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Sudden stops, financial frictions, and labor market flows: Evidence from Latin America[☆]

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ABSTRACT

While the aggregate effects of sudden stops and international financial crises are well known, the disaggregated channels through which they work are not well explored yet. In this paper, using job flows from a sectoral panel dataset for four Latin American countries, we find that sudden stops are characterized as periods of lower job creation and increased job destruction. Moreover, these effects are heterogeneous across sectors: we find that when a sudden stop occurs, sectors with higher dependence on external financing experience lower job creation. In turn, sectors with higher liquidity needs experience significantly larger job destruction. This evidence is consistent with the idea that dependence on external financing affects mainly the creation margin and that exposure to liquidity conditions affects mainly the destruction margin. Overall, our results provide evidence of financial frictions being an important transmission channel of sudden stops and in the restructuring process in general.

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1. Introduction

Many emerging economies have suffered sudden stops of capital flows in the last three decades.¹ These sudden stops have been shown to have significant impact on most macroeconomic aggregates, including output growth, domestic credit and unemployment among others.² However, little is known about the sectoral effects of sudden stops in

developing countries. Most of our knowledge on the reaction of (gross) job flows to shocks comes from the study of the effects of (smoother) macroeconomic shocks – such as recessions – on job creation and destruction in developed countries (see Caballero, 2007 and the references therein). Sudden stops are clear big shocks to emerging economies that likely provide an extreme experiment to study the effects of adverse shocks on job flows.

This paper extends our knowledge in this respect by looking at the effects of sudden stops on sector level job creation and destruction in a sample of Latin American countries. We use a panel dataset on job creation and destruction in manufacturing sectors, at the 2-digit sector level, for four Latin American countries (Brazil, Chile, Colombia, and Mexico) that covers various time periods from 1978 to 2001. We identify sudden stops following previous definitions in the macroeconomic literature (Cavallo and Frankel, 2008; Calvo et al., 2006, 2008; Joyce and Nabar, 2009). Using these data, we find that sudden stops are periods during which job creation decreases and job destruction increases.³ In particular, we find the effect of sudden stops on job destruction to be larger and more robust. We find (weaker) evidence that sudden stops depress job creation only in the case of data coming from all plants sampled.

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¹ Rothenberg and Warnock (2006) document that between 1989 and 2005 most of the time there was at least one country experiencing a sudden stop episode.

² See for example Calvo et al. (2006).

³ Job destruction takes only positive values, thus an increase in its values implies that more jobs are destroyed.

Furthermore, we might expect some of the sectoral effects of sudden stops to be linked to financial channels. One can hypothesize that sectors where firms depend more on external finance suffer more from an adverse external shock. Likewise, the same argument is true for firms that face larger liquidity needs, and hence may need to have access to liquid resources from financial institutions more often, or in larger amounts. Motivated by this argument, we relate the sector level gross job flows to the interaction of sudden stops with proxies for external dependence and liquidity needs of each sector.

We find evidence that the depressing effect of sudden stops on job creation is stronger in sectors with stronger dependence on external finance, as originally measured by [Rajan and Zingales \(1998\)](#). Similarly, the result that sudden stops raise job destruction is stronger in sectors with larger liquidity needs (measured as the ratio of inventories, as suggested by [Raddatz \(2006\)](#)). We thus provide evidence that financial conditions are an important determinant of the extent of the impact of shocks on sectoral job flows in a country. Moreover, these variables are meant to capture two different aspects of the financial characteristics of a firm, and our empirical results seem to highlight that these two facets are indeed related to different margins of adjustment by firms when subject to a sudden stop. These results are mostly robust to controlling for two-way fixed effects, a falsification exercise, adding additional controls, and using a different definition of our crisis variable.⁴

By doing this, our work expands the current understanding of sudden stops and their effects on countries that suffer them and provides additional evidence on the effects of macroeconomic shocks and international financial crises in emerging markets. This paper also highlights how big macroeconomic shocks are transmitted to the labor market and shows how much creation and destruction in this market change when hit by a large financial crisis and how those effects differ across production sectors.⁵

The results in this paper relate to four strands of the literature. First, we draw from the existing literature on the characteristics of sudden stops and their aggregate effects (originated in [Dornbusch et al. \(1995\)](#) and [Calvo \(1998\)](#)). More recent papers by [Calvo et al. \(2006\)](#) and [Guidotti et al. \(2004\)](#) have documented the aggregate effects of sudden stops. Related to our approach, [Guidotti et al. \(2004\)](#) decompose the adjustment of the current account into adjustment in exports and imports and find that countries that are more open and have lower financial dollarization adjust their current account mostly through exports, which they argue are less costly than an imports-based adjustment. This is related to our approach, but they do not look at the particular factors driving the differences across sectors.⁶ Using general equilibrium models, [Gertler et al. \(2006\)](#), [Kehoe and Ruhl \(2009\)](#), and [Pratap and Urrutia \(2007\)](#) find that labor or financial market frictions improve the ability to match some stylized facts of sudden stops in small open economies.⁷ In this paper we focus on the role of financial frictions and therefore we control in our empirical analysis for differences across countries in labor market institutions.

Second, our results are related to the literature on job and worker flows, labor market dynamics and restructuring.⁸ One conclusion

from this literature that is highly related to our work is that firms' reactions to (adverse) shocks depend on (i) financial aspects related to the ability of entrepreneurs to raise external funds to keep the firm running, and (ii) labor regulations that determine the costs of destroying a job and the relative bargaining power of entrepreneurs. In this paper, however, we deal with a shock that is larger and that, at least at the country level, corresponds more to a financial shock, rather than productivity innovations. Within this literature our results are also related to the work on labor market adjustment over the business cycle, see for example [Fujita and Ramey \(2009\)](#) and [Rogerson and Shimer \(2010\)](#). Even though our results are based on plant and not worker information, we find support for the idea that both job creation and job destruction matter, but our point estimates indicate that the destruction margin is more important. This seems to be consistent with the results in [Fujita and Ramey \(2009\)](#).

Third, our paper is related to a literature that deals with the effects of real exchange rates in sectoral flows in open economies. [Gourinchas \(1998, 1999\)](#) find that following a real exchange depreciation job creation and destruction decrease in France. [Klein et al. \(2003\)](#) find that job destruction decreases and net employment growth increases after a depreciation of the dollar in the manufacturing sector in the US.⁹ Finally, [Haltiwanger et al. \(2004\)](#) find, using the same dataset we use in this paper, that real exchange rate appreciations are periods of increased job reallocation, which they define as the sum of job creation and job destruction. While our methodology is related to this literature, we exploit an extreme case of an external shock, which (i) reflects countries' external financial conditions (and probably much better than the real exchange rate) and (ii) is also more exogenous to sector-specific situations across countries; also, we extend the results in [Haltiwanger et al. \(2004\)](#) by looking at job creation and job destruction separately, as it is done in [Gourinchas \(1998, 1999\)](#), and [Klein et al. \(2003\)](#). It is worth emphasizing that the results in our paper are robust to controlling for interactions of the real exchange rate and sectoral dummies.

Finally, our empirical approach is also related to the literature on finance and sector level outcomes, largely started by [Rajan and Zingales \(1998\)](#). [Braun and Larraín \(2005\)](#) show, using a cross-country sample of manufacturing industries over forty years, that industries that are more dependent on external finance reduce their growth more markedly during recessions. In a related way, [Larraín \(2006\)](#) and [Raddatz \(2006\)](#) show that output volatility is dampened in countries with more developed financial systems, with the first paper emphasizing the role of countercyclical borrowing and the second stressing the fact that financial under-development magnifies the effects of liquidity needs on sector level volatility. Therefore, all these papers suggest a possible role for financial frictions in the transmission of sudden stops to sectors, associated to a larger response in sectors that are more exposed to financial conditions. Our results are consistent with this evidence, showing that responses of sector level gross job flows show stronger responses in sectors that are more exposed to finance; this is compatible with increased sectoral volatility and more marked slowdowns in these sectors during recessions.

The paper is organized as follows. [Section 2](#) presents a motivating theory on the determinants of creation and destruction under the presence of financial constraints as a framework for the interpretation of the empirical strategy and results. [Section 3](#) discusses the data and describes the empirical strategy. [Section 4](#) presents the main results of the paper together with a number of complementary and robustness checks and [Section 5](#) briefly concludes.

⁴ In an online appendix to the paper we present alternative specifications and robustness checks. First, we use updated measures of sectoral external dependence, and the cash conversion cycle as an alternative proxy to measure liquidity needs. Second, we present robustness checks including alternative proxies for financial characteristics (as previously mentioned) and changing the sample coverage (excluding Mexico of some regressions and adding data for Argentina and Uruguay).

⁵ For example, see [Pratap and Quintin \(2008\)](#) for a description of the labor markets effects during the Tequila crisis in Mexico.

⁶ For example, [Brei \(2007\)](#) documents the connection between sudden stops and domestic lending by banks.

⁷ Also related to the literature is the work by [Chari et al. \(2005\)](#). They show how in a relatively standard model of a small open economy, a sudden stop can, under certain assumptions, generate an increase rather than a decrease in output. An implication for our paper is that other frictions might be needed to generate the usual output drops that accompany sudden stops. See also the work by [Mendoza and Smith \(2006\)](#).

