Trade flows, exchange rate uncertainty and financial depth: evidence from 28 emerging countries

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Abstract

This paper investigates the effects of real exchange rate uncertainty on manufactures exports from 28 emerging economies, representing 82% of all developing country manufactures exports, and explores the sources of heterogeneity in the uncertainty effects by controlling for the direction of trade (South-North or South-South), and the level of financial development of the exporting country. The empirical results show that for more than half of the countries the uncertainty effect is unidirectional, either South-South or South-North, and the median impact is negative. In addition, while we find that financial development augments trade, exchange rate shocks can negate this effect. Last but not the least, trade among developing economies improves export growth under exchange rate shocks.

Keywords: Trade flows; Exchange rate uncertainty; South-South trade; Financial depth; Manufactured goods trade; Dynamic panel data.

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1 INTRODUCTION

Since the breakdown of the Bretton Woods fixed exchange rate system, researchers studying the effects of exchange rate uncertainty on trade flows have arrived at mixed conclusions. Theoretical models predict positive, negative or no effects depending on the underlying assumptions. Although, the effect of exchange rate uncertainty on trade flows appears to be an empirical question, empirical research, too, yields mixed results. Surprisingly, however, research on the sources of heterogeneity among countries in their trade responses to exchange rate uncertainty has been limited. Among possible sources of this heterogeneity we identify four issues. First, an overwhelming majority of empirical research have focused on developed countries alone and only few considered the possibility that uncertainty may have heterogenous effects on countries with different levels of economic development (Arize et al. 2000; Sauer and Bohara, 2001; Grier and Smallwood, 2007; Baum and Caglayan, 2009; Caglayan and Di, 2010). Second, despite significant research showing the importance of financial development for export performance, there is no study that controls for it under exchange rate uncertainty. Third, the possibility that the effects of uncertainty may depend on the direction of trade (for example South-South or South-North) is completely neglected in previous studies. Last but not least, there is no study that takes into account heterogenous effects of exchange rate uncertainty on manufactured goods, which not only have different long term developmental impacts but also have different response functions to exchange rate uncertainty compared to primary goods. Therefore, instead of using aggregate exports, the product composition of which varies significantly across countries, in this paper we focus on manufactured goods.

In this paper, we contribute to the existing literature by responding to all these

four issues. That is, first we exclusively investigate the impact of exchange rate uncertainty on emerging country bilateral trade flows rather than those of developed economies. Second, we differentiate the movements of trade flows between developing economies (South-South trade) in comparison to trade flows from developing to developed economies (South-North trade). Third, given the recent evidence that financial development significantly affects the pattern of international trade and economic growth, we control for the level of financial depth of the exporting country in our analysis. In particular, we explore whether financial depth, measured by the private credit to GDP ratio, mitigates the (potentially) depressing impact of exchange rate uncertainty on developing country exports. Fourth, unlike the previous research, which uses (mostly aggregated) total merchandize exports, we focus on bilateral manufactured goods exports. In our empirical analysis we also take into account the strong path dependency in international trade flows using a dynamic panel framework.

We carry out our empirical investigation by estimating dynamic panel models for the bilateral exports of each of the 28 emerging countries in our dataset (representing 82% of all developing country manufactures exports) for the period of 1978–2005. Our key findings are as follows. First, we find that exchange rate uncertainty significantly affects exports of (up to) 24 countries (19 of which are within one and an additional 5 within a two year window) out of 28 countries. Although we find that the median effect is negative, there are several cases where exchange rate uncertainty has a positive impact on export growth. Furthermore, we provide evidence that the direction of trade matters under exchange rate uncertainty. Accordingly, in more than half of the cases exchange rate uncertainty affects trade flows only in one direction that is either South-South or South-North. Consistent with the previous research we also find that financial develop-

ment enhances developing county manufactured goods exports. However, we discover that the positive impact of financial depth on trade flows can be reversed under large exchange rate shocks. Last but not least, we find evidence that trade between developing economies can further enhance their manufactures export growth. We confirm the robustness of these findings to the timing of exchange rate uncertainty.

The rest of the paper is organized as follows. Section 2 provides a brief literature review. Section 3 introduces the model and describes the data. Section 4 discusses the empirical results, and Section 5 concludes.

2 LITERATURE REVIEW

In this section we present a brief summary of the related literature on the following topics: i) the impact of exchange rate movements on trade flows; ii) the role of financial development in trade; iii) the determinants of South-South *versus* South-North trade; and iv) the structure of trade and exchange rate uncertainty relationship.

2.1 The Impact of Exchange Rate Uncertainty on Trade Flows

After the breakdown of Bretton-Woods agreement in 1973, it was argued that unexpected movements in exchange rates—exchange rate volatility—would have adverse effects on risk averse exporters. In particular, Ethier (1973), Cushman (1986) and Peree and Steinherr (1989) show that an increase in exchange rate volatility will have adverse effects on exports of risk averse firms. Contrarily, Franke (1991), and Sercu and Vanhulle (1992) suggest that exchange rate volatility may have a positive impact on international trade flows. Between these two positions, De Grauwe (1988), Viaene and DeVries (1992), and Barkoulas et al. (2002) discuss the possibility of ambiguous effects of exchange rate uncertainty on trade flows depending on the aggregate exposure to currency risk and

the type of shocks affecting the firms.

When we turn to empirical evidence, we cannot yet arrive at a clear conclusion either. Cushman (1983), Kenen and Rodrik (1986), Thursby and Thursby (1987) and Peree and Steinherr (1989), among others, report a negative effect of exchange rate uncertainty on trade flows, while Koray and Lastrapes (1989), and Gagnon (1993) find insignificant effects. Likewise, Baum et al. (2004), and Baum and Caglayan (2010) show that exchange rate uncertainty has slightly positive but generally insignificant effects across countries. Klein (1990), and Kroner and Lastrapes (1993), on the other hand, report both positive and negative effects of exchange rate volatility on exports.

Overall, the studies above only concentrate on the experiences of developed countries. Yet, recent research by Baum and Caglayan (2009) (using aggregate exports from 16 developed and 6 emerging countries), Caglayan and Di (2010) (using bilateral sectoral exports from 9 developed and 5 emerging countries), and Grier and Smallwood (2007) (using aggregate exports from 9 developed and 9 emerging countries) investigate the effects of exchange rate uncertainty on trade flows of both developed and emerging countries. While Grier and Smallwood (2007) conclude that the impact of exchange rate uncertainty on trade flows of emerging economies is negative, the other two argue that the effect is either insignificant or negligible. There are few exceptions where the investigation is focused on emerging economies. Most notably, Arize et al. (2000) (using aggregate exports from 13 developing countries) and Sauer and Bohara (2001) (using aggregate exports from 22 developed and 69 developing countries) show that exchange rate uncertainty has a significantly negative effect on emerging country exports.

2.2 The Role of Financial Depth

Studies regarding the impact of exchange rate uncertainty on trade flows have neglected the interactions between uncertainty and financial development despite the growing body of research pointing out the level of financial development as a source of comparative advantage in international trade. According to research by Kletzer and Bardhan (1987), Demirguc-Kunt and Maksimovic (1998), Rajan and Zingales (1998), Beck (2002), Braun and Larrain (2004), Svaleryd and Vlachos (2005), and Demir and Dahi (2010), industries that are more dependent on external finance grow faster in countries with better developed financial systems. In particular, developing countries (the South) with low levels of financial development are found to have lower export shares and trade balances in industries (such as manufactures) that depend more on external finance. Given that industries with higher external finance needs also have larger scales, higher research and development and value-added in production, it appears that financial depth has significant implications for development and long term growth in the South.

