Banking Crises and Exports:

Lessons from the Past*

PRELIMINARY DRAFT - PLEASE DO NOT CITE WITHOUT PERMISSION

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Abstract

This paper analyzes the impact of banking crises on manufacturing exports exploiting the fact that sectors differ in their needs for external financing. Relying on data from 23 banking crises episodes involving both developed and developing countries during the period 1980-2000 we separate the impact of banking crises on export growth from that of other exogenous shocks (i.e. demand shocks). Our findings show that during a crisis the exports of sectors more dependent on external finance grow significantly less than other sectors. However, this result holds only for sectors depending more heavily on banking finance as opposed to inter-firm finance, furthemore sectors characterized by a higher degree of assets tangibility appears to be more resilient in the face of a banking crisis. The effect of the banking crises on exports is robust and additional to external demand shocks, the effect of the latter is indipendent and additional to that of a banking shock, and is particularly significant for for sectors producing durable goods.

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1 Introduction

For the first time since 1982 trade volumes are predicted to fall in 2009 by 11 percent (IMF 2009) as a consequence of the simultaneous drop in demand and financial troubles. The recent collapse in exports following the unfolding of the financial crisis since the fall of 2008 has generated new pressing questions about the relationship between banking crises and exports growth.[1] In particular, it is not entirely clear to what extent supply shocks due to a collapse in the banking system are responsible for the drop in exports versus the more classical demand side factors (i.e access to finance).

With such questions in mind, this paper analyzes the evidence based on 23 banking crises episodes between 1980-2000 to study the relationship between banking crises and exports. In particular, we try to disentangle different channels through which banking crises can affect exports growth and separately estimate the impact of the supply shocks due to the banking crises from external demand shocks due to recessionary episodes in trading partners. The importance of the link between finance and growth cannot be underemphasized and has been extensively studied in the literature.[2]

Our study is particularly close to the approach originally proposed by Rajan and Zingales (1998) and followed by a number of more recent studies. [3] Similarly, various recent studies have focused more specifically on the impact of financial crises on the industrial activity and growth more in general confirming the hypothesis of a credit crunch channel occurring at times of financial distress (Berman 2009, Dell'Ariccia, Detragiache, and Rajan 2008, Kroszner, Laeven, and Klingebiel 2007, Borensztein and Panizza 2006). However, these studies do not specifically analyze the impact of financial crises on exports growth and are silent about the impact of sector-specific external demand shocks. This is a particularly relevant question given the evidence emerging from the firm-level literature which points toward the importance of fixed costs and preparation that exporters have to undergo in order to break and thrive in the export markets [4] (Roberts and Tybout 1997, **?**, Muuls 2008, Iacovone and Javorcik 2008). Our paper is also related to the emerging theoretical and empirical literature pointing toward the importance of financial development for export growth as a factor shaping exports patterns (Kletzer and

[1] "Twenty-eight out of 38 economies reporting November export data (as of January 13, 2009) show double-digit declines relative to the same month in the previous year. On average, exports of the reporting countries declined by 15 percent in November" (World Bank, January 2009).

[2] For a very detailed survey of the literature see Levine (2004).

[3] Fisman and Love (2003), Beck (2003), Braun (2003), Manova (2008), Raddatz (2006).

[4] For example Iacovone and Javorcik (2008) show how in the aftermath of NAFTA Mexican firms in sectors with larger tariffs cuts perceiving new export opportunities prepare to break into export markets by scaling up their investment in physical capital and improving the quality of their goods.

Bardhan 1987, Beck 2002, Beck 2003, Ju and Wei 2005, Hur, Raj, and Riyanto 2006, Becker and Greenberg 2003). While these studies argue that financial development matters for export growth it can also be argued that the development of financial system can actually be shaped by exports patterns themselves as suggested by Do and Levchenko (2007).[5]

This paper provides several contributions to the literature. First, we show that there is a negative and significant effect of banking crises on exports growth as sectors more heavily dependent on external finance are hit harder by a financial crisis. Second, we show that not all financial channels dry up at times of crisis as sectors more heavily dependent on inter-firm finance are not significantly more affected than others. Third, we show that sectors characterized by a higher share of tangible assets are affected significantly less by the crisis as their higher ability to provide collateral provides them with a better access to financial resources even in a context of crisis. Fourth, we show that the impact of "supply-side" shocks due to credit crunch is additional and independent from that of "demand-side" shocks, furthermore the latter is especially important for sectors producing durable goods. Confirming the importance of the "financial channel" these effects are stronger for deeper crises and in countries with a less developed financial system. These findings are robust to a large number of robustness checks, in particular testing for potential endogeneity and omitted variable biases.

The remainder of the paper is structured as follows. Section 2 reviews the existing related literature. Section 3 presents the data and empirical strategy adopted, before the results are discussed in Section 4. Section 5 concludes summarizing the main results and outlining future steps.

2 Related literature

The paper is closely related to three main strands of literature. The first one is the literature analyzing the link between finance and growth. This body of literature is extensive and is not our aim to provide a complete survey but to discuss the studies that are more closely related to our.[6] King and Levine (1993), in their pioneer cross country study show that financial development has a significant positive impact on economic growth. However, this study similarly to other cross-country studies does not formally deal with the problem of causality between finance and growth. Differently, Jayaratne and Strahan (1996) are able to get around this issue by focusing

[5]In this study, in order to test the relationship between financial development and exports growth we exploit the fact a financial crisis can be considered exogenous to the structure of exports, and test for this assumption in our robustness checks.

[6]For a detailed and encompassing survey the reader should refer to Levine (2004)

on the impact of branch deregulations in the US that provide for a quasi-experimental design. In their study they show that the US states that decided to deregulate the bank branches have improved their growth prospects. Importantly, they also find that after deregulation the quantity of borrowing did not rise suggesting that higher growth was induced primarily through higher quality of lending decisions. The view that better allocation of resources is the primary channel through which financial development affects growth is also confirmed by Wurgler (2000). He shows that a more developed financial system helps to allocate funds to industries with higher growth prospects. Events such as the one exploited by Jayaratne and Strahan (1996) are rare and therefore an important step forward toward tackling the engogeneity issues was the contribution of Rajan and Zingales (1998). Their main idea is that industries differ in terms of their "dependence from finance" because of specific technological reasons that are constant across countries. Therefore, when a country's financial system develops those sectors that rely more heavily on external finance will benefit disproportionately and grow faster. In their study, by applying a difference-in-difference methodology they compare the growth of sectors that have differential degree of reliance from external finance and by exploiting between-sector, rather then cross-country, source of variation they are able to overcome some of the well known endogeneity problems of previous studies. Their main hypothesis turns out valid and the results, that sectors more dependent on external finance grow faster as the financial system develops, appear robust to different measures of financial development and external dependence. Following a similar methodology, Fisman and Love (2003) show that when analyzing the link between finance and growth, it is important take into account not only the "bank finance" channel but also other sources of finance such as inter-firm finance. In fact, they find that in contexts where the quality of financial intermediation is low, firms relying more on trade finance and inter-firm finance, rather than on bank finance, tend to grow faster. Another important contribution by Raddatz (2006) shows that better developed financial systems reduce output volatility in sectors with higher liquidity needs. His measures of liquidity needs, unlike Rajan-Zingales which measures primarily long term investment financing needs, are focusing on short term needs for covering the working capital expenses. Finally, Braun (2003) provides additional insights on the channel through which finance affects the real economy by showing that where financial markets are not sufficiently developed the use of collateral is particulary emphasized. Therefore, in economies where financial intermediation is scarce industries that normally rely more on tangible assets tend to have a comparative advantage and grow relatively faster.

