial effect of the shock under appropriate conditions. According to this view, a sudden stop, understood as a reversal in capital flows, is more likely to result in a recession in countries where financial frictions are more prevalent, and in a larger output decline in industries that are both more sensitive to financial frictions and less benefited by relative price changes favoring tradable sectors.

In parallel to the literature focusing on financial frictions, a smaller literature considers the role of labor market frictions that preclude the prompt reallocation of labor between tradable and non-tradable sectors required by the sudden stop of capital flows (Kehoe and Ruhl, 2007). This type of mechanism would result in a relation between the degree of financial frictions in a country and its response to a sudden-stop. In addition, Martin and Rey (2006) consider the role of international segmentation of financial and good markets, incomplete asset markets, and expectation shocks to produce capital flights and output collapses in developing countries. This model would suggest some relation between the segmentation of goods markets and the impact of the expectations shock, which may translate in less tradable sectors being relatively more affected.

Despite the crucial role that micro-level frictions play in the determination of the real consequences of sudden stops from a theoretical perspective, there is little empirical evidence on their qualitative and quantitative importance. Most of the empirical literature on sudden stops has worked at the country level of aggregation, and has focused on quantifying the consequences of sudden stops on macro aggregates (Calvo,

Izquierdo, and Mejia, 2008; Calvo, Izquierdo, and Talvi, 2006; Calvo, Izquierdo, and Loo-Kung, 2006; Guidotti et al., 2004; Ortiz et al., 2007). This literature studies the role of various types of macroeconomic imbalances in the incidence of sudden stops, and focuses on determining the role of ex-ante and ex-post policies in dampening their real consequences. The nature of the microeconomic frictions that transform sudden stops in output collapses is not only of academic interest, but also crucial for the correct design of policy responses to prevent and address these episodes and the lack of evidence on this regard is an important shortcoming. In reaction to this situation, Chari et al. (2005) conclude: *"The key frictions that generate output drops in the existing literature on sudden stops are subtle ones for which so far there is little evidence. Finding that evidence is a challenge for future research."*

This paper provides evidence of the importance of financial frictions for the propagation of sudden stops to the real economy using detailed industry level data for a large set of developed and emerging countries. The paper exploits the heterogeneous response of different industries to the occurrence of a sudden stop, and the relationship between these responses and industry characteristics to identify the mechanisms at work in the propagation of the sudden stops to the real economy. This approach has several advantages over existing studies based on aggregate (country-level) behavior. Most importantly, the reverse causality between macroeconomic performance and the occurrence of sudden stop is much less of a concern when looking at the relation between detailed industry-level activity and aggregate shocks, such as sudden stops. Furthermore, the heterogeneous responses of industries to sudden stops allow us to use a difference-in-difference approach to identify the empirical importance of various possible mechanisms of transmission of sudden stops to the real economy. In particular, the paper tests whether, according to most existing theories, sudden stops result in a larger output decline in industries that are more sensitive to financial frictions and less likely to

expand exports, and whether this is especially true in less financially developed countries. These hypotheses are tested using detailed output data for 28 industries comprising the complete manufacturing sector in a sample of 45 emerging and developed countries that experienced sudden-stops in the last 30 years.

The results show that, indeed, output in sectors with higher external financing needs contract relatively more during sudden-stops episodes. The average decline in output growth among manufacturing industries is about 5 percent, but an industry with high external dependence (one standard deviation above the average) contracts 3 percent more than an industry with low external dependence (one standard deviation below the average). This larger decline among industries with high external dependence is significantly more pronounced among countries where firms are likely to experience higher financial frictions, such as emerging markets or countries with less developed financial markets, and among industries with little comparative advantages that are less likely to experience pressure to expand production.

Both the average and differential effect of sudden stops are much larger when considering only the episodes that coincide with an aggregate output contraction (recession), especially among financially underdeveloped countries. This shows that the simultaneous occurrence of a sudden stop and recessions are episodes when financing constraints are particularly tight. This is consistent with the hypothesis that the interaction of sudden stops and financing constraints at the micro level is behind the correlation between sudden stops and aggregate output declines.

The different effect of sudden stops across countries with low and high financial development is not purely due to differences in the size of the aggregate contractions associated with the sudden stop. Controlling for this size, all industries, and especially those with high external dependence experience a larger output contraction among less

financially developed countries. However, when looking only at sudden stop recessions the average manufacturing growth decline among manufacturing industries is similar in financially developed and underdeveloped countries, and the larger differential effect on externally dependent industries operating in less financially developed countries previously documented becomes smaller statistically insignificant. This tells us that the interaction between sudden stops and financing constraints results in larger aggregate contractions among less financially developed countries than in more developed ones. These results are robust to a battery of tests and do not crucially depend on the specific measure of sudden stops used or other details of the specification.

Looking at the differential impact of sudden stops on industries across other dimensions shows that durable industries also contract significantly more during these episodes, especially so in less financially developed countries. This is a very robust pattern of the data, and suggests that at least part of the cyclical behavior previously documented for durable industries come from financial frictions affecting the supply or demand for these goods. The results also show that industries with smaller comparative advantages decline relatively more during a sudden stop across all groups of countries.

We show that some policy actions may help reducing the impact of sudden stops on aggregate fluctuations. For instance, we show that a high level of international reserves reduces the average manufacturing output decline during a sudden stop, mainly by reducing the correlation between sudden stops and aggregate output contractions. In other words, in countries with high levels of reserves, a sudden stop is less likely to result in a recession, so the average and differential declines in manufacturing activity are smaller. Among sudden stops that are associated with recessions, a high level of initial reserves has no smoothing role. Nonetheless, we also show that following a loose monetary policy may also help dampening the impact of sudden stops both by reducing

their correlation with recessions, but also by dampening their impact after a recession has started. These effects are more pronounced among emerging and less financially developed markets, showing that they do not come only from the comparison of industrial countries that can follow countercyclical policies and the rest.

This paper contributes to the vast literature on the propagation and nature of sudden stops. As discussed above, the theoretical literature has shown that a capital flow reversal does not necessarily lead to output contraction, and that the propagation to the real side may require of additional frictions in financial or labor markets.[3] Nonetheless, there is little direct empirical evidence testing this conjecture. The evidence presented in this paper helps partially fill this gap. Some recent papers have also tried to understand the nature of these frictions. The closest to our paper is Gallego and Tessada (2009) who show that sudden stops have a larger impact on job flows on industries experiencing stronger financial constraints in a sample of 2-digit manufacturing industries in 4 Latin American countries. The results of this paper complement those of Gallego and Tessada (2009) in several dimensions. First, it shows that, in addition to job flows, production of financially dependent industries contracts relatively more during a sudden stop. Second, it uses a larger sample of 47 countries worldwide and a granular set of 28 3-digit industries. Third, it controls for several industry characteristics that relate to the heterogeneous response of industries to sudden stops, such as the durability of the goods it produces, and its degree of comparative advantages. Finally, this paper also studies the role of standard policy responses such as reserve accumulation and countercyclical monetary policy in taming the real consequences of sudden stops.

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[3] Calvo (1998), Neumeyer and Perri (2005), Mendoza (2008), Christiano et al. (2004), Mendoza (2002, 2008), Mendoza and Smith (2002 and 2006), among others.

The paper also contributes to the recent literature on sudden stop recoveries. There has recently been an interest in the quick recoveries experienced by many emerging markets suffering from systemic banking and currency crises. This phenomenon has already been labeled as "V-shaped recoveries" and "Phoenix-miracles" by different authors (Eichengreen and Rose, 2003; Calvo et al., 2006). The underlying observation being that in many countries output recovers surprisingly quickly after collapses of the exchange rate regime, banking sector, and massive capital flows reversals. Moreover, in many cases, this recovery seems to be "creditless" (Calvo et al., 2006), that is, output (and to a lesser extent investment) expands without a commensurate expansion of credit. This evidence seems in contradiction with the liquidity crunch view of sudden stops, but could be explained by compositional changes in the structure of recovery. Industries that need relatively little outside liquidity to operate could benefit from the resources freed by liquidity squeezed sectors and lead the recovery. We show that industries with little need of external financing are indeed relatively benefited during these episodes, especially those that have revealed comparative advantages, indicating that these industries may be behind the speedy recovery observed after sudden stops.

The rest of the paper is structured as follows. Section 2 describes the methodological approach used to test the hypothesis that sudden stops affect relatively more those industries that are more dependent in external finance, and especially so in countries with low financial development. Section 3 describes the data sources. Section 4 presents the main results of the paper. Section 5 conducts a series of robustness tests on the main results. Section 6 studies the role of policy responses. Section 7 concludes.

2. Methodology

If financial frictions are behind the negative impact of sudden stops on the real economy, industries that require larger amounts of external financing, that is those with higher

external dependence, should be relatively more affected by these episodes, especially so in financially underdeveloped countries.[4] As noticed by Chari, Kehoe, and MacGrattan (2005), a sudden stop also puts pressure to expand production through a simple wealth effect. For the sudden stop to result in a decline in output, it is necessary that financial frictions be strong enough to overcome these incentives to expand output to ship abroad. This is most likely to occur in sectors that require more external financing, especially in countries where this financing may be scarce.