⁸ See, for example, [Caballero \(2007\)](#) and [Shimer \(2010\)](#).

⁹ See also [Campa and Goldberg \(2001\)](#) for related work on the effects of international factors on employment and labor markets.

2. Motivating theory

Our empirical strategy aims at linking responses to sudden stops with exposure to financial conditions. Let us assume that each plant p in sector i has access to resources

$$w_{ipt} = \phi_i + \omega_i G_t + \varepsilon_{ipt}, \quad (1)$$

where G is an indicator of aggregate conditions in the financial markets. A sudden stop reduces the availability of funds in the market, in particular consider the case where G is 0 in normal times and 1 when there is a sudden stop. The coefficient $\omega_i < 0$ represents a sector-wide sensitivity to financial conditions. This implies that the effect of sudden stops on financial resources available to plants (or firms) is larger for sectors with larger ω_i . Our variables for financial characteristics should then be interpreted as proxies for the *ranking* of sectors according to (different dimensions of) ω_i .

We assume that firms (or plants) need financial resources both to expand their production, which implies *creating* new jobs, and to *maintain* their production levels from previous periods. Whenever financial resources are scarce firms adjust to the conditions through reduced expansion, thus *decreasing* job creation, and/or by down-sizing their current operations, thus *increasing* job destruction.

Although we can talk about financial resources in general, the sources of funds for creating more jobs and for maintaining the scale of production need not be the same. Bond issuance or large loans from banks might be the most common source of funds for starting new projects or growing current operations, particularly in emerging markets. However, simple credit lines, trade credit, or credit from suppliers are also sources of short-term/more liquid funds used by firms while in production. Although we expect both sets of measures to be correlated, there is no reason a priori to believe that the correlation should be perfect and that the effects should be the same.¹⁰ Given this, it is important for us to use measures that capture separately the “average” exposure to external financing and the “average” exposure to liquidity needs for each sector. It is conceivable that job creation and destruction covary with financial market conditions in different ways and that the empirical exercise explores that possibility.

In spite of the importance financial conditions have on the investment and size adjustment decisions by plants, we know that other variables can affect the investment decision. More importantly for the purpose of our study, some of those variables are likely to be affected by the occurrence of a sudden stop. Consider for example aggregate demand, which can be affected by sudden stops through various possible channels and can affect demand for the goods produced in each sector differently. In our empirical analysis we perform robustness checks, using the real exchange rate and fixed effects to control for some of these additional channels.

3. Data and empirical approach

3.1. Data description

3.1.1. Labor flows

Data on sectoral “gross” flows comes from Haltiwanger et al. (2004). The dataset is an unbalanced panel at the 2-digit sector level for Argentina, Brazil, Chile, Colombia, Mexico and Uruguay from 1978 to 2001. The original surveys record flows in workers or jobs (not in hours) at the firm level and it was aggregated by sectors.¹¹

Consider a given sector and country, let p index the plants and t the period, then $E_{p,t}$ represents employment in plant (firm) p at time t . Net employment growth is given by

$$Net_{p,t} = 2 \left(\frac{E_{p,t} - E_{p,t-1}}{E_{p,t} + E_{p,t-1}} \right). \quad (2)$$

Notice that, by construction, this measure goes between -2 , in the case of a plant that was created between t and $t-1$, and 2 , in the case of a plant that was closed during the same period.

Job creation corresponds to the sum of net employment growth over all plants with positive net employment growth (for a given country–sector pair) between period $t-1$ and t ,

$$Creation_t = \sum_p \phi_{p,t} \max(Net_{p,t}, 0), \quad (3)$$

$$\text{where } \phi_{p,t} = \frac{E_{p,t} + E_{p,t-1}}{\sum_p (E_{p,t} + E_{p,t-1})}.$$

Job destruction is then the sum of the absolute value of net employment growth over all plants with negative employment growth between period $t-1$ and t ,

$$Destruction_t = \sum_p \phi_{p,t} |\min(Net_{p,t}, 0)|. \quad (4)$$

We use data for manufacturing sectors, as it is the only data available for all countries in the original sample available from the IADB. Each job flow series is provided for 2 sets of firms: *continuing* and *all* plants.¹² Job creation data for continuing plants include information from continuing plants in t , alive in $t-1$ and t ; all plants/firms include all plants in t and $t-1$. Job destruction data for continuing plants includes information from continuing plants as reported in period t ; for all plants/firms it again includes information on job destruction from all plants in t and $t-1$. In the paper we refer to the flow variables as “gross” flows, in the tradition of Davis et al. (1998) even though they are average net flows within each sector.¹³

Panel (a) in Table 1 presents the time periods for which we have information for each country and the average values of creation and destruction for the group of countries in our estimation. Average job creation of all plants is 12.3%, significantly higher than job creation of continuing plants (9.2%). Job destruction rate of all plants is very close to the value of job creation (11.8%), implying that net job creation is just 0.5%. We do not observe big differences in terms of job destruction rates among all and continuing plants. Finally, in our sample, net job creation for continuing plants is slightly negative in average (with a rate of -0.9%).

We can see that there is large variation both in creation and destruction across countries. Mexico presents both the highest average job creation rate (17.4%) and one of the lowest destruction rates (10.5%) for all and continuing plants—thus, having the highest net job creation rate of all the countries. The country with the lowest net job creation is Colombia with -0.8% for all plants and one of the lowest (-3.7%) for continuing plants, reflecting a relatively low rate of creation and a relatively high rate of destruction (especially in the case of continuing firms). In addition, if we look at the detailed data (see Appendix Table A.1), we can observe that Mexico has the highest rates of creation (in 1996), but Chile shows the highest destruction rates for all plants (in 1982) and Colombia for continuing plants (in 1992). Chile also presents the largest differences between the maximum and minimum values for creation and destruction in the sample.

¹² The dataset includes data on plants and firms, but for simplicity we refer only to plants. For Argentina and Uruguay, only continuing plants data is available, and we use it in a robustness exercise in the online appendix.

¹³ In fact, notice that the flows correspond to the average positive net flows in the case of creation, and the average negative net flows in the case of destruction.

¹⁰ In fact, as we discuss below the sectoral correlation of proxies for liquidity needs and external financial dependence is very low.

¹¹ See Appendix Table A.3 for a description of the dataset.

Table 1

Descriptive statistics: job creation and destruction, main countries.

	Panel (a). Summary statistics for job flows					
	Job creation		Job destruction			
	All firms	Continuing firms	All firms	Continuing firms	All firms	Continuing firms
Brazil (1992–2000)	0.158	0.088	0.164	0.108	−0.006	−0.020
Chile (1980–1999)	0.119	0.082	0.119	0.074	−0.000	0.008
Colombia (1978–1991, 1993–1999)	0.095	0.067	0.103	0.105	−0.008	−0.037
Mexico (1994–2000)	0.174	0.126	0.105	0.078	0.068	0.048
Total	0.123	0.083	0.118	0.092	0.005	−0.009

Panel (b). Summary statistics for country-specific variables							
	Sudden stop	Banking crisis	Rule of law	Labor costs	Trade openness	Fixed exchange rate regime	Labor market reform
Brazil	0.306	0.667	6.320	1.180	0.175	0.222	1.000
Chile	0.225	0.300	7.020	1.098	0.505	0.100	0.450
Colombia	0.111	0.286	2.080	0.835	0.268	0.000	−0.429
Mexico	0.286	0.571	5.350	1.283	0.731	0.143	0.000
Total	0.200	0.384	4.769	1.031	0.393	0.092	0.130

Panel (c). Summary statistics for sector-specific variables				
	Mean	St. dev.	Max	Min
External dependence (Raddatz Proxy, <i>Fin</i>)	−0.000	0.228	0.461	−0.260
Inventory to Sales (<i>I/S</i>)	0.000	0.038	0.057	−0.053

Notes: Column 1 in panel (a) shows sample coverage in parenthesis.

Table 2Sample coverage and months in sudden stop.
Source: See text.

Country	Sample	SS periods
Brazil	1992–2000	1995.1–1995.12 1998.1–1999.99
Chile	1980–1999	1982.1–1984.1 1995.10–1996.8 1998.1–1999.12
Colombia	1978–1991, 1993–1999	1978.1–1978.3 1997.12–1999.12
Mexico	1994–2000	1994.1–1995.12

These differences in gross and net labor flows may be related to the dissimilar time periods for which we have information for the different countries and also to different conditions under which labor markets in these countries operate over these periods (including macroeconomic shocks, regulations, and other country-specific variables).

