Geography, institutions and export performance*

Stephen Redding, *London School of Economics and CEPR*

Anthony J. Venables, *London School of Economics and CEPR*

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FIRST COMPLETE DRAFT
FIGURES AT END

Abstract

This paper investigates the determinants of countries' export performance looking in particular at the role of international product market linkages. We begin with a novel decomposition of the growth in countries' exports into the contribution from increases in external demand and from improved internal supply-side conditions. The decomposition provides a method for measuring countries' access to foreign markets and of quantifying the extent to which changes in foreign market access are geographically localized. Building on the results of this decomposition, we move on to an econometric analysis of the determinants of export performance. Results include the finding that poor external geography, poor internal geography, and poor institutional quality contribute in approximately equal measure to explaining Sub-Saharan Africa's poor export performance.

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Authors' addresses:
S.J. Redding, A.J. Venables

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Dept of Economics
LSE
Houghton Street
London WC2A 2AE, UK
s.j.redding@lse.ac.uk `
http://econ.lse.ac.uk/~sredding/

Dept of Economics
LSE
Houghton Street
London WC2A 2AE, UK
a.j.venables@lse.ac.uk
http://econ.lse.ac.uk/staff/ajv

1. Introduction

There have been wide variations in countries' export performance over the last quarter century. E. Asian countries have seen real exports increase by more than 800% since the early 1970s, while those of Sub-Saharan Africa have increased by just 70%. This divergent performance has raised concerns that, while some countries are benefiting from globalisation others are, at best, passed by. This paper investigates some of the determinants of these divergent export performances, looking in particular at the roles of geography and of institutions.

Geography might be expected to affect performance in several ways. One is that the strength of international demand linkages varies across countries. Clearly, countries in E. Asia have been at the centre of a fast growing region, this creating growing import demand. Given all we know about the importance of distance as a barrier to trade, the export opportunities created by these growing import demands is likely to be geographically concentrated, creating spillover effects between countries in the region. We measure these effects by developing a theoretical model of bilateral trade flows and using gravity techniques to estimate the model's parameters. This enables us to decompose each country's actual export growth into two parts. One is based on the country's location relative to the sources of changes in import demands, which we call the country's 'foreign market access'. The other is due to changes within the country, which we call 'supply capacity'. We find that a substantial part of the differential export growth of various countries and regions since 1970 can be attributed to variations in their foreign market access.

Changes in countries' foreign market access arise because of changes in aggregate import demand from other countries – particularly countries that are close. There may also be particular regional effects arising, for example, from regional integration agreements. We therefore refine our modelling to allow for the intensity of intra-regional change to differ from trade as a whole, and we find that there have been significant changes in the intensity of intra-regional trade through time..

Having separated out the foreign market access and internal supply capacity contributions to export growth, we then investigate the determinants of each country's supply capacity. We develop a simple theoretical structure to show how it depends on country's internal geography, on measures of their business environment (such as institutional quality) and – in equilibrium – their foreign market access. This provides the basis for econometric estimation of countries' export performance as a function of internal geography, institutional quality, and foreign market access. We find that all three

characteristics are significant and quantitatively important determinants of export performance. We use our results to explore the performance of different regions, and show how almost all of Sub-Saharan Africa's poor export performance can be accounted for by poor external geography (foreign market access), poor internal geography, and poor institutions.

The paper is organised as follows. The next section outlines a theoretical framework, and section 3 decomposes export performance into the effects of external geography (foreign market access) and internal supply effects. It also studies inter-regional linkages, by examining the contribution of each region to the growth of each other region's foreign market access. Section 4 extends the analysis to a more detailed investigation of intra-regional trade, showing how the intensity of this trade has changed through time. Section 5 endogenises each country's supply capacity; in this section we undertake econometric analysis of export performance, and establish the importance of internal geography, external geography, and institutions.

2. Theoretical Framework

We start by outlining the theoretical framework that we use to identify the foreign market access and supply capacity of each country. The framework is based on a standard new trade theory model extended to have transport frictions in trade.

