Asymmetric Effects of Financial Development on South-South and South-North Trade: Panel Data Evidence from Emerging Markets

Demir, Firat and Dahi, Omar S.

University of Oklahoma, Hampshire College

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Asymmetric Effects of Financial Development on South-South and South-North Trade: Panel Data Evidence from Emerging Markets[1]

Fırat Demir[a,2]

[a]Department of Economics, University of Oklahoma

Hester Hall, 729 Elm Avenue

Norman, Oklahoma, USA 73019

Omar S. Dahi[b]

[b]School of Social Science, Hampshire College

Amherst, Massachusetts, USA 01002

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Abstract

Using bilateral trade data in total and technology-and-skill-intensive manufactured goods for 28 developing countries that account for 82% of all developing country manufactures exports between 1978 and 2005, this paper explores the effects of financial development on the pattern of specialization in South-South and South-North trade. The empirical results using dynamic panel regressions and comprehensive sensitivity tests suggest that financial development in the South has an economically and statistically significant positive effect on the share of total and technology-and-skill-intensive manufactures exports in GDP, and total exports in South-South trade. In contrast, no such significant or robust effect of financial development is found in South-North trade. Overall, the positive effect of financial development is found to be asymmetric favoring South-South significantly more than South-North trade. In addition, financial development is found to be increasing technology-and-skill-intensive manufactured goods exports significantly more than total manufactured or merchandise goods exports.

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[2] Corresponding author. Tel: +1 405 325 5844, fax: +1 405 325 5842, e-mail: fdemir@ou.edu

1. Introduction

In recent years a growing body of research has pointed out the level of financial development as a source of comparative advantage in international trade (Kletzer and Bardhan, 1987; Demirguc-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998; Beck, 2002, 2003; Svaleryd and Vlachos, 2005). Accordingly, industries and sectors that are more dependent on external finance are shown to 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 (R&D), higher working capital and value-added in production (Kletzer and Bardhan, 1987; Rajan and Zingales, 1998; Beck, 2002; Braun and Larrain, 2005), these findings have significant implications for development and long term growth in the South. Nevertheless, previous studies on the relationship between financial development and export structure have not differentiated the direction of trade within and between developing and developed countries. In this respect, there is also limited research analyzing the potential effects of financial development on the choice of technology, especially with regard to high value added manufacturing sectors in developing countries.

Furthermore, despite the radical increase in trade and cooperation among developing countries during the 1990s, the existing empirical research on South-South (S-S) trade is quite limited with only few studies examining its structure or determinants. The lack of academic interest in the determinants of S-S trade including the role of financial development is especially surprising given the recent increase in S-S trade volume as well as the initiatives by developing countries to increase their level of financial cooperation through UNCTAD or such regional organizations as the Bank of the South for trade and investment (UNCTAD, 2005a, 2005b, 2007). The current paper, therefore, expands the previous research from a S-S and South-North (S-N) perspective by exploring the effects of financial development on the pattern (i.e. manufactures and technology-and-skill-intensive manufactures) and direction (i.e. S-S versus S-N) of developing country exports. In what follows, as the indicator of trade in manufactured goods in both S-S and S-N directions, we will use total manufactured exports as well as technology-and-skill-intensive (henceforth high-skill) manufactured exports relative to GDP, and relative to total merchandise exports. As a robustness test, we will also consider total and net merchandise exports as a share of GDP, and the trade balance in total and high-skill manufactured goods as a share of total trade. As the financial development indicator (*Finance*), we will use three alternative variables that are: i) credit to private sector by deposit money banks and other financial intermediaries as a share of GDP (*CR*), ii) liquid liabilities as a share of GDP (*M3*); and iii) an index of creditor rights (*Creditor*).

We conduct the empirical investigation using dynamic panel estimation techniques by Arellano and Bover (1995) and Blundell and Bond (1998) that help confront potential biases caused by unobserved country-fixed effects, reverse causality, and joint endogeneity. The empirical results using a panel of 28 countries (that respectively account for 82% and 86% of all developing country total and high-skill manufactures exports) with five-year intervals between 1978 and 2005 and employing a variety of robustness tests suggest that financial development has an economically and statistically significant positive effect on total and high-skill manufactures exports in S-S trade. In contrast, we did not find any robust or significant effect of financial development on manufactures exports in S-N trade, either as a share of GDP, or total exports. Accordingly, a 10% increase in *Finance* increases the share of manufactures exports to the South in GDP (total exports) in the range of 3.99 – 6.03% (3.64 – 6.34%) as opposed to 1.24 – 3.81% (0.73 – 3.84%) for exports to the North (whose coefficient estimates are found to be statistically insignificant).

Turning to high-skill manufactures exports, as predicted and consistent with the previous literature, we find that financial development increases them more than total manufactures exports. More importantly, however, we find that financial development increases S-S exports (in high-skill manufactures as a share of GDP and total exports) more than S-N exports at both economically and statistically significant levels. In fact, like total manufactures, the effect of financial development on S-N high-skill manufactures exports is found to be mostly insignificant. Looking at the economic effects, a 10% increase in *Finance* raises the share of high-skill manufactures to the South and North in GDP (in total exports) in the range of 5.22 – 10.2% (3.22 – 7.60%) and 4.22 – 6.31% (4.70 – 6.08%) respectively.

The paper proceeds as follows: Section two reviews the previous research on financial development, comparative advantage, and S-S trade. Section 3 introduces the hypotheses, methodology, and the data. Section 4 presents the results. Section 5 concludes.

2. Literature review

2.1. Financial development, pattern of specialization, and S-S trade

Capital market imperfections and financial constraints are known to affect firm level fluctuations in employment (Sharpe, 1994), inventories (Kashyap et al., 1994), investment (Fazzari et al., 1988), sales and short-term borrowing (Bernanke et al., 1996), and firm debt and balance-sheets (Krugman, 1999). In addition, the negative effect of recessions and banking crisis on industrial growth is found to be increasing with the degree of external finance dependence and financial frictions (Braun and Larrain, 2005; Kroszner et al., 2007). Financial development is also shown to positively affect the level of R&D (Carlin and Mayer, 1999), and growth (Levine et al., 2000)[1].

[1] For a critical review of this last point, see Demetriades and Hussein (1996).

Recently, there has also been a growing interest exploring the effects of financial development on the pattern of specialization in international trade. The Heckscher-Ohlin model predicts the factor endowment to be a determinant of trade patterns. In this respect Kletzer and Bardhan (1987), building on the Heckscher-Ohlin model, is the first study providing a theoretical framework where credit market imperfections (when credit for working capital or trade finance is needed to pay for the cost of inputs before the receipt of revenues from sales) can lead to different comparative costs even with identical technologies and endowments (which has been a central theme in the North-South trade literature[2]). Empirically, a growing number of research confirms the uneven effect of financial development on industrial and sectoral growth depending on external credit dependence for investment financing. Rajan and Zingales (1998) and Demirguc-Kunt and Maksimovic (1998) show that industries that are more dependent on external finance grow faster in countries with better developed financial systems. Similarly, Beck (2002, 2003), Svaleryd and Vlachos (2005), and Hur et al. (2006) find that level of financial development determines the pattern of trade specialization. Accordingly, those countries with lower levels of financial development are found to have a lower share of exports in industries with higher external finance dependence. In addition, financial development also determines the degree of credit availability for international trade. Particularly, the lack of developed financial systems both increases the transaction costs and functions as a trade barrier if none of the trading parties can provide the trade financing (UNCTAD, 2005a, 2007).