Naturally, the level of financial development determines the amount of credit available for international trade. Particularly, the lack of a developed financial system increases the transaction costs and functions as a trade barrier if none of the trading parties can provide the trade financing (UNCTAD 2005, 2007; IMF 2009). Furthermore, with underdeveloped financial markets, firms are more likely to suffer from currency mismatch problems, which worsens the adverse effects of exchange rate shocks (Caballero and Krishnamurthy, 2004). In addition, real exchange rate uncertainty (by inducing excess volatility in profits) can exacerbate the negative effects of credit constraints on fixed investment expenditures (Aghion et al., 2009). As such, uncertainty becomes more damaging to firms that have high external finance dependency but are located in countries

with low levels of financial development. Aghion et al. (2009)'s empirical investigation shows that exchange rate uncertainty reduces the productivity growth of manufacturing sectors with higher financing needs more in countries with lower financial depth.

2.3 The South-South Trade

Over the last two decades, the share of Southern exports in world trade increased substantially. Between 1978 and 2005 the share of the South in world manufactures exports increased from 5% to 32% while that of South-South manufactures exports jumped from 2% to 16%. The annual growth rate of real South-South manufactures exports has also been significantly higher than the world average reaching 14% as opposed to 5% for the latter (COMTRADE, 2010). In this respect, South-South trade has long been pointed out as an untapped resource for emerging economies. Myrdal (1956), for example, argued that regional integration in the South could help emerging countries overcome local market size limitations during the process of industrialization. It is proposed that given the strongly skill-biased structure of output expansion in international trade (Antweiler and Trefler 2002), increasing market size may help emerging countries enjoy scale effects and improve the skill content of their exports. Likewise, Lewis (1980) and more recently UNCTAD (2005) suggest that South-South trade can reduce the dependence of the South on the expansion of developed country economies—the North. Moreover, the structure of South-South trade is argued to have dynamic and long term benefits for emerging countries both due to its comparatively higher technology and human capital intensive factor content (Amsden 1980; Lall and Ghosh 1989), and the presence of similarities in production patterns and resource base, which facilitate appropriate technology transfers among Southern countries (Amsden 1987; UNIDO 2005; World Bank 2006).

Interestingly, most of the theoretical research on exchange rates and South-South

trade, including Eichengreen and Bayoumi (1996), Eichengreen (1998), Mundell (2002), Bacha (2008), and Swofford (2009) have focused on the optimal currency areas and Southern monetary unions. Yet, none of the studies on South-South trade investigate the relationship between exchange rate uncertainty and trade within developing economies or between developing and developed countries. This presents an important gap in the literature especially given the recent negotiations among various emerging countries to start using national currencies for trade rather than hard Northern currencies (mostly dollar and euro) to escape from the negative effects of currency fluctuations. For example, Brazil and Argentina have recently signed bilateral agreements towards using the peso or real in intra-Mercosur trade and established futures markets for these local currencies (Phillips 2009). Similarly, in 2009, Turkey signed a joint agreement with Russia and Iran to start using their national currencies instead of the dollar or euro for trade. Likewise, both Turkey and Russia are reportedly preparing to use national currencies in their trade with China as well. The lack of research is also surprising given that exchange rate volatility is expected to have deeper adverse effects on South-South trade due to the presence of low levels of financial market development, and high share of short term liabilities in developing countries.

2.4 The Structure of Trade

The recent advances in empirical and theoretical research clearly shows that "not all goods are alike in terms of their consequences for economic performance" and the structure of trade matters for economic development and growth (Hausmann et al. 2007, p.1). Manufactures exports, for example, are more likely to generate positive spill-overs (such as innovation and accumulation of physical and human capital) and linkages for development (Feder 1983; Hausman et al. 2007). Also, the level of (labor) productivity

is much higher in manufacturing than in agriculture and services. Since the manufacturing industry serves as a 'hub' for the generation and diffusion of new technologies to the rest of the economy, they become the engine of export and economic growth (Imbs and Wacziarg 2003). For instance, the median (mean) share of manufactures exports in total merchandize exports of our sample of countries increased from 26% (32%) in 1980 to 53% (46%) in 1990, 62% (55%) in 2000, and 66% (60%) in 2005. Furthermore, due to the higher price elasticity of manufactured goods exports demand and higher degree of international product substitutability, manufactured goods exports are likely to be more sensitive to exchange rate uncertainty. Finally, manufacturing industries depend more heavily on external finance for investment financing and yet developing countries lack adequate financial development, which put them at a comparative disadvantage in their trade with the North under exchange rate uncertainty (Aghion et al. 2009; Demir and Dahi, 2010). For all these reasons, in our analysis we focus on the evolution of manufactures exports rather than total merchandize goods.

3 EMPIRICAL IMPLEMENTATION

3.1 Modeling the Dynamics of Trade Flows

To investigate the effects of exchange rate uncertainty on trade flows we construct 28 separate panels for each emerging country in our data set (allowing us to reduce the unobserved country heterogeneity problem caused by pooling), and implement a dynamic panel model. The inclusion of the lagged dependent variable into our specification allows us to control for the persistence of changes in trade flows. Besides our modeling choice, as discussed in section 2, we differ from the rest of the literature in several important aspects. First, we concentrate on the impact of real exchange rate uncertainty on trade

flows of emerging countries.[1] Second, we test the effect of financial development on trade flows under exchange rate shocks by including an interaction variable between exchange rate uncertainty and financial depth. Third, we analyze the differential effects of exchange rate uncertainty on South-South trade *vis-à-vis* South-North trade. Fourth, we explore whether South-South trade (versus South-North) has any differential effects on emerging country exports. Our baseline model takes the following dynamic form:

$$x_{ij,t} = \alpha_0 + \beta_1 x_{ij,t-1} + \beta_2 y_{j,t} + \beta_3 s_{i,t} + \beta_4 \sigma_{i,t-1} + \beta_5 South_j + \beta_6 (South_j \times \sigma_{i,t-1}) + V_{ij,t} + \nu_j + \epsilon_{j,t}^{(i)} \quad (1)$$

where $x_{ij,t}$, $y_{j,t}$ denote the log difference of real manufactures exports from country i to j at time t, and the logarithmic real per capita GDP growth of the importing country, respectively. The log difference in annual average effective real exchange rate of country i is represented by $s_{i,t}$. Given that the trade data are annual and that the exchange rate uncertainty is generally shown to achieve its greatest effect on trade within a year, we construct an uncertainty proxy that incorporates monthly variations in exchange rates up to a year and denote it with $\sigma_{i,t-1}$ (Baum et al. 2004). *South* is a dummy variable set to 1 if the importing country is a developing economy, and 0 otherwise. V_{ij} depicts other control variables including the log of importing country population and exporting country urbanization rate (for data definitions and sources, please refer to the appendix). In this model the exchange rate uncertainty enters into the equation on its own and in interaction with the *South* dummy. The interaction term allows us to test if uncertainty affects South-South trade different from South-North trade.

Next, we augment our baseline model with a measure of financial depth, *Credit*,

[1] We use real exchange rates instead of nominal exchange rates as the real exchange rate measures the relative cost of tradable goods (which is what matters for international trade) as opposed to the relative value of monies. In this context, one may arrive at erroneous conclusions should the focus be on the effects of movements in nominal exchange rate uncertainty on trade flows.

to test its importance for trade growth under exchange rate shocks. In particular, we implement two separate models. In the first case we allow $Credit$ to enter the model on its own and in interaction with uncertainty so that we can test if financial depth could mitigate or worsen any adverse effects of exchange rate uncertainty on emerging country trade flows. The model that we estimate takes the following form:

$$\begin{aligned} x_{ij,t} = \alpha_0 + \beta_1 x_{ij,t-1} + \beta_2 y_{j,t} + \beta_3 s_{i,t} + \beta_4 \sigma_{i,t-1} + \beta_5 South_j + \beta_6 (South_j \times \sigma_{i,t-1}) \\ + \beta_7 Credit_{i,t} + \beta_8 (Credit_{i,t} \times \sigma_{i,t-1}) + V_{ij,t} + \nu_j + \epsilon_{j,t}^{(i)} \end{aligned} \tag{2}$$

where the rest of the elements of the model is the same as in Equation (1). We then allow $Credit$ to have a separate effect on trade with $South$ by introducing two additional interactions; $Credit \times South$ and $Credit \times South \times \sigma$ as shown below:

$$\begin{aligned} x_{ij,t} = \alpha_0 + \beta_1 x_{ij,t-1} + \beta_2 y_{j,t} + \beta_3 s_{i,t} + \beta_4 \sigma_{i,t-1} + \beta_5 South_j + \beta_6 (South_j \times \sigma_{i,t-1}) \\ + \beta_7 Credit_{i,t} + \beta_8 (Credit_{i,t} \times \sigma_{i,t-1}) + \beta_9 (Credit_{i,t} \times South_j) \\ + \beta_{10} (Credit_{i,t} \times South_j \times \sigma_{i,t-1}) + V_{ij,t} + \nu_j + \epsilon_{j,t}^{(i)} \end{aligned} \tag{3}$$

Differing from Equation (2), Equation (3) allows us to investigate the impact of credit depth when the country is trading with the North and South separately. Furthermore, we can explore whether exchange rate uncertainty can annul or even negate the total effect of credit depth on trade flows. By the same token, we can study if the impact of exchange rate uncertainty on trade flows to North and South is mitigated or aggravated as we incorporate financial depth into the model.