The second strand of literature important for our paper involves those studies focusing on the importance of existing sunk costs to penetrate export markets, and therefore on the possibility that financial constraints may be relevant for firms to be able to overcome such hurdle and penetrate export markets. Kletzer and Bardhan (1987) provided a seminal theoretical contribution by developing a model where countries with identical technology and endowments can develop

a finance based comparative advantage in manufacturing goods requiring more working capital, marketing costs or trade finance. In a similar perspective, Baldwin (1989) and Krugman (1989) developed models where exporters have to pay a significant sunk cost to enter foreign markets. The sunk cost hypothesis was later tested by Roberts and Tybout (1997) who found that indeed such sunk costs exist and are a significant predictor of export entry. Similarly, Bernard and Jensen (2004) analyze the factors that increase the probability of exporting and confirm that sunk costs are important.[7] As discussed by Becker and Greenberg (2003) these costs are large and difficult to finance from various reasons. First, investments are made long before any revenue is collected and provide limited collateral. Second, revenues from abroad might be difficult to verify for outsiders. Finally, export revenues might be volatile and difficult to predict. Muuls (2008) relying on an original dataset of Belgian manufacturing firms shows that credit costraints are a significant predictor of whether a firm will engage into exporting.[8] Along the same line of Kletzer and Bardhan (1987), Beck (2002) develops a theoretical model that predicts that higher financial development will lead to a lower search cost for financial intermediaries and a shift of incentives toward sectors with increasing returns to scale (i.e. manufacturing sectors). He then tests these predictions in cross-country setting and confirms that more financially developed countries have higher manufacturing shares. [9] Further, in a later empirical work, Beck (2003) applies the Rajan-Zingales' methodology and shows that countries with better developed financial markets have higher shares of exports in industries more dependent on external finance. In a recent paper Manova (2008) addresses a similar question using a gravity model and shows that countries at a higher level of development are more likely to become exporters and the effect is more pronounced in sectors more dependent on external finance and with fewer tangible assets.[10] Finally Do and Levchenko (2007) argue, both theoretically and empirically, that the relationship between finance and trade is not uni-directional and a country's financial development is actually endogenous to the export structure of the economy.

Finally, this paper is also closely related to the literature analyzing the impact of crises on the real economy. Several studies focused on the impact of banking crises on industrial output, while others have analyzed the impact of other macroeconomic shocks (i.e. devaluations) on

[7]Confirming the importance of sunk costs to break into export markets, in a recent paper Iacovone and Javorcik (2008) show that in order to break into export markets exporters need to prepare and both incur into significant investment as well as improve the quality of their products.

[8]She uses the bankruptcy risk measure computed by the credit insurance company Coface as a proxy for credit costraints.

[9]He addresses the potential endoegenity issues by using an IV estimator with legal origins serving as an instrument for financial development.

[10]Hur, Raj, and Riyanto (2006) make a similar finding about tangibility as they show that industries with more tangible assets tend to export more, and explain this result arguing that at low levels of financial development problems such as moral hazard and adverse selection will be more pronounced and lenders will be more likely to require a collateral.

exports.[11] From the first group Dell'Ariccia, Detragiache, and Rajan (2008) is particularly close to our study in terms of its methodology as it focuses on the impact of past financial criss on industrial output using a difference-in-difference approach in a panel data framework. Their results show that during periods of financial distress the industries that depend more on external finance were hurt disproportionately more than those financing their investment through internal funds. Similarly, Kroszner, Laeven, and Klingebiel (2007) confirm their results and find that the contraction is more pronounced in countries at higher level of financial development. From the second group of papers Berman (2009) concentrates on the impact of currency crises on trade and provides a finance based explanation for the exchange rate disconnect puzzle. Even though a currency crisis has a positive effect on exporters, by improving their competitiveness, it has also and adverse effect on their balance sheets by increasing the cost of their foreign denominated loans. Therefore, depending on the specific firm-level situation and on the country context the impact of devaluation on exports is ambiguous, and it becomse possible to observe an adverse effect on exports after a devaluation with the adjustment primarily operating on the extensive margin.[12] In a related study Borensztein and Panizza (2006) find that industries with higher propensity to export are hurt relatively more during periods of sovereign defaults. Given that banking crises are often accompanied by economic downturns, Braun and Larrain (2005) show that during recessions industries that depend relatively more on external finance get hurt more. Their explanation for such finding is that during a recession internal funds become scarcer and firm are forced to rely more heavily on external finance. At the same, during a recession confidence in the economy decreases and banks start being reluctant to lend even to good borrowers, and this adverse effect due to this credit crunch is more pronounced for sectors relying more on external finance.

3 Empirical strategy and data

3.1 Empirical strategy

To identify the impact of banking crises on exports we have to address in our empirical strategy the endogeneity and reverse causality issues. The same shocks that trigger the financial crisis might also affect the export performance. Similarly, the performance of exports may be the trigger of the financial crisis. Such concern about reverse causality could be particularly serious in countries where the economy is not sufficiently diversified and relies on just few sectors, the ones affected by adverse exogenous shocks. If the importance of the exporters is sufficiently

[11] There is no study, to our knowledge, that has analyzed the impact of banking crises on exports.

[12] A similar result was pointed out for the case of Indonesia after the 1997-1998 devaluation (Blalock and Roy 2007).

high in the portfolios of the banks, an adverse demand shock might lead to the inability of the exporters to pay off their loans and consequntly to a banking crisis. To tackle these concerns and correctly identify the impact of banking crises on exports growth we therefore adopt a difference-in-difference approach suggested by Rajan and Zingales (1998) that to large extent mitigates both concerns.[13] Specifically, we will test whether banking crises have an effect on exports growth, by asking if industries more dependent on external finance are more severely affected by the crisis. With this objective in mind we estimate the following equation that is very similar to the one used by Dell'Ariccia, Detragiache, and Rajan (2008):

$$\Delta X_{ijt} = \alpha_{ij} + \beta_{it} + \gamma_{jt} + \phi Share_{ijt-3} + \delta ExtFinDep_j * Crisis_{it} + \epsilon_{ijt} \quad (1)$$

where ΔX_{ijt} corresponds to the growth rate of exports in country i, industry j and time t. The inclusion of the lagged share of exports in total exports serves to control for convergence effects. To control for long term growth trends of industries at country-level we include a country-industry fixed effect α_{ij}. The remaining two paired fixed effects β_{it} and γ_{jt} control for country specific and industry specific time varying shocks, these allow us to control country-wide shocks that may affect exports (including macroeconomic and institutional country-wide changes) as well as industry specific global supply or demand shocks that can affect exports growth. Because of the inclusion of all these fixed effects the only additional variables that can be identified are those that simultaneously vary across all three dimensions, i.e. country, industry and time. In fact, our identification strategy only expploits variation between sectors within country and therefore is not affected by country specific, or industry specific, shocks. Furthermore, the inclusion of the fixed effects substantially reduces the risk of obtaining biased results because of omitted variables.

Our main variable of interest is the interaction of the external finance dependence measure with the financial crisis dummy. The financial crisis dummy is actually a "crisis window" because it is equal to 1 if country i faces a financial crisis in year t as well as in the two years immediately after crisis.[14] The reason of using a crisis window is because we are not only interested in the immediate short run effects of the crisis but also its medium-term effects. Furthermore, given the lumpiness of certain investments it is possible that the impact of the credit crunch due to the crisis may emerge with a lag as firms do not have to finance investment continuously. In sum, finding a negative δ would suggest that during a financial crisis sectors relying more on external finance are hurt more than those that finance their investments using internal funds. Such result would confirm the existence of a financial channel operating during the crisis.

[13] Furthermore in our robustness checks we address specifically the endogeneity concerns.

[14] As a robustness check we consider also two and four years windows and our results are substantially unchanged.