There are two dimensions that our dataset misses. First, we do not observe plant turnover data. This is important when studying the effects of financial shocks, as liquidity needs may drive firms out of the market if they cannot borrow to maintain operation. It is also relevant to observe firms that change property, either because of bankruptcy procedures or because of fire-sales when in sudden stops. Second, our dataset only includes data for formal plants/firms. This may certainly be an issue in Latin America given the extent of informality in some countries and sectors (IADB, 2004) and implies that we may be missing some movements along the informal–formal employment margin. However, it is important to notice that our sample includes data just from manufacturing sectors. IADB (2004) documents that informality – measured using coverage in social security of waged workers as a proxy – in the manufacturing sector is significantly lower than in the rest of the economy.¹⁴

3.1.2. Sudden stops

We take the dates for sudden stop episodes directly from the episodes identified by Calvo et al. (2006), Calvo et al. (2008), and Cavallo and Frankel (2008). In addition, we extend their definition of sudden stops using data from the International Financial Statistics for Chile and Colombia in the late 1970s and 1980s (countries for which we have job flows data over periods that are not covered by the above-mentioned papers). Following Joyce and Nabar (2009), and given the fact that there is no unique empirical implementation of the definition of a sudden stop episode, we identify a country-year observation as a sudden stop if it is identified as such by any of three papers mentioned at the beginning of the paragraph (and by our extension of their methodologies to the 1970s and 1980s).¹⁵

Finally, we transform the monthly definition of sudden stops in the papers by Calvo et al. to annual frequency, to match with the information in Cavallo and Frankel (2008) and in our job flows dataset. To do this, we take the fraction of months of a year in which a sudden stop is identified by either of the papers by Calvo et al. Then the variable that combines the annual information from the three papers corresponds to our baseline definition of sudden stop (henceforth denoted by SS).

Table 2 shows the periods for which we identify a sudden stop together with the years and months for which we have job flows data for each of the six countries. Panel (b) of Table 1 shows that there has been a sudden stop in about 20% of the periods included in our sample. On the other hand, we find that Brazil, Chile, and Mexico have spent more than 20% of the sample period in sudden stops. Interestingly for our identifying assumptions, with the exception of Mexico 1994–1995, all the sudden stops identified in our sample correspond to periods of bunching of sudden stops as observed in the work by Rothenberg and Warnock (2006), which in turn correspond to periods during which credit conditions worsened due to exogenous reasons as documented in Gallego and Jones (2005).

¹⁴ According to IADB (2004) informality rates are 21% for Brazil (in 1999), 19% for Mexico (in 2001), and 17% for Chile (in 2000)—as a reference, informality rates for the whole economy are 36%, 34%, and 20%, respectively. As a comparison, average informality measured using this proxy for OECD countries – where arguably informality rates are quite small – is 7% (with the two countries with the highest informality rates being Greece with 16% and France with 14%).

¹⁵ The three empirical measures of sudden stops are correlated given the definitions are very similar among them (Joyce and Nabar, 2009). The correlation of the sudden stop dummies in the papers by Calvo et al. is 0.81. In turn, the correlation between Calvo et al. (2006) and Cavallo and Frankel (2008), and between Cavallo and Frankel (2008) and Cavallo and Frankel (2008) is 0.55 and 0.52, respectively.

3.1.3. Sectoral financial characteristics

We use two sets of financial characteristics:

1. *External financing dependence*: The first sector level characteristic we use corresponds to the Raddatz (2006) measure of external financing dependence (we denote it by *Fin*). It captures a sector's dependence on external financing by measuring the fraction of the assets that is financed with external funds (following the seminal paper by Rajan and Zingales, 1998). A sector with a higher external financing dependence measure should suffer more in the event of a financial crunch or any other reduction in the access to credit.¹⁶
2. *Liquidity "needs"*: Following Raddatz (2006) we use the median value of the ratio of total inventories to sales (denoted by *Inv/Sales*) across firms in each sector as our main proxy for the liquidity needs of firms.¹⁷

The original external financing dependence and the liquidity needs variables were calculated for 3-digit sectors. Given that our data for labor flows contains information for 2-digit sectors, in our main specifications, we use the median value of each indicator across 3-digit sectors within a 2-digit sector.¹⁸

It is worth emphasizing that these measures capture different dimensions of the financial needs of firms, and, as we discussed in Section 2, relate to different types of financial funds firms need. The first set, based on the initial Rajan–Zingales approach, measures dependence related to the use (in equilibrium) of external funds in asset acquisition, and hence it relates more to long-run and investment decisions. In turn, the liquidity needs measures explicitly capture financial needs arising from delays between production and sales revenue collection. Interestingly, the Spearman (Kendall) rank correlation between both proxies for different margins of financial characteristics for the nine sectors we use in this paper is just 0.28 (0.17) and we cannot reject the null hypothesis that both series are independent among them, with a p-value of 0.46 (0.60). This indeed shows that both margins of financial frictions are different, which is key for the empirical analysis and the interpretation of the results of this paper.

3.1.4. Country level variables

We use a number of country-level characteristics in our regressions. We list them here.

1. We use two measures of labor market regulation. First, a labor regulation proxy from Botero et al. (2004), which measures the sum of the cost of firing workers and the number of procedures required to dismiss a worker (Micco and Pagés-Serra, 2006).¹⁹ Second, a proxy for labor market regulations that changes by country within our sample using information from Heckman and Pagés-Serra (2004). Our proxy takes a value of 1 if the country implemented labor reforms that increased legal protection of workers, a value of -1 if the country implemented labor reforms that decreased legal protection of workers, and a value of 0 if the country did not implement a labor reform. In our sample, Brazil in 1985 and Chile in 1991 implemented reforms

increasing legal protection to workers and Colombia in 1990 implemented reforms decreasing legal protection to workers.

2. We use a rule of law proxy from La Porta et al. (1998), which corresponds to the assessment of the law and order tradition in the country averaged over the 1982–1995 period (constructed by *International Country Risk*). The index goes from 0 to 10, with lower scores for lower levels of law and order.
3. We use a measure of trade openness that corresponds to the residual of a regression of the log of the ratio of exports and imports (in 1995 US\$) to GDP (in 1995 US\$), on the logs of area and population, and dummies for oil exporting and for landlocked countries (Chang et al., 2009). We use the average of the measure over the period for which we have labor flows information for each country.
4. Finally, we use a dummy for de facto fixed exchange rate regimes from Levy Yeyati and Sturzenegger (2003) to study how differences in the exchange rate regime affect our results. We find the following episodes of fixed exchange rate regimes in the years included in our sample: Brazil (1998 and 2000), Chile (1980–1981), and Mexico (1994).

3.2. Empirical strategy

Motivated by the discussion in Section 2 and the existing literature, we proceed to study the case of sudden stops in Latin America. We seek evidence using data on gross job flows in Latin America, over a sample period where these countries suffered significant sudden stops. We use our data on job flows from continuing versus all plants to contrast the effect of the financial shock on the complete sample of plants versus those that have survived between two consecutive periods to shed some light on the potential role of plant closing and opening in the process.

We estimate the following equation:

$$y_{ijt} = \alpha S_{jt} + \delta m_j S_{jt} + \rho z_i S_{jt} + \mu + \varepsilon_{ijt}, \quad (5)$$

where y_{ijt} is some measure of job flows (mainly creation and destruction and in some specifications net employment growth) in sector i , country j , and time t , S is a measure of external shocks to financial conditions – sudden stops in this paper –, m_j is a vector of country specific institutional variables (i.e. proxies for labor market regulation and the rule of law), z_i is a vector of sector specific characteristics (e.g. financial dependence and liquidity needs), and μ is a vector of fixed effects that includes country, year and sector fixed effects, and in some specifications it also includes interactions of (any two) of them. Finally, all sector and country variables are included as deviations with respect to their sample means to facilitate interpretation.

The interaction effects ($z_i S_{jt}$ and $m_j S_{jt}$) are the most important part of this regression for testing the main hypotheses of our paper. The sector specific characteristics are related to financial characteristics of the sectors, and we will follow the existing literature assuming that at least part of the observed differences across sectors in financial outcomes is associated with technological differences. Thus, the α coefficients reflect estimates of the effects of sudden stops on an average country and on the average sector, and hence give an estimate of the baseline effect of the sudden stops on labor flows.

In many cases sudden stops are accompanied by abrupt changes in relative prices, particularly in the real exchange rate. We thus add the real exchange rate (in different specifications) to our baseline regression, and we estimate

$$y_{ijt} = \alpha S_{jt} + \delta m_j S_{jt} + \rho z_i S_{jt} + \sum_i \pi_i RER_{jt} + \mu + v_{ijt}, \quad (6)$$

where all variables are as defined in Eq. (5), and RER_{jt} is a measure of the real exchange rate and we allow π to be different for each sector in

¹⁶ Alternatively, we also use the Micco and Pagés-Serra (2006) and Rajan and Zingales (1998) measures of external financing dependence as a robustness check (we denote them by *Fin1* and *Fin2*, respectively) in the online appendix.

¹⁷ Alternatively, we also use the cash conversion cycle (denoted by CCC), which corresponds to an estimate of the length in days between the moment a firm pays for the raw materials and the moment it finally receives the payment for the sale of the final goods it produces. We present the results in the online appendix.

¹⁸ Appendix Table A.2 presents a description of the main variables used in the paper.

¹⁹ The cost of firing workers is a measure of how expensive it is for a firm to fire 20% of the workers; it includes all the compensations and penalties needed to pay in this case. The dismissal procedures variable counts the number of measures a firm must undertake in order to be able to dismiss a worker.

