
Monograph:
Caglayan, M., Dahi, O.S. and Demir, F. (2010) Trade Flows, Exchange Rate Uncertainty and Financial Depth: Evidence from 28 Emerging Countries. Working Paper. Department of Economics, University of Sheffield ISSN 1749-8368

Sheffield Economic Research Paper Series 2010011

Sheffield Economic Research Paper Series

SERP Number: 2010011

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May 2010

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Trade Flows, Exchange Rate Uncertainty and Financial Depth: Evidence from 28 Emerging Countries

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May 9, 2010

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Abstract

We investigate the effects of real exchange rate uncertainty and financial depth on manufactures exports from 28 emerging economies to the North and South over 1978–2005. We estimate a dynamic panel model using system GMM approach and show that for the majority of countries in our sample exchange rate uncertainty affects both South-South and South-North trade negatively. Furthermore, for several cases we discover that this effect is unidirectional, that is South-South or South-North. In addition, we find that while financial depth plays a trade-enhancing role, exchange rate shocks can negate this effect. We also show that trade among developing economies is likely to enhance export growth.

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

JEL Classification Numbers: F15; F31; G15; E44; O14

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 based on the specified model, uncertainty measures, sample period, frequency and aggregation level of the data, and the countries considered.

A review of the empirical literature shows that researchers have predominantly focused on developed countries alone in their investigation on the linkages between trade flows and exchange rate variability. Surprisingly, only few researchers used data from developing countries and considered the idea that exchange rate uncertainty may have heterogenous effects on countries with different levels of economic development. Among the few, Baum and Caglayan (2009) and Caglayan and Di (2010) argue that exchange rate uncertainty has little or no effect on export flows of either developed or developing countries. In contrast, Grier and Smallwood (2007), Arize et al. (2000) and Sauer and Bohara (2001) conclude that the impact of exchange rate uncertainty on emerging country exports is negative.

In this paper, we contribute to the existing literature in several distinct ways. 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 (S-S) trade) in comparison to trade flows from developing to developed economies (South-North (S-N) trade). Third, given the recent evidence that financial development significantly affects

the pattern of international trade and economic growth, and that emerging countries heavily depend on their exports for growth, we incorporate information on 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 countries' trade flows. Fourth, we implement a dynamic panel framework and consider the path dependency in international trade flows using the system GMM approach. Last but not least, unlike the previous research, which uses (mostly aggregated) total merchandize exports, we scrutinize the behavior of (bilateral) manufactured goods exports.

We focus on the evolution of manufactures exports for several reasons. To start with, it is widely recognized 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 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, it is important to

investigate the effects of exchange rate uncertainty on emerging country manufactures exports since these sectors depend heavily on external finance yet emerging economies lack the adequate financial depth (Aghion et al. 2009).

To carry out our investigation, we estimate 28 separate dynamic panel models for each of the emerging countries in our dataset and scrutinize their trade flows to the rest of the world. Our investigation covers the period between 1978 and 2005. Several findings emerge in a setting where confounding factors are considered within a dynamic panel framework. First, we find that exchange rate uncertainty significantly affects trade flows of (up to) 23 out of 28 countries, depending on the specified model. Although the median effect of exchange rate uncertainty on trade flows is negative, we find several cases where the effect is positive. Furthermore, we provide evidence that exchange rate uncertainty affects trade flows towards both South and North. However, in several cases, we discover that the effect is unidirectional such that exchange rate uncertainty affects trade flows towards either South or North. These results differ from the earlier research, which showed that exports of emerging economies, to a large extent, are negatively affected from exchange rate uncertainty. Second, we find that financial depth tends to play a trade enhancing role. However, we also observe that the positive impact of financial depth on trade flows can be reversed due to exchange rate shocks. Overall, we find that the net effect of financial development on export growth is significant for up to 15 countries where the median effect is positive. Last but not least, we find evidence that trade between emerging economies further enhances their manufactures export growth.

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 study we address several different areas of research in international economics including: i) the impact of exchange rate movements on trade flows; ii) the role of financial depth in growth and trade; and iii) the determinants of S-S *versus* S-N trade. In what follows below, we present a brief survey on each research area and point out how our investigation links to that literature.