3.2 Data

We carry out our empirical investigation using annual real (non-zero) manufactures exports data (SITC 5-8) from 28 emerging countries, which account for 82% of all developing country manufactures exports to the rest of the world (126 to 226 countries), and

76% of all South-South exports during 1978-2005.[2] Over the period of investigation, we observe a steady increase in the sample countries' share in global manufactures exports going up from 4% in 1978 to 29% in 2005. The data on manufactured good exports are obtained from the U.N. Commodity Trade Statistics Database (COMTRADE). Our dataset spans the period 1978 to 2005, and includes 11 countries from Latin America (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Paraguay, Uruguay, Venezuela), 7 countries from the Middle East and North Africa (MENA) (Algeria, Egypt, Jordan, Morocco, Syria, Tunisia, Turkey), and 10 countries from East and South East Asia (China, Hong Kong, India, Indonesia, Malaysia, Pakistan, Philippines, Singapore, South Korea, Thailand). In choosing these emerging economies, the following factors were considered: a) the presence of a sufficiently diversified production and export structure, b) the availability of at least 10 years of continuous data (to avoid non-random entry and exit bias), and c) regional representation to avoid sampling bias.[3] Our choice of the time period analyzed is conditioned by the data availability. In addition to our key questions of interest, the country sample also allows us to discuss the role of geographical location or the impact of development on the role of exchange rate movements in trade growth.

We extract consumer price indices and spot foreign exchange rates from the IMFs International Financial Statistics (IFS). The effective real exchange rate, also obtained from the IFS, is based on trade weights. In a few cases including for Argentina, Brazil,

[2]Excluding observations where bilateral exports are zero, as is commonly done in Gravity approach to trade, may introduce a bias in the estimations (Silva and Tenreyro, 2006; Tenreyro, 2007). The reason for their exclusion is because it is impossible to interpret correctly the meaning of zero and/or missing observations as it is impossible to know whether a zero (missing) observation is really zero or simply missing. Therefore we carry out our estimations after eliminating zero and missing observations from our data.

[3]For example, Sauer and Bohara (2001) find that exchange rate uncertainty is significant in Latin America and Africa but not in Asia.

Chile, Ecuador, Hong Kong, Korea, Mexico, Turkey and Uruguay, exchange rate data are gathered from the Bank for International Settlements, domestic statistical institutes, and central banks. When the multilateral rate is not available the real exchange rate is computed from the spot exchange rate and local and US consumer price indices for Egypt, India, Indonesia, Jordan, Syria, and Thailand.[4] The effective real exchange rate is expressed as an index with 2005 as the base year and an increase is a real appreciation. The export data are expressed in current US dollars and we employ country specific export price deflators (from WDI) to generate real exports.

Turning to the measurement of exchange rate uncertainty, the empirical literature offers a number of competing approaches for its construction including methods such as the simple moving standard deviation of the series. However, this proxy gives rise to substantial serial correlation in the measure. In this study we implement the GARCH model to capture the volatility clustering often found in exchange rate series. Prior to estimation of the GARCH model, we scrutinize the time series properties of the data to determine the appropriate characterization regarding the order of integration of each exchange rate series. Given the presence of unit root, we compute the GARCH (1,1) model for each country in our dataset on the log difference of monthly real exchange rate series and use their annual averages in the regressions as our measure of exchange rate uncertainty.[5] Figure 1 presents the annual average exchange rate uncertainty for

[4]We would like to note that the use of bilateral exchange rates with respect to the US does not create a significant problem in our investigation as most world trade is heavily denominated in US dollar. As a robustness test we calculated bilateral real exchange rates with respect to the US for a subset of countries in our dataset and generated the corresponding bilateral volatility measures. We find that the cross correlation between the multilateral and bilateral real exchange rate volatility is 0.99 for Indonesia, Korea, Mexico and Venezuela, 0.98 for Thailand, 0.97 for China and Philippines, 0.94 for Malaysia, 0.88 for Paraguay, and 0.83 for Costa Rica, averaging 0.95 all together.

[5]It would be preferable to generate a measure of uncertainty based on bilateral real exchange rates for each of the trading partners. However, this is not feasible because of data unavailability as it requires monthly price indexes for 28*226 country pairs going back to 1978.

all 28 countries as well as for eight leading economies in each geographical region in the sample. As one can observe from the figure, our uncertainty proxy differs substantially across countries.

Insert Figure 1 Here

We use the ratio of real private credit by deposit money banks and other financial intermediaries to real GDP, *Credit*, as a proxy for financial development. This proxy, used by several researchers including Beck et al. (2000), Levine et al. (2000), Beck (2002), Svalery and Vlachos (2005) and Braun and Raddatz (2007), captures the extent of financial development of the exporting country, and is considered the most standard measure of financial development. In our investigation the North includes high-income OECD countries while the South includes all low and middle income countries according to the World Bank definitions. Finally, in order to limit the impact of outliers, we dropped those observations of real (non-zero) exports (in levels) that were below the 1st percentile, and real export growth rates that were below or above the 1st and 99th percentiles.[6]

In Tables 1 and 2 we provide summary statistics on the variables that enter the analysis. We can see from Table 1 that the average annual real manufactures export growth is quite high for many countries and falls between 3.22 (Venezuela) and 23.38 (Indonesia). For the case of Syria the growth rate is negative and can perhaps be explained by the existing trade sanctions. When we look at the growth rate of trade flows to the South the figures are slightly higher; the growth rate of real exports falls between 4.46 (Venezuela) and 24.24 (Indonesia). The same figures for North are between 0.55

[6]Trimming the data at the top and bottom 1% percentile leads to only a marginal reduction in sample size (i.e. 2.4% on average). Regression results when we use the full data are similar to those reported in the text and are available upon request.

(Argentina) and 24.68 (China). For a number of countries, namely Algeria, Paraguay, Uruguay, and Venezuela, trade growth with North is negative over this period. Average total trade growth for all countries is 11%, and with the South it is 11.3%. The last column shows that the number of trade partners for each country ranges between 126 and 226.

Insert Table 1-2 Here

In Table 2, we provide further information on other variables that enter into our model. Column 1 shows that the average manufactures exports to GDP ratio ranges between 0.5% (Algeria) and 94.7% (Singapore). Column 2 presents the average ratio of manufactures exports to total merchandize exports. For some countries this ratio is very small such as Ecuador (1.2%), Algeria (2.0%) while for some others it is quite high such as Hong Kong (84.1%), South Korea (82.9%) and China (80.5%). The next two columns present the average percentage share of manufactures exports that goes to South and North separately. These ratios are generally balanced except for Mexico whose 91.9% of trade is with the North given that 88% of its exports go to the US alone. Column 5 provides real GDP per capita (in PPP terms) where Hong Kong and Singapore stand out from the rest of the countries with their GDP per capita levels of around $21,000. Column 6 depicts credit depth in each country allowing us to see that there is substantial variation across countries. We see that for only a few countries the ratio of private credit to real GDP is above 50%, including China, Hong Kong, Jordan, Malaysia, Singapore, South Korea, Thailand and Tunisia. Column 7 depicts our measure of exchange rate uncertainty, which differs substantially from country to country. Given the country heterogeneity, we expect to find that exchange rate uncertainty affects their trade flows differently. In the last two columns we provide information on population and urban-

ization, reflecting market size, and the degree of urban versus agrarian development.