Table 3
Job creation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel (a). All plants series</i>								
Sudden stop (SS)	−0.0228*** (0.00534)	−0.0227*** (0.00531)	−0.0228*** (0.00532)	−0.0302** (0.0148)		−0.0291* (0.0168)	−0.0308** (0.0130)	−0.0314** (0.0145)
Fin*SS		−0.0429*** (0.0159)	−0.0407** (0.0198)	−0.0407** (0.0193)	−0.0407** (0.0181)	−0.0148 (0.0346)	−0.0324 (0.0201)	−0.0373* (0.0203)
I/S*SS	−0.160 (0.104)		−0.0278 (0.128)	−0.0359 (0.130)	−0.0226 (0.116)	−0.0382 (0.219)	−0.153 (0.129)	−0.0690 (0.138)
Labor regulation costs*SS				0.0308 (0.0576)		0.0268 (0.0633)	0.0322 (0.0491)	0.0298 (0.0579)
Rule of law*SS				−0.00322 (0.00396)		−0.00306 (0.00459)	−0.00344 (0.00356)	−0.00302 (0.00401)
N	484	484	484	484	484	484	484	466
Adj. R ²	0.599	0.602	0.601	0.600	0.725	0.474	0.674	0.620
<i>Panel (b). Continuing plants series</i>								
Sudden stop (SS)	−0.0165*** (0.00398)	−0.0166*** (0.00397)	−0.0165*** (0.00395)	0.000561		0.00144 (0.0126)	−0.0000378 (0.0102)	−0.000487 (0.0103)
Fin*SS		−0.0355*** (0.0116)	−0.0386*** (0.0138)	−0.0385*** (0.0139)	−0.0386*** (0.0141)	−0.0287 (0.0260)	−0.0327** (0.0158)	−0.0372*** (0.0141)
I/S*SS	−0.0868 (0.0807)		0.0381 (0.0945)	0.0299 (0.0938)	0.0388 (0.0904)	0.0630 (0.165)	−0.0796 (0.101)	0.0120 (0.0985)
Labor regulation costs*SS				−0.0695 (0.0425)		−0.0722 (0.0476)	−0.0682* (0.0385)	−0.0701* (0.0424)
Rule of law*SS				0.000794 (0.00291)		0.000905 (0.00345)	0.000573 (0.00280)	0.000935 (0.00294)
Observations	484	484	484	484	484	484	484	466
Adj. R ²	0.525	0.530	0.529	0.533	0.673	0.423	0.610	0.554
One-way fixed effects	C,S,Y	C,S,Y	C,S,Y	C,S,Y	S	C	Y	C,S,Y
Two-way fixed effects	No	No	No	No	CY	SY	CS	No
LRER*sector dummies	No	No	No	No	No	No	No	Yes

Notes: Standard errors in parenthesis. C: country fixed effects, S: sector fixed effects, Y: year fixed effects.

*** Significant at $p < 0.01$.

** Significant at $p < 0.05$.

* Significant at $p < 0.1$.

order to capture different sensitivities to relative prices, which might be due to different degrees of tradability, among other factors.²⁰

We also implement some additional regressions adding additional controls and interactions (such as trade openness, the exchange rate regime, and labor market reforms) and implement some instrumental variable regressions. Given that these exercises are mostly additional checks, we discuss them in Section 4.

3.3. Identification

Sector level data allows us to control for unobserved country characteristics and rely on particular sector specific (but not country-sector specific) variables to identify sector specific effects of sudden stops. Part of this effect comes from interaction effects between sector characteristics and the prevalence of sudden stops, e.g. we expect sectors that rely more on external financing or have less access to collateral to suffer more during a sudden stop than sectors with better chances of self-financing its operations (or at least part of them). The same argument follows for the liquidity related variables, as the source of identification is the same.

Our identification of differentiated sectoral sensitivity to sudden stops relies on the assumption that any determinant of the sudden stop

(or its size) may not be systematically correlated with sector characteristics that determine the sensitivity of firms in each sector to the sudden stop, which in our case are financial dependence and liquidity needs (or any other sector characteristic that is correlated with any of these two characteristics). Notice that it does not require the sudden stop to be independent of country characteristics, but to be uncorrelated with determinants of the sector specific sensitivity to them. We believe this condition to be weaker than the one we would need to identify direct effects of sudden stops on creation and destruction.

Our discussion above implies that of the two sets of estimates we obtain, it is more plausible to give some structural or causal interpretation to the sector characteristics. Even if we were not able to interpret some of the coefficients as causal effects, our results can still be interpreted as stylized facts about correlations between financial characteristics and the extent of the equilibrium response of sectoral gross job flows to sudden stops.

We also implement a falsification exercise to check for our identification assumptions. We run our equations using *lagged* creation/destruction rates (i.e., y_{ijt-1}) as the left-hand side variable. If we found a significant effect of sudden stops in *the future* and/or of interactions of sudden stops in *the future* with sectoral financial characteristics on job flows *today*, that would imply that there is either reverse causality or some omitted variable(s) is (are) driving our results. Albeit certainly imperfect, this procedure allows us to check our basic identification assumptions.

Finally, a small comment on our proxies for sectoral financial characteristics. The use of US-based measures has caused some controversy in the literature because of the assumption that we can extrapolate to different countries. There are two elements to consider in this respect. First, there is evidence that rankings based on the Rajan and Zingales (1998) measure of financial dependence perform well in other countries (Ilyina and Samaniego, 2008). Second, as we are interested in

²⁰ As has been noted before, we exclude Argentina and Uruguay from all analyses of this paper query. There are two different reasons to drop Argentina and Uruguay. First, we do not identify any sudden stop in Uruguay during the years for which we have job flows data. Second, the nature of the original surveys from which data was collected in both countries differs from the rest. For both countries there is no information on new plants, as only continuing plants are observed in their sampling. This lack of data makes it impossible to compare continuing and all plants data. However, it is worth noting that including these two countries does not change the results of the paper. We present results using all countries in the online appendix to the paper.

Table 4
Job destruction.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel (a). All plants series</i>								
Sudden stop (SS)	0.0522*** (0.00569)	0.0516***	0.0522*** (0.00570)	0.0478*** (0.0175)		0.0504*** (0.0176)	0.0481*** (0.0147)	0.0485*** (0.0170)
Fin*SS		0.0331* (0.0193)	0.0142 (0.0223)	0.0142 (0.0224)	0.0143 (0.0187)	0.0210 (0.0364)	0.0206 (0.0228)	0.0201 (0.0228)
I/S*SS	0.283** (0.121)		0.237* (0.141)	0.247* (0.139)	0.228* (0.120)	0.229 (0.230)	0.275* (0.146)	0.209 (0.143)
Labor regulation costs*SS				0.0175 (0.0614)		0.00818 (0.0664)	0.0168 (0.0558)	0.0189 (0.0616)
Rule of law*SS				0.00166 (0.00446)		0.00199 (0.00482)	0.00178 (0.00405)	0.00141 (0.00450)
N	484	484	484	484	484	484	484	466
Adj. R ²	0.585	0.583	0.585	0.584	0.729	0.468	0.613	0.605
<i>Panel (b). Continuing plants series</i>								
Sudden stop (SS)	0.0412*** (0.00538)	0.0406*** (0.00534)	0.0412*** (0.00537)	0.0569***		0.0573*** (0.0134)	0.0572*** (0.0116)	0.0581*** (0.0154)
Fin*SS		0.0317 (0.0196)	0.0125 (0.0194)	0.0127 (0.0189)	0.0127 (0.0156)	0.0280 (0.0277)	0.0155 (0.0179)	0.0156 (0.0194)
I/S*SS	0.282** (0.109)		0.241** (0.103)	0.216** (0.105)	0.208** (0.0996)	0.0881 (0.175)	0.257** (0.115)	0.192* (0.109)
Labor regulation costs*SS				−0.0624 (0.0522)		−0.0645 (0.0506)	−0.0631 (0.0438)	−0.0626 (0.0523)
Rule of law*SS				−0.00373 (0.00375)		−0.00372 (0.00367)	−0.00361 (0.00318)	−0.00384 (0.00378)
Observations	484	484	484	484	484	484	484	466
Adj. R ²	0.559	0.555	0.558	0.571	0.688	0.488	0.604	0.597
One-way fixed effects	C,S,Y	C,S,Y	C,S,Y	C,S,Y	S	C	Y	C,S,Y
Two-way fixed effects	No	No	No	No	CY	SY	CS	No
LRER*sector dummies	No	No	No	No	No	No	No	Yes

Notes: Standard errors in parenthesis. C: country fixed effects, S: sector fixed effects, Y: year fixed effects.

*** Significant at $p < 0.01$.

** Significant at $p < 0.05$.

* Significant at $p < 0.1$.

intrinsic (most likely technological) characteristics that make sectors differ in their financial decisions, we can think of Eq. (5) either as the reduced form of an IV estimation where the US-based measure is used as an instrument for the country specific variables or as an equation in which the interactions of sudden stops and financial sector characteristics are affected by attenuation bias (Raddatz, 2006). Therefore, we do not think it is a problem to use US-based measures of sector characteristics and, if anything, our estimates are biased toward 0 because of attenuation bias, so they are conservative estimates of the interaction effects related to sectoral financial characteristics.