This contraction is also more likely to occur for goods that are less tradable. In fact, there is widespread evidence that sudden stops result in a relative expansion of tradable sectors (Tornell and Martinez, 2003; Kehoe and Ruhl, 2009; among others). Thus, one would also expect that the industries that should decline the most during a sudden stop are those that are relatively less tradable and more exposed to financial frictions, regardless of whether it is sudden stops interacting with financial frictions that cause recessions or vice-versa.

To test these hypotheses, we estimate the parameters of the following empirical specification:

$$\begin{aligned} g_{i,c,t} &= \alpha\, Share_{i,c,t-1} + \beta\, SS_{c,t} + \gamma\, EXFD_i \times SS_{c,t} + \delta X_{i,c,t} \\ &\quad + \theta_{i,c} + \theta_t + \varepsilon_{i,c,t} \end{aligned}$$

where $g_{i,c,t}$ is the growth rate of sector i in country c at time t, and $Share_{i,c,t-1}$ is the lagged share of total manufacturing value added of the same industry. The variable $SS_{c,t}$ indicates whether country c is experiencing a sudden stop at time t (to be defined below), and $EXFD_i$ is a measure of an industry's external financial dependence. The

[4] See Braun and Larraín (2006) and Raddatz (2006) for the relation between industry volatility and response to shocks and external and working capital needs.

vector of controls $X_{i,c,t}$ includes, among other things, the interaction of the sudden stop indicator with measures of other dimensions of heterogeneity across industries, such as an indicator of whether they produce durable goods, their degree of capital intensity, etc.

The parameters $\theta_{i,c}$ and θ_t are country-industry and time fixed effects that control non-parametrically for all sources of variation across these dimensions. In alternative specifications, we also allow the time fixed effect to vary across industries (capturing global industrial cycles). The main parameter of interest is γ that measures the differential impact of sudden stops on industries with different levels of external dependence. If sudden stops produce a relatively larger decline in output in sectors subject to stronger financial frictions, this parameter should be significantly negative. The parameter β that captures the average growth of manufacturing output during a sudden stop is also of interest, and its comparison across groups of countries and industries can shed some light on the mechanisms of propagation of sudden stops. Nonetheless, in some of the robustness tests we will include country-year fixed effects to capture non-parametrically this source of variation.

Beyond the average effect of sudden stops across countries, if financial frictions are really at the core of the propagation mechanism, the γ coefficient should be larger in absolute value among financially underdeveloped countries, where financial frictions are more likely to bind. We test this hypothesis by separately estimating the model in equation (1) among countries with relatively high and low levels of financial development (defined below) and financial market access. Furthermore, as explained above, the mechanism should be weaker in industries with stronger incentives to expand production to increase net exports. Thus, we also separately estimate the model using data from industries that are relatively more (less) competitive within a country, as captured by their revealed comparative advantages, and test whether the difference in γ between financially developed and underdeveloped countries is larger for industries with weaker comparative

advantages. Finally, we also want to test whether certain policies, such as the accumulation of international reserves, help reduce the negative consequences of sudden stops. To this end we will add the interaction of the different variables in equation (1) with measures of policy responses and test whether indeed these interactions help explain differences in the average impact of sudden stops or differences in their impact across industries.

3. Data

For our main indicator of sudden stops, we follow Guidotti, Sturzenegger, and Villar (2004) in defining a sudden stop $SS_{c,t}$ as a year in which the annual change in the capital account (scaled by GDP) is one standard deviation below the average and also below 5 percent of GDP. Both the standard deviation and the average are country specific and computed using all available data during 1975-2005 from the International Monetary Fund (2008), International Financial Statistics (henceforth IFS).[5] In addition to this baseline definition, we also consider three alternatives ways of identifying sudden stops that have been previously used in the literature. First, we follow Rothemberg and Warnock (2006) and Calvo, Izquierdo and Mejia (2008) and define a sudden stop considering annual changes in the capital account at least one standard deviation below average that eventually reaches two standard deviations below average (regardless of the size of the decline as a share of GDP). Second, we further follow Rothemberg and Warnock (2006), Calvo, Izquierdo and Mejia (2008), and Gallego and Tessada (2009) and construct rolling standard deviations to define time varying thresholds. When following this procedure we use quarterly data from IFS to compute meaningful rolling

[5] Changes in the capital account correspond to changes in financial flows as reported in series 78BJ..DZF (Financial Account N.I.E.) from the IFS. GDP in US dollars also comes from the World Development Indicators.

standard deviations. Finally, we also use the systemic sudden stop indicators constructed by Calvo, Izquierdo, and Mejia (2004).

Following Calvo, Izquierdo and Mejia (2004) we also show results restricting our definition of sudden stops only to those episodes where the capital account reversal results in a recession, which we label as sudden stop recessions $SSR_{c,t}$. This indicator results from the interaction of the sudden stop indicator $SS_{c,t}$ with a recession indicator (defined below). In these cases, the sudden stop is associated with the whole recession episode. For instance, if a sudden stop occurs at any time during a 5-year recession or the year before a recession starts, we classify the whole 5 recession years as a sudden stop recession.

To define a recession we follow Braun and Larrain (2006), and measure their occurrence using a dummy variable that takes the value 1 if a country is in recession a given year and zero otherwise. However, our main measure of recession differs from Braun and Larrain's (2006) in several respects. First, while Braun and Larrain use a relative threshold to identify recessions as cases when the deviations of GDP from its HP filtered trend are larger than one standard deviations, we use an absolute threshold and identify a recession with an output contraction, much in the spirit of Calvo, Izquierdo and Mejia (2004). Starting from this criterion, we roughly identify a cyclical peak as the year in which real output growth turns negative, and a trough as the year in which it turns positive. All years between the peak and the trough are considered as part of the recession episode. Of course, most real-world cases do not fit nicely this U-shaped pattern of recession and recoveries, so we also established criteria to deal with cases of "double-dipping" and short-lived drops. The appendix describes the details of the procedure. In addition to this baseline definition of a recession, we also considered the Braun and Larrain (2006) country-specific definition. We construct all these measures

using data on real local currency GDP from the World Bank (2007), World Development Indicators.

Following Calvo, Izquierdo and Mejia (2004) and Calvo, Izquierdo, and Loo-Kung (2006) we keep in our sample only countries that are integrated to global financial markets (emerging and developed economies) since the literature on sudden stops focuses on reversals in private capital flows that are likely different to the fluctuations in aid flows and remittances that constitute an important part of capital flows to poorer countries.

The sample of 47 developed and developing countries considered in this study, and the detailed list of episodes of capital account reversals, recessions, and sudden-stops experienced by each of them are reported in Table 1 and summarized in Figure 1. Most of the countries in the sample have experienced a recession during 1975-2003, and almost all emerging economies considered have experienced a capital account reversal. Only two developed countries that have experienced no recession during these 28 years (Austria and Norway). Two emerging economies have experienced capital account reversals but no recession according to our definition (Egypt and Pakistan). Four emerging economies experienced recessions but no capital account reversal a la Guidotti, Villar, and Sturzenegger (2004) (Algeria, Colombia, India, and South Africa). As noticed by other authors (see Calvo, Izquierdo, and Mejia, 2004), there is clustering of these three types of events around the Latin American Debt Crisis, the Mexican Tequila Crisis, and the Asian ad Russian Crisis (see Figure 1). However, these are clearly not the only events in the sample, since as noticed in the literature (see Guidotti, Villar, and Sturzenegger (2004) and Rothemberg and Warnock (2006), among others) sudden stops are common. In fact, since 1980, there are only four years where no country in our sample of 47 was experiencing a sudden stop episode.

Industry-level output data come from United Nations (2007), Industrial Statistics Database (UNIDO). This database reports various measures of industry-level activity, such as output, value-added, and industrial production, for 28 three-digit ISIC manufacturing industries comprising the entire manufacturing sector across the world with variable coverage during the period 1960-2003. From this database we keep the data on all countries that JP Morgan classifies as emerging markets, and for which there is industrial data during the post Bretton-Woods period, 1975-2003. This leaves us with a sample of 45 countries. To measure the activity of each industry in each country we use the index of industrial production. Despite some coverage and consistency problems with this measure (see Yamada, 2005), it does not require deflating the nominal values reported, for instance, for value added. This is an important advantage when working with annual data, since it has been documented that price responses to sudden stops may be significantly different across sectors. Table 2 reports some summary statistics for the number of industries and growth rates of industries in the various countries included in the sample. In most countries, there is almost full coverage across the 28 industries and there is positive average industrial growth.

We measure the degree of external dependence of an industry using balance sheet data of listed manufacturing industries in the US, following Rajan and Zingales (1998) approach of considering these needs to be at least partially technologically determined, and measuring them in the United States, a country with well developed financial markets. The data used to build these measures comes from Compustat. To ease comparison and interpretation of the results reported below, the measure of external dependence, and all other industry level characteristics that are interacted with the sudden stop indicators (see next paragraph), are normalized to have zero mean and unit standard deviation. Having a zero mean eases the interpretation of the β coefficient for the average effect of sudden stops in equation (1). Having a unit standard deviation eases the comparison

across interaction terms since one does not need to consider differences in the dispersion of industry characteristics to assess their differential economic significance.