A key issue in our identification strategy is to define a measure of external dependence from finance that is appropriate and relevant for exporters. Based on the previous literature we argue that exporters rely on two main sources of finance. First, exporters are likely to need to finance their investments as much as domestic firms and even more as confirmed by studies pointing to the importance of fixed costs and investment in order to succeed in export markets (Iacovone and Javorcik 2008). Furthermore, given the larger volumes of production that exporters have to generate in order to serve export markets they are also likely to be heavily reliant on working capital and trade finance. These are going to be our main variables that will capture the reliance on external finance and in the next section we will discuss more in details which proxies we use to capture these variables.

3.2 Data

Exports data, from UN Comtrade, are disaggregated at 4 digits ISIC Rev 2 and cover the period 1980 to 2006. To construct our dependent variable we first exclude all very small trade values, i.e. smaller than 1000 USD, then we compute the exports growth rates as log differences and exclude extreme growth values by trimming top and bottom 5% of observations .[15]

The information on banking crises is obtained from Dell'Ariccia, Detragiache, and Rajan (2008) who identify 48 systemic financial crises periods in both developed and developing countries.[16] However, because we are only interested in the effect of pure banking crises we exclude all "twin crises" when a currency crisis occurred jointly with the banking crisis.[17] The rationale for this exclusion is that we wanto to isolate the credit crunch channel from the balance sheet effects. In fact, during twin crises, when large devaluations occur, firms with high exposure to foreign debt will be hit particularly hard. If these firms are also the firms highly dependent on external finance, the effect of the crisis on exporters that we observe might be a consequence of their own balance sheet problems rather than a consequence of the credit crunch due to the banking crisis. Finally, out of the remaining 32 crisis episodes we only have disaggregated trade data for

[15] A similar cleaning procedure is also used by Dell'Ariccia, Detragiache, and Rajan (2008) and Borensztein and Panizza (2006), both using more aggreagated 3 digit ISIC data, exclude 2% on each tail. Furthermore, we test the robustness of our results trimming the top and bottom 1% and our results are qualitatively unchanged, while the size of our main coefficient of interest becomes marginally larger in the baseline regressions.

[16] Based on their definition, an episode of financial crisis occurs if one of the following four conditions is satisfied. First, emergency measures have been taken to assist the banking system. Second, large scale nationalization took place. Third, non-performing loans reached at least 10% in total assets or finally, costs of rescue operations were more than 2% of GDP.

[17] We identify these using the standard Frankel and Rose (1995) criteria.

24 crises in 22 countries.[18] The list of countries in the sample and their principal characteristics are summarized in Table 1.

The measure of external finance dependence is based on data of listed US companies provided in Compustat and obtained from Rajan and Zingales (1998). They compute the proxy as a fraction of capital expenditures that an industry is not able to finance with internal funds. To construct it they first compute the median of all firms in each sector and year and then they average the sectoral measures over the entire period of 1980-89. Rajan and Zingales (1998) argue that this variable identifies the " external dependence" as a "technological characteristic" of the sector. Therefore, it is necessary to use a benchmark economy with limited market frictions because otherwise the measure of dependence could reflect these frictions rather than the "technological factors", i.e. the external financing need of an industry.[19] It is important to underscore that for our identification strategy the actual magnitude of this variable does nto have to be the same across countries, the only assumption that really matters is that the ranking of the industries in terms of their financial dependence is the same across countries.

The measure proposed by Rajan and Zingales (1998) is a good proxy for the reliance on external funds to cover long-term investments and dependence from banks. However, for exporters it is also important to be able to finance short term needs such as working capital, which is often covered through trade credit. In order to capture this component we will employ a measure proposed by Fisman and Love (2003) who follow a similar approach as Rajan and Zingales (1998) and define the sectoral dependence on trade finance as the ratio of accounts payable over total assets.

Finally, as we described in the Section 2 various studies have emphasized the importance of collaterizable assets in situations when the confidence in financial sector is low. Industries that are characterized by a larger share of tangible assets are more likely to have easier access to external finance (both trade and banking finance) because of their ability to provide collateral in securing their loans. Therefore, in our baseline estimations we will be also using a proxy for the ability of an industry to provide collateral. This proxy is obtained from Kroszner, Laeven,

[18]The countries for which the data are missing are primarily African countries that experienced a crisis early in the sample.

[19]As discussed by Levine (2004)), their strategy is based on three main assumptions: (1) financial markets in the U.S. are relatively frictionless, (2) in a frictionless financial system, technological factors influence the degree to which an industry uses external finance, (3) the technological factors influencing external finance are constant (or reasonably constant) across countries. This approach has been extremely successful and various papers have adopted and relied on similar assumptions (Asli Demirg-Kunt & Vojislav Maksimovic 2002; Beck & Levine 2002; Beck (2002); Beck (2003)).

and Klingebiel (2007) and is equal to the ratio of tangible assets in total assets. We believe that this measure can provide an additional dimension and could be of particular importance during financial crises when it could ease access to finance. All three variables are summarized in Table 2.

In addition to the above variables we will be using a range of other control variables and alternative measures throughout the estimations and robustness checks. Their construction and sources will be described as we introduce them in Section 4.

4 Results

4.1 Summary statistics

Before proceeding with the estimation we will have a brief look at the summary statistics. Table 3 captures the differences in growth rates of highly dependent industries compared to low dependent industries in an out of a financial crisis. An industry that is highly dependent from financial sector (i.e. at the top decile of financial dependence measured using the RZ proxy) experiences a reduction in its average growth rate by 2.2 percentage points during a crisis relative to non-crisis times. On the other hand an industry characterized by a low external dependence (i.e. from the bottom decile measured using the RZ proxy) tends to actually grow faster during a crisis. The latter result may appear surprising but is easily explained by the devaluation that often takes place during a financial crisis. In fact, Table 1 shows how most of the crises, even though they did not meet the criteria to be classified as twin crises, were accompanied by at least a mild devaluation. Therefore, the increase in export growth in industries that do not rely on external finance is likely to be a direct consequence of their increased competitiveness. Even though the enhanced competitiveness applies to the high dependent industries as well, their response to demand is limited by financial constraints that are likely to be higher during a financial crisis. The resulting difference between growth in non-crisis and crisis period in a high dependent industry compared to the same difference in the low dependent industry is 3.5 percentage points.

In case of the trade credit dependence, both the high dependent and the low dependent industries tend to grow faster during a crisis, however, the differential between the two remains almost unchanged when comparing to non-crisis times. This suggests that both types of industries have reaped the benefits of higher competitiveness brought by the devaluation in almost the same extent and the highly dependent industries did not seem to be affected by their sources

of finance drying up.

Finally, industries with higher shares of tangible assets experience higher growth rates during crisis periods than during normal periods. On the other hand, the growth rates of exports in non-tangible industries get slightly lower during crises. The differential between high and low tangible industries rises by almost 3 percentage points in a crisis situation suggesting that posession of tangible assets provides for a buffer and eases access to finance when the economy is experiencing financial distress.

We will be estimating these difference in difference coefficients more formally in the next section using the methodology described above.

4.2 Baseline regressions

Table 4 summarizes the results from our benchmark regression (1). We estimate the specification separately for each of the two major measures of external finance dependence as well as for the tangibility measure in the first three columns and combine all of them in column 4. The results suggest that exports of industries that depend heavily on external finance from banks suffer significantly more during a banking crisis. Comparing the exports growth performance of the ship building sector which is in the tope decile of external dependence with production of non-metallic mineral products from the bottom ten per cent in a crisis we observe a difference in the growth rates about 4 percentage points higher compared to non-crisis years. While exports growth of high dependent sectors is reduced by about 4.1 percentage points (going down from an average growth of about 11% out of crisis), the growth in a low dependent sector is almost unchanged.