4. Results

Following, our previous discussion, we start presenting our basic results for the estimated effects of sudden stops on job creation and job destruction, in Tables 3 and 4 respectively. In both tables we present two panels: in panel (a) we show results of job flows using data from all plants and in panel (b) we show estimates using job flows from continuing firms only. In addition, in each table we present eight different specifications. In the first three columns we present the direct effect of sudden stops and include interactions of sectoral financial characteristics and sudden stops (in columns 1 and 2 including separately each characteristic and in column 3 including both at the same time). Next, in column 4 we include interactions of sudden stops with two country level characteristics that may affect the reactions of the economy to sudden stops: proxies for labor market regulations and the rule of law. In columns 5 to 7 we include two-way fixed effects to check the robustness of results in column 4 to include: *country*year* fixed effects (column 5), *sector*year* fixed effects (column 6), and *country*sector* fixed effects (column 7). Finally, in column 8 we include interactions of the (log of the) real exchange rate and sector dummies to

see whether the estimated effects are not being confounded by the heterogeneous impact of real exchange rate fluctuations at the sectoral level.²¹

4.1. Sudden stops and labor flows

The main results for the effects of sudden stops on creation and destruction by all firms can be observed in the top row of panel (a) in Tables 3 and 4. Table 3 shows the effects on job creation, where we find that sudden stops depress job creation by between −2.3 and −3.1 percentage points, depending on the specification. Results in panel (b) imply that the depressing impacts on job creation by *continuing firms* are also negative but smaller suggesting that the effects of sudden stops on plant entry could be more relevant. The results for job destruction are in the first row of each panel in Table 4; there we observe that sudden stops raise job destruction by between −4.8 and −5.2 percentage points. In this case, we see that the effect of sudden stops is not sensitive to whether the sample is restricted to only continuing plants or not.

The estimated effects are also economically relevant. During a year-long sudden stop job creation by all plants decreases by between about 20 and 25% of the average rate of job creation in the complete sample (which is equal to 12.3%). Similarly, a sudden stop raises job destruction by all plants between 40% and 62% of the average rate of job destruction in our sample (which is equal to 11.8%). The increase of job destruction over sudden stops for continuing plants is of the same order of magnitude.

²¹ Notice that when using *country*year* fixed effects we cannot identify the direct effect of sudden stops since this fixed effect annihilates the effect of any other variable that varies at the *country*year* level.

Although not the central results of our paper and not surprising, these results are important, particularly because they imply that labor market flows (and potentially frictions) are relevant in any model that wants to explain the economic effects of sudden stops on a developing economy. To study in more detail this point, we now move to sectoral effects.

4.2. Sectoral effects

While the results on the average effect of sudden stops are important and highlight an aggregate pattern for the effects in manufacturing sectors, they also hide significant differences across sectors. In particular, we focus on financial fragility or exposure to financial market conditions. As previous literature and our motivating theory suggest, both dimensions are likely to affect hiring and firing decisions by firms: new projects may be delayed, some plants/firms may reduce their scale because of financing problems, etc.²²

4.2.1. Financial dependence

The rows labeled $Fin*SS$ in Tables 3 and 4 correspond to the estimated effects of the interaction of the Raddatz (2006) measure of financial dependence by sector with the sudden stop variable. In all specifications including creation rates as dependent variables, the coefficient for $Fin*SS$ is negative as can be seen in both panels of Table 3. Moreover, the estimates are statistically significant in 13 of the 16 columns. The cases in which this interaction is not statistically significant are: the specifications in which we control for $sector*year$ fixed effects in both panels (column 6) and the specification for all plants in which we control for $sector*country$ fixed effects (column 7 in panel (a)). Given that the introduction of these two-way fixed effects may be decreasing the efficiency of the estimates without affecting the consistency of them, we implement simple Hausman tests in which we compare our estimates for this interaction with estimates that do not include these two-way fixed effects (column 4 in both panels). Under the null, both estimates are consistent and the estimates that do not include two-way fixed effects are more efficient. Results imply that we cannot reject the null hypothesis and therefore we prefer the more efficient estimates (without two-way fixed effects).²³ Interestingly, the estimated interaction effects do not seem to be different in both panels.²⁴

Our main results using $Fin*SS$ (column 4) suggest that during a year long sudden stop, job creation in the sector with the highest financial exposure is approximately 2.1 percentage points smaller than in the sector with the smallest financial exposure, and approximately 1.7 percentage points smaller than in the average sector of our sample.²⁵ These effects are economically relevant as a year-long sudden stop depresses job creation in all firms by between -2.3 and -3.1 percentage points, depending on the specification.

In contrast to job creation, our estimates for the effect of $Fin*SS$ on destruction rates are positive, but never statistically different from 0 (except for the case of column 2 in panel (a) when we do not control for our measure of liquidity needs). This is consistent with our motivating theory and implies that for the destruction margin the effect of sudden stops on sectoral flows does not depend significantly on financial dependence of the firms.

²² Another margin refers to destruction of plants and the consequent separation of workers, unfortunately, as we mentioned before, due to lack of data, we cannot study this channel. Similarly, we cannot follow plants individually, thus we cannot track what fraction of the changes comes from reductions within a firm and how much comes from changes in the number and size of firms that enter and exit the market. We leave both aspects as topics for further research.

²³ The p-values of the Hausman tests are the following: 0.34 for column 6 in panel (a), 0.50 for column 6 in panel (b), and 0.22 for column 7 in panel (a).

²⁴ We also run a “pooled” specification with data from both continuing and all plants and find similar results.

²⁵ The same numbers are 2.0 and 1.6, respectively, for continuing plants only.

4.2.2. Liquidity needs

The results for short-run liquidity needs are in the rows labeled $(I/S)*SS$ (for inventories over sales) in Tables 3 and 4. We observe that in Table 3 most of the coefficients for $(I/S)*SS$ are negative but they are never statistically significant. The opposite picture arises in the case of job destruction in Table 4, where the coefficients are always positive and statistically different from 0 in most specifications (in 13 out of 16 estimates). As in the previous regressions for $Fin*SS$, the estimates are not statistically significant in columns 6 in both panels and in column 8 in panel (a). As before, to check whether the inclusion of two-way fixed effects (in this case $sector*year$ fixed effects) is affecting the consistency or just the efficiency of the estimates, we performed Hausman tests and found that the estimates of columns 4 and 6 in both panels are not statistically different among them.²⁶

In the case of estimates in column 8 in Table 4 (i.e. the effects of sudden stops on job destruction), the $(I/S)*SS$ term is statistically significant only for continuing plants and decreases in magnitude implying that part of the effects of the financial characteristics of the sectors are more related to heterogeneous effects of real exchange rate movements on destruction. The fact that the decrease in the point estimates is relatively small (it decreases by just about 15% from estimates in column 4), and that the coefficient is similar for both continuing and all plants makes us believe that overall $(I/S)*SS$ has a negative effect on destruction rates.

The estimated results regarding the impact of $(I/S)*SS$ are also economically relevant in magnitude. For the case of continuing plants, on average the sector with the highest value for $(I/S)*SS$ exhibits a job destruction flow 2.3 percentage points higher than the sector with the lowest value (considering our most conservative estimate in column 8 panel (a)). This difference represents 57% of the effect of a sudden stop on job destruction in the average sector.²⁷ Overall, these results suggest that patterns of job flows across sectors during a sudden stop are related to the financial characteristics of the sectors.

4.2.3. Financial factors overall

It is important to emphasize that our results suggest that our measures of financial characteristics, financial dependence and liquidity needs, are related to different margins. First, this dichotomy is interesting from an empirical point of view and we believe it to be reasonable, given the way the proxy variables are constructed and what they are supposed to capture. Furthermore, these effects on separate margins are also robust to changes in the specification of the regressions. Second, this is a new result in the literature on financial frictions and sector outcomes; previous results have shown that both dimensions are correlated with sectoral variation and volatility at the sectoral level, but do not distinguish between creation and destruction margins—because of the lack of data.²⁸

Finally, analyzing two separate margins on gross flows allows us to depict a slightly more detailed picture of the mechanics behind some of the observed results regarding financial characteristics. We interpret our results as evidence that there is indeed a connection to both aspects of finance and that we are not capturing a more general idea of financial constraints, with each gross margin having a closer relation to one of the finance characteristics, with the extent of this relation partially hidden when looking at a more macro level. From the point of view of the effects of sudden stops, the point estimates also suggest that financial characteristics play a role in net job flows and total reallocation, defined

²⁶ The relevant p-values are the following: 0.92 for column 6 in panel (a) and 0.36 for column 6 in panel (b).

²⁷ Similar calculations for only continuing firms yield a 2.1 percentage points increase in job destruction for the sector with the highest value of (I/S) with respect to the sector with the lowest value, and an effect which is equivalent to 37% of the effect of a sudden stop on the average manufacturing sector (we also use estimates in column 8).

²⁸ See for example Braun and Larraín (2005), Raddatz (2006) and references therein.