Sudden-stop recessions could have a differential impact on sectors for reasons unrelated to their external dependence that could be confounded with those related to working capital financing frictions. For instance, durable consumption is likely to decline more during contractions;[6] thus, if an industry's durability is correlated with its external dependence, we could erroneously identify this cyclical durable demand as evidence of financial frictions related to working capital financing. Of course, it may also be the case that the cyclicality of durable industries results from their external dependence, but our data does not allow us to separate these hypotheses. At the very least, we are interested in determining if the results survive to controlling for the durability of goods. To control for this possibility we add to our specification the interaction of a dummy variable that identifies industries that produce durable goods with the indicator of sudden stop recessions. Similarly, sudden stops may affect differently industries with different degrees of natural labor turnover because of their impact on employment levels and aggregate flows. As shown by Gallego and Tessada (2009), sudden stops increase aggregate labor destruction and depress creation. It is possible, therefore, that these episodes affect relatively less those industries with higher labor turnover. We measure the natural labor turnover of an industry as the sum of its labor creation and destruction in the US, which we obtain from Micco and Pages (2006). We also control for other measures of the importance of financial frictions for different industries such as their degree of asset tangibility, which measures the pledgeability of a firm's assets as collateral and proxies for the firm's borrowing capacity during normal times (obtained from Braun, 2003).

[6] For a detailed description of the volatility of aggregate durable and non-durable consumption see Attanasio (1999). The strong cyclicality of durable consumption has been long documented in the US. See, for instance Bils and Klenow (1998) and Yogo (2006).

Table 3 summarizes the values of the various industry characteristics previously described. To ease comparison with the literature, the table reports the original value of each characteristic but, as mentioned above, in the regressions below we use the normalized values of these variables (i.e. after subtracting the cross industry average and dividing by the standard deviation).

4. Results

The average impact of sudden stops in the production of manufacturing industries and their differential effect across industries with different external financing needs are documented in Table 4. The results indicate that, on average, sudden stops have a large negative and statistically significant impact on average manufacturing growth and that this impact is larger in industries with high external dependence (Column (1)). The differential effect across sectors is large. For the average industry, a typical sudden stop reduces industrial production in about 5 percent, but for an industry with a level of external financing needs of one (equal to one standard deviation above the mean), the decline is 3 percentage points larger than for an industry with a level of minus one (one standard deviation below the mean). This difference is almost as large as the average effect. This is consistent with sudden stops being associated to a tightening of financing constraints in the average country, and indicates that financial frictions may be behind the transmission of sudden stops to the real economy, as conjectured by many theoretical papers.

Consistent with sudden stops operating through financing constraints, both the average and differential effect of sudden stops are significantly larger in countries with less developed financial system. Among market-access countries (mainly emerging markets),

the average decline in manufacturing output after a sudden stop is almost 7 percent, and the difference in decline among industries one standard deviation above and below the median of external dependence is 4 percent. Among industrial countries, the figures are 2 and 1.8 percent, respectively. Similarly, in countries with low financial development (those with average total capitalization to GDP below the sample median), the average decline is 7.6 percent and the differential decline is 5 percent. Among countries with high financial development, the average decline is 2.6 percent, and the differential decline is 1.2 (not significant). The bottom of the table shows the p-values for the tests that the average and differential effects are similar across groups of countries (i.e. Market Access vs. Industrial and Low Financial Development vs. High Financial Development). The tests show that the differences mentioned above are statistically significant at conventional levels. The only difference that does not reach significance is that between Market Access and Industrial countries in Panel A.

Not surprisingly, the average and differential effect of sudden stops are much larger when they coincide with a recession (Panel B). In these cases, there is a 10 percent average manufacturing output decline, and a differential decline of 5.6 percent. Among market access or financially underdeveloped countries, the average decline reaches 13 percent, and the differential decline 8 percent. As before, the figures are significantly smaller among industrial countries or financially developed ones.

Overall, the main results cannot reject the hypothesis that sudden stops result in output contractions by tightening financial constraints. The evidence unambiguously shows that these episodes result in a larger output decline among industries with higher external financial needs, especially so in financially underdeveloped countries. The results also show that most of this differential effect occurs when sudden stops coincide with an aggregate output contraction (recession).

Using a simple indicator for the occurrence of a sudden stop allows us to compare average growth rates during these episodes with other times and across groups of countries. However, it has the disadvantage of not controlling for the size of the aggregate contraction resulting from the sudden stop. Thus, the larger average and differential declines observed among less financially developed countries might result from sudden stops being associated with larger aggregate declines among these countries, without larger declines in externally dependent industries per point of output contraction. The results in Table 5 show that this is not the case. The regressions reported in this table replace the sudden stops indicators for their interaction with the corresponding GDP growth rate. Therefore, each coefficient captures the output impact of a sudden stop that coincides with a one percent increase in GDP. Of course, this means that the sign of the coefficients reverse. On average, a sudden stop of a one percent GDP decline results in a 1 percent manufacturing output contraction. The same sudden stop results in a 0.6 percent differential decline between industries one standard deviation above and below the mean level of external financing needs. As in the baseline results, the magnitudes of the average and differential declines are significantly larger among market access and less financially developed countries.

The results in Panel B show that, while the overall effects of sudden stops are larger when they are actually associated with a recession, their differential effect across groups of countries are smaller. Their average effect per percentage point of output decline among market access and industrial countries is very similar and even higher among more financially developed ones. The point estimates for the differential effect across sectors with different external financing needs is still larger among less financially developed countries. Industries with high external financing needs located in financially underdeveloped countries contract more per unit of aggregate output contraction during a sudden stop than their peers in more financially developed countries. However, the

two-sided test of equality of coefficients cannot reject the hypothesis that the coefficients are the same at standard levels of confidence.

The results in Panels A and B together reveal that sudden stops have lower output impact among manufacturing industries in less financially developed countries because they are more frequently associated with aggregate contractions in this group of countries. Conditional on being associated with an aggregate contraction, sudden stops not surprisingly result in similar declines per unit of aggregate output drop across groups of countries, but still have a larger differential effect among externally dependent industries. This set of findings provides further additional support to the hypothesis that the association between sudden stops and aggregate contractions results from the tightening of financial constraints.

As discussed above, Chari, Kehoe, and MacGrattan (2005) showed that in a simple model with an external financing constraint but without frictions, a sudden stop would result in an expansion in output because of its wealth effect. Countries would like to produce more to repay their debt without drastically reducing consumption. In their simple model, the only good available is tradable, but of course, debt repayment requires the production of tradable goods (a trade surplus). In a less stylized version, the current account reversals associated with these sudden stops would probably require the reallocation of factors towards exportable goods. This means that any pressure for production expansion would fall disproportionally on those goods where the country suffering the sudden stop has comparative advantages. Thus, one would expect the tightening of financing constraints to be less important to sectors that are favored by the movements in relative prices. To check for evidence of this mechanism, we constructed an average index of revealed comparative advantages (a la Balassa, 1965) for each industry in each country, and separated those industries within a country with an index

above and below the country median as those with high and low comparative advantages. We then estimated the baseline specification separately in each of these groups. The results, reported in Table 6, strongly support the view that financing constraints are less important for these sectors and that there are relative pressures to expand production in them. Across all countries, the average output decline in a sudden stop in industries with low comparative advantages is 6 percent (Column (1)), while in industries with high comparative advantages is about half as large at 4 percent (Column (2)). This is consistent with the reallocation toward tradable industries predicted by the wealth mechanism in, Kehoe, and MacGrattan (2005), and also consistent with the segmented market mechanism in Martin and Rey (2007). Similarly, the differential output decline of an industry with low comparative advantages and high external dependence, relative to one with low external dependence is 4 percent (Column (1)). Among industries with high revealed comparative advantages, this difference is 0.2 percent. The bottom of panel A shows the results of tests for the equality of coefficients between the coefficients reported in columns (1) and (2) for industries with low and high comparative advantage. The tests confirm that the differences in average and differential effects of a sudden stop between the two groups of industries are statistically significant. Similarly, comparing columns (3) and (4) with (5) and (6) shows that the larger differential of sudden stops in industries with high external dependence in financially underdeveloped countries is strong only among industries with low revealed comparative advantages. The difference in the coefficient for the interaction of sudden stops and external finance between columns (3) and (4) (financially underdeveloped countries) is larger than between columns (5) and (6) (financially developed countries), but the former is not significant at conventional levels. Panel B shows that considering only sudden-stop recessions does not change the conclusions. Thus, the pressure to relocate factors toward more tradable industries or the decline in domestic demand for non-

tradables hurt specially those firms in non-tradable industries that also have high external financial needs. The interaction of a weak pressure for relative expansion and limited of access to finance plays strongly against these industries.

Overall, the evidence is consistent with sudden stops being associated with tightening of financial constraints resulting from the need of firms for external financing of their operations. Consistent with this mechanism, the evidence shows that the output decline of an industry during a sudden stop is larger for industries with high needs for external financing, operating in financially underdeveloped countries, and without revealed comparative advantages. These findings fare well with the literature that proposes that financial constraints at the microeconomic level, most likely those associated with working capital financing, are behind the propagation of sudden stops to the real economy. The next section further tests the robustness of these findings and show that they are not driven by specific measurement or modeling choices, or by straightforward omitted variables.