At the same time, it appears that not all the external finance during a crisis dries up. The sign on the estimated coefficent in column 2 of Table 4 suggests that industries more dependent on trade credit are in an advantage during a crisis, however, the result is not statistically significant. This implies that in the past crises despite their adverse effect on the bank finance trade credit provision was not cut. Trade finance is basically inter-firm finance provided to relatively more finance constrained firms by more advantaged firms often with well established relationships with financial institutions (Petersen and Rajan 1996). However, during a financial crisis these privileges might be cut and consequently the firms might also reduce the trade credit provision. This does not seem to have been the case. What can explain our result is that in exporting industries the trade credit providers are not necessarily from the same country as the receiver and therefore there is no reason to expect that trade credit provision would face

substantial constraints. [20]

Consistent with our hypothesis that higher ability to provide collateral might ease access to finance during crises when confidence in the economy is low, we find that industries with higher shares of tangible assets are growing faster. The estimated coefficient suggests that the difference in the growth rates between a highly tangible industry such as glass production and an industry with few collaterizable assets such as drugs will be 5 percentage points higher in crisis compared to non-crisis years.

In the last three columns of Table 4 we show that all three effects are almost unchanged also when we control for financial development interacted with the proxies for external dependence. Financial development is defined as private credit in GDP and is taken from Beck, Demirguc-Kunt (2009).

4.3 Demand side effects

In addition to the supply side effect of the financial channel we are also interested in the impact of external demand shocks. For this purpose we construct an industry specific external demand shock and estimate the following specification:

$$\Delta X_{ijt} = \alpha_{ij} + \beta_{it} + \gamma_{jt} + \phi Share_{ijt} + \delta ExtFinDep_j * Crisis_{it} + \lambda ExtDemShock_{ijt} + \epsilon_{ijt} \quad (2)$$

The external demand shock for exporter i in industry j is defined as GDP growth of the importer p weighted by the trade share of this partner in total exports of i in industry j and summed over all partners that import goods from this specific exporter in this specific industry. This gives a measure that varies across exporters, industries and time. The estimated positive and significant coefficient on the demand shock variable in the first column of Table 5 can be interpreted as follows. Should the GDP growth of the only trading partner (100% share) decrease by 1 percentage point then the exports growth decreases by 1.18 percentage points. Obviously, the effect of the same demand shock of importer p will have a different impact across sectors dependent on the relative importance of this importer in each industry.

[20] Based on preliminary findings by Freund and Klapper (2009) analyzing the impact of the current financial crisis using high frequency monthly trade data this seems to be a key difference with the current financial crisis when also sector relying more on trade finance have been adversely hit. This makes sense, because the past financial crises were usually discrete events with the trading partners being mostly unaffected while the present crisis is much more of a systemic nature where multiple source of finance are affected simultaneously.

To see whether a demand shock differentially affects sectors based on their dependence on external finance we interact the demand shock with each of our three core financial measures. Interestingly, a positive demand shock abroad also leads to a higher growth in industries relatively more dependent on external finance. This could imply that sectors relying heavily on external finance are also more pro-cyclical as durable goods tend to. It is a well established fact that during downturns the consumption of durables decreases disproportionately more than of non-durables. To test whether our external dependence measure is not just a proxy for durables in column 5 of Table 5 we include in addition to the interactions with external dependence also similar interactions with a dummy variable taken from (Kroszner, Laeven, and Klingebiel 2007) which equals one when the sector is producing predominantly durable goods. Even though, the coefficient on the main interactions gets slighlty lower in magnitude it remains significant at 1% level. Exports of durables are not significantly more affected by a domestic crisis, however, consistent with previous literature they tend to grow faster than non-durable goods in response to positive demand shocks. Most importantly for us, controlling for the demand does not affect the coefficient of the interaction of crisis and external dependence which remains strongly significant and with a magnitude that is almost unchanged compared to the baseline regressions. We also run similar tests using a recession dummy instead of the GDP growth variable and find the results to be consistent with the findings above. Therefore, from our analyses we can conclude that in a situation when a domestic banking crisis is accompanied by a demand shock abroad the industries that depend heavily on external finance will be double hit.

4.4 Deepness of the crisis

We will proceed with the analysis of whether certain characteristics of the crisis or of the exporter that experienced a crisis have resulted in heterogeneous outcomes during the crises. We start by asking if crises that are deeper also have stronger differential effects on exports growth across industries. We use the GDP loss experienced during the crisis to measure the deepness of a banking crisis. The variable is computed as the difference between GDP predicted from a linear or quadratic trend and the actual GDP observed during a crisis. Based on the work of (Braun and Larrain 2005) one could expect that when a banking crisis is accompanied with a high GDP loss the overall pessimism which is likely to prevail in the economy will cause that banks will be much more stingy with the lending and this will have a much higher adverse impact on the industries that rely on external finance. Our findings summarized in Table 6 are consistent with this hypothesis. Higher GDP loss during a crisis indeed widens the gap between the growth of the high and low dependent industries and increases the importace of a collateral.

4.5 Impact of economic and financial development

We also attempt to understand whether the impact on finance is more or less pronounced in countries with higher GDP per capita or higher level of financial development. In Table 7 we show that the triple interaction of the crisis with external finance dependence and GDP per capita is significant but very small in magnitude. This result implies that poorer countries hit by a financial crisis experience a stronger impact on their exports in industries that require more external finance. Running a similar regression but using financial development instead of GDP we similarly find that countries with less developed financial systems are hit harder. In Table 7 we look at the same issue differently and show that the fact that a country is developed implies a less severe impact of the banking crisis. A conclusion one may make from these results is that countries that are richer and more financially developed might have also additional financing options outside of the banking sector. As shown in last column of Table 7 this really seems to be the case. In economies with higher shares of other financial assets in GDP the impact of the crises on industries with high need of external finance is less pronounced.

4.6 Impact of policies

We have seen that banking crises bring by financial constraints and frictions that have repercussions in the real economy. A question arises whether there is anything for the policy maker to do in order to mitigate these effects. Honohan and Klingebiel (2003) compile a list of measures put in place by the government during the financial crises. These include blanket depositor protection and two types of forbearance. Forbearance of type A allows insolvent or illiquid banks to operate for 12 months. Forbearance of type B means that either there is type A forbearance or some regulations are not enforced. Two additional measures capture repeated recapitalizations and government sponsored debt relief for corporate or private borrowers. These first five measures are captured as zero-one dummies. We borrow their measures and enclose them in our baseline regressions in form of tripple interactions with the measure of financial dependence or tangibility and financial crisis. In addition to the first five measures we also include a policy total variable which adds the dummies and gives the number of policies that have been implemented during each crisis. The results are presented in Table 10. The information about policy interventions is not available for all crises and therefore the number of observations is cut substantially. The results from this constrained sample suggest that none of the general policies put in place in order to ease the situation of the banks did not significantly help to reduce the effect of the crisis and some of the policies even enter with a negative sign.