4 EMPIRICAL RESULTS

Throughout our empirical implementation, we employ the two-step system GMM dynamic panel data estimator by Arellano and Bover (1995) and Blundell and Bond (1998), and use the second to fourth lags of variables as level and difference instruments. We limited the number of instruments given that remote lags are not likely to provide much additional information and that the power of overidentification test is weakened as instrument count increases relative to the sample size (Roodman, 2009a). Using the system GMM method we aim to control for any possible parameter endogeneity, state-dependence, and simultaneity bias as well as to correct for the correlation between the lagged dependent variable and country specific effects and the error term.[7]

We compute robust two-step standard errors by the Windmeijer finite-sample correction method. The reliability of our econometric methodology depends crucially on the validity of the instruments, which can be evaluated with the J-test of overidentifying restrictions. A rejection of the null hypothesis that instruments are orthogonal to errors would indicate that the estimates are not consistent. Given that the model we implement has a dynamic panel data context, we expect the presence of a first order serial correlation. However, we should not detect a second-order serial correlation so that the instruments are not correlated with the errors. For each model we check the J-statistic for overidentifying restrictions and the Arellano and Bond AR(2) tests and make sure

[7]Our modeling choice and estimation methodology allow us to avoid these common problems that are faced by the Gravity equation approach to international trade (Baier and Bergstrand, 2007). We have identified the lagged dependent variable with GMM type instruments, and others with standard instruments.

that our instruments are appropriate and there is no second order serial correlation.[8] The Table 6 in the appendix presents the traditional Hansen test results for overidentifying restrictions, which shows that the p-value for this test is always above 10% level except for China, which is significant at the 7% level for the model given in table 5. We also report in Table 7 the difference-in-Hansen test of exogeneity, which tests whether the subset of instruments used in the level equations are exogenous.

Finally, we note that, in addition to the lagged dependent variable, we include three types of independent variables in our models: those that are cross-section and time variant (i.e. $y_{j,t}$), those that are time invariant but cross-section-variant (i.e. $South_j$), and those that are time-variant but cross-section invariant (i.e. $\sigma_{i,t}$). As a result, the error term includes three parts: cross-section and time variant, time invariant but cross-section-variant, and time-variant but cross-section invariant. Here we have several specification issues to deal with: autocorrelation problem (i.e. lagged dependent variable being correlated with the error term), possible correlation between the unobserved time/cross section-variant error term and the observed variables, reverse causality and endogeneity. In this setting, OLS, fixed and random effects will yield biased results. Two-step system GMM method, however, is expected to deal with these issues and generate unbiased results (Bond, 2002; Roodman, 2009b). Furthermore, we choose not include year dummies in our modeling as they will fully absorb the impact of cross-sectional invariant regressors. Our approach does not yield any bias in the estimated coefficients as long as the cross-sectional invariant variables are sufficient to capture all year effects and saves on the degrees of freedom as we do not estimate year-effects.[9]

[8]The results for Ecuador should be taken with caution since it fails the AR(2) test.

[9]This approach is in the same vein as that of Acemoglu et al. (2003).

4.1 Basic Specification

In this section we first discuss results obtained from equation (1). Using this model, we investigate the effects of exchange rate uncertainty on trade flows originating from emerging economies to the rest of the world and discuss its impact on exports to South and North separately. Within this framework we also scrutinize if South-South trade has any trade enhancing or impeding effect on emerging countries. Given that we run separate panels for each country in our dataset (28 in total), in Table 3 we only provide information on the impact factors of exchange rate uncertainty in South-North and South-South trade as well as on the importance of trade with South for export growth (the details of all regressions results are available upon request). The impact factors are measured as the net effect of one standard deviation increase in exchange rate uncertainty on bilateral export growth. Also, Table 3 as well as Tables 4 and 5 contain information on the number of instruments used, number of trading partners in each model, and number of observations.

Insert Table 3 Here

Inspecting Table 3 we see that exchange rate uncertainty significantly affects trade flows of 18 out of 28 countries—the effect is significant and negative for Brazil, Chile, Colombia, Ecuador, Egypt, Turkey, India, Pakistan, Philippines, and South Korea; and positive for Syria, Costa Rica, Mexico, Paraguay, Uruguay, Venezuela, Indonesia, and Singapore. Considering all countries, we observe that the median impact of exchange rate uncertainty on trade flows is negative. When we explore the effect of uncertainty on South-South trade, we find that the median impact is still negative (eight negative *versus* four positive cases) but that towards North is positive (seven positive *versus* five

negative cases). Looking at the impact factors, the parameter estimates are also found to be economically significant. Accordingly, for the statistically significant parameter estimates, a one standard deviation increase in exchange rate uncertainty reduces South-South export growth by 5.2 percentage points while it increases South-North export growth by 8.9 percentage points for the median country in our sample. Furthermore, inspecting columns one and two we can see that for two thirds of the time the effect of uncertainty on trade flows is only in one direction, South-North or South-South.

Overall, while these findings provide support to the claim that exchange rate uncertainty affects trade flows emanating from emerging countries negatively, the evidence is not as strong as earlier research suggests (see, for example, Arize et al. 2000, and Sauer and Bohara, 2001). First, our results show that the effects of exchange rate uncertainty on developing country exports may be positive or negative. Secondly, and perhaps more importantly, we discover that the trade effects of exchange rate uncertainty may very well depend on the direction of trade (South-South *versus* South-North), which may explain the heterogenous findings in the empirical literature.

The third column of Table 3 allows us to check whether South-South trade enhances or mitigates exports of an emerging economy. Note that this is a joint test of the hypothesis that $(\beta_5 + \beta_6 \times \sigma_{i,t-1})$ is significantly different from zero at the mean value of exchange rate uncertainty. If the effect is insignificant (none), then trade with South has a similar impact to that of North on export growth. If the effect is positive (negative), then we can say that trade with the South enhances (impedes) manufactures export growth of developing countries. Inspecting column three, we see that South-South trade enhances trade growth of 11 emerging economies at economically and statistically significant levels. The point estimates suggest that the median (mean) trade enhancing

effect of S-S trade is 5.9 (5.6) percentage points for these countries. Only one country, Singapore, experiences a reduction in its trade growth as it trades with the South. This, however, is because of the presence of a strong negative effect of exchange rate uncertainty that the interaction term ($\beta_6 \times \sigma_{i,t-1}$) captures. Hence, the case of Singapore (as well as Brazil, Chile, Colombia, Philippines, and South Korea, in column two) shows that exchange rate shocks can significantly reduce South-South trade growth. As discussed in section 2.1, to overcome such negative effects of exchange rate shocks, several emerging countries are currently beginning to use their own currencies rather than hard currencies when they trade with each other.

Should we look at the importance of trade with the South for emerging economies from a regional stand point, we observe significant positive effects for almost all East and South East Asian countries including India, Indonesia, Malaysia, Pakistan, South Korea, and Thailand, which are considered as the engine of growth in the world economy. Similarly, for the Latin American countries positive effects of trade with South are reported for Argentina, Brazil, and Columbia. In the case of MENA, the two largest NICs, Egypt and Turkey both display a positive response to South-South trade. For the remaining countries, we observe that trade with South under exchange rate uncertainty does not have an additional impact on trade growth. These findings provide reasonable support to the view that trade with South can further enhance growth patterns of emerging economies.

4.2 Augmenting the Model with Financial Depth

We next augment our basic model by introducing a control variable for the level of financial development ($Credit$) of the exporting country. Here we examine two different models. In the first case, different from Equation (1), we introduce $Credit$ on its own and

in conjunction with exchange rate uncertainty as depicted in Equation (2). In our final model, we allow the affect of *Credit* to differ between South and North by interacting these two terms with South as shown in Equation (3). These models allow us to test the claim that financial depth would have a mitigating impact on the linkages between exchange rate uncertainty and trade flows as Aghion et al. (2009) suggests. Additionally, we investigate if financial depth enhances trade growth.