Table 5
Net creation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel (a). All plants series</i>								
Sudden stop (SS)	−0.0750*** (0.00848)	−0.0744*** (0.00842)	−0.0750*** (0.00848)	−0.0779*** (0.0268)		−0.0794*** (0.0263)	−0.0788*** (0.0224)	−0.0800*** (0.0266)
Fin*SS		−0.0761*** (0.0281)	−0.0549 (0.0335)	−0.0549* (0.0331)	−0.0550** (0.0259)	−0.0358 (0.0543)	−0.0530 (0.0347)	−0.0575* (0.0343)
I/S*SS	−0.443** (0.187)		−0.265 (0.221)	−0.283 (0.222)	−0.251 (0.166)	−0.268 (0.344)	−0.428* (0.222)	−0.278 (0.237)
Labor regulation costs*SS				0.0133 (0.0985)		0.0186 (0.0992)	0.0153 (0.0849)	0.0108 (0.102)
Rule of law*SS				−0.00488 (0.00671)		−0.00505 (0.00720)	−0.00522 (0.00616)	−0.00443 (0.00699)
N	484	484	484	484	484	484	484	466
Adj. R ²	0.484	0.485	0.485	0.484	0.710	0.336	0.500	0.519
<i>Panel (b). Continuing plants series</i>								
Sudden stop (SS)	−0.0578*** (0.00767)	−0.0572*** (0.00756)	−0.0577*** (0.00763)	−0.0563** (0.0229)		−0.0559*** (0.0212)	−0.0572*** (0.0183)	−0.0586*** (0.0225)
Fin*SS		−0.0673*** (0.0254)	−0.0511* (0.0270)	−0.0512* (0.0272)	−0.0513** (0.0236)	−0.0567 (0.0438)	−0.0482* (0.0284)	−0.0528* (0.0278)
I/S*SS	−0.369** (0.160)		−0.203 (0.166)	−0.186 (0.170)	−0.169 (0.151)	−0.0250 (0.277)	−0.336* (0.182)	−0.180 (0.181)
Labor regulation costs*SS				−0.00711 (0.0819)		−0.00771 (0.0800)	−0.00510 (0.0694)	−0.00753 (0.0825)
Rule of law*SS				0.00452 (0.00566)		0.00463 (0.00581)	0.00418 (0.00503)	0.00477 (0.00577)
Observations	484	484	484	484	484	484	484	466
Adj. R ²	0.539	0.541	0.541	0.541	0.690	0.446	0.571	0.575
One-way fixed effects	C,S,Y	C,S,Y	C,S,Y	C,S,Y	S	C	Y	C,S,Y
Two-way fixed effects	No	No	No	No	CY	SY	CS	No
LRER* sector dummies	No	No	No	No	No	No	No	Yes

Notes: Standard errors in parenthesis. C: country fixed effects, S: sector fixed effects, Y: year fixed effects.

*** Significant at $p < 0.01$.

** Significant at $p < 0.05$.

* Significant at $p < 0.1$.

as the sum of creation and destruction for a sector, during a sudden stop. We turn to this point in the next section.

4.3. Sudden stops, financial characteristics, and net labor growth

In this section we extend our previous analysis by estimating Eq. (5) using net labor flows as the left-hand side variable. Table 5 presents the results of estimating models similar to those in the previous section. Given the close relationship with results in the previous sections we focus on the main results in Table 5.

Consistent with the results in the previous section, sudden stops have a significantly robust depressing effect on net creation at the sector level. The estimates for the sample including all firms imply that net employment growth decreases between 7.5 and 8 percentage points in a year with a sudden stop. The results for the sample including job flows of continuing firms are slightly lower in absolute value with point of between −5.6 and −5.9 percentage points.

Regarding the sectoral impact of sudden stops on net employment growth, point estimates confirm results of a negative coefficient for both coefficients ($Fin*SS$ and $I/S*SS$). However, results in these cases are slightly less robust to the inclusion of both financial variables together, but in no case signs are overturned. In general, the interaction of sudden stops with our proxy for sectoral external dependence ($Fin*SS$) is always significant and with point estimates fairly robust (except for models in column 6 in both panels in which we include $sector*year$ fixed effects). In turn, the interaction of sudden stops with liquidity needs ($I/S*SS$) presents the expected sign but is significant in just four specifications.

If we consider the size of the estimated impacts on net employment growth, both variables have impacts of the same order of magnitude (using our preferred estimates in panel (a), column 4). The sector with the highest external dependence decreases net employment growth by 2.8 percentage points less than the sector with lowest value for external dependence when there is a year long sudden stop. A similar calculation

regarding liquidity needs implies a differential net growth of 3.9 percentage points. Our reading of these results is that probably the lack of significance of ($I/S*SS$) is more related with precision problems than with a zero impact on net employment growth.

4.4. Robustness exercises

In order to check the robustness of our results we perform four different groups of exercises. The first two exercises study the identification strategy we use in the paper. The second set of exercises include additional control and interaction variables.²⁹

4.4.1. Falsification exercises

In Table 6 we present a set of falsification exercises in which we run the same specifications of column 4 in Tables 3 and 4 but using the lag of our gross job flows measures as the left-hand side variables in each regression. Our aim is to study the endogeneity of our sudden stop variables to overall and sectoral job shocks. If we found statistically and economically significant effects of sudden stops in the future and/or of interactions of sudden stops in the future with sectoral financial characteristics on job flows today, that would imply that there is either reverse causality or any other omitted variable is driving our results. Albeit certainly imperfect, this procedure allows us to check this basic identification assumption.

Table 6 presents the results. Interestingly, none of the variables of interest (i.e., SS , $Fin*SS$, and $I/S*SS$) has a significant impact on lagged creation and destruction rates. Moreover, the size of the estimated effects is clearly smaller than those estimated in previous tables suggesting that the lack of significance is not due to increases in

²⁹ As previously mentioned, the online appendix also includes robustness exercises in which we use alternative proxies for sectoral financial characteristics and alternative samples of countries.

Table 6
Falsification exercises.

	(1)	(2)	(3)	(4)
Sample:	All plants	Continuing plants	All plants	Continuing plants
Dependent variable:	Lagged job creation		Lagged job destruction	
Sudden stop (SS)	0.009 (0.017)	0.009 (0.014)	−0.003 (0.021)	−0.007 (0.017)
<i>Fin</i> *SS	−0.027 (0.025)	−0.006 (0.021)	0.023 (0.026)	0.006 (0.020)
<i>I/S</i> *SS	0.243 (0.184)	0.284* (0.147)	−0.203 (0.169)	−0.115 (0.123)
Labor regulation costs*SS	0.026 (0.071)	0.011 (0.056)	−0.020 (0.076)	−0.001 (0.060)
Rule of law*SS	0.002 (0.005)	0.002 (0.004)	0.002 (0.006)	0.001 (0.004)
One-way fixed effects	C,S,Y	C,S,Y	C,S,Y	C,S,Y
N	450	450	450	450
Adj. R ²	0.483	0.259	0.363	0.228

Notes: Standard errors in parenthesis. C: country fixed effects, S: sector fixed effects, Y: year fixed effects.

*** Significant at $p < 0.01$.

** Significant at $p < 0.05$.

* Significant at $p < 0.1$.

the estimated standard errors. Thus, we conclude from this table that our results are not driven by reverse causality or other biases related to the potential endogeneity of sudden stops to domestic omitted variables affecting both job flows and sudden stops.

4.4.2. Sudden stops and financial crises

Next, we study how our results are related to the potential effects of sudden stops on financial crises. Our theoretical argument relates mainly to financial market conditions and, therefore, we could study how sudden stops affect job flows through their effects on banking crises. To implement this idea we follow the literature and use the financial crises identified in Caprio et al. (2003) (and used by several papers, e.g. Cerra and Saxena (2008)). We identify a systematic financial crisis with a dummy that takes a value of 1 for all the years marked as crisis years in that paper (denoted by *FC*). Caprio et al. (2003) identify financial systemic crises in our sample for the following years: Brazil (1994–1999), Chile (1981–1986), Colombia (1982–1987), and Mexico (1994–1997).

Given that a share of these financial crises is domestic in nature, and therefore highly endogenous, we implement an IV procedure in which we use sudden stops as an instrumental variable for *FC*. This way, we identify the effect of *FC* on job flows that is due to the effect of sudden stops on a financial crisis. Our estimates in Tables 3 and 4 could be interpreted as reduced forms of these IV regressions. Due to collinearity problems, we can only identify the interaction effects.³⁰ This is not a fundamental problem, as the main focus of the paper is the identification of the interaction effects.

We report these results in Table 7. Before going to the instrumental variable estimates, we discuss the first stages.³¹ In the first stage regression for *Fin***FC*, the interaction *Fin***SS* is statistically significant (with a coefficient of 0.29 and t-stat of 4.09) but the interaction (*I/S*)**SS* is not different from 0 (with a coefficient of −0.08 and a t-stat of −0.17). Analogously, in the first stage for (*I/S*)**FC*, the interaction (*I/S*)**SS* is statistically significant (with a coefficient of 0.27 and t-stat of 3.68) but the interaction *Fin***FC* is not different from 0 (with a

³⁰ The complete IV procedure to estimate a specification that is analogous to our preferred estimates in Tables 3 and 4 imply the estimation using five variables as instruments for five potentially endogenous variables (*SS*, *SS***Fin*, *SS**(*I/S*), *SS***labor*, and *SS***rule-of-law*). This procedure yielded unreliable second stage estimates due to the collinearity in the five first stages.