4.7 Robustness tests

4.7.1 Is banking crisis just like any other period of economic distress?

Banking crises are often accompanied by economic downturns during which even healthy banks may cut lendings in response to balance sheet problems of the borrowers (Dell'Ariccia, Detragiache, and Rajan 2008). In order to better understand if our results are simply driven by the recession rather than by the financial distress we construct a recession dummy as suggested by Braun and Larrain (2005). We then estimate our baseline model substituting for the banking crisis variable with the recession dummy as well as including the interaction of the measure of external finance dependence with each, the banking crisis and the recession dummy. The results are summarized in Table 10. When we include the interaction between the recession and financial dependence alone we confirm that indeed there is an adverse effect of the recession which may be operating through a credit channel too but the coefficient is not significant. Combining the two interactions does not affect the sign and the size of our main variable of interest. Alternatively, instead of the recession dummy we include GDP growth. In this case we find that a decrease in the growth rate of national income has a significant negative impact on exporters in high dependent industries, however, even in this case the result on the banking crisis interaction does not weaken substantially.[21]

4.7.2 Alternative measures of external dependence and tangibility

The measure of external finance dependence as computed by RZ might not always be the ideal measure. For example when looking at developing countries one could argue that looking at the mature firms in the US might not be the best benchmark. Therefore, directly from the original RZ paper we use the same type of measure but only computed for the young firms that are likely to resemble more to firms in developing countries composing the majority of our sample. In addition this measure might also be more appropriate because firms tend to rely much more on external finance in their early life. Table 11 shows that even though the cofficient on the main interaction weakens slightly the results are quantitatively unchanged. A second concern that one might have with using US data is that a country that has itself experienced a financial crisis might not be the best frictionless benchmark. Therefore, our second alternative is based on Kroszner, Laeven, and Klingebiel (2007) who again compute the same measure but based only on data of countries that have never experienced a financial crisis. Here again the results are very similar to the ones from our benchmark regressions. To provide additional testing of

[21] However the positive sign on the interaction between GDP growth and external dependence from finance can be both a consequence of the larger pro-cyclicality of sectors highly dependent from finance as well as a spurious result due to the fact that exports are a component of GDP by construction.

whether the dependence of external finance really matters we employ two additional measures both taken from Raddatz (2006). They are defined as cash conversion cycle and as inventories to sales and are meant to capture more short term financial needs intended to cover mainly the working capital. Both estimated coefficients are negative and significant but smaller than when we use the original measure. This suggests that it is particularly the long term financing that is hurt during a crisis which is consistent with our finding using the Fisman and Love (2003) trade credit measure.

We do a similar set of tests for the tangibility measure. This variable is inherently different than the external finance dependence and therefore we use a different set of proxies to check its robustness. We take the alternative measures from Braun (2003). He similarly to Kroszner, Laeven, and Klingebiel (2007) uses the book measure as the benchmark measure, but constructs it only at the 3 digit ISIC level. Therefore, for comparison we report the result of our benchmark regression using his definition of tangibility. The coefficient is slightly lower in magnitude but the result is consistent with our previous findings. Given that when getting a loan what will matter for the banks is the market value rather than the book value of the collateral we use Braun's measures of tangibility based on market and sales values to test the robustness of the results. In both cases the estimated coefficient is positive, highly significant and almost identical in magnitude.

To summarize, Table 11 shows that even though the results slightly change in terms of their size and significance when using different proxies for external dependence from finance and tangibility, they do not force us to alter our main conclusions.

4.7.3 Do the proxies measure something else?

Another concern with our measure of the external finance dependence is that this might potentially capture other industry characteristics that are not inherently related to finance. We have already shown that even though the high dependent RZ industries are pro-cyclical, durability is not what is driving our results. The inability of an industry to finance its investment might be driven by the sofistication of the indsutry. Therefore, other possible drivers could be capital or R&D intensity of the industry. We obtain proxies for both measures from Kroszner, Laeven, and Klingebiel (2007) and include their interaction with the financial crisis dummy as additional controls in our baseline regression. As shown in Table 12 inclusion of none of them weakens our main result. Three more industry characteristics that the RZ could potentially capture are reported in the table. The first two, the share of 20 largest intermediates and the Herfindahl index are all caturing the dependence on intermediates and are taken from

the work of Kevin Cowan (2007). The reason to include these two proxies is their relation to the complexity of the product The third variable, the product homogeneity is based on the Rauch (1999) classification of industries. Rauch classifies a good as homogeneous if it is sold in organized exchanges or at least there is a reference price for it. A heterogenous product on the other hand requires building up a trading relationship. Therefore, we can expect that a differentiated product will have a higher fixed cost of entry into a foreign market. If the inclusion of this variable weakens the coefficient on the main interaction it would suggest that the Rajan, Zingales measure is a proxy of entry cost rather than finance dependence. Again inclusion of any of these variables does not affect the coefficient on the main interaction in any substantial way.

We do a similar set of tests for tangibility and it is also robust to inclusion of additional measures that are potentially correlated with the crisis interaction. In addition to the capital-labor ratio, R&D intensity and product homogeneity we also include the interactions of physical capital intensity, natural resources intensity and human capital intensity with the crisis dummy. The taught behind this is that our measure of tangibility might be correlated with an industry specific characteristic providing for comparative advantage. However, inclusion of any of these additional interactions does not weaken the baseline result.

4.7.4 Country exclusions

We also do several robustness checks to see whether our result is driven by a specific country or group of countries. First, we test whether the results are driven by one specific country. Therefore, we run our baseline model given by equation (1) excluding one of the crisis countries at the time. We do this for both, the external finance dependence and tangibility measures. In both sets of 23 unreported regressions the coefficient on our variable of interest stays significant with their with the same sign and magnitude almost unchanged throughout the experiment.

Second, we exclude the poorest and the richest countries (Table 13) to see whether one of these particular groups is driving the results. We find that in both cases the coefficient on the interaction of the financial measure with financial crisis remains negative and statistically significant. Given that the result is stronger after excluding the rich country, this is also consistent with our previous conclusion that poorer countries were hurt more by the banking crises.

Finally, we look at whether having countries in the sample that have experienced more than one crisis might have affected our results. In Table 14 we show that the coefficients on the main interactions get slightly weaker after the exclusion. This result is not very strong but it seems to suggest that in countries that have already experienced a crisis the effect of the credit crunch gets especially pronounced.

4.7.5 Addressing endogeneity issues

Even though, the Rajan and Zingales methodology has meant a substantial step forward in addressing the endogeneity problem present in the previous finance and growth literature, some concerns still remain. In our specific case an observed drop in exports in the high dependent industries might actually be the cause of a banking crisis rather than other way round. We do two different tests in order to show that our results are not driven by reverse causality.

The results of our first test are summarized in Table 15. The two separate tables report our benchmark regressions estimated first only for sectors whose share in total exports three years before the crisis was lower than the median share, i.e. small sectors, while the other table reports the results from the above median sectors, i.e. large sectors. If our results are strictly driven by reverse causality we would expect that the coefficients in the regressions of the large sectors will be negative, significant and large in magnitude while in the case of small sectors they will be insignificant. Our results show that while in both cases the coefficients are negative and significant they are actually twice as large in the case of the small sectors that, given their sheer size, are certainly less likely to be triggers of a financial crisis.

In our second test we address the potential endogeneity by only looking at crises that can be strictly exogenous, i.e. they have started as a result of investors reverting from certain markets. More specifically we focus only on crises that can be the result of a contagion from other countries within the same region. The criterion to identify these crises is an occurrence of a financial crisis in a country in the same region one or two years before the exporter has experienced a financial crisis itself. We identify 14 episodes of this type and we rerun our baseline regressions on this reduced sample. As shown in Table 16 the results on our main variable of interest becomes slightly less significant, not surprisingly given the substantially smaller sample we are using, but remains negative and very similar in its magnitude.