4.2.1 Case 1: The Role of Financial Depth

Table 4 presents the results for Equation (2) where we augment our basic model with *Credit* and the interaction of *Credit* with exchange rate uncertainty. Inspecting columns 1 and 2 we see that exchange rate uncertainty affects trade flows of 17 out of 28 countries. In the case of South-South trade we find that the median effect is negative (8 out of 13 cases) with an impact factor of -0.048, which is economically and statistically significant. On the other hand, in South-North trade we encounter an even number of negative and positive (7 *versus* 7) cases with a median impact factor of 0.019. Of the 17 cases, seven countries respond to exchange rate uncertainty only in one direction—three negative cases for South-South, and two positive and two negative cases for South-North—and the rest responds in both directions (five positive and five negative cases). The findings using the augmented model also help explain the heterogenous results in previous research on uncertainty-trade relationship. Different from Table 3, once we control for the level of financial development, we now discover that exchange rate uncertainty significantly affects export growth of Argentina, China, Hong Kong, India, Paraguay, and Singapore, in at least one direction. Also, in contrast to our earlier findings the unidirectional effects of uncertainty disappears for Mexico, Philippines, South Korea, and Uruguay.

Insert Table 4 Here

Column 3 presents the total impact of $Credit$ on trade growth. To determine the overall effect of credit on trade flows we test the joint hypothesis that $(\beta_7 + \beta_8 \times \sigma_{i,t-1})$ is equal to zero at the mean value of exchange rate uncertainty $(\sigma_{i,t-1})$. We find that the total effect is positive for 6 countries including Argentina, Brazil, Paraguay, Philippines, Syria, and Venezuela. Surprisingly, the effect is negative for 7 countries including Colombia, Indonesia, Mexico, Morocco, Singapore, South Korea, and Turkey. When we take a step back and consider the sign and the size of the interaction term between $Credit$ and exchange rate uncertainty, we observe that the total impact of these countries yield a negative sign due to the presence of a large negative coefficient on the interaction term. This shows that exchange rate shocks can annul or negate the positive effects of financial depth on export growth. It is possible that the adverse effects of exchange rate uncertainty in these emerging economies are amplified due to the existence of intermediate levels of financial development rather than fully operational financial markets, which make them more exposed to exchange rate shocks and credit market failures (Joyce and Nabar, 2009 and Aysun amd Honig, 2011).

Finally, we concentrate on the impact of trade with South. Similar to our findings in the benchmark model, we see that trade with South has economically and statistically significant manufactures export enhancing effects for emerging economies (with the median point estimate being 0.057). We now find that there are 11 cases where trade with South has a significantly positive effect on export growth. There are two countries (Singapore and Syria) whose overall trade growth is negatively affected as they trade with the South. As in the previous case (see the discussion for the role of trade flows to South for results in Table 3) the effect of South-South trade is negative for Singapore due to the presence of a negative exchange rate shock.

4.2.2 Case 2: The Role of Financial Depth for North and South

Table 5 presents our results for Equation (3) where we differentiate the total effects of real exchange rate uncertainty and financial depth on trade flows towards North and South. We start our investigation inspecting the impact of exchange rate uncertainty on trade flows. Looking at Columns 1 and 2, we see that exchange rate uncertainty affects exports of 19 (12 negative and 7 positive) out of 28 countries including Egypt, Jordan, Syria, Turkey, Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Venezuela, China, India, Indonesia, Pakistan, Philippines, Singapore, and Thailand. Similar to Tables 3 and 4, for few countries uncertainty affects trade flows both to North and South simultaneously (three positive, three negative, and one with opposite signs) while in others the effect is either for North (four negative, three positive) or South (four negative, two positive). When we consider South-South and South-North trade, we find that the median effect is negative; for the South-South trade there are 8 negative *versus* 4 positive cases (with a median impact factor of -0.054) and for the South-North trade there are 7 negative *versus* 6 positive cases (with a median impact factor of -0.043). Given these results presented in Table 5, it appears that exchange rate uncertainty exerts a broader impact on trade flows of emerging economies in comparison to those shown in Tables 3 and 4. Furthermore, these results further underline our previous findings that both the direction of trade and the level of financial development matters under exchange rate uncertainty.

Insert Table 5 Here

Turning to the effect of financial development, in Columns 3 and 4, we provide information on the effect of *Credit* on trade flows when the country is trading with the

North or South. To determine the effect of financial depth on trade with the North and South we test the significance of $(\beta_7 + \beta_8 \times \sigma_{i,t-1})$ and $(\beta_7 + \beta_8 \times \sigma_{i,t-1} + \beta_9 \times South_j + \beta_{10} \times South_j \times \sigma_{i,t-1})$ at the mean value of exchange rate uncertainty. Overall we find that there are 15 significant cases where trade credit affects trade flows (for one country the effect is in opposite directions for South-South and South-North trade). Of these 15 cases, 9 countries experience a positive impact on their trade growth as financial depth increases, yet 7 countries experience a negative effect. In particular, Column (3) shows that the total effect of financial depth on trade with North is positive for 8 countries (Syria, Argentina, Brazil, Costa Rica, Mexico, Paraguay, China, and Philippines) yet for 5 countries (Morocco, Turkey, Columbia, Indonesia and Singapore) we find that the effect is negative, rendering a reduction in export growth. Column (4) presents the overall effect of *Credit* on trade flows towards South and shows that only 3 countries (Indonesia, Mexico, and South Korea) experience a reduction in their exports whereas 5 countries (Syria, Argentina, Brazil, Philippines and Venezuela) enjoy an increase in their export growth. Here, too, the negative effects of financial depth on trade flow is mostly a consequence of adverse exchange rate shocks which is captured by the interaction terms.[10] Overall, the point estimates suggest that a one percentage point increase in *Credit* growth leads to 0.4 and 0.3 percentage points increase in South-North and South-South export growth for the median country, respectively.

The last column of Table 5 depicts the impact of *South* on trade flows. Similar to our findings in the previous models, we find that South-South trade has a trade enhancing effect for emerging economies. We find that there are 12 cases where trading with the South significantly affects export growth. For 10 countries (Turkey, Argentina, Brazil, Colombia, Costa Rica, India, Malaysia, Pakistan, South Korea and Thailand)

[10]The range of coefficient estimates for β_7 is (-12.35, 3.10) in Table 4, and (-6.72, 9.39) in Table 5.

the effect is positive and for 2 countries (Syria and Mexico) the effect is negative.[11] Of the negative cases, Mexico's results are due to the presence of negative interaction terms with uncertainty (i.e. $South \times \sigma$ and $Credit \times South \times \sigma$) despite significantly positive South-South effects ($South$ and $Credit \times South$). The negative effect for Syria can possibly be explained by the presence of regional preferential trade agreements between Syria and other Arab states in the Middle East that cause trade diversion. Last but not least, the parameter estimates of the South-South trade effect is found to be consistent with those from Table 3 and 4, and show that for a median country the effect is 0.068.

4.2.3 Robustness Tests

To check for the robustness of our findings, we repeat the analysis presented in Tables 3-5 using a twice lagged uncertainty measure to capture the effect of variations in exchange rates between the 12th and the 24th months rather than in the first 12 months. Thus, instead of assuming that exchange rate uncertainty shows its effects in one year for all countries, we extended it to two years and found that timing does indeed mater for several countries. In general our results (which are available upon request) are similar to those reported in the text, yet we find that a slightly smaller (and different) set of countries are affected by exchange rate uncertainty. Moreover, we find that while the effect of exchange rate uncertainty disappears for up to nine countries after one year, for some others (i.e. up to five countries) this effect becomes significant in a two year window. These observations suggest that the timing of the volatility effect differs across different countries as it is possible that exchange volatility can take more than a year to affect trade flows for some countries while for some others the impact could be observed more quickly. Hence, the results from this set of regressions that take into account

[11] Singapore dropped from our list due to the presence of a strong multi-collinearity problem.

any delayed effects of exchange rate volatility along with our earlier findings provide a stronger support for the significant effects of exchange rate uncertainty on trade flows. In total, for a maximum of 24 countries (19 within a one year window and an additional 5 countries within a two year window) out of 28 countries exchange rate uncertainty has a significant effect on trade flows in at least one direction—South or North (for more than half of the cases, the effect is unidirectional). Though there are cases where the effect is positive, the median effect of exchange rate uncertainty on trade flows is negative in both South-North and South-South trade.