³¹ These results are available upon request.

coefficient of 0.0001 and a t-stat of 0.01). In terms of diagnostic tests for under-identification, the Kleibergen-Paap LM statistic is 8.79 thus we reject the null hypothesis of under-identification (with a p-value of 0.003). In terms of weak identification, we follow Stock et al. (2002) and use the Cragg–Donalds F test of weak identification suggested by Stock and Yogo (2005). The F statistic is 4.51, very close to the critical value for 15% maximal IV size of 4.58 (Stock and Yogo, 2005) and, therefore, we do not seem to have a problem of weak instruments. Thus, these results suggest that the IVs have the expected signs in the first stage and are statistically significant and that the IV estimates do not suffer from a weak instruments or an under-identification problem.

We report IV results in columns 1 and 2 of Table 7. Estimates related to creation flows are mostly consistent with our estimates in Table 3: only the interaction between financial crises and *Fin* is positive and statistically significant. The point estimate is actually bigger than in Table 3 suggesting that, as expected, when a sudden stop creates a financial crisis its impacts are amplified by sectoral financial frictions.

Results for destruction rates are less precisely estimated. The point estimates for the interaction of (*I/S*) and *FC* are bigger than the point estimates for interaction of *Fin* and *FC*. This is consistent with our results in Table 4. However, the interaction of (*I/S*) and *FC* is only marginally significant (p-values of 0.12 and 0.11 in panels (a) and (b), respectively).³² As in the case of the point estimates of the interaction between *Fin* and *FC*, point estimates are bigger than the estimates in Table 4, suggesting that also in this case financial frictions amplify the effects of sudden stops that produce banking crises, as expected.

In all, results in this section give additional evidence that is consistent with our motivating theory emphasizing the potential effects of sudden stops through financial channels.

4.4.3. Additional control variables

In the next group of exercises we add additional controls related to policy characteristics of the countries. Given the fact that we only have four countries in our main estimations, we do not have enough data variation to derive clear implications on the direct effects of these variables on gross flows. Thus, we take these exercises mostly as robustness checks to our initial estimates and focus on how our interactions of sudden stops and sectoral financial characteristics change. The three variables we use are: the degree of trade openness of the countries, the exchange rate regime, and a proxy for labor market reform.³³ In each case we present in Table 8 the coefficients on variables of interest (*Fin***SS* and (*I/S*)**SS*) and triple-interactions with each variable.

We start with trade openness. Results in column 1 in both panels imply that for job creation the interaction *SS***Fin* is statistically significant and maintains the size even after controlling for the direct and interactive effects of trade openness. No triple interaction is statistically significant suggesting that the degree of trade openness does not affect how frictions affect sudden stop shocks. Regarding job destruction rates (see column 4), similar results appear: as in our basis case, only the interaction (*I/S*)**SS* is statistically significant and the introduction of triple interactions does not affect the estimated coefficients in comparison to the results we obtain in Table 4 (even in the case of panel (b), the estimated coefficient of (*I/S*)**SS* is more precisely estimated).

Next, we consider the exchange rate regime using a dummy that takes a value of 1 if the de facto exchange rate regime is classified as fixed according to Levy Yeyati and Sturzenegger (2003). Results appear in columns 2 and 5 in Table 8. The estimated effect of *SS***Fin* on the creation margin for all firms is very similar to the estimated effects in Table 3 but is only marginally significant (p-value of 0.15). Interestingly, however, the triple interaction of this variable with the fixed exchange rate regime variable is negative and an F test of the

³² If we just include the interaction between (*I/S*) and *FC*, the estimate coefficient is statistically different from 0 with p-values of 0.06 in both panels.

³³ We thank the referees for suggesting us to perform exercises using these variables.

Table 7
Sudden stops and financial crises, instrumental variable estimations; all plants series.

	(1)	(2)	(3)	(4)
Sample:	All plants	Continuing plants	All plants	Continuing plants
Dependent variable:	Job creation		Job destruction	
<i>Fin</i> * <i>FC</i>	−0.138** (0.068)	−0.131** (0.058)	0.048 (0.080)	0.043 (0.069)
(<i>I/S</i>) * <i>FC</i>	−0.126 (0.446)	0.105 (0.326)	0.866* (0.516)	0.789* (0.457)
One-way fixed effects	C,S,Y	C,S,Y	C,S,Y	C,S,Y
N	484	484	484	484

Notes: Standard errors in parenthesis. C: country fixed effects, S: sector fixed effects, Y: year fixed effects.

*** Significant at $p < 0.01$.

** Significant at $p < 0.05$.

* Significant at $p < 0.1$.

sum the coefficients on $SS * Fin$ and the triple interaction yields that the sum of the two coefficients is different from 0 (p -value of 0.06). In the case of the estimated effects for creation for continuing firms, $SS * Fin$ is statistically significant and the triple interaction is very close to 0.

Regarding effects on the destruction margin (in column 5), for both continuing and all firms, (I/S) * SS is statistically significant and presents a very similar value to the one we obtained in Table 4. The triple interaction in this case is negative and important in absolute value but not statistically significant. We take these results as suggestive that the results we find in Tables 3 and 4 are robust, but also as suggestive (weak) evidence that the exchange rate regime may interact in a differentiated way with financial frictions in the creation and destruction margins. We leave a detailed study of this point for future research.

The third policy dimension we study is labor market regulation. We use a variable identified using information from Heckman and Pagés-Serra (2004). Results are presented in columns 3 and 6 in Table 8. On the creation margin, $SS * Fin$ is statistically significant and keeps a value similar to those estimated in Table 3 in both panels. The triple interactions are not statistically significant. In turn, on the destruction margin, results in panels A and B show that (I/S) * SS are positive and statistically significant, even though the point estimates decrease. No triple interaction is significant.

Summarizing, we interpret these results mostly as robustness checks of our main results in Tables 3 and 4, and they usually confirm our baseline results.

Table 8
Robustness checks.

Dependent variable:	Job creation			Job destruction		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel (a). All plants series</i>						
<i>Fin</i> * SS	−0.045** (0.019)	−0.031 (0.021)	−0.042** (0.018)	0.011 (0.025)	0.013 (0.026)	0.017 (0.022)
(<i>I/S</i>) * SS	−0.065 (0.124)	−0.146 (0.141)	−0.020 (0.121)	0.251* (0.150)	0.329** (0.162)	0.242* (0.138)
(<i>Fin</i>) * SS * trade openness	0.051 (0.124)			0.084 (0.141)		
(<i>I/S</i>) * SS * trade openness	0.470 (0.813)			−0.155 (0.860)		
(<i>Fin</i>) * SS * fixed exchange rate regime		−0.055 (0.051)			0.059 (0.057)	
(<i>I/S</i>) * SS * fixed exchange rate regime		0.542 (0.334)			−0.495 (0.309)	
(<i>Fin</i>) * SS * labor market reform			0.005 (0.021)			−0.014 (0.027)
(<i>I/S</i>) * SS * labor market reform			−0.037 (0.137)			−0.017 (0.164)
N	484	448	484	484	448	484
Adj. R^2	0.616	0.606	0.630	0.603	0.601	0.593
<i>Panel (b). Continuing plants series</i>						
<i>Fin</i> * SS	−0.042*** (0.013)	−0.037** (0.015)	−0.041*** (0.013)	0.010 (0.021)	0.013 (0.021)	0.018 (0.020)
(<i>I/S</i>) * SS	0.000 (0.089)	−0.063 (0.103)	0.040 (0.090)	0.237** (0.116)	0.290** (0.122)	0.193* (0.106)
(<i>Fin</i>) * SS * trade openness	0.056 (0.090)			0.056 (0.112)		
(<i>I/S</i>) * SS * trade openness	0.339 (0.584)			−0.296 (0.650)		
(<i>Fin</i>) * SS * fixed exchange rate regime		−0.002 (0.039)			0.008 (0.048)	
(<i>I/S</i>) * SS * fixed exchange rate regime		0.442** (0.222)			−0.308 (0.220)	
(<i>Fin</i>) * SS * labor market reform			0.010 (0.013)			−0.024 (0.023)
(<i>I/S</i>) * SS * labor market reform			−0.043 (0.091)			0.072 (0.122)
N	484	448	484	484	448	484
Adj. R^2	0.551	0.550	0.591	0.576	0.582	0.588
One-way fixed effects	C,S,Y	C,S,Y	C,S,Y	C,S,Y	C,S,Y	C,S,Y

Notes: Standard errors in parenthesis. C: country fixed effects, S: sector fixed effects, Y: year fixed effects.

*** Significant at $p < 0.01$.

** Significant at $p < 0.05$.

* Significant at $p < 0.1$.