2.1 The Impact of Exchange Rate Uncertainty on Trade Flows

After the breakdown of Bretton-Woods agreement in 1973, it is 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 on the effects of exchange rate volatility on trade flows. Cushman (1983), Kenen and Rodrik (1986), Thursby and Thursby (1987) and Peree and Steinherr (1989), among others, report a nagative effect of exchange rate uncertainty on trade flows, while Koray and Lastrapes (1989), and Gagnon (1993) find insignificant effects. Likewise, Baum, Caglayan and Ozkan (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 bilateral exports.

Overall, the studies above concentrate on data only from developed countries. Recent research by Baum and Caglayan (2009) (using aggregate export flows 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 total merchandize 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 predominantly focused on emerging economies. Most notably, Arize et al. (2000) (using quarterly aggregate exports from 13 developing countries) and Sauer and Bohara (2001) (using annual aggregate exports from 22 developed and 69 developing countries) show that exchange rate uncertainty has a significantly negative effect on emerging country exports. Furthermore, Sauer and Bohara (2001) find that exchange rate volatility significantly reduces exports from emerging economies in Latin America and Africa, but not those in Asia or from industrialized countries.

In this study, different from earlier research we specifically concentrate on bilateral manufactured goods exports from 28 emerging countries (representing 82% of all developing country manufactures exports) to the rest of the world. In addition, unlike most previous research, we take into account the dynamic nature of the data with strong path dependency using a panel framework.

2.2 The Role of Financial Depth

Studies regarding the impact of exchange rate uncertainty on trade flows have neglected the interrelations 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 and sectors 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 extent of financial development also determines the amount of credit availability for international trade. Particularly, the lack of developed financial systems 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, when domestic financial markets are underdeveloped, firms are more likely to suffer from currency mismatch problems as adverse effects of exchange rate shocks are further aggravated (Caballero and Krishnamurthy 2004). In particular, Aghion et al. (2009) present a theoretical model where real exchange rate uncertainty (by inducing excess volatility in profits) exacerbates the negative investment effects of credit market

constraints. As such, exchange rate volatility is expected to be more damaging to firms that have high external finance dependency but located in countries with low levels of financial development. Their empirical investigation shows that exchange rate volatility reduces the productivity growth of manufacturing sectors that require higher liquidity more in countries with lower financial depth.

Given the evidence discussed in the previous two sections, it is apparent that emerging countries face significant challenges due to exchange rate variability and financial constraints in manufactured goods exports. Hence, it is important to investigate the effect of financial depth under exchange rate uncertainty on emerging country trade flows. On the same theme, we also explore whether exchange rate uncertainty affects trade growth more negatively in emerging countries where financial development is weaker.

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 S-S manufactures exports jumped from 2% to 16%. The annual growth rate of real S-S manufactures exports has also been significantly higher than the world average reaching 14% as opposed to 5% for the latter. In this respect, the S-S trade has long been seen 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 S-S trade can reduce the dependence of the South on the expansion of developed country economies—the North. Moreover, the structure of S-S 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).

Most of the theoretical research on exchange rates and S-S 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. Surprisingly, none of the studies on S-S 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 (see Stewart (1987) for an earlier discussion on this issue). 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 reported getting ready for using 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 S-S trade (as opposed to S-N or N-N trade) due to

the presence of low levels of financial market development, and high share of short term liabilities in developing countries.

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, 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, as we concentrate on the impact of exchange rate uncertainty on trade flows of emerging countries, we also explore the differential effects of exchange rate uncertainty on S-S trade *vis-à-vis* S-N trade. 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 explore whether S-S trade (versus S-N) has any differential effects on emerging country exports. Our baseline model takes the following dynamic form:

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

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 income 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_j depict our control variables including the log of population and a measure of urbanization of the trading partners (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 S-S trade different from S-N trade.

Next, we augment our baseline model with a measure of financial depth, $Credit$, 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 form:

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

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:

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

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. Likewise, 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 aggregate real manufactures exports data (ISIC 5-8) from 28 emerging countries, which account for 82% of all developing country manufactures exports to the rest of the world (126-226 countries), and 76% of all S-S exports during 1978-2005. 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. Our investigation ends in 2005 because of data availability issues for most of the countries in our dataset.