When we turn to the impact of financial depth on short term export growth, we came up with similar conclusions that financial depth has heterogenous impacts on trade flows. Yet, there are several countries where the total impact of financial depth is found to be negative. Similar to previous results, this mostly results from a significantly negative interaction term with uncertainty. That is to say it is the negative exchange rate shocks, which cannot be absorbed fully by the financial markets that render the coefficient of *Credit* negative. Finally, similar to our results in Tables 3-5, we observe that South-South trade enhances growth in emerging economies.

5 CONCLUSION

In this paper we investigate the effects of exchange rate uncertainty on emerging country manufactured goods exports, and explore four possible sources of heterogeneity among countries in their trade responses to uncertainty. These are: i) the level of economic development of trading countries, ii) the level of financial development, iii) the direction of trade (South-South *versus* South-North), and iv) the structure of trade. In addition, we take into account the path dependency in international trade. We conduct our empirical

analysis using bilateral manufactures exports data from 28 emerging economies to the rest of the world covering the period between 1978-2005, and employ country specific measures of exchange rate uncertainty (generated using the GARCH methodology) and financial development (measured by the ratio of real private credit by deposit money banks and other financial intermediaries to real GDP). We estimate all models by the system GMM method.

Our key findings are as follows. First, we find that exchange rate uncertainty significantly affects trade flows of (up to) 24 out of 28 countries and the median effect is negative. However, we should note that there are several cases where the overall impact of exchange rate uncertainty is positive. Second, our results clearly show that the direction of trade matters under exchange rate uncertainty. Accordingly, in a majority of cases uncertainty affects trade flows only in one direction that is either South-South or South-North. Third, the adverse effects of exchange rate uncertainty are not necessarily mitigated by financial depth, and instead there is evidence that the negative effects can be amplified at intermediate levels of financial development. Fourth, consistent with previous research we also find that financial development enhances developing county manufactured goods exports. However, it turns out that the positive impact of financial depth on trade flows can be reversed under large exchange rate shocks. Last but not the least, we find evidence that trade between emerging economies can further enhance their manufactures export growth.

For future research, further empirical investigation using other developing countries would be useful to understand if our findings are limited with only emerging countries at higher levels of industrial development or are applicable to other less developed countries as well. In addition, replicating this study using more disaggregated manufactured goods

data can help us unveil differences in exchange rate uncertainty responses of low, medium and high skill manufactured goods exports, which have different long term developmental effects.

Appendix

1. Data Definitions and Sources

Exports: The bilateral manufactures exports data are extracted from COMTRADE (and OECD for Turkey). Total merchandize exports series are from WDI database. All raw data are in current U.S. dollars. In converting to real values we used exports price indices (i.e. unit values of aggregate or manufactures exports depending on availability) from IFS, WDI, and the central bank and statistical institutes of South Korea and Turkey.

Exchange rates: The real effective and nominal exchange rates are extracted from IFS, and BIS, and domestic central bank and statistics institutes.

Per capita real GDP: They are extracted from WDI in constant international 2005 prices.

Credit: Private credit by deposit money banks and other financial institutions as a share of GDP. Given the inconsistency between a stock and flow ratio, it is calculated using the following deflation method as in Beck (2002): $100*\frac{0.5*[\frac{Credit_t}{Pe_t}+\frac{Credit_{t-1}}{Pe_{t-1}}]}{GDP_t/Pa_t}$ where $Credit$ is private credit by deposit money banks and other financial institutions to the private sector, Pe is end-of period CPI and Pa is average annual CPI, and GDP is in local currency. Raw data are extracted from the electronic version of the IMF's International Financial Statistics (IFS).

Population and Urbanization rates (POP and Urban) are extracted from WDI.

2. Hansen Test of Overidentifying Restrictions

Insert Table 6 Here

3. Difference-in-Hansen Test of Exogeneity of Instruments

Insert Table 7 Here

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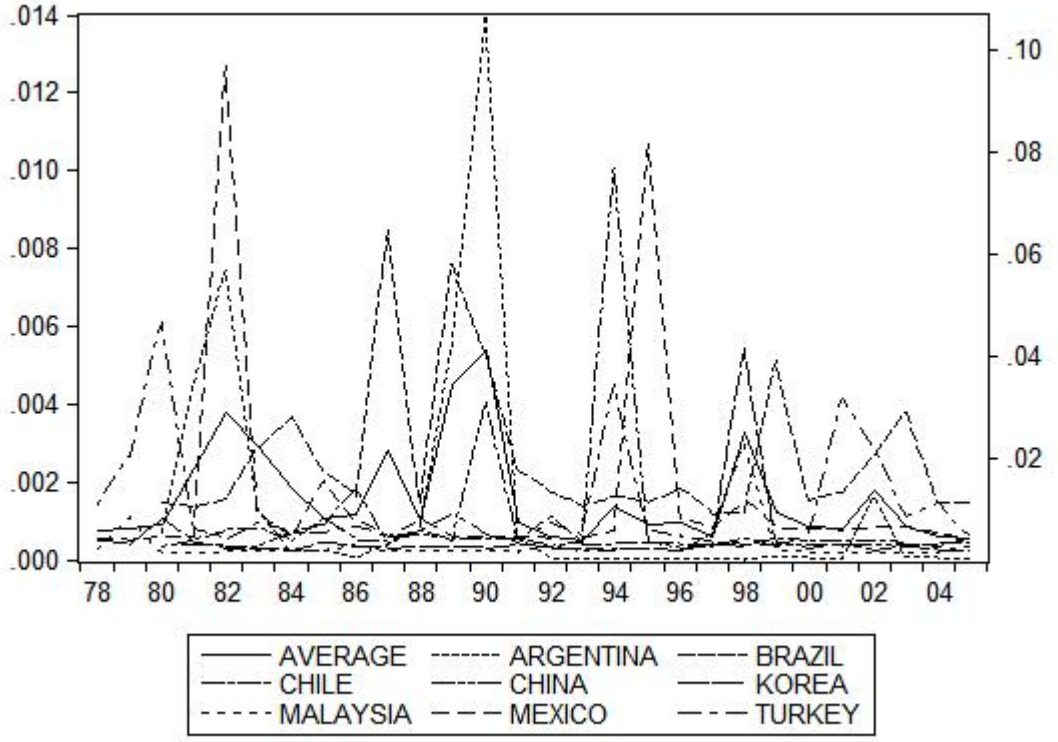

Figure 1: Exchange Rate Uncertainty for Subset of Countries, 1978-2005

Notes: *Average* refers to the average annual real exchange rate uncertainty of all 28 countries. Right axis refers to the case of Argentina.