5. Robustness

Sudden stops may have differential effects across sectors for reasons unrelated to their need for external financing that our main coefficient may wrongly capture when other industrial characteristics are omitted. To check for this possibility, in Table 7 we add to the baseline specification a series of interactions between different industrial characteristics and the sudden stop indicators. The regression in column (1) controls for potential heterogeneous effects of sudden stops in industries producing durable goods to control for the cyclicality of their demand. There is a positive correlation of 0.22 between external dependence and durability and, as discussed earlier, durable goods' production is more cyclical than that of other goods (Bils and Klenow, 1998). The results confirm that, indeed, the production of durable goods contracts significantly more during sudden

stops. Their average decline is 4 percent larger than that of non-durable industries. The coefficient for the interaction between sudden stops and external financing declines in magnitude from -0.15 to -0.1, indicating that part of the difference documented came from the correlation between external financing needs and durability, but it is still economically and statistically significant. As previously discussed, the significant differential effect obtained for durable goods might just indicate that the production of (or demand for) these goods faces financing constraints in a manner not captured by the external dependence measure. If that were the case, part of this differential effect could still be associated with financing needs, and the main coefficient would be a conservative estimate of the true importance of financing needs. Our data, however, do not allow us to disentangle these two hypothesis (we do not have a good continuous measure of durability) so we will keep focusing on the main coefficient. Nonetheless, because of the high significance of the durable goods interaction, we will maintain it in the rest of the robustness analysis.

Capital-intensive sectors may be more dependent on the international capital flows that reverse during a sudden stop; however, we find no significant difference of the sudden stop indicator across those sectors (Column (2)). In addition, the tangibility of the assets of firms in various sectors probably relates to their debt capacity and to their ability to finance capital investment in financially underdeveloped environments or in tight credit conditions (see Almeida and Campello, 2007; Claessens and Laeven, 2003, and Braun, 2003). The results, however, indicate that sectors with higher asset tangibility do not contract relatively more during sudden stops (Column (3)). In both regressions, the coefficient for the interaction of sudden stops and external financing needs is unaffected.

By increasing the aggregate level of unemployment and labor flows, sudden stops may affect relatively more those firms in sectors that naturally experience lower labor

turnover, since workers in these sectors are likely to have higher job-specific human capital that would be costly wasted during the contraction. We check for this possibility adding the interaction of a sector's job turnover in the US with the sudden stop indicator, and find that, while the main result remains unaffected, there is no heterogeneous effect of sudden stops along this dimension (Column (4)). To the extent that the measure of sectoral turnover adequately captures the sensitivity of industries to labor market frictions, as conjectured by Micco and Pages (2006), these results do not support the models that put labor market frictions at the center of the transmission of sudden stops to the real economy (Kehoe and Ruhl, 2007).

Since controlling for durability has some impact on the magnitude and significance of the coefficient of interest, we re-estimated all the baseline results controlling for durability. The results are reported in Table 8. As expected, the main coefficient is somewhat smaller, but it is still economically meaningful and statistically significant across specifications. Also, the result that the coefficient is larger (in magnitude) in emerging markets and financially underdeveloped countries remains unaltered. Interestingly, however, the coefficient for the interaction with durability is also systematically larger in emerging markets and financially underdeveloped countries. The relative contraction of industries producing durable-goods in these countries is larger than in industrial and more financially developed countries (where most of the existing evidence on durable goods cyclicality comes from). This suggests that part of the contraction in durable goods output is due to the tightening of financing constraints, further confirming the view that sudden stops are indeed associated with these tightening, and provides support

to the recent literature that focuses on the interaction of credit market frictions and durable expenditures (Attanasio et al., 2008; Monacelli, 2009).[7]

There are many different indicators of the occurrence of sudden stops available in the literature, each with its own advantages and problems. Our choice of a simple indicator is motivated by the desire to have comprehensive coverage, but we checked whether our results are crucially driven by this choice by also using three alternative indicators constructed following the methods of Rothemberg and Warnock (2006), and Calvo, Izquierdo and Mejia (2008), and Gallego and Tessada (2009), as described in section 3 above. Table 9 reports the results. While there are some small quantitative differences with the results using the baseline measure of sudden stops, the main message one gets from the table is that the conclusions are largely unaffected. Regardless of the measure, Sudden Stops have a large negative average impact on industry growth, especially for those industries with high external financing needs. The difference in decline between an industry with high and low external financing needs (one standard deviation above and below the mean) is between 3 and 4 percentage points depending on the specification. When considering sudden stop regressions these differences increase to between 4 and 6 percent.

Finally, the regressions in Table 10 show that the findings discussed above are robust to changes in the specific measure of activity, and to changes in the estimation procedure. The regressions in columns (1) and (5) use the Braun and Larrain (2006)'s measure of recessions, reaching similar qualitative and quantitative conclusions. The regressions in columns (2) and (6) address the concern that developed countries may have an excessive weight on the results because they typically have better industry coverage. To control

[7] Traditional business cycles models can create volatility in durable expenditure through simple stock-flow mechanisms (e.g. Baxter, 1996)

for this we re-estimate the baseline model weighting each observation by the inverse of the number of industries reported in a country in a given year. Lastly, the regressions in columns (3), (4), (7) and (8) change the set of fixed effects included in the regression. Columns (3) and (7) replace the year fixed effects by industry-year fixed effects to capture global industry trends, and columns (4) and (8) replace the year fixed effects by country-year fixed effects to capture country level aggregate fluctuations. Across all the specifications, the coefficient for the interaction of the sudden stop indicator and external finance remains unaltered.

6. Do Policies Matter?

Because of the association of sudden stops with large contractions on the real side of the economy, countries take many measures to prevent the occurrence and mitigate the consequences of these episodes. The accumulation of large amounts of reserves has recently become a popular measure, both to prevent sudden stops driven by attacks on the currency and to have resources to provide liquidity in case a sudden stop occurs (self-insurance) (see Rodrik, 2006, and Aizenman and Lee, 2007). Along the same lines, the easing of monetary policy to stimulate internal demand is also typically considered once a sudden stop occurs (Stiglitz, 2002; Caballero and Krishnamurty, 2003; Braggion, Christiano, and Roldos, 2005; Ortiz et al., 2009). In what follows, we evaluate the shielding and dampening effects of these types of policy measures.

To evaluate whether the amount of international reserves help smooth the real consequences of a sudden stop, we add to the baseline specification the interaction of all the main variables with the ratio of international reserves to GDP before the beginning of the sudden stop. If a higher level of reserves helps smooth some of the negative consequences of sudden stops (either the average or differential effect), the coefficients of these triple interactions should be significantly positive. The results are reported in

Table 11. Looking at the occurrence of sudden stops only, the results in Panel A show that a higher level of reserves significantly smoothes its negative average output consequences, and to a lesser extent, its differential consequences among sectors with high external dependence (although not significantly so). The dampening effect on the average output decline is somewhat larger among emerging markets than in industrial countries and clearly larger in financially underdeveloped countries than in financially developed ones. In addition, among emerging markets the differential effect of sudden stops across industries with different external financing needs is significantly larger than among industrial countries.

Interestingly, there is no such dampening effect when considering only sudden-stop recessions. If anything, the average output decline in a sudden-stop recession is larger among countries with higher international reserves. This suggests that once the sudden stop actually results in a recession, having large volumes of reserves offers little help. The relatively larger decline among countries with higher initial reserves likely indicates that sudden stops that become recessions despite these larger reserves tend to be larger.

What can then be done to dampen the impact of a sudden stop once it has already induced a recession? A policy measure that has been hotly debated, especially after the onset of the Asian Crisis of 1997, is the role of expansive monetary policy. The trade-off typically mentioned was between expanding internal demand and maintaining international demand for a country's assets.[8] While the former may require reducing interest rates, the latter require maintaining high interest rates. The results in Table 12

[8] See Fisher (1998) for the view that monetary policy should tighten during a sudden stop, and Stiglitz (2002) for an argument for easing monetary policy. On the theoretical front Caballero and Krishnamurthy (2005) argue for an ex-ante expansive monetary policy, Bragion et al. (2005) argue that a tightening followed by a loosening is optimal, and Hevia (2007) argues in favor of monetary tightening.

suggest that, on average, among these countries, a monetary loosening helped reduce the average and differential effects of sudden stops. While a sudden stop induces an average growth decline of almost 3 percent, there was little decline in countries that reduced their interest rate by 50 percent (respect to the pre sudden-stop level, see Column (1)). A similar decline in interest rates would also smooth the relative decline experienced by industries with high external financing needs. Comparing across groups of countries, these effects are larger among market access than among industrial countries, and among financially underdeveloped countries than in financially developed ones.[9] In contrast to Table 11, the regressions in panel B show a similar pattern: interest rate cuts help smooth the real growth consequences of sudden stops, especially in market access and financially underdeveloped countries. This indicates that this policy works precisely by attenuating the impact of the sudden stops that resulted in an aggregate output contraction. These findings are consistent with those of Ortiz et al. (2009), but apply to a broader set of episodes than the systemic sudden stops they use to reduce the concerns of endogeneity resulting from their reliance on aggregate data.

7. Conclusion

Sudden stops in capital inflows are typically associated with large contractions in real activity. While part of the literature takes this as guaranteed, from a theoretical point of view a sudden stop puts pressure to expand production through wealth effects and the

[9] This also shows that the difference documented in the baseline results between market access and industrial countries does not only come from the contrast between emerging markets that follow pro-cyclical policies and developed countries following countercyclical ones.

correlation between sudden stops and recessions require the presence of real rigidities that overcome this pressure.