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). While choosing these countries in our data set we made sure that each country has: a) the presence of a sufficiently diversified production and export structure, b) at least 10 years of continuous data (to avoid non-random entry and exit bias), and c) regional

representation to avoid sampling bias (for example, Sauer and Bohara (2001) find that exchange rate uncertainty is significant in Latin America and Africa but not in Asia). 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, 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 it is computed from the spot exchange rate and local and US consumer price indices for Egypt, India, Indonesia, Jordan, Syria, and Thailand. 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.

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 exports (in levels) that were below the 1st percentile, and real export growth rates that were below or above the 1st and 99th percentiles. This restriction 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.

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 total real 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 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 (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.

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 range 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 handful of 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 urbanization, reflecting market size, and the degree of urban versus agrarian development.

3.2.1 Generating Exchange Rate Uncertainty

The empirical literature offers a number of competing approaches for the construction of the exchange rate volatility measure 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. We find that GARCH (1,1) provides a good fit for the monthly exchange rate data for all countries in the sample. Given the presence of unit root in the real exchange rate series we computed the GARCH model for each country in our dataset on the log difference of monthly real exchange rate series and used their annual averages in the

regressions as our measure of exchange rate uncertainty. Ideally, it would be preferable to generate a measure of uncertainty based on bilateral real exchange rates for each of the trading parters of the sample countries. However, this was not feasible because of data unavailability as it required monthly bilateral exchange rates and price indexes going back to 1978. Regression results from the GARCH models are available upon request.

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 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, 2009). 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 firm specific effects and the error term. 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 that our instruments are appropriate and there is no second order serial correlation.

4.1 Basic Specification

In this section we first discuss results obtained for equation (1) where we allow trade flows to follow a dynamic framework. 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 S-S trade has any trade enhancing or impeding effect on emerging countries. Given that we run separate panels for each of the countries in our dataset (28 in total), in Table 3 we provide qualitative information (the sign and the significance) on the impact of exchange rate uncertainty on exports to North and South as well as on the importance of trade with South for export growth (the details of all regressions results are available upon request). 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.

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 trade flows towards South, 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). Furthermore, inspecting columns one and two we can see that the effect of uncertainty on trade flows for some countries is only in one direction, S-N or S-S, yet there are a few countries where exchange rate uncertainty affects trade flows in both directions. These findings suggest that the effects of exchange rate uncertainty on developing country exports may very well depend on the direction of trade, that is S-S versus S-N. Overall, while the results provide a general support to the claim that trade flows emanating from emerging countries are negatively effected by exchange rate uncertainty, the evidence is not as strong as earlier research suggests (see, for example, Arize et al. 2000, and Sauer and Bohara, 2001).

The third column of Table 3 allows us to scrutinize whether S-S 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 South enhances (impedes) trade growth of the exporting country. Inspecting column three, we see that S-S trade further enhances trade growth of 11 emerging economies. Only one country, Singapore, experiences a reduction in its trade growth as she 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 S-S trade growth. To overcome such negative effects, emerging countries are currently beginning to use their own currencies rather than a hard currency when they trade with each other. As noted in section 2.1, this is being observed between several

emerging countries.

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 trade response to S-S trade. For the remaining countries, we observe that trade with South under exchange rate uncertainty does not have an additional impact on their trade growth. These findings provide partial support to the view that trade with South can further enhance growth patterns of emerging countries as suggested by several researchers that we discuss in section 2.

4.2 Augmenting the Model with Financial Depth

We next augment our basic model by introducing a control variable on 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 depicts 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. Specifically, we find that the median effect is negative (8 out of 13 cases) for S-S trade. In the case of S-N trade we encounter equal number of negative and positive (7 *versus* 7) cases. Of the 17 cases, seven countries respond to exchange rate uncertainty only in one direction—three negative cases for S-S, and two positive and two negative cases for S-N—and the rest responds in both directions (five positive and five negative cases). Interestingly, we do not find any strong evidence that financial depth mitigates the total impact of uncertainty on trade flows. Nevertheless, this observation does not necessarily indicate a lack of significance of financial development for trade flows of emerging economies.

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 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. In other words, a large negative coefficient on the

interaction term negates the effects of financial depth on trade flows. These findings can be explained by the changes in long term business structure of companies that engage in trade, which later reflects on their export patterns as countries experience large shocks rather than a lack of finance. For instance the significant downturn in trade flows in 2008-2009 are explained by "falling demand rather than a lack of trade finance" according to IMF (2009 p.8).