Consequently, the level of financial development is of significant importance for developing countries. Since "not all goods are alike in terms of their consequences for economic performance", the structure of trade matters for economic development and growth (Hausmann et al., 2007, p.1). In particular, exports in high-technology intensive industries are likely to generate larger spillovers (such as innovation and accumulation of physical and human capital) and linkages for development than lower technology and labor intensive ones (Feder 1983; Hausman et al., 2007).[3] An and Iyigun (2004) and Hausmann et al. (2007), for example, find that a higher export concentration in technology and skill intensive goods generates higher per-capita GDP growth rates. Antweiler and Trefler (2002) also point out the importance of scale economies for understanding the factor content of trade resulting from industry-level externalities. Imbs and Wacziarg (2003) also examine the patterns of sectoral concentration within and across countries and find that (up to a threshold level of income) economic development is accompanied by increasing diversification of production rather than specialization.

[2] See, for example, Krugman (1981) and Dutt (1986).
[3] Previous studies on N-S trade and uneven development also raised this point. See Darity and Davis (2005) for a comprehensive review.

Given that two thirds of developing countries depend on primary commodities with low value-added and small development potential for more than 50% of their export earnings (UNCTAD, 2005a), the question is "why do some economies find it easier to diversify from traditional to nontraditional products and keep the progression rolling along?" (Rodrik, 2004, p. 9). Indeed, firms in developing countries seeking to engage in the production and export of manufactures face various obstacles and our focus in this paper is on one such major constraint that is the level of financial sector development.[4]

We can illustrate the link between financial development and comparative advantage using a simple application of a two-country/two-sector Ricardian trade model (Beck, 2003). Assuming that primary goods exhibit constant returns to scale while manufacturing goods enjoy increasing returns to scale, the manufacturing sectors lose more from a lack of external financing. Accordingly, while primary goods sectors can continue to produce with an existing technology, the manufacturing sectors need working capital to acquire new technology (every period before the output is produced) whose cost increases with its quality. Therefore, holding everything else equal, both Kletzer and Bardhan's Heckscher-Ohlin model and the Ricardian version here predict that countries with better financial systems will have a comparative advantage in industries with higher external finance dependence (i.e. manufactures). However, considering a three country model, one in the North and two in the South, the level of financial development may have heterogeneous effects on the pattern and direction of trade. Accordingly, suppose that country 1 is in the North with a perfect capital market, and country 2 and 3 are in the South with similar but imperfect capital markets. While country 1 will have a comparative advantage in the manufactures exports (and in particular, high value added manufactures), country 2 and 3 will specialize in primary goods and simple manufactures with low external finance dependence. Given this pattern, even if country 2 and 3 improve their levels of financial development, they will still be at a disadvantage as long as those levels are behind that of country 1. In contrast, when trading with each other, neither country 2 nor 3 have a comparative advantage in financial development. Moreover, any improvement in the financial system is likely to have a larger marginal effect on the manufacturing sectors and their trade shares between country 2 and 3 than with country 1. For example, assume that country 1 is the high income OECD (the North) and country 2 and 3 are Colombia and India (the South). We would then predict that country 2 and 3, with an average share of credit to the private sector in GDP of 28% and 25% respectively (between 1978-2005), should export less in manufactures (especially in high value added manufactures that are more external finance dependent) to the North, which has an average share of credit in GDP of 139% than to the South. Looking at the stylized facts, we see that the average shares of real high-skill manufactures exports (the definition of which is given in the next

[4] For further discussion, see Rodrik (2004) and UNCTAD (2005a, 2007).

section) in real GDP of Colombia and India were 0.4% each for Northern exports as opposed to 0.9% and 0.7% for Southern exports between 1978-2005, respectively.

2.2. South-South trade and development

S-S trade has long been pointed out as an untapped potential for developing countries. Myrdal (1956), for example, argued that regional integration in the South helps developing countries overcome local market size limitations during industrialization. Given that output expansion in international trade is shown to be strongly skill biased (Antweiler and Trefler, 2002), increasing market size may help developing countries enjoy scale effects and increase the skill content of their exports. Likewise, Lewis (1980) and more recently UNCTAD (2005a) also suggests that S-S trade can reduce the dependence of the South on Northern growth. Moreover, the structure of S-S trade is argued to have dynamic and long term benefits for developing countries due to its comparatively higher technology and human capital intensive factor content (Amsden, 1980; Lall and Ghosh, 1989). Besides, similarity in production pattern and resource base is argued to facilitate appropriate technology transfer among Southern countries (UNIDO, 2005; Amsden, 1987; World Bank, 2006). In particular, it is argued that because the South lags the North in technological development, it has to "accept the direction of technological change" from the North that is more capital-intensive and embodies "high-income" characteristics (Stewart 1992, p. 81).[5] Therefore, although the products from the North are biased against Southern preferences and inappropriate in terms of both "techniques of production" and "product characteristics", the South accepts them due to lack of alternatives. On the other hand, imports from other developing countries are more likely to have technologies more appropriate for technological development in the South. In this framework, S-S trade may allow developing countries to upgrade technologically and eventually penetrate Northern markets.

Nevertheless, it is only since 1990s that S-S trade has become a substantial force in world trade. 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 reached 16% from 2% during the same period. The annual growth rate of real S-S manufactures exports has also been significantly higher than the world average reaching 14% as opposed to 6% for the latter. By 2003, manufactures accounted for over two thirds of S-S merchandise exports compared to 25% in 1965 (UNCTAD, 2005a). Moreover, as of 2005 51% and 54% of developing country total manufactures and high-skill manufactures exports were sent to other developing countries (Table 1). Even more impressive has been the increasing Southern share in global

[5] Linder's hypothesis on trade, which argues that countries trade most with other countries that have similar demand structures is often cited as a potential for S-S trade and technology transfer. A car without air conditioning, for example, would not be have much success in the US market whereas it could be quite successful in lower income countries as is the case with Russian or Iranian cars. Thus, certain products have 'high' and others 'low' income characteristics, corresponding to preferences in the North and South. See Copeland and Kotwal (1996) and Murphy and Schleifer (1997), for example, on how quality preferences may affect demand for Southern goods.

high-skill manufactures exports reaching 31% in 2005 from 2% in 1978 with an average annual growth rate of 15% as opposed to 6% for the latter. Similarly, the share of S-S exports in global high-skill manufactures exports reached 17% by 2005 from 1% in 1978 with an annual growth rate of 17%. According to UNIDO (2005, p. 18), five out of the top ten products in S-S trade have become high-technology manufactures. In our sample of 28 developing countries, the median share of technology-and-skill-intensive manufactured goods in total manufactures exports is almost twice as high for exports to the South than to the North for most of the period analyzed (Table 1).

<Insert Table 1 Here>

Realizing the importance of finance for trade, developing countries have started initiatives to increase their levels of financial development and cooperation (such as the Bank of the South among South American countries). Furthermore, World Bank recently reported a radical increase in South-South syndicated and cross border bank lending and FDI flows in financial and non-financial sectors. The share of S-S FDI in global FDI flows, for example, increased from 16% in 1995 to 37% in 2003 (World Bank, 2006).