The world consists of $i = 1,...R$ countries, each of which can produce a range of differentiated products. Product differentiation is modelled in the usual constant elasticity of substitution way; s is the

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elasticity of substitution between any pair of products, implying a CES utility function of the form, where z denotes manufacturing varieties, n_i is the set of varieties produced in country i, and $x_{ij}(z)$ is the country j consumption of the zth product from this set. The second equation imposes symmetry over all products produced in country i, enabling us to dispense with the index z and rewrite the integral as a product. Dual to this quantity aggregator is a price index for manufactures in each country, G_j, defined over the prices of individual varieties produced in i and sold in j, p_{ij},

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where the second equation makes use of the symmetry in equilibrium prices.

Country j's total expenditure on manufactures we denote E_j. Given this expenditure, its

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demand for each product is, (by Shephard's lemma on the price index),

Thus, the own price elasticity of demand is s, and the term Install Equation Editor and double-click here to view equation. gives the position of the demand curve facing a single firm in market j.

We shall assume that all country i varieties have the same producer price, p_i, and that the cost of delivery to market j gives price $p_{ij} = p_i t_i T_{ij} t_j$. t_i and t_j are the ad valorem cost factors in getting the product to and from the border in countries i and j and T_{ij} is the cost of shipping the product between countries.

Employing the usual iceberg assumption, the value of total exports of country i to country j is

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therefore

The right hand side of this equation contains both demand and supply variables. The term Install Equation Editor and double-click here to view equation. is country j '*market capacity*'; it depends on total expenditure in j, on internal transport costs t_j, and on the number of competing varieties and their prices, this summarised in the price index. On the supply side, the term Install Equation Editor and double-click here to view equation. measures what we refer to as the '*supply capacity*' of the exporting country; it is the product of the number of varieties and their price competitiveness, such that doubling supply capacity (given market capacities) doubles the value of sales. We will denote market capacity and supply capacity by m_i and, s_i respectively, so

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From (4), bilateral trade flows can be expressed simply as the product of exporter supply capacity, importer market capacity, and the term Install Equation Editor and double-click here to view equation. which measures bilateral

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transport costs between them:

We can now construct a measure of each country's access to foreign markets. Country *i*'s '*foreign market access*', F_i, is the sum of the market capacity of all other countries, weighted by the

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measure of bilateral trade costs in reaching supplier *i*,

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Using this set up, the total value of exports of country *i*, V_i, satisfies

Analogous to market access we also define each country's '*foreign supplier access*', H_i, as the sum of the supply capacity of all other countries, weighted by the measure of bilateral trade in

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reaching supplier *i*,

The total value of imports of country *i*, Z_i, satisfies

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These relationships provide the basis of the decompositions of the next section.

3. Sources of export growth: decomposition

A key feature of theoretical models of product differentiation and trade costs is the existence of a pecuniary demand effect across countries (when combined with increasing returns to scale, this results in the so-called 'home market effect'). An increase in expenditure on traded goods in one country raises demand for traded goods in other countries and, because of trade costs, the size of this effect is much greater for neighbouring countries than for distant countries. To what extent can countries' differential export performances be accounted for by differences in these demand conditions, and how much by shifting internal supply response?

3.1 Data Sources and Sample Size

Data on the value of bilateral trade flows for 101 countries during the period 1970-97 are obtained from the NBER World Trade Database (Feenstra et al. 1997, Feenstra 2000). We are concerned with the growth in real value of countries' exports, and the current dollar data in the NBER World Trade Database are therefore deflated to obtain a measure of real trade flows. A country's market and supplier access depend on its trade with all other countries, and these trade data have the advantage of being available for a large cross-section of countries. We combine the trade data with information on geographical characteristics (eg bilateral distance, existence of a common border) and data on GDP and population from the World Bank. See Appendix A for further details.