This paper used industry-level data from emerging and industrial countries to provide evidence of the likely nature of these rigidities by documenting how the differential response of industries to sudden stops relates to industry characteristics that proxy for their vulnerability to some of their rigidities. In particular, we show that industries that require higher levels of external financing suffer more from these episodes, especially when, at the aggregate level, the sudden stop coincides with recessions, and particularly so among less financially developed countries. This strongly suggests that a feature of these episodes is the tightening of financing constraints and that financing rigidities at the micro level are behind the negative consequences of sudden stops.

The paper also explored the role of two common policy actions aimed at preventing and reducing the impact of sudden stops: reserve accumulation and monetary loosening. Our findings suggest that while reserve accumulation may help reducing the probability that a sudden stop will coincide with a recession, it does not change the pattern of responses once they coincide. Nonetheless, we also find that a monetary loosening may indeed smooth the average and differential impact of sudden stops across industries, both by reducing the correlation between sudden stops and recessions, and by dampening their consequences when the recession actually occurs.

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Table 1. Recessions, Capital Account Reversals, and Sudden Stops across Emerging and Developed Economies

Country	Recessions	Sudden Stops	Sudden Stop Recessions
Algeria	1987-1988,1991,1993-1994	--	--
Australia	1982,1990	--	--
Austria	--	--	--
Belgium	1993	--	--
Bulgaria	1989-1997	1989,1990,1994,1996	1989-1997
Canada	1982,1991	1982	1982
Chile	1982-1983,1999	1982,1983,1998	1982-1983
Colombia	1999	--	--
Costa Rica	1981-1982	1981,1982,2000	1981-1982
Cote d'Ivoire	1980,1983-1984,1987,1992-1993,2002-2003	1984,1996,2002	2002-2003
Denmark	1980-1981	1989,1991,1993,1998,2000,2004	--
Dominican Republic	1985,1990,2003	2002	2003
Ecuador	1982-1983,1987,1999	1983,1999,2000	1999
Egypt	--	1990	--
Finland	1976,1991-1993	1986,1988,1991	1991-1993
France	1993	--	--
Hungary	1988,1990-1992	1990,1994,1996	1990-1992
India	1979	--	--
Indonesia	1998	1997,1998	1998
Ireland	1983,1986	1999,2001	--
Italy	1993	--	--
Japan	1998-1999	--	--
Jordan	1988-1989	1992,1993	--
Korea	1980,1998	1986,1997	1998
Malaysia	1985,1998	1987,1994,1997	1998
Mexico	1982-1983,1986,1995	1982,1994,1995	1982-1983

Continues next page

Country	Recessions	Sudden Stops	Sudden Stop Recessions
Morocco	1981,1987,1992-1993	1978,1979,1983,1995	--
Netherlands	1981-1982,2003	--	--
New Zealand	1977-1979,1988,1990-1991	1988	1988
Nigeria	1978,1983-1984,1987	1992,1996,1999,2002	--
Norway	--	--	--
Pakistan	--	1998	--
Peru	1982-1983,1988-1990	1983,1998	--
Philippines	1984-1985,1991,1998	1983,1997,1998	1984-1985
Poland	1991	1981,1982,1988,1990,1994	1991
Portugal	1983-1984,1993,2003	1979,1983,1986,1992	1983-1984
Russia	1990-1998	1996,1998	1990-1998
South Africa	1977,1982-1983,1990-1992	--	--
Spain	1993	1992	1993
Sweden	1977,1991-1993	1991,1995	1991-1993
Switzerland	1976,1982,1991,2003	1979,1996,2004	--
Tunisia	1982,1986	--	--
Turkey	1979-1980,1994,1999,2001	1994,2001	1994
United Kingdom	1980-1981,1991	--	--
Uruguay	1982-1984,1995,1999-2002	1983,2002	1982-1984

Table 2. Average Industrial Growth across Countries

Country	Median of # of gth_iip obs.	Average gth_iip	Country	Median of # of gth_iip obs.	Average gth_iip
Algeria	25	0.069	Korea	28	0.076
Australia	28	0.014	Malaysia	26	0.074
Austria	28	0.023	Mexico	26	0.038
Belgium	28	0.002	Morocco	23	0.022
Bulgaria	7	0.002	Netherlands	25	0.008
Canada	28	0.019	New Zealand	28	0.008
Chile	28	0.017	Nigeria	8	0.001
Colombia	28	0.016	Norway	28	-0.005
Costa Rica	24	0.020	Pakistan	9	0.038
Cote d'Ivoire	16	0.015	Peru	28	-0.006
Denmark	28	0.021	Philippines	28	0.114
Dominican Republic	5	0.029	Poland	27	0.030
Ecuador	28	0.062	Portugal	27	0.024
Egypt	27	0.049	Russia	21	-0.018
Finland	28	0.022	South Africa	28	-0.004
France	26	0.002	Spain	28	0.010
Hungary	27	0.010	Sweden	28	0.003
India	28	0.044	Switzerland	13	0.007
Indonesia	25	0.067	Tunisia	25	0.051
Ireland	27	0.034	Turkey	28	0.049
Italy	28	0.007	United Kingdom	28	-0.001
Japan	27	0.005	Uruguay	28	0.003
Jordan	16	0.027			

Table 3. Industry characteristics

ISIC3	Industry Name	External Finance	Durable	Tangibility	Natural Turnover	Capital Per Wkr
311	Food products	0.137	0	0.378	17.866	42218
313	Beverages	0.077	0	0.279	16.639	95034
314	Tobacco	-0.451	0	0.221	13.650	102655
321	Textiles	0.277	0	0.373	18.026	27212
322	Wearing apparel, except footwear	0.029	0	0.132	25.264	6133
323	Leather products	-0.140	0	0.091	23.885	14486
324	Footwear, except rubber or plastic	-0.078	0	0.117	21.951	9400
331	Wood products, except furniture	0.284	1	0.380	23.230	31113
332	Furniture, except metal	0.236	1	0.263	21.886	13201
341	Paper and products	0.154	0	0.558	12.251	98152
342	Printing and publishing	0.204	0	0.301	16.834	25701
351	Industrial chemicals	0.236	0	0.412	11.759	189841
352	Other chemicals	0.793	0	0.197	18.382	62619
353	Petroleum refineries	0.042	0	0.671	8.137	464417
354	Misc. petroleum and coal products	0.334	0	0.304	18.717	67995
355	Rubber products	0.226	0	0.379	15.286	43315
356	Plastic products	1.140	0	0.345	22.505	34568
361	Pottery, china, earthenware	-0.146	1	0.075	17.833	22517
362	Glass and products	0.528	1	0.331	15.345	58958
369	Other non-metallic mineral products	0.062	1	0.420	22.259	54467
371	Iron and steel	0.087	1	0.458	15.167	90854
372	Non-ferrous metals	0.005	1	0.383	16.753	72482
381	Fabricated metal products	0.237	1	0.281	20.612	27397
382	Machinery, except electrical	0.724	1	0.183	19.744	37498
383	Machinery, electric	0.846	1	0.213	19.382	42359
384	Transport equipment	0.300	1	0.255	18.457	48995
385	Professional & scientific equipment	0.961	1	0.151	17.221	30482
390	Other manufactured products	0.470	1	0.188	23.978	19097

Table 4. Differential Effect of Sudden Stops in Industries with High External Financing Needs

	Panel A: Sudden Stop Episodes					Panel B: Sudden Stop Recession Episodes				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Countries	Market Access	Industrial	Low Fin. Dev.	High Fin. Dev.	All Countries	Market Access	Industrial	Low Fin. Dev.	High Fin. Dev.
Share of Manuf. Output	-0.216***	-0.290***	-0.060	-0.286**	-0.158*	-0.227***	-0.306***	-0.065	-0.305**	-0.164*
(lagged)	(0.078)	(0.095)	(0.107)	(0.125)	(0.095)	(0.075)	(0.092)	(0.104)	(0.122)	(0.091)
Sudden Stop	-0.052***	-0.066***	-0.023***	-0.077***	-0.027***	-0.100***	-0.128***	-0.046***	-0.127***	-0.081***
	(0.004)	(0.007)	(0.004)	(0.008)	(0.005)	(0.007)	(0.010)	(0.006)	(0.012)	(0.007)
Sudden Stop X External	-0.015***	-0.020***	-0.009**	-0.025***	-0.006	-0.028***	-0.040***	-0.009*	-0.042***	-0.016**
Finance	(0.005)	(0.007)	(0.004)	(0.009)	(0.004)	(0.007)	(0.011)	(0.005)	(0.013)	(0.007)
Observations	22010	11113	10897	9184	12627	22010	11113	10897	9184	12627
Adjusted R-squared	0.124	0.112	0.178	0.109	0.149	0.124	0.112	0.178	0.109	0.149
Test Equal Avg Effect		0.000		0.000			0.000		0.001	
Test Equal Diff. Effect		0.172		0.054			0.010		0.078	

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A (columns (1) to (5)) consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B (columns (6) to (10)) consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales(1998)) and varies only across industries. Sudden Stop X External Finance is the interaction between the respective sudden stop indicator and the measure of external finance. Regressions in columns (1) and (6) include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (2) and (7) include only Market Access countries, and those in columns (3) and (8) only Industrial countries. Regressions in columns (4) and (9) include only sample countries with average (1975-2005) total capitalization (stock market capitalization plus private creit to GDP) below the sample median, and those in columns (5) and (10) those countries with total capitalization above the sample median. All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent respectively.