Nevertheless, despite its remarkable growth and increasingly industrialized nature (Table 1), the S-S trade accounts for only 16% of global trade in manufactures compared to 50% for N-N and 34% for S-N trade in 2005 (UNCTAD, 2005a, COMTRADE). Moreover, as a share of Southern manufactures exports, S-S trade was 51% in 2005 compared to 74% for N-N trade (UNCTAD, 2005a, and Table 1). Besides, the distribution of this trade is highly skewed and is mostly driven by a few developing countries (as our sample shows). In addition to the lack of financial sector development, there are currently other obstacles that impede the S-S trade including significant infrastructural deficiencies such as inadequate insurance and transportation facilities (that may also be correlated with the level of financial development).

3. Empirical analysis

3.1. Econometric model

Our main goal is to explore differential effects of financial sector development on the pattern of specialization in S-S and S-N trade. We first test whether the lack of financial sector development is a major determinant of S-S and S-N trade and whether it can explain the low level of trade integration among Southern countries. Second, we explore whether financial sector development affects the pattern of S-S trade differently than S-N trade. Similar to previous studies, we adopt the following specification:

$$Manufactures_{it} = \alpha_1 Manufactures_{it-1} + \alpha_2 Finance_{it} + \alpha_3 V_{it} + d_i + d_t + \varepsilon_{it} \quad (1)$$

$$HighSkill_{it} = \beta_1 HighSkill_{it-1} + \beta_2 Finance_{it} + \beta_3 V_{it} + d_i + d_t + \phi_{it} \quad (2)$$

where *i=1, …, 28* and *t=1978,…, 2005* respectively refer to the country and time period, d_i and d_t is a vector of country and time fixed effects, ε_{it} and ϕ_{it} are the error terms. In the estimation, to smooth out cyclical fluctuations and to determine medium and long-run effects, as in Levine et al. (2000) and Beck (2002), we have split the data into six non-overlapping five-year periods (except the 1978-1980 period) and used their period averages. Thus, in the estimations the time subscript *t* refers to the five-year averages. All variables are in natural logs. The lagged dependent variable is included to control for adjustment speed and the level of persistence and path dependency of exports.

Manufactures and *High-Skill* refer to the real manufactured and technology-and-skill-intensive manufactured goods exports of Southern country *i* at time *t* to the North (high-income-OECD countries) and the South (low-and-middle-income countries) as a share of its real GDP, *and* total exports. In the robustness analysis, we also included total and net merchandise exports as a share of GDP, and net exports of total and high-skill manufactured goods as a share of total merchandise trade.

Finance is the financial development indicator. As in Beck et al. (2000), Beck (2002, 2003), Levine et al. (2000), Svalery and Vlachos (2005) and Braun and Raddatz (2007) we use the following variables as proxies for financial development: The benchmark variable we employ is the ratio of real private credit by deposit money banks and other financial intermediaries to real GDP (*CR*). This is by far the most frequently used measure of financial development in the literature. For robustness, the second proxy variable we used is the liquid liabilities to GDP ratio (*M3*).[6] And finally, we also included an aggregate index of creditor rights (*Creditor*) from Djankov et al. (2007) capturing the level of development of the credit system. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights). We used this index as an instrument for the *CR* variable (for definitions and summary statistics see the appendix) (Table 2).

V is a vector of control variables including the following:

Population, which is the total population controls for trade shares. Accordingly, larger countries may be expected to have lower trade openness and export shares. Alternatively, larger countries may enjoy scale effects due to larger domestic markets and as a result achieve higher export shares. It is also a proxy for labor supply and market size. We also experimented with the total labor force size (that has a correlation coefficient of 0.98 with *Population*) and received identical results.

GDP78, which is the initial level of real per capita GDP controls for any causality from initial income levels to trade.

[6] Despite its common usage, *M3* may not be a good proxy for financial development in some countries given that it measures both the ability of banks to mobilize funds and the extent of monetization, the latter of which may increase without financial development in developing countries (Demetriades and Hussein, 1996; Luintel and Khan, 1999).

GFCF, which is the one-period lagged gross fixed capital formation as a share of GDP controls for the effect of capital accumulation on the production structure and comparative advantage.

HK, which is the percentage share of 'no schooling' in total population controls for human capital and educational infrastructure (with an expected negative sign). As an alternative, we also tried other human capital proxies such as the percentage of primary and secondary school attained and average schooling years in total population. The results were not significantly different than those reported.

Moreover, for sensitivity analysis we also had additional control variables including:

FDI, which is the annual foreign direct investment (FDI) inflows as a share of GDP. Countries that are export platforms may experience increases in their manufactures exports without a significant change in their financial development. Also, given their better access to investment financing, foreign firms may affect the export performance without a change in domestic financial development. Yet, *FDI* may also be endogenously determined with *Finance*.

GDPGN and *GDPGS* are the average logarithmic GDP growth rates in the North and the South, respectively and are included to control for long term developments and cyclical fluctuations. Increasing growth in the North (South) is expected to increase the S-N (S-S) trade (Havrylyshyn, 1985).

TOT is the terms of trade measured by the price of exports over imports.

3.2. Methodology

In order to correct for parameter endogeneity resulting from the presence of unobserved country specific effects and to correct for the reverse causality and simultaneity bias, we used the augmented "system GMM" estimator by Arellano and Bover (1995) and Blundell and Bond (1998).[7] We estimated equations (1) and (2) using the two-step system GMM estimation with Windmeijer (2005) finite-sample correction method that gives asymptotically robust standard errors. The system GMM technique estimates a system of equations in the first differences and levels. Arellano and Bover (1995) show that when the original Arellano and Bond (1991) first differencing estimator is used the lagged level values of variables are often poor instruments for first differences. Thus, Arellano and Bover (1995) suggest that if the original equations in levels are added to the system additional moment conditions could be added to increase efficiency. Furthermore, Bond et al. (2001) shows that with a small number of time periods system GMM performs better than difference GMM. The system estimation pools (*t-s*) first difference equations with an additional set of (*t-s*) level equations for $x_{i,\ t-s}$. In the instrument specification, we identified *Finance* and *GFCF* as GMM instruments together with the lagged dependent variable. Because of the use of lagged values as instruments, we assume that our explanatory variables are at least weakly exogenous. In other words, future innovations of the trade structure do not affect current level of financial

[7] The panel data estimates are obtained using the xtabond2 command in Stata 10.1 written by David Roodman.

development.[8] 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), we employed only the closest possible two lags as instruments whose validity are tested by the Hansen test of overidentifying restrictions.[9] Also, the presence of serial correlation in the disturbances is tested by a second order serial correlation test.

3.3. Data and descriptive statistics

The bilateral trade data in total and high-skill manufactures are obtained from the U.N. Commodity Trade Statistics Database (COMTRADE). The merchandise trade data are from World Bank's World development Indicators and IMF's Direction of Trade Statistics. For industrial classification we used the second revision of the Standard International Trade Classification of Commodities (SITC) because of its broader coverage. The sum of SITC categories 5-8 are used for total manufactures. For the examination of systematic differences in the impact of financial development on S-S and S-N trade in high-skill manufactures, we selected 75 commodities that fall into the 'medium' and 'high' technology" classification of exports based on Lall (2000) and UNIDO (2004) (see the appendix for a complete list). Accordingly, medium-technology products "tend to have complex technologies, with moderately high levels of R&D, advanced skill needs and lengthy learning periods." Likewise, high technology products are those with "advanced and fast-changing technology, with high R&D investments and prime emphasis on product design. The most advanced technologies require sophisticated technology infrastructure, high levels of specialized technical skills and close interaction between firms and universities or research institutions" (Lall, 2000, p. 94). Because of the fluctuations in export prices, we employed real exports (using export unit prices) as a share of real GDP in our benchmark regressions. Normalizing with real GDP also avoided distortions created by high inflation experiences of some of the countries in the sample. As an alternative measure of trade specialization, we also used the share of total and high-skill manufactures in total merchandise exports.