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 significant export enhancing effects for emerging economies. 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 S-S 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 depicts 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 to North and South at the same time (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 S-S and S-N trade, we find that the median effect is negative; for the S-S trade there are 8 negative *versus* 4 positive cases and for the S-N trade there are 7 negative *versus* 6 positive cases. Similar to our earlier observations, we do not find that financial depth mitigates the adverse effects of exchange rate uncertainty on trade flows. Furthermore, exchange rate uncertainty seems to have a broader impact on trade flows of emerging economies in comparison to that shown in Tables 3 and 4, and the effect is negative for both S-S and S-N trade flows.

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 $(\beta_7 + \beta_9 \times \sigma_{i,t-1})$ and $(\beta_7 + \beta_8 \times South_j + \beta_9 \times \sigma_{i,t-1} + \beta_{10} \times South_j \times \sigma_{i,t-1})$ at the mean value of exchange rate uncertainty. Overall we find that there are 15 significant cases where trade credit is having an impact on trade flows (for one country the effect is in opposite directions for S-S and S-N 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 enhances trade 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 it leads to a reduction in export growth. Column (4) provides 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. It is also possible that the adverse effects of exchange rate uncertainty is exacerbated due to the existence of intermediate levels of financial development in those emerging countries rather than fully operational financial markets. As shocks alter the long term business structure of exporting companies and affect the consumer demand, semi-developed financial markets may not be sufficient to reverse the adverse impact of exchange rate uncertainty on trade flows.

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 S-S trade has a trade enhancing effect for emerging economies. We find that there are 12 cases where trade South significantly affects export growth. For 10 countries (Turkey, Argentina, Brazil, Colombia, Costa Rica, India, Malaysia, Pakistan, South Korea and Thailand) the effect is positive and for 2 countries (Syria and Mexico) the effect is negative (Singapore dropped from our list due to the presence of a strong multi-collinearity problem). Of the negative cases, Mexico's results from a strongly negative interaction of uncertainty with a positive S-S effect. 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.

4.2.3 Robustness Tests

To check for the robustness of our findings, we repeat the analysis presented in Tables 3-5 using a further 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. In general our results are similar to those reported in the text, yet we find that a slightly

smaller (and different) set of countries are effected by exchange rate uncertainty. These observations are meaningful 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 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, we see that there are 23 countries (out of 28) where exchange rate uncertainty has a significant effect on trade flows in at least one direction—South or North. Though there are cases where the effect is positive, the median effect of exchange rate uncertainty on trade flows is negative in both S-N and S-S trade.

When we turn to the impact of financial depth on short term trade growth, we came up with similar conclusions that financial depth has mixed impact on trade flows. We find that the net effect is positive for a total of 9 countries in S-N trade and 7 countries in S-S trade. 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. The other cases where the coefficient of *Credit* assumes a negative sign may be explained by the fact that financial markets in these countries have not matured sufficiently. The reason why we find mixed and not very strong results may also be due to the fact that the financial depth measure we use is too broad and therefore we cannot capture the full impact of credit provided to firms involved in international trade. But overall it is the negative exchange rate shocks, which cannot be absorbed fully by the financial markets that render the coefficient of *Credit* negative. Last but not least, we observe that international trade between emerging markets appear to be enhancing growth and results are similar to those in Tables 3-5.

5 CONCLUSION

In this paper we investigate the impact of exchange rate uncertainty on trade flows of 28 emerging economies taking into account the role of financial depth, and the extent of industrialization of their trade partners; North *versus* South. We construct 28 separate panels for trade flows emanating from each emerging country in our dataset to the rest of the world. Each panel spans the period during 1978-2005. Using GARCH methodology, we compute country specific measures of exchange rate uncertainty. We use the ratio of real private credit by deposit money banks and other financial intermediaries to real GDP as a proxy for financial depth. All models are estimated by the system GMM method.

Our investigation shows that exchange rate uncertainty has a significant impact on trade flows of emerging countries. However, our results differ from the earlier research which conclude that exchange rate uncertainty mainly has a negative impact on trade flows of developing countries. We find that although the impact of exchange rate uncertainty on trade flows can be positive, the median effect is negative for trade flows to both North and South. In addition, we also find that in several cases uncertainty affects trade flows only in one direction, S-S or S-N. Furthermore, the adverse effects of exchange rate uncertainty are not necessarily mitigated by financial depth.