Table 5. Differential Effect of Sudden Stops in Industries with High External Financing Needs Controlling for Size of Suuden Stop

	Panel A: Sudden Stop Episodes					Panel B: Sudden Stop Recession Episodes				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Countries	Market Access	Industrial	Low Financial Dev.	High Financial Dev.	All Countries	Market Access	Industrial	Low Financial Dev.	High Financial Dev.
Share of Manuf. Output	-0.232***	-0.311***	-0.064	-0.297**	-0.168*	-0.229***	-0.311***	-0.064	-0.307**	-0.162*
(lagged)	(0.073)	(0.092)	(0.099)	(0.126)	(0.087)	(0.074)	(0.093)	(0.103)	(0.122)	(0.090)
Sudden Stop X Growth	1.097***	1.200***	0.319***	1.458***	0.743***	2.018***	1.967***	1.752***	1.787***	2.717***
	(0.098)	(0.117)	(0.095)	(0.157)	(0.118)	(0.146)	(0.157)	(0.228)	(0.173)	(0.246)
Sudden Stop X Growth	0.302***	0.387***	-0.054	0.494***	0.114	0.508***	0.524***	0.323*	0.551***	0.385
X External Finance	(0.094)	(0.111)	(0.101)	(0.145)	(0.114)	(0.138)	(0.148)	(0.187)	(0.161)	(0.241)
Observations	21982	11085	10897	9156	12627	21986	11089	10897	8492	13295
Adjusted R-squared	0.120	0.106	0.171	0.105	0.140	0.141	0.126	0.179	0.123	0.167
Test Equal Avg Effect		0.000		0.000			0.437		0.002	
Test Equal Diff. Effect		0.003		0.039			0.399		0.567	

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A (columns (1) to (5)) consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B (columns (6) to (10)) consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. Sudden Stop X Growth is the interaction between the sudden stop indicator considered in each panel and the contermporaneous real GDP growth rate. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales)) and varies only across industries. Sudden Stop X Growth X External Finance represents the triple interaction of the sudden stop indicator, the contemporaneous growth rate and the external finance measure.Regressions in columns (1) and (6) include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (2) and (7) include only Market Access countries, and those in columns (3) and (8) only Industrial countries. Regressions in columns (4) and (9) include only sample countries with average (1975-2005) total capitalization (stock market capitalization plus private creit to GDP) below the sample median, and those in columns (5) and (10) those countries with total capitalization above the sample median. All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent respectively.

Table 6. Differential Effect of Sudden Stops Depending on an Industry's Degree of Reveraled Comparative Advantage

	(1)	(2)	(3)	(4)	(5)	(6)
	All Countries		Low Financial Dev.		High Financial Dev.	
	Low Comp. Advantage	High Comp. Advantage	Low Comp. Advantage	High Comp. Advantage	Low Comp. Advantage	High Comp. Advantage
Panel A: Sudden Stop Episodes						
Share of Manuf. Output (lagged)	-0.565***	-0.124	-0.976**	-0.078	-0.290**	-0.091
	(0.179)	(0.083)	(0.376)	(0.115)	(0.142)	(0.110)
Sudden Stop	-0.063***	-0.039***	-0.087***	-0.062***	-0.036***	-0.017***
	(0.007)	(0.005)	(0.012)	(0.009)	(0.007)	(0.006)
Sudden Stop X External Finance	-0.023***	-0.001	-0.032**	-0.010	-0.012**	0.003
	(0.007)	(0.005)	(0.014)	(0.009)	(0.006)	(0.005)
Observations	10645	10880	4546	4638	6044	6148
Adjusted R-squared	0.117	0.104	0.098	0.102	0.141	0.120
Test Equal Avg Effect	0.005		0.096		0.039	
Test Equal Diff. Effect	0.011		0.186		0.055	
Panel B: Sudden Stop Recession Episodes						
Share of Manuf. Output (lagged)	-0.575***	-0.132*	-0.996***	-0.094	-0.296**	-0.093
	(0.177)	(0.080)	(0.380)	(0.109)	(0.133)	(0.107)
Sudden Stop Recession	-0.104***	-0.090***	-0.125***	-0.117***	-0.091***	-0.068***
	(0.011)	(0.008)	(0.019)	(0.013)	(0.011)	(0.009)
Sudden Stop Rec. X External	-0.046***	0.001	-0.079***	-0.000	-0.023***	0.003
Finance	(0.010)	(0.009)	(0.018)	(0.014)	(0.008)	(0.011)
Observations	10645	10880	4546	4638	6044	6148
Adjusted R-squared	0.128	0.118	0.110	0.118	0.160	0.131
Test Equal Avg Effect	0.303		0.728		0.106	
Test Equal Diff. Effect	0.000		0.001		0.056	

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales)) and varies only across industries. Sudden Stop X External Finance and Sudden Stop Rec. X External Finance are the interaction between the respective sudden stop indicators and the measure of external finance. In each panel, regressions in columns (1) and (2) include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (3) and (4) include only sample countries with average (1975-2005) total capitalization (stock market capitalization plus private creit to GDP) below the sample median, and those in columns (5) and (6) those countries with total capitalization above the sample median. Column (1) shows the results for industries with low average revealed comparative advantage (below the within country median) and (2) those for industries with high average revealed comparative advantage (above the within country median). The same applies to the other pair of columns. All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent respectively.

Table 7. Robustness to Controlling for other Industry Characteristics

	(1)	(2)	(3)	(4)	(6)	(7)	(8)	(9)
	Panel A: Sudden Stop Episodes				**Panel B: Sudden Stop Recesion Episodes**			
	Durable	Capital per Wkr	Tangibility	Labor Flex.	Durable	Capital per Wkr	Tangibility	Labor Flex.
Share of Manuf.	-0.217***	-0.218***	-0.218***	-0.218***	-0.229***	-0.232***	-0.231***	-0.230***
Output (lagged)	(0.077)	(0.077)	(0.077)	(0.077)	(0.075)	(0.075)	(0.075)	(0.075)
Sudden Stop Recession	-0.052***	-0.052***	-0.052***	-0.052***	-0.100***	-0.100***	-0.100***	-0.100***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.006)	(0.007)
Sudden Stop Rec. X	-0.010**	-0.010**	-0.010**	-0.010**	-0.018***	-0.018***	-0.018***	-0.018***
External Finance	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.007)	(0.007)
Sudden Stop X	-0.021***	-0.020***	-0.020***	-0.020***	-0.039***	-0.037***	-0.037***	-0.037***
Durable	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.007)	(0.007)
Sudden Stop X Capital		0.004				0.010*		
per Wkr.		(0.004)				(0.005)		
Sudden Stop X			0.006				0.011*	
Tangibility			(0.004)				(0.006)	
Sudden Stop X Labor				-0.004				-0.006
Mo. Flex.				(0.004)				(0.006)
Observations	22010	22010	22010	22010	22010	22010	22010	22010
Adjusted R-squared	0.113	0.113	0.113	0.113	0.127	0.127	0.127	0.127

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A (columns (1) to (5)) consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B (columns (6) to (10)) consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales)) and Durable is an indicator that takes a value of one for industries producing durable goods and zero otherwise. Tangibility, Natural turnover, and Capital per Wkr. are measures of an industry's asset tangibility (Braun and Larrain (2006)), natural labor turnover (Micco and Pages (200X), and capital per worker. Bogus is a random variable with zero mean and unit standard deviation. These measures are industry specific and all have been normalized to have zero mean and unit standard deviation. Sudden Stop X External Finance is the interaction between the respective sudden stop indicator and the measure of external finance. The same applies to the other interaction variables. All regressions include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and ***

Table 8. Controlling for Durability of the Goods

	Panel A: Sudden Stop Episodes					Panel B: Sudden Stop Recession Episodes				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Countries	Market Access	Industrial	Low Financial Dev.	High Financial Dev.	All Countries	Market Access	Industrial	Low Financial Dev.	High Financial Dev.
Share of Manuf. Output	-0.217***	-0.291***	-0.062	-0.294**	-0.157*	-0.229***	-0.302***	-0.071	-0.303**	-0.166*
(lagged)	(0.077)	(0.095)	(0.106)	(0.124)	(0.094)	(0.075)	(0.092)	(0.104)	(0.123)	(0.091)
Sudden Stop	-0.052***	-0.066***	-0.023***	-0.077***	-0.027***	-0.100***	-0.129***	-0.046***	-0.128***	-0.081***
	(0.004)	(0.007)	(0.004)	(0.008)	(0.005)	(0.007)	(0.010)	(0.006)	(0.011)	(0.007)
Sudden Stop X External	-0.010**	-0.013*	-0.007**	-0.018**	-0.004	-0.018***	-0.027***	-0.005	-0.029**	-0.009
Finance	(0.004)	(0.007)	(0.003)	(0.008)	(0.004)	(0.007)	(0.010)	(0.006)	(0.012)	(0.007)
Sudden Stop X Durable	-0.021***	-0.031***	-0.007*	-0.032***	-0.011**	-0.039***	-0.052***	-0.019***	-0.051***	-0.028***
	(0.004)	(0.007)	(0.003)	(0.008)	(0.005)	(0.007)	(0.010)	(0.006)	(0.012)	(0.007)
Observations	22010	11113	10897	9184	12627	22010	11113	10897	9184	12627
Adjusted R-squared	0.113	0.099	0.174	0.101	0.135	0.127	0.116	0.180	0.113	0.151
Test Equal Avg Effect		0.000		0.000			0.000		0.000	
Test Equal Diff. Effect		0.431		0.118			0.059		0.150	
Test Equal Diff. Eff. (Durable)		0.002		0.026			0.005		0.098	

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Panel A considers the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Panel B considers the impact of sudden stop recession episodes captured by a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales)) and Durable indicates whether an industry produces durable goods. Both vary only across industries. Sudden Stop X External Finance (Durable) is the interaction between the respective sudden stop indicator and the measure of external finance (durable). Regressions in columns (1) and (6) include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (2) and (7) include only Market Access countries, and those in columns (3) and (8) only Industrial countries. Regressions in columns (4) and (9) include only sample countries with average (1975-2005) total capitalization below the sample median, and those in (5) and (10) countries with total capitalization above the sample median. All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent respectively.