In the sample selection the following issues were decisive: a) the presence of a sufficiently diversified production and export structure, b) data availability since we included only those countries with at least 10 years of continuous data (to avoid non-random entry and exit bias), c) regional balance, that is to say we tried to include sufficient number of countries from each region (Asia, Middle East, and Latin America) to avoid sampling bias. The final sample includes 28 countries that account for 82%

[8] Weak exogeneity does not necessarily imply that economic agents ignore the expected future trade structure in their plans to develop the financial system; it just means that unanticipated future shocks to trade structure do not influence current financial development (Levine et al., 2000, p. 51).

[9] The reported results in section 4 are robust to using all available lags as instruments. Moreover, given the sensitivity of over-identification test to the number of instruments (Roodman, 2009), we repeated the regressions using the "collapse" option written by David Roodman in Stata 10.1 and confirmed the validity of the instruments. The results were similar to those reported and are available from the authors.

(76%) of total manufactures and 86% (84%) of high-skill manufactures exports of all Southern (and S-S) exports during 1978-2005 reflecting the existing development gap between these and other developing countries. During the period analyzed, we observe a steady increase in the sample countries' share in global manufactures and high-skill manufactures exports going up from 4% and 2% in 1978 to 29% and 28% respectively in 2005. The 28 countries include 11 countries from Latin America (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Paraguay, Uruguay, Venezuela), 7 countries from 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 the estimations, the North includes high-income OECD countries while the South includes all low-and-middle income countries according to the World Bank definitions.

In terms of the pattern and direction of trade in the sample, we see an increase in S-S trade compared to S-N trade in both total and high-skill manufactures. Accordingly, the median share of S-S total manufactures and high-skill manufactures exports (in total exports of these goods from sample countries) increased from 27% and 52% in 1978 to 50% and 58% in 2005 respectively (Table 1). From the last two columns of Table 1 we also see a higher skill content of manufactures exports in S-S trade than S-N trade. Accordingly, while the average median share of skill-intensive goods in total manufactures exports is 44% in S-S trade, it is 26% in S-N trade between 1978 and 2005. However, we also observe that the skill content of S-N exports (i.e. share of high-skill manufactures in total manufactures exports) has been increasing at a much faster rate. Likewise, the median share of manufactures exports to the North in total Southern merchandise exports (and in GDP) increased from around 23% (3%) in 1978 to 30% (9%) in 2005 while those to the South increased from around 9% (1.4%) to 24% (4%) (Table 2). Meanwhile, the median share of high-skill manufactures exports to the North in total Southern merchandise exports (and in GDP) increased from around 2.6% (0.3%) in 1978 to 7.6% (1.8%) in 2005 while those to the South increased from around 4.3% (0.6%) in 1978 to 12% (1.9%) in 2005 (Table 2). In the case of changes in financial sector development, the median share of credit generated to the private sector in GDP (*CR*) increased from around 23% in 1978 to 31% in 2005.

<Insert Table 2 Here>

4. Empirical results

The regression results from Table 3 and 4 suggest that financial development has asymmetric effects on both total and high-skill manufactured goods exports to the *North* and *South*. First of all, unlike the previous research that did not differentiate the direction of exports (or take into account their dynamic structure), we did not find any robust and significant effect of financial development on total manufactures exports to the North, either as a share of real GDP or total merchandise exports. In contrast, the results using all three financial development indicators suggest that financial development has a

statistically and economically significant positive effect on S-S manufactures exports. Furthermore, the economic effect is significantly higher, that is in the range of 1.6 – 2.9 times as a share of total exports and 1.7 – 5 times as a share of real GDP. According to point elasticities, a 10% increase in *Finance* significantly increases the share of manufactures exports to the South in GDP (total exports) in the range of 3.99 – 6.03% (3.64 – 6.34%) as opposed to 1.24 – 3.81% (0.73 – 3.84%) for exports to the North (which are at statistically insignificant levels).[10] To illustrate the economic effect, let us consider Argentina. According to our point estimates (using column *CR* as a benchmark), an exogenous increase in the Argentina's private credit to GDP ratio from its average level of 17% to the sample mean of 43% would have increased the share of S-S manufactures exports in GDP (in total exports) to 2.15% (31.59%) from its current (2005) level of 1.48% (18.47%) for exports to the South. [11] In contrast, while statistically insignificant, the same exercise would suggest that the share of S-N manufactures exports would increase to 0.91% (12.67%) from its current level of 0.76% (10.85%).

<Insert Tables 3 & 4 Here>

Turning to high-skill manufactures exports, consistent with previous studies, we find that financial development increases high-skill manufactures exports (that are more external finance dependent) more than total manufactures exports. More importantly, however, we find that financial development increases S-S exports (in high-skill manufactures as a share of real GDP, and total exports) more than S-N exports at both economically and statistically significant levels.[12] In fact, the effect of financial development on S-N exports is found to be statistically significant only in column (*CR*) and at only 10% and 5% levels in Tables 3 and 4. Looking at the economic effects, a 10% increase in *Finance* raises the share of high-skill manufactures to the South and North in GDP (in total exports) in the range of 5.22 – 10.2% (3.22 – 7.60%) and 4.22 – 6.31% (4.70 – 6.08%) respectively. For example, the average share of high-skill manufactures exports in GDP of Argentina is 0.90% for exports to the *South* and 0.26% to the *North*. In this case, an exogenous increase in private credit to the sample mean would have increased the share of high-skill manufactures exports in GDP (in total exports) to 1.56% (22.29%) for S-S exports and to 0.42% (6.04%) for S-N exports.

In all regressions we find a high level of path dependency in both S-S and S-N trade and the lagged dependent variable is significant (at more than 1% level) in all specifications, which supports the choice of a dynamic specification. Therefore, it appears that this is a major shortcoming of the previous research in this field since ignoring the lagged dependent variable would certainly cause a mis-specification problem. On the other hand, similar to Beck (2002), we do not find any significant or robust

[10] Repeating regressions with one-step estimation yielded very similar results, both economically and statistically.
[11] That is for S-S real manufactures exports/real GDP, the predicted level is found as: *exp*[0.93*0.399+ln(1.48)] where 0.93 is the exogenous increase in private credit to GDP ratio.
[12] The exception is the *M3* column in Table 4 where we failed to find any significant effect in either direction.

effect of other control variables included. In terms of the validity of the results, the Hansen specification test confirms the validity of instruments used and the AR(2) test indicates no strong sign of first or second-order serial correlation in the estimations.[13]

4.1. Sensitivity analysis

The first sensitivity test we conduct is to check whether the results hold for real total merchandise exports (as a share of real GDP) as well. In other words, whether the positive (and in S-S trade, significant) effect of financial development on manufactures exports is also valid for total exports. If our hypothesis is correct, the effect of financial development on total exports should be smaller than that on total manufactures and high-skill manufactures exports.

<Insert Table 5 Here>

As reported in Table 5, we failed to find any significant effect of financial development on S-S or S-N merchandise exports. Also, supporting the hypothesis of stronger effect of financial development on more external finance-dependent sectors, the coefficient estimates are significantly smaller than those in Tables 3 and 4. The only exception is the effect of *CR* on S-N merchandise exports (column 1), found to be significantly positive though with a coefficient estimate more than twice smaller than that in high-skill manufactures of Tables 3 and 4.