5. Concluding comments

This paper studies the effects of sudden stops on job creation and destruction in a sample of Latin American countries, as captured by a measure of gross job flows at the sector level. We find consistent evidence that sudden stops are associated with decreased job creation and, particularly, increased job destruction. Importantly, we also observe the magnitude of the sectoral effects of the sudden stops on job flows to be related to financial characteristics of the sector: job creation tends to decrease more during sudden stops in sectors with strong dependence on external finance. Similarly, the increasing effect of sudden stops on job destruction is larger in sectors with higher liquidity needs. Simple calculations show that the associated sector differences are economically significant.

Studying the connection between reallocation and restructuring, and financial characteristics in response to sudden stops moves us forward in two different, but related, areas. First, and central to the main interest of this paper, it provides us with a novel look at the mechanics of sudden stops within countries. Since differences in the creation and destruction flows can affect the speed of adjustment and recovery during and after shocks, our results also signal the relevance of further studying the dynamics of the flows in the labor markets before, during and after a sudden stop, something that we leave as a topic for further research. Moreover, to the extent that the responses of different sectors are correlated with financial characteristics, the empirical results also suggest that we should incorporate financial market frictions into our study of the effects of sudden stops and why these differ across countries. The results on the relation between external financial dependence (i.e., Rajan–Zingales type of measures), liquidity needs (i.e., inventories over sales), and the response of gross job flows to a country level shock, a sudden stop in this case, also complement previous studies on the relation between financial frictions and sectoral outcomes, in particular with respect to the effects on volatility and sensitivity to shocks.

Finally, as sudden stops constitute large financial shocks for a country as a whole, we also contribute to the literature on job flows, reallocation/restructuring, and financial conditions by presenting additional evidence from this “extreme” shock in emerging economies, which complements the existing evidence drawn from the effects of recession and business cycles in developed economies. The relation between sectoral financial characteristics, sector responses to sudden stops and the financial nature of the shock lends support to the idea that financial conditions do matter for the process of restructuring. Moreover, these results are qualitatively relevant for other situations and relate to the existing evidence on the microeconomic responses to macroeconomic shocks, particularly about the different responses of job creation and destruction.

Appendix A. Supplementary data

Supplementary data to this article can be found online at [doi:10.1016/j.jdeveco.2011.04.003](https://doi.org/10.1016/j.jdeveco.2011.04.003).

References

Botero, J., La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2004. The regulation of labor. *Quarterly Journal of Economics* 119, 1339–1382.

Braun, M., Larraín, B., 2005. Finance and the business cycle: international, inter-industry evidence. *Journal of Finance* 60 (3), 1097–1128.

Brei, M. (2007). “The Impact of Sudden Stops on Bank Lending: Are there Cross-Sectional Differences?”, mimeo, Bonn Graduate School of Economics, July.

Caballero, R.J., 2007. The macroeconomics of specificity and restructuring. Yrjö Jahnsson Lecture. MIT Press, Cambridge, MA.

Calvo, G., 1998. Capital flows and capital-markets crises: the simple economics of sudden stops. *Journal of Applied Economics* 1 (1), 35–54.

Calvo, G., Izquierdo, A., Talvi, E., 2006. Phoenix miracles in emerging markets: recovering without credit in systemic financial markets. NBER Working Paper 12101. March.

Calvo, G., Izquierdo, A., Mejía, L., 2008. Systemic sudden stops: the relevance of balance-sheet effects and financial integration. NBER Working Paper No. 14026. May.

Campa, L., Goldberg, L., 2001. Employment versus wage adjustment and the US dollar. *The Review of Economics and Statistics* 83 (3), 477–489.

Caprio, G., Klingebiel, D., Laeven, L., Noguera, G., 2003. Banking Crises Database. The World Bank.

Cavallo, E., Frankel, J., 2008. Does openness to trade make countries more vulnerable to sudden stops, or less? Using gravity to establish causality. *Journal of International Money and Finance* 27 (8), 1430–1452.

Cerra, V., Saxena, S., 2008. Growth dynamics: the myth of economic recovery. *The American Economic Review* 98 (1), 439–457.

Chang, R., Kaltani, L., Loayza, N., 2009. Openness can be good for growth: the role of policy complementarities. *Journal of Development Economics* 90, 33–49.

Chari, V.V., Kehoe, P., McGrattan, E., 2005. Sudden stops and output drops. Federal Reserve Bank of Minneapolis, Research Department Staff Report 353. January.

Davis, S., Haltiwanger, J., Schuh, S., 1998. *Job Creation and Destruction*. MIT Press, Cambridge, MA.

Dornbusch, R., Goldfajn, I., Valdés, R., 1995. Currency crises and collapses. *Brookings Papers on Economic Activity* 2, 219–293.

Fujita, S., Ramey, G., 2009. The cyclical nature of separation and job finding rate. *International Economic Review* 2009, 415–430 May.

Gallego, F. and G. Jones (2005). “Exchange Rate Interventions and Insurance: Is ‘Fear of Floating’ a Cause for Concern?”, Mimeo, MIT.

Gertler, M., Gilchrist, S., Natalucci, F.M., 2006. External constraints on monetary policy and the financial accelerator. *Journal of Money, Credit and Banking* 39, 295–330 March.

Gourinchas, P.-O., 1998. Exchange rates and jobs: what do we learn from job flows? NBER Macroeconomics Annual 1998. MIT Press, Cambridge, MA, pp. 153–207.

Gourinchas, P.-O., 1999. Exchange rates do matter: French job reallocation and exchange rate turbulence, 1984–1992. *European Economic Review* 43 (7), 1279–1316.

Guidotti, P., Sturzenegger, F., Villar, A., 2004. On the consequences of sudden stops. *Economía* 4 (2), 171–214 Spring.

Haltiwanger, J., Kugler, A., Kugler, M., Micco, A., Pagés-Serra, C., 2004. Effects of tariffs and real exchange rates on job reallocation: evidence from Latin America. *Journal of Policy Reform* 7 (4), 191–208 Dataset available online.

Heckman, J., Pagés-Serra, C., 2004. Law and employment: lessons from Latin America and the Caribbean. NBER Books. National Bureau of Economic Research, Inc.

IADB, 2004. Good jobs wanted: labor markets in Latin America. Economic and Social Progress in Latin America Series, 2004 Report. Inter-American Development Bank.

Ilyina, A., Samaniego, R.M., 2008. Technology and finance. IMF Working Papers 08/182. International Monetary Fund.

Joyce, J., Nabor, M., 2009. Sudden stops, banking crises and investment collapses in emerging markets. *Journal of Development Economics* 90 (2), 314–322.

Kehoe, T., Ruhl, K., 2009. Sudden stops, sectoral reallocations, and the real exchange rate. *Journal of Development Economics* 89 (2), 235–249.

Klein, M.W., Schuh, S., Triest, R.K., 2003. Job creation, job destruction, and the real exchange rate. *Journal of International Economics* 59, 239–265.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. Law and finance. *Journal of Political Economy* December.

Larraín, B., 2006. Do banks affect the level and composition of industrial volatility? *Journal of Finance* 61 (4), 1897–1925.

Levy Yeyati, E., Sturzenegger, F., 2003. A de facto classification of exchange rate regimes: a methodological note. *The American Economic Review* 93 (4) Classification updated, December 2005.

Mendoza, E., Smith, K., 2006. Quantitative implications of a debt-deflation theory of sudden stops and asset prices. *Journal of International Economics* 70 (1), 82–114.

Micco, A., Pagés-Serra, C., 2006. The economic effects of employment protection: evidence from international industry-level data. IZA Discussion Paper No. 2433. November.

Pratap, S., Quintin, E., 2008. Labor markets in turbulent times: some evidence from Mexico. *Southwest Economy* 5, 10–14 September/October.

Pratap, S., Urrutia, C., 2007. “Credit Constraints, Firm Dynamics and the Transmission of External Financial Shocks,” mimeo Hunter College and ITAM.

Raddatz, C., 2006. Liquidity needs and vulnerability to financial underdevelopment. *Journal of Financial Economics* 80 (3), 677–722.

Rajan, R.G., Zingales, L., 1998. Financial dependence and growth. *The American Economic Review* 88 (3), 559–586.

Rogerson, R., Shimer, R., 2010. Search in macroeconomic models of the labor market. In: Ashenfelter, Orley, Card, David (Eds.), *Handbook of Labor Economics*, vol. 4A. Elsevier, Amsterdam, pp. 619–700.

Rothemberg, A.D., Warnock, F.E., 2006. Sudden flight and true sudden stops. NBER Working Paper 12726. December.

Shimer, R., 2010. *Labor Markets and Business Cycles*. Princeton University Press, Princeton, NJ.

Stock, J.H., Yogo, M., 2005. Testing for weak instruments in linear IV regression. In: Andrews, D.W.K., Stock, J.H. (Eds.), *Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg*. Cambridge University Press, Cambridge, pp. 80–108.

Stock, J.H., Wright, J.H., Yogo, M., 2002. A survey of weak instruments and weak identification in generalized method of moments. *Journal of the American Statistical Association* 20 (4), 518–529.

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Corrigendum

Corrigendum to “Sudden stops, financial frictions, and labor market flows: Evidence from Latin America”

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