4.7.6 Placebo crises

Bertrand, Duflo, and Mullainathan (2004) show that difference in difference estimates can be severely biased when the data used is serially correlated. Therefore, our final robustness check tests whether our results are really capturing an economically important effect or are completely spurious and driven by our methodology. In order to do so we take data for all countries that never experienced a financial crisis and we randomly assign 23 crisis episodes. We repeat this 200 times and then we test our model using each of these "placebo crises" interacted with the external dependence as in our baseline regression. Our results speak against the spuriousness of our findings. The coefficient on the interaction of external dependence and financial crisis turns out negative and significant at the critical 5% degree of confidence in less than 3% of

cases, but also turns out positive at the same degree of confidence in 3% of the estimations. In case our results were spurious we would expect the negative and significant result to occur much more frequently. We do a similar experiment with the tangibility measure and in this case the coefficient is positive and significant at 5% level in only 3 cases out of 200. However, in 13 more cases it is positive and statistically significant. This suggests that once again our results do not seem to suffer by a bias and even if there was one it seems it would bias our result downwards more than upwards.

5 Conclusions

TO BE COMPLETED

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6 Appendix

Table 1: Summary statistics

exporter	years in sample			GDP per capita	Fin. development	Crises	Av. devaluation	Recessions	# of sectors per year		
	min	max	total						Min	Max	In crisis
Argentina	1981	2006	26	6861	0.13	1995	0.00%	1985, 1988-90, 1999-02	63	79	75
Bolivia	1980	2006	27	895	0.24	1994	5.03%	1985 -1986	10	56	48
Colombia	1980	2006	27	1592, 2097	0.24, 0.34	1982, 1999	19.97%	1981-85, 1998-02	61	80	73
Finland	1980	2006	27	19200	0.70	1991	16.97%	1990-93	75	80	78
Indonesia	1980	2006	27	572	0.27	1992	3.37%	1985-88, 1998-99	46	80	73
Italy	1980	2006	27	15064	0.49	1990	6.20%	1981-83, 1990-93	78	81	80
Jordan	1982	2006	25	2118	0.61	1989	13.32%	1988-91	40	64	48
Japan	1980	2006	27	31828	1.81	1992	-7.18%	1980-84, 1986	79	81	80
Sri Lanka	1980	2005	26	537	0.19	1989	9.17%	1987-89, 1992, 2001-02	45	73	62
Mexico	1987	2006	20	5080	0.17	1994	39.23%	1986-88, 1995	63	81	76
Malaysia	1980	2006	27	1992, 3241	0.52, 1.04	1985, 1997	9.11%	1985-87,2001	72	80	78
Norway	1980	2006	27	24644	0.72	1987	-3.23%	1981-82, 1987-93,2001-03	74	80	78
Nepal	1983	2000	18	159	0.08	1988	12.15%	1983, 1986-87	3	33	10
Panama	1987	2006	20	3371	0.42	1988	0.00%	1987-89, 1999-03	28	57	33
Philippines	1980	2006	27	939	0.33	1981	24.14%	1984-85	49	75	56
Papua New Guinea	1982	2004	23	625	0.27	1989	4.94%	1987-90, 2000-02	27	46	39
Portugal	1980	2006	27	6405	0.84	1986	-1.88%	1981-85, 1992-94	72	80	78
Sweden	1980	2006	27	22311	0.95	1990	5.31%	1980-83, 1990-93	73	81	79
Tunisia	1981	2006	26	1418	0.49	1991	7.79%	1988-89, 1993-95	52	74	69
United States	1980	2006	27	21418	0.83	1980	0.00%	1980-82, 2006	77	81	79

Table 2: Sector dependence on external finance

ISIC	**Industrial sectors**	**RZ**		**FL**		**TANG**	
isic	**sector**	**RZ**	**rank**	**apayta**	**rank**	**tang**	**rank**
311	Food products	0.14	25	0.112	3	0.37	13
312	Food manufacturing	n/a	n/a	n/a	n/a	n/a	n/a
313	Beverages	0.08	27	0.091	16	0.4	9
314	Tobacco	-0.45	36	0.066	32	0.19	28
321	Textile	0.4	11	0.101	7	0.31	17
322	Apparel	0.03	30	0.111	5	0.15	32
323	Leather	-0.14	34	0.055	35	0.12	36
324	Footwear	-0.08	32	0.093	13	0.13	35
331	Wood products	0.28	15	0.088	18	0.32	15
332	Furniture	0.24	17	0.092	15	0.28	18
341	Paper and products	0.18	22	0.081	26	0.42	7
342	Printing and publishing	0.2	21	0.075	29	0.21	26
351	Industrial chemicals	n/a	n/a	n/a	n/a	n/a	n/a
352	Other chemicals	0.22	20	0.097	10	0.27	23
353	Petroleum refineries	0.04	29	0.118	2	0.62	1
354	Petroleum and coal products	0.33	13	0.096	11	0.46	4
355	Rubber products	0.23	19	0.088	18	0.36	14
356	Plastic products	1.14	2	0.099	9	0.38	11
361	Pottery	-0.15	35	0.067	31	0.28	18
362	Glass	0.53	7	0.089	17	0.42	7
369	Nonmetal products	0.06	28	0.064	34	0.48	3
371	Iron and steel	0.09	26	0.094	12	0.44	5
372	Nonferrous metal	0.01	31	0.078	27	0.32	15
381	Metal products	0.24	17	0.088	18	0.28	18
382	Machinery	0.45	10	0.086	22	0.22	25
383	Electric machinery	0.77	6	0.082	25	0.21	26
384	Transportation equipment	0.31	14	0.105	6	0.23	24
385	Professional goods	0.96	5	0.072	30	0.16	30
390	Other industries	0.47	8	0.087	21	0.18	29
3211	Spinning	-0.09	33	0.149	1	0.38	11
3411	Pulp, paper	0.15	24	0.065	33	0.6	2
3511	Basic excluding fertilizers	0.25	16	0.083	23	0.43	6
3513	Synthetic resins	0.16	23	0.093	13	0.4	9
3522	Drugs	1.49	1	0.055	35	0.16	30
3825	Office and computing	1.06	3	0.083	23	0.14	33
3832	Radio	1.04	4	0.076	28	0.14	33
3841	Ship	0.46	9	0.101	7	0.28	18
3843	Motor vehicle	0.39	12	0.112	3	0.28	18

Table 3: Summary statistics: Difference in difference

External dependence from banks			
	mean	**median**	**N.**
No crisis, high dep	11.24%	10.22%	2467
Crisis, high dep	9.00%	7.79%	396
No crisis, low dep	7.44%	6.16%	2805
Crisis, low dep	8.75%	6.18%	440
Differences - Drop in Export Growth			
	High dep	Low dep	Dif in dif
mean	2.24%	-1.31%	**3.55%**
median	2.42%	-0.02%	**2.44%**

External dependence from trade credit			
	mean	**median**	**N.**
No crisis, high dep	8.19%	7.32%	4397
Crisis, high dep	11.48%	8.92%	688
No crisis, low dep	7.94%	7.08%	2733
Crisis, low dep	10.55%	7.76%	426
Differences - Drop in Export Growth			
	High dep	Low dep	Dif in dif
mean	-3.29%	-2.61%	-0.68%
median	-1.60%	-0.68%	-0.92%

Tangibility			
	mean	**median**	**N.**
No crisis, high dep	9.47%	8.38%	2796
Crisis, high dep	12.00%	9.32%	440
No crisis, low dep	8.64%	8.04%	3793
Crisis, low dep	8.38%	6.76%	603
Differences - Drop in Export Growth			
	High dep	Low dep	Dif in dif
mean	-2.53%	0.27%	-2.80%
median	-0.94%	1.28%	-2.21%