Next, we test the effect of financial development on net merchandise, net total manufactures, and net high-skill manufactures exports as a share of total trade. If financial development improves the competitiveness of more external finance dependent sectors, such as manufactures, (and assuming small income but strong substitution effects) we may observe increasing trade balance in such goods. Theoretically speaking, however, financial development may affect exports and net exports differently for the following reasons. First, the trade balance reflects not only comparative advantage but also investment and saving decisions, the inter-temporal consumption decisions, and the degree of capital mobility. Second, if increasing financial development is accompanied by increasing net capital inflows (thanks to rising interest rates, better financial infrastructure, integration with world capital markets, and reverse capital flight), by the balance of payments identity, that country will have a current account deficit. Increasing net capital inflows may be used for either consumption or investment, both of which will worsen the trade balance. On the other hand, if they are mostly used for investment and capital accumulation, then in a dynamic setting we may observe increasing competitiveness. Last, even assuming that transversality condition holds, given the limited time period analyzed, we cannot know whether or not the countries included are at the final stage of their inter-temporal optimization.

[13] The exception is the manufactures exports to North where AR(2) test indicated 2nd order serial correlation. However, in the robustness tests repeating regressions with three or deeper lags corrected this problem with no qualitative change in the reported results. For consistency, we reported regression results with the same lag length for instrument selection in all specifications.

<Insert Tables 6 and 7 Here>

Mindful of the complexity of both predicting and interpreting the effect of financial development on net exports, we report our results in Tables 6 and 7. In the case of trade balance in merchandise goods (Table 6), similar to Beck (2002), overall we find a negative effect of financial development on both S-S and S-N trade, yet at statistically insignificant levels. Turning to net manufactures exports, however, we find that financial development has a positive effect at comparable levels on both S-S and S-N trade, although at differing statistical significance levels. The regression results using trade balance in high-skill manufactured goods provide further support to our initial hypothesis. Accordingly, we find a significantly positive effect of financial development on net skill-intensive exports in S-S trade while no such robust or significant effect is detected in S-N trade.

Next, we employed a rich battery of robustness tests. First, to test if the results are sensitive to the instrument selection, we repeated the regressions using: a) full-instrument matrix with all available lags (deeper than two) of the variables as instruments (footnote 9); b) limited-instrument matrix with the smallest possible number of instruments (footnote 9); and c) one-step estimations (footnote 10). In all three cases, we found that total manufactures exports to the North (both as a share of GDP and total exports) remained statistically insignificant while those to the South were significant at more than 1% level. In terms of the economic effect, the coefficient estimates for financial development in S-N trade were up to five times smaller than in S-S trade. In the case of high-skill manufactures, similar to Tables 4 and 5, the effect of financial development on S-N trade is found to be more important (at varying degrees of statistical significance) than the case with total manufactures. Yet, its positive impact is found to be significantly weaker, both economically and statistically, than in S-S trade.

Second, in order to test the sensitivity of the results to the estimation method, we repeated the regressions using the two-stage least squares method. Third, as discussed earlier, we introduced a wider set of control variables including FDI stocks, FDI flows, terms of trade, initial levels of human capital measured by the average schooling years in total population in 1980, and the GDP growth rates in the North and South. Fourth, to control for aggregation bias we repeated the regressions using four-year averages. In all the above cases, the (unreported) results were not significantly different than those reported and are available from the authors.

Lastly, we excluded China, Hong Kong, Malaysia, Singapore, South Korea and Thailand from the sample to see if the results are driven by the unique industrialization experiences of these Asian countries, and by the increasing intra-regional and triangular trade within East Asia (with the ultimate destination being the North) (UNCTAD, 2005a, 2007). The (unreported) results show that while financial development is not a significant determinant of S-N trade, it continues to affect S-S trade at an economically and statistically significant level.

5. Conclusion

This paper analyzed the effects of financial development on the structure of trade from a South-South and South-North perspective. The empirical results from a 28 year panel with 28 developing countries provide partial support to the previous research on the relationship between financial development and the pattern of specialization in international trade. In particular, conditional on the direction of developing country exports, financial sector development appears to be a significant source of comparative advantage in total and high-skill manufactured goods. Furthermore, consistent with the predictions of previous studies, increasing financial development is found to have a stronger positive effect on exports of higher value added and external finance dependent manufactured goods.

A key contribution of this paper, however, is that the positive effect of financial development is found to be asymmetric depending on the direction of exports. Accordingly, we find that financial development has a statistically and economically significant positive (and stronger) effect on Southern total manufactures and high-skill manufactures exports to the South. In contrast, we fail to detect any significant or robust effect of financial development on South-North trade.

Our findings have significant implications for both future research and also development policy in late industrializing countries. Regarding future research, our results suggest that aggregating developing country exports to all directions may lead to a serious mis-specification problem given the potentially different determinants of S-S and S-N trade. Secondly, adopting a static specification may result in spurious regression estimates given the high level of path dependency and differing adjustment speeds of trade series. In terms of policy implications, our findings suggest that improving the financial sector development and credit availability in developing countries can significantly expand the S-S trade in manufactures and, in particular, high-skill manufactures, which have significant dynamic long term development benefits. However, given the low levels of credit availability in a majority of our sample countries (despite comprehensive financial liberalization programs), some sort of industrial policy in the form of directed and subsidized credit programs through domestic or regional development banks may be of substantial importance in supporting the diversification and expansion of high-skill manufacturing sectors. However, we also need to point out that the countries studied had higher levels of industrial and human capital development (compared to low-income South) during the ISI years under autarchy, thus the results may not apply to other Southern countries. Furthermore, increasing financial development may not deliver the same benefits in low income countries as in middle income ones because of lower institutional quality of their financial systems that might be more binding as income levels decrease.[14]

[14] For a discussion, see Demetriades and Law (2006).

Appendix

1. Data definitions:

CR: 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): $100*\{(0.5)*[Credit_t/Pe_t + Credit_{t-1}/Pe_{t-1}]\}/[GDP_t/Pa_t]$ 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).

M3: Liquid liabilities as a share of GDP (in percentage) from the World Development Indicators of World Bank (WDI). Liquid liabilities are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travelers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.

Creditor: The index is from Djankov et al. (2007).

The total and high-skill manufactures exports (imports) data are from COMTRADE (and OECD for Turkey). Total merchandise exports (imports) series are from WDI and IMF's direction of trade statistics databases. All raw data are in current 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. The real GDP values are from WDI in constant 2000 dollars.

FDI inflows are from the WDI, and FDI stock values are from UNCTAD FDI database. Population, GFCF, GDP78, GDPGN and GDPGS are from WDI.

Human capital series are from Barro and Lee (2000).