Table 1: Summary Statistics

	Real Export Growth (%)					
	Total	*North*	*South*	*Numberof Partners*	*Obs*	*Years*
Algeria	8.43	-2.33	14.95	126	775	80-04
Argentina	4.14	0.55	5.30	194	2,138	80-05
Bolivia	10.16	9.94	10.33	124	911	80-05
Brazil	7.35	5.18	7.72	219	3,463	83-05
Chile	8.65	15.01	6.36	187	1,823	83-05
China	20.68	24.68	20.06	214	3,338	87-05
Colombia	8.70	5.84	9.50	215	2,650	78-05
Costa Rica	11.58	19.61	8.72	154	1,362	86-05
Ecuador	9.58	11.58	8.51	156	1,290	80-05
Egypt	13.27	9.28	14.35	194	2,483	81-05
Hong Kong	7.36	9.40	7.02	201	4,317	78-05
India	13.22	10.19	13.70	224	4,608	78-05
Indonesia	23.38	19.39	24.24	217	3,083	79-05
Jordan	10.74	11.84	7.67	167	1,861	81-05
Malaysia	16.88	13.05	17.56	225	3,947	78-05
Mexico	12.12	11.28	12.32	217	2,370	86-05
Morocco	13.31	11.99	13.56	183	2,495	78-05
Pakistan	12.06	9.80	12.48	213	3,405	82-05
Paraguay	4.66	-3.11	9.65	115	777	83-05
Philippines	7.77	6.31	8.13	210	2,983	81-05
Singapore	9.90	12.28	9.38	220	3,266	79-05
South Korea	14.71	11.98	15.15	226	4,386	78-05
Syria	-4.25	4.35	-7.64	145	516	95-05
Thailand	18.72	14.44	19.47	223	4,254	78-05
Tunisia	10.60	9.67	10.90	184	2,148	80-05
Turkey	22.45	22.23	22.52	219	3,382	78-05
Uruguay	7.48	-0.22	10.88	169	1,572	83-05
Venezuela	3.22	-0.36	4.46	161	1,692	83-05

Notes: Total, North, and South refer to the real manufactures export growth of sample countries to the world, North, and South, respectively. Number of partners refer to the number of trading partners in the sample.

Table 2: Summary Statistics

	X/GDP	$X/Trade$	N/X	S/X	$RGDPC$	$Credit$	σ	Pop	$Urban$
Algeria	0.5	2.0	58.4	41.6	5,517	31.8	0.0010	26	53.5
Argentina	3.1	28.8	35.1	64.9	10,160	16.5	0.0114	34	87.6
Bolivia	4.0	25.7	76.6	23.4	2,753	32.3	0.0347	7	56.4
Brazil	4.9	52.8	55.6	44.4	6,880	49.2	0.0028	159	77.2
Chile	9.7	39.6	62.6	37.4	8,950	57.7	0.0005	14	84.5
China	16.9	80.5	47.6	52.4	2,980	98.8	0.0012	1,210	32.4
Colombia	3.3	26.6	39.2	60.8	5,430	27.6	0.0007	34	68.3
Costa Rica	11.9	38.1	53.9	46.1	7,265	17.9	0.0002	4	55.2
Ecuador	1.2	5.3	23.7	76.3	4,553	22.2	0.0024	11	55.9
Egypt	2.1	28.9	57.3	42.7	3,608	38.1	0.0027	59	43.2
Hong Kong	89.8	84.1	53.0	47.0	21,675	147.7	0.0002	6	97.1
India	4.7	64.6	54.3	45.7	1,944	24.6	0.0003	875	25.8
Indonesia	9.5	33.7	52.7	47.3	3,071	28.1	0.0039	183	33.5
Jordan	10.2	44.2	21.1	78.9	4,128	66.7	0.0003	4	73.2
Malaysia	42.5	53.2	58.2	41.8	7,773	95.3	0.0004	19	52.8
Mexico	15.1	66.1	91.9	8.1	7,275	18.7	0.0013	91	73.2
Morocco	7.8	45.9	65.7	34.3	3,534	35.3	0.0002	25	48.6
Pakistan	9.4	72.9	63.0	37.0	2,254	23.3	0.0003	119	31.5
Paraguay	1.7	12.5	44.6	55.4	5,029	20.3	0.0018	5	51.3
Philippines	17.4	52.8	72.4	27.6	3,331	34.1	0.0008	65	50.9
Singapore	94.7	65.8	48.5	51.5	20,970	98.7	0.0001	3	100.0
South Korea	24.1	82.9	58.7	41.3	10,405	62.3	0.0005	43	71.5
Syria	2.5	9.0	28.0	72.0	1,999	9.2	0.0006	17	51.6
Thailand	20.4	54.5	60.7	39.3	4,888	84.1	0.0004	55	29.4
Tunisia	16.4	56.9	74.6	25.4	5,653	60.0	0.0002	8	58.9
Turkey	6.3	61.9	62.9	37.1	4,727	15.4	0.0013	58	57.6
Uruguay	6.2	41.2	33.4	66.6	9,036	33.6	0.0010	3	89.8
Venezuela	3.7	13.8	56.5	43.5	7,571	24.4	0.0064	22	86.5

Notes: X/GDP and $X/Trade$ refer to the share of manufactures exports in GDP and total merchandise exports of country i, N/X and S/X refer to the share of manufactures exports to the North and South in total manufactures exports, respectively. $RGDPC$ is average real GDP per capita in 2005 international prices for the period analyzed for country i, $Credit$ is the share of real private credit by deposit money banks and other financial institutions to real GDP, $Sigma$ is the exchange rate uncertainty, Pop is total population in millions, $Urban$ is the percentage share of urban population.

Table 3: Basic Model: Effects of Exchange Rate Uncertainty

	σ_{North}	σ_{South}	$South$	$\#ofInst.$	$\#ofGroups/Obs$
East and South East Asian Countries					
China	-0.036	-0.020	-0.008	42	186/2825
Hong Kong	0.002	0.004	-0.011	56	177/3777
India	-0.044***	0.001	0.058***	101	185/3804
Indonesia	0.221***	0.245***	0.070**	92	185/2601
Malaysia	-0.008	0.005	0.072***	50	183/3278
Pakistan	-0.032**	-0.074***	0.054**	48	172/2905
Philippines	-0.012	-0.080**	0.017	79	164/2449
Singapore	0.047*	0.009	-0.034*	53	178/2742
South Korea	0.003	-0.028*	0.028*	52	184/3709
Thailand	0.022	0.022	0.084***	52	182/3588
Latin American Countries					
Argentina	0.039	0.010	0.049**	93	180/1815
Bolivia	0.021	0.099	0.073	73	64/775
Brazil	-0.009	-0.056***	0.036***	64	177/2942
Chile	-0.009	-0.072**	0.0005	81	126/1535
Colombia	-0.022	-0.048**	0.077***	56	137/2140
Costa Rica	0.212*	-0.003	-0.008	36	97/1128
Ecuador	-0.162**	-0.111*	0.012	52	94/1062
Mexico	0.139***	0.024	0.010	52	153/1936
Paraguay	0.192**	0.164	0.093	46	57/652
Uruguay	-0.036	0.062*	0.038	83	115/1308
Venezuela	0.132*	0.118**	0.031	67	112/1410
MENA Countries					
Algeria	0.150	0.104	-0.071	46	69/545
Egypt	-0.316***	-0.252***	0.115***	70	154/2048
Jordan	-0.114	-0.106	0.077	71	127/1525
Morocco	0.011	0.027	0.0002	56	134/2018
Syria	0.482***	0.443***	-0.188	33	90/348
Tunisia	-0.031	0.00004	-0.001	73	125/1751
Turkey	-0.058**	0.034	0.060*	80	180/2875
Mean	0.068	0.012	0.056		
Median	0.089	-0.052	0.059		

Notes: σ_{North} and σ_{South} refer to the impact factor of exchange rate uncertainty in South-North and South-South trade, respectively. It is measured as the joint effect of one standard deviation increase in σ on bilateral exports growth. *South* refer to the joint effect of South-South trade. # of Inst. and # of Groups/Obs refer to the number of instruments, and the number of groups and observations in each estimation. Mean and Median are given only for the statistically significant coefficient estimates. *, **, and *** refer to $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively.