When we turn to inspect the overall impact of financial depth on trade flows, we find that for several countries the effect is positive while there are a few cases where the effect is negative. We observe that the negative effect is mainly due to the presence of strong exchange rate shocks that affect the country. Yet, it would be useful to further investigate the role of financial depth on trade flows and how it interacts with exchange rate volatility using more disaggregated data. Finally, when we investigate whether S-S

trade, compared to S-N trade promote manufactured good trade for emerging countries, we find evidence that trade among emerging economies enhances export growth significantly for our sample of countries. Hence, different from the presumption that emerging countries enjoy growth in their exports as they interact more with the North, we provide empirical evidence that trade among emerging countries can promote further trade growth in these economies. Further empirical investigation using other emerging countries would be useful to understand if trade between developing countries promotes more trade, or whether our findings are limited with only emerging countries at higher levels of industrial development.

ACKNOWLEDGMENTS

We thank James Boyce, Amitava K. Dutt, Kevin Grier, Jiandong Ju, Jeffrey B. Nugent and the session participants at the Eastern Economic Association 2010 meeting in Philadelphia for their comments and suggestions. For financial support, we thank the Office of the Vice President for Research, the Research Council, and the College of Arts and Sciences at the University of Oklahoma, and the Dean of Faculty Office and the School of Social Science at Hampshire College. The usual disclaimer applies.

Appendix

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.

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Table 1: Summary Statistics

	Real Export Growth (%)					
	Total	North	South	Number of Partners	Obs	Dates
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	80-05
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

Note:Total, North and South refer to the real 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	0.003*	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

Note: 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

MENA Countries					
	σ_{North}	σ_{South}	*South*	# of Inst.	# of Groups/Obs
Algeria	none	none	none	46	69/545
Egypt	neg***	neg***	pos***	70	154/2048
Jordan	none	none	none	71	127/1525
Morocco	none	none	none	56	134/2018
Syria	pos***	pos***	none	33	90/348
Tunisia	none	none	none	73	125/1751
Turkey	neg**	none	pos*	80	180/2875
Latin American Countries					
	σ_{North}	σ_{South}	South	# of Inst.	# of Groups/Obs
Argentina	none	none	pos**	93	180/1815
Bolivia	none	none	none	73	64/775
Brazil	none	neg***	pos***	64	177/2942
Chile	none	neg**	none	81	126/1535
Colombia	none	neg**	pos***	56	137/2140
Costa Rica	pos*	none	none	36	97/1128
Ecuador	neg**	neg*	none	52	94/1062
Mexico	pos***	none	none	52	153/1936
Paraguay	pos**	none	none	46	57/652
Uruguay	none	pos*	none	83	115/1308
Venezuela	pos*	pos**	none	67	112/1410
East and South East Asian Countries					
	σ_{North}	σ_{South}	South	# of Inst.	# of Groups/Obs
China	none	none	none	42	186/2825
Hong Kong	none	none	none	56	177/3777
India	neg***	none	pos***	101	185/3804
Indonesia	pos***	pos***	pos**	92	185/2601
Malaysia	none	none	pos***	50	183/3278
Pakistan	neg**	neg***	pos**	48	172/2905
Philippines	none	neg**	none	79	164/2470
Singapore	pos*	none	neg*	53	178/2742
South Korea	none	neg*	pos*	52	184/3709
Thailand	none	none	pos***	52	182/3588

Note: σ_{North} and σ_{South} refer to the joint effect of exchange rate uncertainty on S-N and S-S trade, respectively. *South* refer to the joint effect of S-S trade. # of Inst. and # of Groups/Obs refer to the number of instruments, and the number of groups and observations in each estimation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: The Role of Financial Depth