Table 4: Baseline regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trade share	-0.680***	-0.679***	-0.674***	-0.676***	-0.660***	-0.661***	-0.656***
	(0.115)	(0.115)	(0.115)	(0.115)	(0.122)	(0.122)	(0.122)
RZ*Crisis	-0.0536***			-0.0354*	-0.0599***		
	(0.0171)			(0.0181)	(0.0172)		
FL*Crisis		0.203		-0.240		0.274	
		(0.351)		(0.366)		(0.352)	
TANG*Crisis			0.199***	0.175***			0.240***
			(0.0543)	(0.0583)			(0.0544)
RZ*Fin Dev					-0.0315		
					(0.0200)		
FL*Fin Dev						-0.145	
						(0.401)	
TANG*Fin Dev							0.0987
							(0.0630)
Constant	-0.153	-0.163	-0.160	-0.235	-0.0258	0.107	-0.413***
	(0.143)	(0.131)	(0.135)	(0.154)	(0.195)	(0.104)	(0.107)
Observations	30753	30753	30753	30753	29126	29126	29126
R-squared	0.275	0.275	0.275	0.275	0.283	0.282	0.283

Table 5: Impact of demand shocks abroad

	(1)	(2)	(3)	(4)	(5)
Trade share	-0.673***	-0.668***	-0.675***	-0.669***	-0.670***
	(0.111)	(0.114)	(0.114)	(0.114)	(0.114)
RZ*Crisis		-0.0480***			-0.0418**
		(0.0170)			(0.0172)
Demand shock	0.0118***	0.00790***	0.0227***	0.0185***	0.00551**
	(0.00198)	(0.00231)	(0.00833)	(0.00475)	(0.00241)
RZ*Demand shock		0.0144***			0.0110***
		(0.00397)			(0.00406)
FL*Crisis			0.129		
			(0.352)		
FL*Demand shock			-0.120		
			(0.0871)		
TANG*Crisis				0.192***	
				(0.0544)	
TANG*Demand shock				-0.0214	
				(0.0136)	
Durables*Crisis					-0.0162
					(0.0121)
Durables*Demand shock					0.00848***
					(0.00307)
Constant	0.0239	-0.0471	0.144*	-0.305*	-0.254
	(0.0707)	(0.150)	(0.0783)	(0.157)	(0.161)
Observations	31980	30753	30753	30753	30753
R-squared	0.274	0.277	0.276	0.277	0.277

Table 6: Deepness of the crisis

	(1)	(2)	(3)	(4)	(5)	(6)
Trade share	-0.682***	-0.681***	-0.677***	-0.680***	-0.675***	-0.668***
	(0.115)	(0.115)	(0.115)	(0.115)	(0.115)	(0.115)
RZ*Crisis	-0.0398**	-0.0502***			0.161***	0.185***
	(0.0173)	(0.0171)				
RZ*Crisis*Loss(linear)	-0.469***					
	(0.179)					
RZ*Crisis*Loss(quadratic)		-0.504***				
		(0.174)				
FL*Crisis			0.0332	0.187		
			(0.356)	(0.349)		
FL*Crisis*Loss(linear)			6.469			
			(3.994)			
FL*Crisis*Loss(quadratic)				3.046		
				(3.475)		
TANG*Crisis					0.161***	0.185***
					(0.0549)	(0.0540)
TANG*Crisis*Loss(linear)					1.174**	
					(0.598)	
TANG*Crisis*Loss(quadratic)						2.071***
						(0.568)
Constant	-0.0968	-0.0989	-0.179	-0.129	-0.177	-0.199
	(0.118)	(0.118)	(0.141)	(0.122)	(0.143)	(0.152)
Observations	30753	30753	30753	30753	30753	30753
R-squared	0.275	0.275	0.275	0.275	0.275	0.276

Table 7: Impact of GDP and financial development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trade share	-0.665***	-0.661***	-0.654***	-0.683***	-0.679***	-0.675***	-0.659***	-0.680***	-1.300***
	(0.122)	(0.122)	(0.122)	(0.115)	(0.115)	(0.115)	(0.122)	(0.115)	(0.364)
RZ*Crisis	-0.0952***			-0.0786***			-0.0757**	-0.0706***	-0.144**
	(0.0310)			(0.0259)			(0.0326)	(0.0273)	(0.0589)
RZ*Crisis*Fin Dev	0.0557*						0.0616*		
	(0.0311)						(0.0341)		
FL*Crisis		0.688			0.368		0.137	0.0207	
		(0.630)			(0.533)		(0.654)	(0.559)	
FL*Crisis*Fin Dev		-0.703					-0.669		
		(0.671)					(0.695)		
TANG*Crisis			0.244**			0.141*	0.163	0.0677	
			(0.0952)			(0.0812)	(0.102)	(0.0871)	
TANG*Crisis*Fin Dev			-0.000305				0.0895		
			(0.0997)				(0.109)		
RZ*Crisis*GDP cap				2.73e-06**				3.86e-06***	
				(1.36e-06)				(1.45e-06)	
FL*Crisis*GDP cap					-1.83e-05			-2.80e-05	
					(2.94e-05)			(3.08e-05)	
TANG*Crisis*GDP cap						6.37e-06		1.16e-05**	
						(4.38e-06)		(4.79e-06)	
RZ*Crisis*OFA/GDP									0.316**
									(0.144)
Constant	-0.487***	0.0878	0.104	-0.130	0.204	-0.0900	0.130*	0.202	0.382
	(0.132)	(0.103)	(0.113)	(0.134)	(0.129)	(0.132)	(0.0760)	(0.129)	(0.374)
Observations	29126	29126	29126	30753	30753	30753	29126	30753	13815
R-squared	0.283	0.282	0.283	0.275	0.275	0.275	0.283	0.275	0.307

Table 8: Developed countries

	(1)	(2)	(3)
Trade share	-0.683***	-0.679***	-0.674***
	(0.115)	(0.115)	(0.115)
RZ*Crisis	-0.0739***		
	(0.0244)		
RZ*Crisis*Developed	0.0553*		
	(0.0304)		
FL*Crisis		0.539	
		(0.499)	
FL*Crisis*Developed		-0.935	
		(0.643)	
TANG*Crisis			0.187**
			(0.0759)
TANG*Crisis*Developed			0.0330
			(0.0983)
Constant	-0.182	-0.185	0.146*
	(0.152)	(0.140)	(0.0866)
Observations	30753	30753	30753
R-squared	0.275	0.275	0.275

Table 9: Impact of policy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trade share	-1.085***	-1.085***	-1.089***	-1.083***	-1.084***	-1.089***	-1.084***
	(0.149)	(0.149)	(0.149)	(0.149)	(0.149)	(0.149)	(0.149)
RZ*Crisis	-0.0461**	-0.0368*	-0.0363**	-0.0401**	-0.0393**	-0.0355*	-0.0388*
	(0.0202)	(0.0196)	(0.0181)	(0.0199)	(0.0189)	(0.0183)	(0.0201)
Blanket guarantee	0.0389						
	(0.0342)						
Liquidity support		-0.0130					
		(0.0393)					
Forbearance A			-0.118				
			(0.141)				
Forbearance B				0.00549			
				(0.0377)			
Recapitalizations					0.00394		
					(0.0427)		
Debt relief						-0.0771	
						(0.0816)	
Policy total							-0.000333
							(0.0103)
Constant	0.660***	-0.0198	-0.103	-0.164	-0.104	-0.0497	-0.146
	(0.0941)	(0.0932)	(0.102)	(0.113)	(0.104)	(0.0960)	(0.112)
Observations	20216	20216	20216	20216	20216	20216	20216
R-squared	0.329	0.329	0.329	0.329	0.329	0.329	0.329