2. Summary statistics

<Insert Table 8 Here>

3. List of medium to high technologically and skill intensive commodities, SITC Rev. 2

266, 267, 512, 513, 524, 533, 541, 553, 554, 562, 572, 582, 583, 584, 585, 591, 598, 653, 671, 672, 678, 711, 712, 713, 714, 716, 718, 721, 723, 724, 725, 726, 727, 728, 736, 737, 741, 742, 743, 744, 745, 749, 751, 752, 759, 761, 762, 763, 764, 771, 772, 773, 774, 775, 776, 778, 781, 782, 783, 784, 785, 786, 791, 792, 793, 812, 871, 872, 873, 874, 881, 882, 884, 885, 951

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Table 1: Trends in S-S trade (percentages)

	Share of S-S Exports in Total Southern Exports of These Commodities		*Median Share of … Exports of the Sample going to the South*		*Median Share of High-Skill Goods in Total Manufactures Exports*	
Year	*Manufactures*	*High-Skill Manufactures*	*Manufactures*	*High-Skill Manufactures*	*South-South*	*South-North*
1978	34	39	27	52	41	11
1979	37	42	35	56	44	11
1980	45	53	45	67	42	17
1981	45	52	50	70	39	15
1982	46	53	46	59	38	20
1983	43	49	44	57	36	17
1984	42	48	40	63	39	22
1985	44	48	41	65	39	21
1986	41	43	37	58	44	24
1987	43	45	37	53	41	23
1988	43	45	41	58	43	22
1989	43	46	38	52	43	25
1990	42	45	38	50	42	24
1991	41	46	41	55	40	23
1992	41	45	40	57	38	24
1993	40	44	40	57	42	22
1994	41	44	42	55	44	23
1995	41	43	43	53	42	23
1996	42	44	46	53	42	27
1997	41	43	44	52	42	28
1998	38	39	41	53	42	31
1999	36	37	39	46	45	39
2000	37	38	42	47	47	39
2001	38	40	42	50	51	36
2002	42	43	43	52	52	34
2003	43	45	45	52	51	35
2004	48	51	47	53	48	34
2005	51	54	50	58	49	41
Mean	42	45	44	57	44	26

Source: COMTRADE and authors' calculations.
Notes: The first two columns refer to the entire S-S trade while the next four columns refer to our sample countries.

Table 2: Sample summary (percentages, medians)

		Total Manufactures Exports				*High-Skill Manufactures Exports*						
		South-North		*South-South*		*South-North*		*South-South*				
		As a Share of										
Year	*N*	*Total Exports*	*GDP*	*Total Exports*	*GDP*	*Total Exports*	*GDP*	*Total Exports*	*GDP*	*CR*	*M3*	*Creditor*
1978	8	22.63	2.93	9.03	1.38	2.55	0.33	4.31	0.64	22.89	35.04	2
1979	10	21.06	3.19	11.52	1.49	2.75	0.35	4.46	0.72	23.64	37.38	2
1980	16	14.53	1.39	11.17	1.33	2.07	0.21	3.81	0.42	25.79	36.71	2
1981	18	15.84	1.42	11.22	1.34	1.84	0.09	5.24	0.46	26.26	36.66	2
1982	19	20.12	1.72	13.24	1.23	2.67	0.22	4.91	0.37	30.23	38.91	2
1983	24	20.99	1.48	10.6	1.18	2.36	0.15	4.14	0.38	32.35	38.29	2
1984	24	21.63	1.66	12.13	1.37	2.56	0.21	4.62	0.41	32.91	40.24	2
1985	24	22.9	1.96	12.47	1.53	2.61	0.25	6.03	0.5	30.2	41.05	2
1986	26	23.16	1.96	15.06	1.74	2.86	0.3	6.19	0.45	27.56	43.27	2
1987	27	23.91	2.76	14.66	1.99	3.76	0.37	6.54	0.43	26.07	44.14	2
1988	27	24.49	2.75	16.86	1.95	4.14	0.48	6.13	0.74	25.09	44.92	2
1989	27	27.74	3.29	16.22	1.85	4.34	0.66	6.26	0.8	27.96	42.38	2
1990	27	26.35	3.03	16.8	1.96	4.73	0.74	6.14	0.73	24.51	40.48	2
1991	27	29.53	3.06	18.56	2.39	4.84	0.69	6.56	0.75	25.88	44.29	2
1992	27	29.96	3.7	17.67	2.24	5.01	0.7	6.65	0.8	24.06	44.31	2
1993	27	32.76	3.4	20.39	2.86	5.52	0.71	7.31	1.16	27.92	46.64	2
1994	27	32.04	4.45	20.24	3.05	6.19	0.96	7	1.28	32.78	46.22	2
1995	28	30.75	4.29	20.6	3.37	5.29	0.92	7.09	1.14	35.53	44.21	2
1996	28	27.91	3.92	20.57	3.24	5.25	0.82	8.63	1.16	39.53	47.85	2
1997	28	26.22	4.68	20.41	3.45	5.79	0.88	8.1	1.27	41.79	49.83	2
1998	28	33.44	5.63	21.19	3.43	7.79	1.35	9.95	1.53	41.61	50.49	2
1999	28	44.96	6.22	22.55	2.98	10.85	1.87	10.05	1.33	43.24	54.55	2
2000	28	39.8	6.35	22.23	3.42	11.8	1.82	10.61	1.44	40.55	53.75	2
2001	28	35.12	6.95	24.33	3.85	8.95	1.36	11.49	1.61	35.87	59.46	2
2002	28	36.33	6.94	22.96	3.75	9.26	1.47	12.21	1.57	33.41	59.67	2
2003	28	33.19	8.4	23.34	3.75	8.97	1.4	11.61	1.44	32.62	59.31	2
2004	28	30.62	8.05	24.25	3.86	7.91	1.45	11.88	1.44	32.56	55.96	2
2005	27	30.37	8.76	24.07	4.18	7.61	1.81	11.98	1.85	31.04	54.59	2

Table 3: Determinants of real total and high-skill manufactured goods exports as a share of real GDP

	Manufactures Exports as a Share of GDP						*High-Skill Manufactures Exports as a Share of GDP*					
	South-North			*South-South*			*South-North*			*South-South*		
	CR	*Creditor*	*M3*	*CR*	*Creditor*	*M3*	*CR*	*Creditor*	*M3*	*CR*	*Creditor*	*M3*
LD	0.940***	0.843***	1.041***	0.751***	0.715***	0.823***	0.797***	0.726***	1.007***	0.684***	0.497***	0.848***
	(0.157)	(0.119)	(0.080)	(0.116)	(0.193)	(0.101)	(0.140)	(0.170)	(0.088)	(0.148)	(0.162)	(0.078)
Finance	0.188	0.381	0.124	0.399***	0.603***	0.358*	0.525*	0.631	0.422	0.589***	1.019***	0.522*
	(0.212)	(0.294)	(0.282)	(0.120)	(0.187)	(0.196)	(0.294)	(0.477)	(0.642)	(0.184)	(0.305)	(0.303)
Population	-0.031	0.012	-0.030	-0.031	0.057	0.021	0.085	0.160	-0.038	0.092	0.110*	-0.032
	(0.088)	(0.067)	(0.061)	(0.215)	(0.075)	(0.026)	(0.077)	(0.125)	(0.095)	(0.112)	(0.061)	(0.101)
GDP78	-0.114	-0.005	-0.083	-0.135	0.062	-0.008	0.107	0.127	-0.195	0.155	0.221	-0.123
	(0.183)	(0.128)	(0.091)	(0.352)	(0.087)	(0.072)	(0.187)	(0.226)	(0.120)	(0.245)	(0.140)	(0.222)
GFCF	-0.052	0.017	-0.346	0.255	-0.211	0.097	0.004	0.503	-0.811	0.102	0.203	-0.100
	(0.338)	(0.668)	(0.511)	(0.659)	(0.737)	(0.476)	(0.912)	(0.756)	(0.673)	(0.570)	(0.474)	(0.620)
HK	-0.025	0.086	0.012	-0.200	-0.041	-0.130	0.103	0.069	-0.127	-0.067	-0.071	-0.235
	(0.150)	(0.139)	(0.092)	(0.234)	(0.098)	(0.082)	(0.176)	(0.170)	(0.158)	(0.180)	(0.109)	(0.151)
Constant	1.161	-1.455	1.714	0.391	-2.224	-1.291	-4.231	-7.483	3.432	-4.541	-7.015**	0.666
	(3.568)	(2.536)	(1.721)	(5.888)	(2.573)	(1.745)	(6.011)	(6.374)	(3.377)	(5.145)	(3.044)	4.387)
AR1	0.10	0.08	0.14	0.09	0.13	0.13	0.35	0.39	0.35	0.22	0.23	0.27
AR2	0.03	0.01	0.03	0.81	0.99	0.74	0.21	0.22	0.22	0.38	0.45	0.21
Hansen	0.64	0.43	0.66	0.64	0.78	0.86	0.89	0.41	0.83	0.67	0.95	0.86
Obs	122	122	121	122	122	121	122	122	121	122	122	121
Groups	28	28	28	28	28	28	28	28	28	28	28	28