MENA Countries						
	σ_{North}	σ_{South}	$Credit(tot)$	$South$	# of Inst.	# of Groups/Obs
Algeria	none	none	none	none	48	69/545
Egypt	neg***	neg***	none	pos***	72	154/2048
Jordan	none	none	none	none	73	127/1525
Morocco	none	none	neg*	none	58	134/2018
Syria	pos**	pos*	pos***	neg*	35	90/348
Tunisia	none	none	none	none	75	125/1751
Turkey	neg***	none	neg**	pos*	82	180/2875
Latin American Countries						
	σ_{North}	σ_{South}	$Credit(tot)$	$South$	# of Inst.	# of Groups/Obs
Argentina	pos**	none	pos***	pos**	95	130/1815
Bolivia	none	none	none	none	75	64/775
Brazil	none	neg**	pos***	pos***	66	177/2942
Chile	none	neg**	none	none	83	126/1535
Colombia	none	neg*	neg*	pos***	58	137/2140
Costa Rica	pos*	none	none	none	38	97/1128
Ecuador	neg*	neg*	none	none	54	94/1062
Mexico	none	none	neg**	none	54	153/1936
Paraguay	pos**	pos*	pos*	none	48	57/652
Uruguay	none	none	none	none	85	115/1308
Venezuela	pos*	pos*	pos**	none	69	112/1410
East and South East Asian Countries						
	σ_{North}	σ_{South}	$Credit(tot)$	$South$	# of Inst.	# of Groups/Obs
China	neg***	neg**	none	none	44	186/2825
Hong Kong	neg*	none	none	none	39	177/2328
India	neg***	neg*	none	pos***	103	185/3804
Indonesia	pos**	pos***	neg*	pos**	94	185/2601
Malaysia	none	none	none	pos***	52	183/3278
Pakistan	neg***	neg***	none	pos***	50	172/2905
Philippines	none	none	pos***	none	81	164/2470
Singapore	pos**	pos*	neg***	neg*	55	178/2742
South Korea	none	none	neg**	pos*	54	184/3709
Thailand	none	none	none	pos***	54	182/3588

Note:$Credit(tot)$ refers to the joint effect of $Credit$. * p < 0.10, ** p < 0.05, *** p < 0.01. For other variable definitions please refer to Table 3.

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

MENA Countries							
	σ_N	σ_S	$Credit(Ntot)$	$Credit(Stot)$	$South$	# of Inst.	# of Groups/Obs
Algeria	none	none	none	none	none	50	69/545
Egypt	neg***	neg**	none	none	none	74	154/2048
Jordan	none	neg*	none	none	none	75	127/1525
Morocco	none	none	neg***	none	none	60	134/2018
Syria	none	pos**	pos**	pos**	neg*	37	90/348
Tunisia	none	none	none	none	none	77	125/1751
Turkey	neg***	none	neg***	none	pos*	84	180/2875
Latin American Countries							
	σ_N	σ_S	$Credit(Ntot)$	$Credit(Stot)$	$South$	# of Inst.	# of Groups/Obs
Argentina	pos***	none	pos**	pos**	pos**	97	130/1815
Bolivia	none	none	none	none	none	77	64/775
Brazil	none	neg**	pos**	pos***	pos***	68	177/2942
Chile	none	neg*	none	none	none	85	126/1535
Colombia	none	neg**	neg*	none	pos***	60	137/2140
Costa Rika	none	none	pos**	none	pos**	40	97/1128
Ecuador	neg*	none	none	none	none	56	94/1062
Mexico	pos**	neg*	pos*	neg***	neg**	56	153/1936
Paraguay	pos***	pos*	pos**	none	none	50	57/652
Uruguay	none	none	none	none	none	87	115/1308
Venezuela	none	pos**	none	pos***	none	71	112/1410
East and South East Asian Countries							
	σ_N	σ_S	$Cerdit(Ntot)$	$Credit(Stot)$	$South$	# of Inst.	# of Groups/Obs
China	neg***	neg**	pos**	none	none	46	186/2825
Hong Kong	none	none	none	none	none	41	177/2328
India	neg***	none	none	none	pos***	105	185/3804
Indonesia	pos**	pos*	neg*	neg*	none	96	185/2601
Malaysia	none	none	none	none	pos**	54	183/3278
Pakistan	neg***	neg***	none	none	pos***	52	172/2905
Philippines	pos*	none	pos***	pos**	none	83	164/2470
Singapore	pos**	absent	neg***	absent	absent	57	178/2742
South Korea	none	none	none	neg**	pos**	56	184/3709
Thailand	neg*	none	none	none	pos***	56	182/3588

Note:$Credit(Ntot)$ and $Credit(Stot)$ refer to the joint effect of $Credit$ on S-N and S-S trade, respectively.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. For other variable definitions please refer to Table 3.