It is likely that there are substantial year-on-year fluctuations in bilateral trade flows - particularly for small countries - and we are concerned here with the determinants of long-run real export growth. Therefore, in the empirical analysis that follows, we average bilateral trade flows over 4-year periods. With 28 years of data, this yields 7 periods of analysis.

3.2 Export growth decompositions

We start with a mechanical decomposition of the growth in countries' total exports. Given actual values of total exports and imports, V_i, and Z_i, and values of bilateral trade costs, Install Equation Editor and double-click here to view equation., equations (7) - (10) are $4N$ equations in $4N$ unknowns (m_i, s_i, F_i, and H_i for all i). Thus, given values for exports, imports, and bilateral trade costs, this system of equations can be solved to obtain measures of market capacity, supplier capacity, foreign market access, and foreign supplier access for all N countries.[1]

Measures of bilateral trade costs are obtained from gravity equation estimation. Equation (6) in the model implies a relationship between bilateral trade, supplier capacity, and market capacity. We estimate this relationship using bilateral distance and a dummy for whether countries share a common border to capture trade frictions between countries. Supplier capacity and market capacity are controlled for respectively using an exporter country and importer partner dummy.[2] The estimation results are summarized in Table 1, and we take the predicted values for bilateral trade costs from this equation as our measures of trade costs: thus, Install Equation Editor and double-click here to view equation., where $dist_{ij}$ is the distance between a pair of countries i and j, and $bord_{ij}$ is a dummy variable that takes the value one if the two countries share a common border.

These measures of trade costs are then combined with information on countries' total imports and exports to solve the system of simultaneous equations (7) - (10) for all countries' market capacities, supply capacities, foreign market access, and foreign supplier access. This implies, of course, that the product of each country's supply capacity and foreign market access exactly equals its actual exports (and analogously on the import side). This enables us to undertake an exact decomposition of actual export volumes. An alternative approach would be to use the estimates of the exporter country and importer partner dummies obtained from the gravity equation as measures of market capacity and supply capacity. Combining these with the measures of trade costs from the gravity equation, foreign market access and foreign supplier access can be constructed using equations (7) and (9). This alternative approach was used in another context by Redding and Venables (2000) and is adopted here as a robustness test. We find a high degree of correlation between measures of foreign market and supplier access constructed from solving the system of equations for all countries total imports and exports and those constructed based on estimates from bilateral trade flows.

The results for 101 countries are reported in Table A1 of the Appendix and to provide a

broader overview of the sources of export growth, we aggregate country results for 9 geographical regions: Eastern Europe; Latin America; Middle East and North Africa; North America; Oceania; South-East Asia; Other Asia; Sub-Saharan Africa; and Western Europe. (Aggregation is done by weighting country variables by their average shares during the sample period in the relevant region's total exports). The upper two panels of Figure 1 give the evolution of FMA for each of the regions, while the lower two panels graph the time-series of supplier capacity (where supplier capacity is normalised relative to its initial value).

The initial ranking of regions has East and Western Europe having the highest level of FMA; the Eastern European position is not as surprising as it first seems, because supply capacity captures countries' internal characteristics and, and FMA simply reports where countries are relative to world import demands. These regions are followed by North America. Looking at the upper right panel (and noting the vertical scale) the initial ranking then proceeds as Other Asia, Sub-Saharan Africa, SE Asia and Oceania. The obvious feature of the time trend is the rapid growth of SE Asia (overtaking Africa, Other Asia and Latin America), and the acceleration of Other Asia in the second period.

Turning now to growth rates, we look at proportionate changes in s_i, and F_i, noting that these

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satisfy:

Intuitively, this decomposition reveals the extent to which a country's export growth is due to improved supply-side performance within the country itself ($?\ln s_i$) or increases in import demand in trade partners ($?\ln F_i$).

Appendix Table A1 gives the country detail, and Table 2 of the text gives the regional aggregates. The first rows of this table, the benchmark case, report the rate of growth of world exports in each period, and the growths of supply capacity and market capacity that would be observed if all countries had the same rates of growth of exports, of supply capacity, and of market access. Time series for the levels of s_i and F_i were also shown in Figure 1 above.