Notes: Time dummies are included in all regressions but not reported. *South-North* and *South-South* refer to the South-North and South-South trade. *LD* is lagged dependent variable. *Finance* refers to the financial development indicators including: credit to the private sector as a share of GDP (*CR*), Creditor Rights (*Creditor*), and the liquid liabilities to GDP ratio (*M3*). *Population* is the total population, *GDP78* is the per capita real GDP in 1978, *GFCF* is the share of gross fixed capital formation in GDP, and *HK* is human capital measured as the percentage of population with no education. All variables are in natural logarithms. All ratios are in percentages. (***), (**), (*) denote significance at 1, 5 and 10% levels. All regressions are estimated using two-step system GMM method with Windmeijer finite-sample correction. *Hansen* is Hansen over-identifying restrictions test, *AR1* and *AR2* are AR(1) and AR(2) tests. Test statistics are given by their p-values. *Obs* is the number of observations, and *Groups* is the number of cross section groups.

Table 4: Determinants of total and high-skill manufactured goods exports as a share of merchandise exports

	Manufactures Exports as a Share of Merchandise Exports						*High-Skill Manufactures Exports as a Share of Merchandise Exports*					
	South-North			*South-South*			*South-North*			*South-South*		
	CR	*Creditor*	*M3*	*CR*	*Creditor*	*M3*	*CR*	*Creditor*	*M3*	*CR*	*Creditor*	*M3*
LD	0.837***	0.728***	0.914***	0.575***	0.634***	0.697***	0.740***	0.694***	0.922***	0.509***	0.461***	0.656***
	(0.089)	(0.101)	(0.094)	(0.094)	(0.076)	(0.073)	(0.104)	(0.133)	(0.127)	(0.106)	(0.1034)	(0.089)
Finance	0.167	0.384	0.073	0.577***	0.634***	0.364*	0.608**	0.503	0.470	0.745***	0.760***	0.322
	(0.145)	(0.260)	(0.162)	(0.128)	(0.078)	(0.189)	(0.256)	(0.354)	(0.489)	(0.205)	(0.269)	(0.211)
Population	-0.001	0.100	-0.017	0.083	0.098*	0.079**	0.175	0.232	0.029	0.195*	0.191*	0.042
	(0.079)	(0.076)	(0.045)	(0.057)	(0.051)	(0.034)	(0.132)	(0.147)	(0.160)	(0.119)	(0.106)	(0.086)
GDP78	-0.094	-0.001	-0.078	0.052	0.018	0.019	0.151	0.176	-0.108	0.272	0.219	-0.008
	(0.103)	(0.082)	(0.097)	(0.095)	(0.087)	(0.078)	(0.216)	(0.225)	(0.146)	(0.192)	(0.144)	(0.159)
GFCF	-0.046	0.032	0.119	-0.695*	-0.943***	-0.129	-0.479	0.336	-1.032	-0.529	-0.279	0.367
	(0.238)	(0.580)	(0.366)	(0.377)	(0.220)	(0.436)	(0.458)	(0.718)	(0.730)	(0.590)	(0.647)	(0.499)
HK	-0.015	0.037	0.010	-0.056	-0.090	-0.135**	0.047	0.069	-0.090	-0.079	-0.076	-0.172*
	(0.072)	(0.066)	(0.112)	(0.069)	(0.065)	(0.066)	(0.118)	(0.168)	(0.104)	(0.128)	(0.117)	(0.095)
Constant	0.763	-2.491	0.406	-0.334	0.135	-1.279	-4.467	-7.769	2.068	-5.066	-5.358	-1.769
	(2.389)	(2.035)	(1.906)	(1.920)	(1.444)	(1.328)	(4.766)	(5.322)	(3.958)	(4.147)	(3.604)	(2.973)
AR1	0.10	0.05	0.13	0.07	0.04	0.13	0.52	0.59	0.63	0.10	0.14	0.35
AR2	0.07	0.10	0.11	0.46	0.46	0.63	0.24	0.27	0.25	0.91	0.84	0.28
Hansen	0.92	0.65	0.68	0.95	0.96	0.87	0.84	0.64	0.64	0.70	0.57	0.87
Obs	122	122	121	122	122	121	122	122	121	122	122	121
Groups	28	28	28	28	28	28	28	28	28	28	28	28

Notes: Time dummies not reported. For variable definitions see Table 3.

Table 5: Determinants of real total merchandise exports as a share of real GDP

	South-North			*South-South*		
	CR	*Creditor*	*M3*	*CR*	*Creditor*	*M3*
LD	0.924***	1.001***	0.993***	0.892***	0.971***	0.864***
	(0.122)	(0.156)	(0.162)	0(0.116)	(0.154)	(0.082)
Finance	0.218**	0.208	0.158	0.056	0.090	0.308
	(0.101)	(0.199)	(0.227)	(0.108)	(0.219)	(0.252)
Population	0.040	0.024	0.009	-0.089	-0.013	-0.017
	(0.031)	(0.017)	(0.030)	(0.064)	(0.043)	(0.058)
GDP78	0.089	0.047	0.017	-0.107	0.001	0.012
	(0.063)	(0.041)	(0.051)	(0.096)	(0.047)	(0.084)
GFCF	-0.453	-0.394	-0.206	-0.101	-0.412	-0.382
	(0.448)	(0.318)	(0.490)	(0.509)	(0.440)	(0.589)
HK	0.094	0.082*	0.023	-0.087	-0.009	-0.073
	(0.060)	(0.046)	(0.047)	(0.060)	(0.069)	(0.081)
Constant	-0.662	-0.385	-0.171	3.170	1.478	0.889
	(0.915)	(0.704)	(1.066)	(1.990)	(1.329)	(2.375)
AR1	0.08	0.06	0.15	0.03	0.02	0.02
AR2	0.09	0.08	0.08	0.29	0.31	0.34
Hansen	0.94	0.94	0.80	0.88	0.43	0.56
Obs	139	139	138	139	139	138
Groups	28	28	28	28	28	28

Notes: Time dummies not reported. For variable definitions see Table 3

Table 6: Determinants of trade balance in total merchandise goods as a share of total merchandise trade