Table 9. Robustness to Alternative Measures of Sudden Stops

	Panel A: Sudden Stop Episodes			Panel B: Sudden Stop Recession Episodes		
	(1)	(2)	(3)	(4)	(5)	(6)
	Reversals greater than 1 sd and reach 2 sd	Reversals greater than 1 sd and 5% GDP. Rolling	Systemic Sudden Stop	Reversals greater than 1 sd and reach 2 sd	Reversals greater than 1 sd and 5% GDP. Rolling	Systemic Sudden Stop
Share of Manuf. Output (lagged)	-0.222***	-0.173**	-0.408**	-0.223***	-0.181**	-0.397**
	(0.076)	(0.081)	(0.203)	(0.076)	(0.079)	(0.200)
Sudden Stop Recession	-0.075***	-0.049***	-0.056***	-0.083***	-0.110***	-0.113***
	(0.007)	(0.006)	(0.006)	(0.007)	(0.010)	(0.010)
Sudden Stop Rec. X External Finance	-0.024***	-0.016***	-0.023***	-0.021***	-0.030***	-0.034***
	(0.007)	(0.005)	(0.006)	(0.007)	(0.009)	(0.010)
Constant	0.001	0.020**	0.028**	0.002	0.014	0.066***
	(0.008)	(0.010)	(0.013)	(0.008)	(0.010)	(0.019)
Country-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22976	21032	5320	22976	21058	5376
Adjusted R-squared	0.109	0.100	0.171	0.110	0.107	0.215

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A (columns (1) to (3)) consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B (columns (4) to (6)) consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales)). Sudden Stop X External Finance is the interaction between the respective sudden stop indicator and the measure of external finance. All regressions include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (1) and (4) consider as a sudden stop episode one that begins with capital account reversal larger than one standard deviation and eventually reaches 2 standard deviations. Standard deviations are computed using all available data from 1975 to 2005. Columns (2) and (5) define a sudden stop as an episode with a capital account reversal larger than one standard deviation and that reaches 5 percent of GDP, as in the baseline results. However, this measure is computed using quarterly data and a time varying standard deviation corresponding to the cummulative standard deviation since 1975 until each date. Columns (3) and (6) use the systemic sudden stop data from Calvo et al. (2005), which includes reversals larger than one standard deviation that result in output contractions and that are associated with an increase in the EMBI. All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent respectively.

Table 10. Robustness to Alternative Measures of Activity and Econometric Procedure

	Panel A: Sudden Stop Episodes				Panel B: Sudden Stop Recession Episodes			
	(1) Using Alternative Recession Indicator	(2) All countries equally weighted	(3) Including Industry-Year FE	(4) Including Country-Year FE	(5) Using Alternative Recession Indicator	(6) All countries equally weighted	(7) Including Industry-Year FE	(8) Including Country-Year FE
Share of Manuf. Output (lagged)	-0.216***	-0.100	-0.255***	-0.240***	-0.220***	-0.119	-0.264***	-0.247***
	(0.078)	(0.100)	(0.083)	(0.062)	(0.076)	(0.098)	(0.080)	(0.062)
Sudden Stop	-0.052***	-0.044***	-0.052***		-0.053***	-0.105***	-0.100***	
	(0.004)	(0.005)	(0.004)		(0.004)	(0.008)	(0.007)	
Sudden Stop X External Finance	-0.015***	-0.015***	-0.014***	-0.015***	-0.014***	-0.032***	-0.025***	-0.027***
	(0.005)	(0.006)	(0.004)	(0.004)	(0.004)	(0.008)	(0.007)	(0.006)
Country-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	No	Yes	Yes	No	No
Observations	22010	22010	22010	21971	22120	22010	22010	21971
Adjusted R-squared	0.112	0.116	0.089	0.261	0.111	0.166	0.101	0.262

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A (columns (1) to (4)) consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B (columns (5) to (8)) consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales (1998)) and has been normalized to have zero mean and unit standard deviation. Sudden Stop X External Finance is the interaction between the respective sudden stop indicator and the measure of external finance. The same applies to the other interaction variables. All regressions include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (1) and (5) use the methodology of Braun and Larrain (2006) to define a recession. Regressions in columns (2) and (6) give equal weight to all countries regardless of the number of manufdacturing industries for which there is data. This is done by using weights that are inversely proportional to the number of industries reported by a country in each year. Regressions in columns (3) and (7) include industry-year FE to absorb global industry trends, and those in columns (4) and (8) include country-year FE to absorb all aggregate determinants of fluctuations. All regressions include country-industry fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent

Table 11. Does the Initial Level of Reserves Help to Attenuate the Shocks?

	Panel A: Sudden Stop Episodes					Panel B: Sudden Stop Recession Episodes				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Countries	Market Access	Industrial	Low Financial Dev.	High Financial Dev.	All Countries	Market Access	Industrial	Low Financial Dev.	High Financial Dev.
Share of Manuf. Output	-0.218***	-0.298***	-0.059	-0.288**	-0.159*	-0.224***	-0.301***	-0.065	-0.292**	-0.164*
(lagged)	(0.078)	(0.093)	(0.109)	(0.127)	(0.095)	(0.074)	(0.091)	(0.104)	(0.120)	(0.091)
Sudden Stop	-0.071***	-0.091***	-0.045***	-0.093***	-0.043***	-0.073***	-0.080***	-0.051***	-0.000	-0.074***
	(0.007)	(0.010)	(0.008)	(0.014)	(0.006)	(0.010)	(0.019)	(0.008)	(0.030)	(0.009)
Sudden Stop X Initial Reserves	0.241***	0.300***	0.219***	0.304***	0.133***	-0.205**	-0.400*	0.059	-1.979***	-0.078
	(0.038)	(0.046)	(0.064)	(0.107)	(0.031)	(0.103)	(0.217)	(0.065)	(0.533)	(0.083)
Sudden Stop X External	-0.021***	-0.030***	-0.002	-0.030**	-0.010*	-0.016	-0.017	-0.010	0.019	-0.011
Finance	(0.007)	(0.011)	(0.007)	(0.015)	(0.006)	(0.010)	(0.019)	(0.007)	(0.026)	(0.010)
Sudden Stop X Ini. Res. X	0.056	0.096*	-0.066	0.040	0.032	-0.122	-0.283	0.002	-1.104**	-0.053
Ext. Finance	(0.040)	(0.050)	(0.058)	(0.118)	(0.029)	(0.113)	(0.262)	(0.048)	(0.485)	(0.095)
Observations	21882	10985	10897	9056	12627	21910	11013	10897	9084	12627
Adjusted R-squared	0.112	0.094	0.175	0.092	0.135	0.117	0.101	0.178	0.100	0.149
Test Equal Avg Eff (Reserve)		0.304		0.125			0.043		0.000	
Test Equal Diff. Effect		0.032		0.216			0.730		0.282	
Test Equal Diff. Eff. (Reserve)		0.034		0.948			0.285		0.033	

The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A (columns (1) to (5)) consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B (columns (6) to (10)) consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. Initial Reserves are the international reserves as a share of GDP the year before the beginning of a sudden stop (sudden stop recession) episode. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales)) and varies only across industries. Sudden Stop X Initial Reserves, Sudden Stop X External Finance, and Sudden Stop X Ini. Res. X Ext. Finance, denote the interactions between the variables described above. Regressions in columns (1) and (6) include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (2) and (7) include only Market Access countries, and those in columns (3) and (8) only Industrial countries. Regressions in columns (4) and (9) include only sample countries with average (1975-2005) total capitalization (stock market capitalization plus private creit to GDP) below the sample median, and those in columns (5) and (10) those countries with total capitalization above the sample median. All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent respectively.