Table 10: Banking crises just like any other economic distress?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trade share	-0.679***	-0.676***	-0.684***	-0.681***	-0.680***	-0.673***	-0.684***	-0.676***
	(0.115)	(0.115)	(0.115)	(0.115)	(0.115)	(0.115)	(0.115)	(0.115)
RZ*recession	-0.0182				-0.00614			
	(0.0147)				(0.0153)			
TANG*recession		0.109**				0.0667		
		(0.0460)				(0.0479)		
RZ*GDPgr			0.00648***				0.00537**	
			(0.00210)				(0.00218)	
TANG*GDPgr				-0.0231***				-0.0188***
				(0.00645)				(0.00665)
RZ*Crisis					-0.0518***		-0.0415**	
					(0.0178)		(0.0177)	
TANG*Crisis						0.179***		0.156***
						(0.0566)		(0.0560)
Constant	-0.168	-0.213	-0.0932	-0.237	-0.157	-0.0940	-0.0688	-0.248
	(0.142)	(0.145)	(0.138)	(0.162)	(0.147)	(0.114)	(0.125)	(0.161)
Observations	30753	30753	30753	30753	30753	30753	30753	30753
R-squared	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275

Table 11: Alternative measures of external finance dependence and tangibility

Alternative measures of external dependence				
	(1)	(2)	(3)	(4)
Trade share	-0.675***	-0.674***	-0.657***	-0.680***
	(0.111)	(0.111)	(0.115)	(0.115)
INVSA*Crisis	-0.218**			
	(0.103)			
CCC*Crisis		-0.0391**		
		(0.0161)		
RZ young *Crisis			-0.0229**	
			(0.00986)	
RZ non crisis * Crisis				-0.0364**
				(0.0166)
Constant	-0.151	-0.224**	-0.256	-0.0432
	(0.110)	(0.106)	(0.164)	(0.143)
Observations	30916	30916	29908	30753
R-squared	0.271	0.271	0.277	0.275

Tangibility alternatives from Braun			
	(1)	(2)	(3)
Trade share	-0.668***	-0.667***	-0.666***
	(0.112)	(0.112)	(0.113)
TANG (Braun)*Crisis	0.174***		
	(0.0502)		
TANG(Market)*Crisis		0.214***	
		(0.0650)	
TANG(Sales)*Crisis			0.172***
			(0.0540)
Constant	-0.373	-0.357	-0.386
	(0.305)	(0.306)	(0.306)
Observations	30102	30102	30102
R-squared	0.273	0.273	0.273

Table 12: Are we measuring something else

External finance dependence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trade share	-0.670***	-0.680***	-0.676***	-0.677***	-0.675***	-0.676***	-0.677***
	(0.115)	(0.115)	(0.120)	(0.115)	(0.115)	(0.115)	(0.115)
RZ*Crisis	-0.0485***	-0.0766***	-0.0351*	-0.0481***	-0.0389**	-0.0387**	-0.0434**
	(0.0171)	(0.0225)	(0.0193)	(0.0177)	(0.0179)	(0.0178)	(0.0174)
Capital/labor*Crisis	0.000384**						
	(0.000195)						
R&D*Crisis		0.173**					
		(0.0754)					
Rauch*Crisis			0.0273				
			(0.0177)				
Herfindahl*Crisis				0.00333			
				(0.0113)			
Intermediates*Crisis					0.0848**		
					(0.0418)		
CCC*Crisis						-0.0278	
						(0.0173)	
INVSA*Crisis							-0.162
							(0.107)
Constant	-0.229	-0.143	0.264**	0.369**	0.381***	0.352**	0.367**
	(0.148)	(0.127)	(0.113)	(0.155)	(0.139)	(0.145)	(0.149)
Observations	30753	30753	23806	29689	29689	29689	29689
R-squared	0.275	0.275	0.272	0.274	0.274	0.274	0.274

Tangibility

	(1)	(2)	(3)	(4)	(5)	(6)
Trade share	-0.675***	-0.674***	-0.675***	-0.676***	-0.672***	-0.672***
	(0.115)	(0.115)	(0.120)	(0.115)	(0.115)	(0.115)
TANG*Crisis	0.204***	0.205***	0.0935	0.278***	0.202***	0.218***
	(0.0721)	(0.0565)	(0.0741)	(0.0776)	(0.0663)	(0.0559)
Capital/labor*Crisis	-2.51e-05					
	(0.000258)					
R&D*Crisis		0.0336				
		(0.0582)				
Rauch*Crisis			0.0272			
			(0.0188)			
Phys cap intensity*Crisis				-0.343		
				(0.305)		
Nat res intensity*Crisis					0.00816	
					(0.0209)	
Hum cap intensity*Crisis						-0.00270
						(0.0257)
Constant	-0.182	-0.177	0.243**	0.346**	0.397***	0.337**
	(0.142)	(0.143)	(0.106)	(0.152)	(0.150)	(0.141)
Observations	30753	30753	23806	29689	29689	29689
R-squared	0.275	0.275	0.272	0.274	0.274	0.274

Table 13: Excluding the poorest and richest countries

Poor countries out			
	(1)	(2)	(3)
Trade share	-1.113***	-1.115***	-1.110***
	(0.193)	(0.193)	(0.193)
RZ*Crisis	-0.0542***		
	(0.0166)		
FL*Crisis		0.327	
		(0.344)	
TANG*Crisis			0.191***
			(0.0534)
Constant	0.338**	0.258	0.208*
	(0.142)	(0.228)	(0.119)
Observations	25047	25047	25047
R-squared	0.290	0.289	0.290

Rich countries out			
	(1)	(2)	(3)
Trade share	-0.624***	-0.622***	-0.618***
	(0.128)	(0.128)	(0.128)
RZ*Crisis	-0.0714***		
	(0.0240)		
FL*Crisis		0.364	
		(0.498)	
TANG*Crisis			0.156**
			(0.0754)
Constant	0.224	0.194	0.218
	(0.151)	(0.145)	(0.161)
Observations	18505	18505	18505
R-squared	0.303	0.302	0.303

Table 14: Excluding countries with more than one crisis

	(1)	(2)	(3)
Trade share	-0.611***	-0.609***	-0.606***
	(0.138)	(0.138)	(0.138)
RZ*Crisis	-0.0449**		
	(0.0212)		
FL*Crisis		-0.103	
		(0.430)	
TANG*Crisis			0.170**
			(0.0673)
Constant	1.061***	1.091***	1.072***
	(0.173)	(0.164)	(0.170)
Observations	24565	24565	24565
R-squared	0.297	0.297	0.297

Table 15: Small and large sectors

Large sectors			
	(1)	(2)	(3)
Trade share	-0.575***	-0.575***	-0.570***
	(0.119)	(0.119)	(0.119)
RZ*Crisis	-0.0404**		
	(0.0184)		
FL*Crisis		0.281	
		(0.421)	
TANG*Crisis			0.157**
			(0.0623)
Constant	-0.0253	0.370***	-0.107
	(0.164)	(0.108)	(0.141)
Observations	15646	15646	15646
R-squared	0.398	0.397	0.398

Small sectors			
	(1)	(2)	(3)
Trade share	-40.97***	-41.02***	-41.15***
	(5.137)	(5.140)	(5.140)
RZ*Crisis	-0.0634*		
	(0.0341)		
FL*Crisis		0.0707	
		(0.614)	
TANG*Crisis			0.227**
			(0.0996)
Constant	-0.487	-0.300	-0.238
	(0.397)	(0.367)	(0.303)
Observations	15351	15351	15351
R-squared	0.377	0.377	0.377

Table 16: Contagious crises only

	(1)	(2)	(3)
Trade share	-0.797***	-0.802***	-0.781***
	(0.157)	(0.157)	(0.157)
RZ*Crisis	-0.0613**		
	(0.0250)		
FL*Crisis		0.439	
		(0.529)	
TANG*Crisis			0.318***
			(0.0781)
Constant	0.0859	0.453**	0.0851
	(0.163)	(0.200)	(0.202)
Observations	14887	14887	14887
R-squared	0.335	0.334	0.335