Table 4: The Role of Financial Depth

	σ_{North}	σ_{South}	$Credit$	$South$	$\#ofInst.$	$\#ofGroups/Obs$
East and South East Asian Countries						
China	-0.101***	-0.093**	0.272	-0.008	44	186/2825
Hong Kong	-0.021*	-0.016	0.297	-0.023	39	177/2328
India	-0.099***	-0.052*	-0.259	0.057***	103	185/3804
Indonesia	0.088**	0.108***	-0.249*	0.064**	94	185/2601
Malaysia	0.092	0.104	-0.345	0.072***	52	183/3278
Pakistan	-0.046***	-0.081***	-0.259	0.056***	50	172/2905
Philippines	0.054	-0.017	0.505***	0.010	81	164/24449
Singapore	0.067**	0.027*	-0.679***	-0.032*	55	178/2742
South Korea	0.160	0.126	-0.851**	0.029*	54	184/3709
Thailand	-0.014	-0.016	0.039	0.086***	54	182/3588
Latin American Countries						
Argentina	0.058**	0.022	0.440***	0.051**	95	130/1815
Bolivia	-0.136	-0.099	1.106	0.057	75	64/775
Brazil	0.016	-0.034**	0.181***	0.038***	66	177/2942
Chile	-0.007	-0.070**	0.211	0.006	83	126/1535
Colombia	-0.022	-0.048*	-1.004*	0.077***	58	137/2140
Costa Rica	0.210*	-0.004	0.584	-0.009	38	97/1128
Ecuador	-0.154*	-0.110*	-0.253	0.009	54	94/1062
Mexico	0.047	-0.064	-0.643**	0.009	54	153/1936
Paraguay	0.269**	0.249*	0.751*	0.082	48	57/652
Uruguay	-0.074	0.021	0.040	0.031	85	115/1308
Venezuela	0.220*	0.193*	0.844**	0.018	69	112/1410
MENA Countries						
Algeria	0.140	0.136	0.377	-0.058	48	69/545
Egypt	-0.446***	-0.382***	0.475	0.119***	72	154/2048
Jordan	-0.158	-0.148	-0.014	0.080	73	127/1525
Morocco	0.065	0.085	-0.483*	0.002	58	134/2018
Syria	0.268**	0.256*	3.358***	-0.219*	35	90/348
Tunisia	-0.107	-0.062	0.036	-0.001	75	125/1751
Turkey	-0.124***	-0.036	-0.398**	0.063*	82	180/2875
Mean	0.014	-0.003	0.136	0.035		
Median	0.019	-0.048	-0.249	0.057		

Notes: *Credit* refers to the joint effect of *Credit*. For other variable definitions please refer to Table 3.

Table 5: The Role of Financial Depth for Trade with North and South

	σ_{North}	σ_{South}	$Credit$ $(North)$	$Credit$ $(South)$	$South$	$\#of$ $Inst.$	$\#of$ $Groups/Obs$
East and South East Asian Countries							
China	-0.138***	-0.092**	1.366**	0.118	0.015	46	186/2825
Hong Kong	-0.020	-0.016	0.175	0.316	-0.022	41	177/2328
India	-0.130***	-0.042	-0.475	-0.165	0.072***	105	185/3804
Indonesia	0.114**	0.077*	-0.234*	-0.273*	0.003	96	185/2601
Malaysia	-0.061	0.139	0.177	-0.455	0.141**	54	183/3278
Pakistan	-0.047***	-0.080***	0.208	-0.411	0.063***	52	172/2905
Philippines	0.074*	-0.024	0.404***	0.547**	-0.001	83	164/2449
Singapore	0.064**	Absent	-0.611***	Absent	Absent	57	178/2742
South Korea	-0.194	0.206	-0.560	-0.918**	0.137**	56	184/3709
Thailand	-0.043*	-0.007	0.047	0.037	0.089***	56	182/3588
Latin American Countries							
Argentina	0.061***	0.021	0.450**	0.427**	0.050**	97	130/1815
Bolivia	-0.110	-0.113	1.220	1.011	0.044	77	64/775
Brazil	0.007	-0.032**	0.110**	0.195***	0.040***	68	177/2942
Chile	-0.010	-0.064*	-0.502	0.471	-0.014	85	126/1535
Colombia	-0.003	-0.054**	-1.473*	-0.855	0.085***	60	137/2140
Costa Rica	0.154	-0.019	1.970**	0.195	0.156**	40	97/1128
Ecuador	-0.156*	-0.109	-0.410	-0.146	0.020	56	94/1062
Mexico	0.484**	-0.222*	1.416*	-1.411***	-0.204**	56	153/1936
Paraguay	0.308***	0.243*	1.206**	0.411	0.052	50	57/652
Uruguay	-0.075	0.030	0.316	-0.046	0.047	87	115/1308
Venezuela	0.125	0.240**	0.074	1.188***	0.101	71	112/1410
MENA Countries							
Algeria	0.116	0.134	0.211	0.446	-0.047	50	69/545
Egypt	-0.456***	-0.364	0.393	0.560	0.136	74	154/2048
Jordan	0.045	-0.226*	0.180	0.030	-0.078	75	127/1525
Morocco	0.103	0.064	-0.833***	-0.250	-0.013	60	134/2018
Syria	0.164	0.312**	3.205**	3.498**	-0.304*	37	90/348
Tunisia	-0.033	-0.088	0.160	-0.070	-0.034	77	125/1751
Turkey	-0.131***	-0.037	-0.659***	-0.328	0.063*	84	180/2875
Mean	0.0003	0.009	0.486	0.407	0.032		
Median	-0.043	-0.054	0.404	0.311	0.068		

Notes: $Credit(North)$ and $Credit(South)$ refer to the joint effect of $Credit$ on South-North and South-South trade, respectively. For other variable definitions please refer to Table 3.

Table 6: The Hansen Test of Overidentifying Restrictions

	Table 3	Table 4	Table 5
East and South East Asian Countries			
China	0.12	0.12	0.07
Hong Kong	0.10	0.17	0.17
India	0.29	0.27	0.27
Indonesia	0.16	0.24	0.17
Malaysia	0.26	0.26	0.27
Pakistan	0.33	0.24	0.22
Philippines	0.20	0.29	0.29
Singapore	0.20	0.20	0.19
South Korea	0.19	0.23	0.22
Thailand	0.17	0.18	0.18
Latin American Countries			
Argentina	0.34	0.38	0.36
Bolivia	0.91	0.89	0.91
Brazil	0.74	0.83	0.83
Chile	0.30	0.26	0.29
Colombia	0.37	0.36	0.35
Costa Rica	0.25	0.21	0.11
Ecuador	0.29	0.23	0.25
Mexico	0.35	0.30	0.31
Paraguay	0.56	0.51	0.46
Uruguay	0.35	0.28	0.56
Venezuela	0.44	0.38	0.38
MENA Countries			
Algeria	0.34	0.51	0.46
Egypt	0.25	0.16	0.15
Jordan	0.35	0.36	0.38
Morocco	0.42	0.45	0.45
Syria	0.16	0.21	0.22
Tunisia	0.26	0.28	0.28
Turkey	0.40	0.37	0.37

Notes: p-values for Hansen test of overidentifying restrictions for Tables 3-5.

Table 7: The Difference-in-Hansen Test of Exogeneity of Instruments

	Table 3	Table 4	Table 5
East and South East Asian Countries			
China	0.49	0.54	0.53
Hong Kong	0.10	0.20	0.18
India	0.72	0.61	0.59
Indonesia	0.77	0.65	0.42
Malaysia	0.64	0.60	0.60
Pakistan	0.30	0.15	0.13
Philippines	0.58	0.72	0.72
Singapore	0.15	0.16	0.27
South Korea	0.01	0.01	0.01
Thailand	0.36	0.37	0.37
Latin American Countries			
Argentina	0.39	0.54	0.45
Bolivia	0.98	0.95	0.98
Brazil	0.79	0.72	0.73
Chile	0.42	0.36	0.47
Colombia	0.50	0.50	0.49
Costa Rica	0.09	0.07	0.03
Ecuador	0.71	0.75	0.74
Mexico	0.39	0.35	0.44
Paraguay	0.61	0.53	0.47
Uruguay	0.44	0.42	0.91
Venezuela	0.18	0.08	0.07
MENA Countries			
Algeria	0.36	0.60	0.54
Egypt	0.87	0.72	0.72
Jordan	0.77	0.77	0.79
Morocco	0.15	0.17	0.17
Syria	0.64	0.80	0.92
Tunisia	0.04	0.03	0.02
Turkey	0.83	0.79	0.77

Notes: P-values for difference-in-Hansen test of exogeneity of GMM instruments for levels in Tables 3-5.