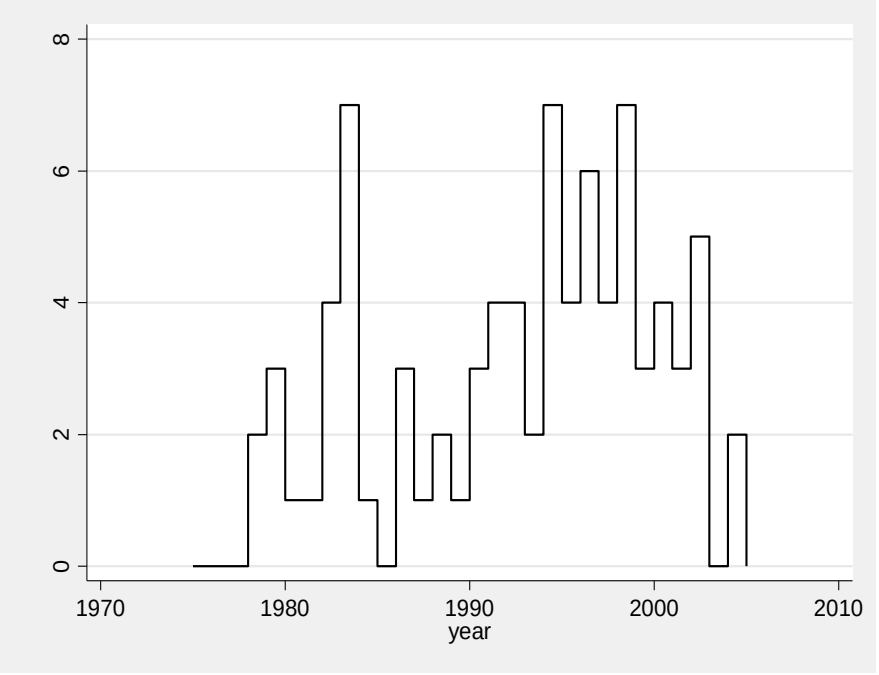
Table 12. Does Monetary Easing Help to Attenuate the Shocks?

	Panel A: Sudden Stop Episodes					Panel B: Sudden Stop Recession Episodes				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Countries	Market Access	Industrial	Low Fin. Dev.	High Fin. Dev.	All Countries	Market Access	Industrial	Low Fin. Dev.	High Fin. Dev.
Share of Manuf. Output	-0.178**	-0.239**	-0.061	-0.225*	-0.130	-0.206***	-0.277***	-0.065	-0.257**	-0.156*
(lagged)	(0.077)	(0.095)	(0.107)	(0.131)	(0.092)	(0.074)	(0.090)	(0.105)	(0.117)	(0.092)
Sudden Stop	-0.027***	-0.020***	-0.024***	0.003	-0.021***	-0.073***	-0.067**	-0.053***	-0.009	-0.079***
	(0.003)	(0.007)	(0.004)	(0.011)	(0.004)	(0.007)	(0.029)	(0.007)	(0.034)	(0.008)
Sudden Stop X Change	-0.061***	-0.063***	-0.011	-0.097***	-0.011	-0.070***	-0.095***	-0.029**	-0.154***	-0.059***
Interest Rate	(0.011)	(0.011)	(0.018)	(0.017)	(0.012)	(0.013)	(0.035)	(0.015)	(0.037)	(0.018)
Sudden Stop X External	-0.009***	-0.007	-0.009***	-0.025**	-0.004	-0.014**	0.005	-0.017***	0.013	-0.017**
Finance	(0.003)	(0.006)	(0.003)	(0.011)	(0.003)	(0.007)	(0.028)	(0.005)	(0.029)	(0.007)
Sudden Stop X Chg. Int. Rate	-0.018*	-0.019*	-0.010	-0.008	-0.006	-0.035***	-0.058	-0.033***	-0.065*	-0.033**
X Ext. Finance	(0.011)	(0.011)	(0.019)	(0.018)	(0.011)	(0.012)	(0.035)	(0.011)	(0.036)	(0.015)
Observations	21415	10518	10897	8706	12510	21659	10762	10897	8917	12543
Adjusted R-squared	0.115	0.087	0.174	0.086	0.144	0.115	0.089	0.179	0.086	0.153
Test Equal Avg Eff (Int. Rate)		0.014		0.000			0.083		0.021	
Test Equal Diff. Effect		0.766		0.066			0.439		0.315	
Test Equal Diff. Eff. (Int Rate)		0.682		0.924			0.496		0.412	

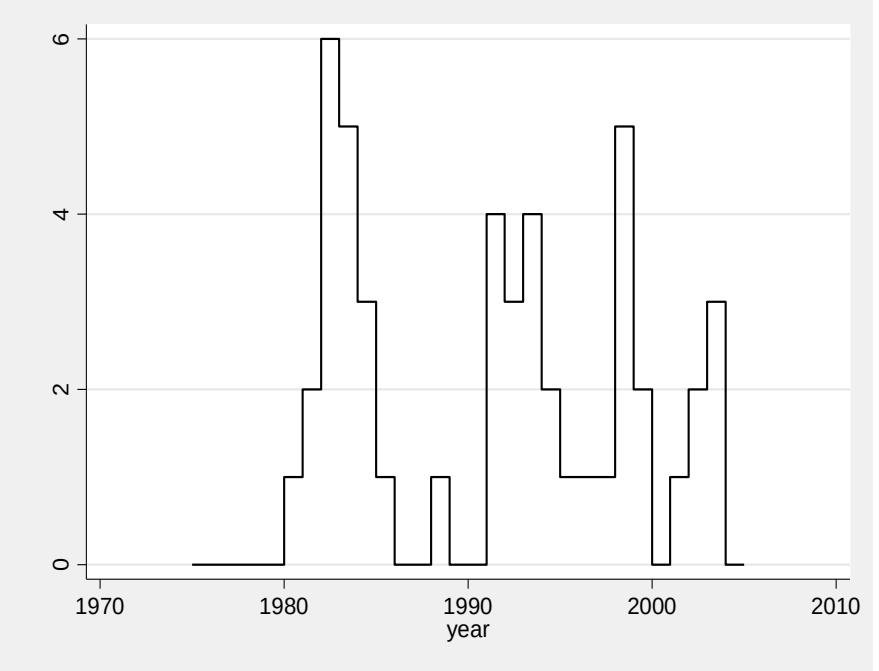
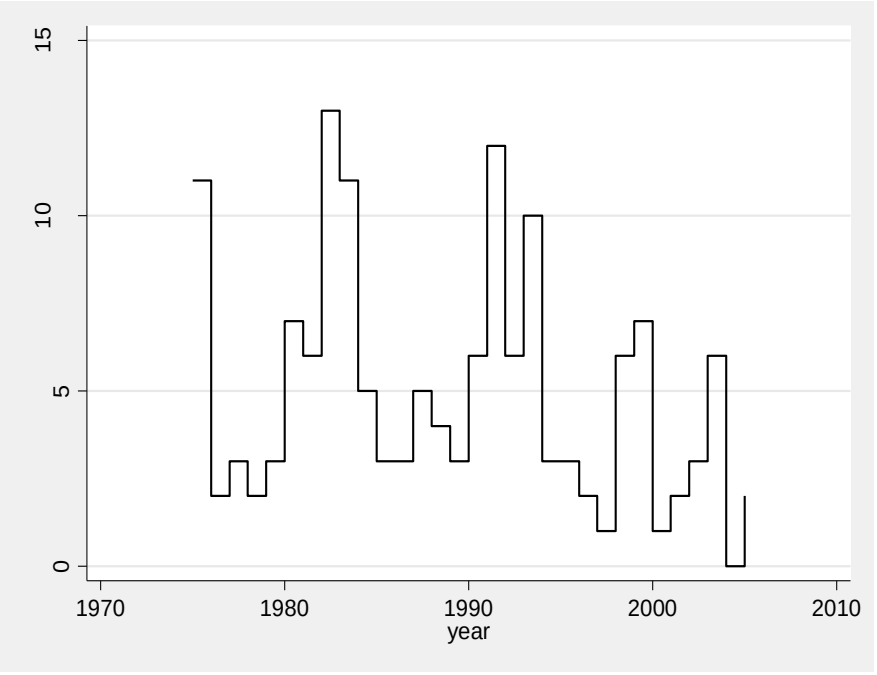
The dependent variable is the growth in the index of industrial production of an industry in a given country and year. Share of output is the fraction of a country's total annual manufacturing output represented by each industry. Regressions in Panel A (columns (1) to (5)) consider the impact of sudden stop episodes. In these regressions, Sudden Stop is dummy variable that takes a value of 1 if a country experiences a sudden stop in a given year and zero otherwise. Regressions in Panel B (columns (6) to (10)) consider the impact of sudden stop recession episodes. Sudden Stop Recession is a dummy variable that takes a value of 1 if sudden stop is associated with an output contraction and zero otherwise. Change Interest Rate is the cumulative percentage decline in money market rates during the sudden stop episode. External Finance is a measure of an industry's needs for external financing (Rajan and Zingales)) and varies only across industries. Sudden Stop X Change Interest Rate, Sudden Stop X External Finance, and Sudden Stop X Chg. Int. Rate X Ext. Finance, denote the interactions between the variables described above. Regressions in columns (1) and (6) include all countries in the sample, that is developing countries with access to international financial markets (Market Access) and industrial countries (Industrial). Regressions in columns (2) and (7) include only Market Access countries, and those in columns (3) and (8) only Industrial countries. Regressions in columns (4) and (9) include only sample countries with average (1975-2005) total capitalization (stock market capitalization plus private creit to GDP) below the sample median, and those in columns (5) and (10) those countries with total capitalization above the sample median. All regressions include country-industry and year fixed effects. Heterokesdacity robust standard errors, clustered at the country-industry level are reported in parenthesis. *, **, and *** denote significance at 10, 5 and 1 percent respectively.

Figure 1. Number of Sudden Stops, Sudden Stop Recessions, and Recessions in the Sample, per year. 1975-2003

A. Number of Sudden Stops in the sample



B. Number of Sudden Stop Recessions in the Sample



C. Number of Recessions in the sample