	South-North			*South-South*		
	CR	*Creditor*	*M3*	*CR*	*CR Right*	*M3*
LD	0.463***	0.478***	0.439***	0.410**	0.428***	0.360***
	(0.131)	(0.143)	(0.111)	(0.183)	(0.156)	(0.185)
Finance	-0.030	-0.022	-0.057	0.001	-0.015	-0.034*
	(0.030)	(0.042)	(0.040)	(0.023)	(0.035)	(0.020)
Population	0.011	0.016	0.013*	0.018**	0.019**	0.020**
	(0.009)	(0.008)	(0.008)	(0.009)	(0.008)	(0.009)
GDP78	0.009	0.019	0.014	0.022	0.027***	0.021*
	(0.016)	(0.015)	(0.011)	(0.014)	(0.010)	(0.012)
GFCF	0.171*	0.109	0.106	0.070	0.089	0.170**
	(0.095)	(0.076)	(0.106)	(0.047)	(0.069)	(0.071)
HK	-0.032	-0.012	-0.010	-0.017	-0.015	-0.016
	(0.025)	(0.026)	(0.018)	(0.015)	(0.011)	(0.014)
Constant	-0.541	-0.598*	-0.354	-0.666*	-0.727***	-0.856**
	(0.371)	(0.329)	(0.307)	(0.379)	(0.275)	(0.354)
AR1	0.13	0.16	0.09	0.13	0.11	0.14
AR2	0.11	0.14	0.20	0.61	0.57	0.45
Hansen	0.92	0.65	0.98	0.59	0.58	0.83
Obs	139	139	138	139	139	138
Groups	28	28	28	28	28	28

Notes: Time dummies not reported. The trade balance is the natural log of [1+ (exports – imports) / (exports + imports)].

Table 7: Determinants of trade balance in total and high-skill manufactured goods as a share of total merchandise trade

	Trade Balance in Manufactured Goods as a Share of Total Trade						*Trade Balance in High-Skill Manufactured Goods as a Share of Total Trade*					
	South-North			*South-South*			*South-North*			*South-South*		
	CR	*Creditor*	*M3*	*CR*	*Creditor*	*M3*	*CR*	*Creditor*	*M3*	*CR*	*Creditor*	*M3*
LD	0.411***	0.471***	0.571***	0.819***	0.535***	0.653***	0.653***	0.537***	0.824***	0.772***	0.554**	0.623***
	(0.102)	(0.170)	(0.142)	(0.118)	(0.162)	(0.249)	(0.135)	(0.196)	(0.307)	(0.120)	(0.161)	(0.151)
Finance	0.042**	0.026	0.033**	0.015	0.024	0.040***	0.0005	-0.006	0.005	0.012**	0.010*	0.024***
	(0.018)	(0.035)	(0.014	(0.009)	(0.020)	(0.012)	(0.019)	(0.017)	(0.022)	(0.006)	(0.006)	(0.009)
Population	0.022***	0.018**	0.011*	0.013***	0.022***	0.022**	0.003	0.008**	0.010***	0.008***	0.010***	0.010**
	(0.006)	(0.007)	(0.006)	(0.005)	(0.007)	(0.009)	(0.010)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)
GDP78	0.010	0.003	-0.004	0.010*	0.019	0.019*	-0.002	0.006	0.007	0.010**	0.015***	0.014**
	(0.010)	(0.013)	(0.010)	(0.006)	(0.012)	(0.009)	(0.017)	(0.006)	(0.007)	(0.005)	(0.006)	(0.005)
GFCF	0.011	0.081	0.048*	0.013	0.040	0.022	0.051	0.119**	0.060*	0.021	0.050***	0.024
	(0.087)	(0.124)	(0.026)	(0.027)	(0.048)	(0.041)	(0.062)	(0.055)	(0.035)	(0.021)	(0.018)	(0.018)
HK	-0.015*	-0.012	-0.010	0.005	0.009	-0.001	-0.012	-0.016	-0.006	0.003	0.002	-0.001
	(0.008)	(0.015)	(0.010)	(0.005)	(0.013)	(0.005)	(0.009)	(0.012)	(0.008)	(0.004)	(0.005)	(0.005)
Constant	-0.616	-0.659*	-0.414**	-0.418**	-0.779***	-0.762**	-0.163	-0.502***	-0.395***	-0.340***	-0.487***	-0.465***
	(0.200)	(0.338)	(0.206)	(0.187)	(0.273)	(0.345)	(0.248)	(0.178)	(0.142)	(0.132)	(0.151)	(0.144)
AR1	0.05	0.15	0.09	0.05	0.12	0.15	0.04	0.04	0.13	0.05	0.10	0.10
AR2	0.04	0.03	0.03	0.98	0.81	0.78	0.05	0.02	0.04	0.87	0.92	0.93
Hansen	0.94	0.37	0.96	0.81	0.59	0.86	0.92	0.38	0.99	0.70	0.55	0.83
Obs	122	122	121	122	122	121	122	122	121	122	122	121
Groups	28	28	28	28	28	28	28	28	28	28	28	28

Notes: Time dummies not reported. The trade balance is the natural log of [1+ (exports – imports) / (exports + imports)].

Table 8: Descriptive statistics and correlation analysis (five-year averages)

		S-N		*S-S*		*S-N*		*S-S*				
		Man/X	*Man/Y*	*Man/X*	*Man/Y*	*SK/X*	*SK/Y*	*SK/X*	*SK/Y*	*CR*	*M3*	*Creditor*
	Mean	27.63	10.03	18.57	7.17	10.46	5.15	9.16	4.51	43.03	56.67	1.72
	Median	26.08	3.86	17.31	2.66	4.38	0.69	5.97	0.98	30.23	46.28	2
	Minimum	0.08	0.02	0.21	0.07	0.006	0.0004	0.03	0.002	4.14	9.25	0
	Maximum	78.48	63.14	52.22	75.46	61.86	55.84	38.71	65.18	176.7	265.8	4
	Stdev	20.01	14.91	12.27	12.93	12.93	10.37	8.67	10.00	33.43	37.27	1.1
	Obs	151	151	151	151	151	151	151	151	165	165	168
Pairwise Correlations (p-values in parenthesis)												
S-N	*Man/X*	1										
	Man/Y	0.58	1									
		(0.00)										
S-S	*Man/X*	0.47	0.52	1								
		(0.00)	(0.00)									
	Man/Y	0.33	0.91	0.61	1							
		(0.00)	(0.00)	(0.00)								
S-N	*SK/X*	0.75	0.67	0.39	0.48	1						
		(0.00)	(0.00)	(0.00)	(0.00)							
	SK/Y	0.44	0.92	0.46	0.87	0.72	1					
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)						
S-S	*SK/X*	0.46	0.71	0.86	0.78	0.63	0.72	1				
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)					
	SK/Y	0.29	0.88	0.56	0.99	0.51	0.90	0.77	1			
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)				
	CR	0.40	0.75	0.59	0.73	0.47	0.64	0.70	0.69	1		
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)			
	M3	0.28	0.67	0.58	0.73	0.36	0.58	0.64	0.68	0.83	1	
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
	Creditor	0.20	0.48	0.40	0.49	0.16	0.39	0.41	0.45	0.41	0.44	1
		(0.01)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	

Notes: *Stdev* is the standard deviation and *Obs* is number of observations. *S-N* and *S-S* are South-North and South-South exports. *Man/X* and *Man/Y* are manufactures exports as a share of merchandise exports and real GDP. *SK/X* and *SK/Y* are high-skill manufactures exports as a share of merchandise export and real GDP. Refer to Tables 2 for other variable definitions.