A number of results stand out. South-East Asian countries experience export growth much faster than the benchmark in both periods. In the first period this was driven particularly by supply capacity growth, and in the second foreign market access growth becomes relatively more important.

Looking at individual countries in S.E. Asia (appendix table A1) shows that market access growth was generally faster in the first period than in the second. For some of the earlier developers supply capacity growth slowed sharply in the second period (eg Japan, Taiwan, Korea) while the later developers experienced a dramatic increase in second period supply capacity growth (eg Philipines, Thailand, Vietnam).

Other Asia experienced below world average export growth in the first period, but this is accounted for by significantly faster than benchmark market access growth coupled with much slower than benchmark supply capacity growth. This is in sharp contrast to the second period where market access growth close to the benchmark was associated with supply capacity growth at twice the benchmark, giving overall export growth of nearly twice the world rate.

Latin America shows a rather opposite picture. Slightly better than benchmark market access growth in both periods was associated with strong supply capacity growth in the first period and weak growth in the second. Results for the Middle East and North Africa aggregate are dominated by oil-exporters, while those for Sub-Saharan Africa elaborate on a familiar story. Taking the two periods together, nearly 20 percentage points were knocked off Africa's export growth rates by virtue of their geographical location. However, supply capacity grew less fast than the benchmark in both periods, and positive export growth in the second period was achieved by market access growth offsetting a reduction in supply capacity.

The main messages from this section are then, that both levels and rates of change of foreign market access vary widely across countries and regions. Moving a country from Sub-Saharan Africa to Western Europe would nearly triple its FMA and – given supply capacity – triple exports. Of course, there will also be an equilibrium response of supply capacity to these external conditions, and we analyse these in section 5. However, before doing this we look in more detail at regional trade effects.

3.3. Regional effects

In the decomposition we looked at each country's FMA growth, but failed to divide the sources of this growth geographically. How much FMA growth do countries receive from the performance of other countries in their own region, and how much from, say, a growth in North American market capacity?

To address these questions we partition countries' trade partners into $K = 9$ sub-groups $\{R_1,$

R_2, ... , R_K} and analyze the extent to which a country's growth in FMA is driven by increases in access to markets in each of 9 geographical regions. A country's FMA can be written as the sum of its access

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to foreign markets within each geographical region,

where Install Equation Editor and double-click here to view equation. is the market access derived by country *i* from region *k*, Install Equation Editor and double-click here to view equation. . Taking differences in this equation and dividing through by FMA_i, the rate of growth of the country's foreign market access can be decomposed into the contributions from

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foreign market growth in the various geographical regions,

where there are two components to these regional contributions. A region *k* may make a large contribution to country *i*'s FMA growth either because it constitutes a large share of the country's FMA, (Install Equation Editor and double-click here to view equation.) or because there is rapid growth in access to markets in the members of the region (Install Equation Editor and double-click here to view equation.). The growth in country *i*'s access to markets in a region (Install Equation Editor and double-click here to view equation.) will itself depend on two sets of considerations; first, changes in market capacity in the members of the region and second changes in trade costs between country *i* and the region in question (see equation (7)). If country *i* is itself a member of the region in question, this change in trade costs will include the effects of regional integration; if not the change in trade costs will reflect variation over time in the distance coefficient and the common border coefficient if the country shares a common border with countries in another region.

Note that this decomposition of the growth in FMA shares features with the literature concerned with a shift-share analysis countries export growth (see for example Richardson 1971). However, we have used the structure of a theoretical trade and geography model to decompose exports into the components explained by own country performance (supplier capacity) and changes in external markets

(foreign market access). As a result of this and the use of measures of trade costs that vary within regions and over time, we are able to shed further light on the impact of regional integration on the growth in countries' exports.

We report results not for individual countries, but for their regional groupings. Thus, Install Equation Editor and double-click here to view equation. is the market access derived by region *k* from region *i*, and the

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weighted sum of these components sums to each region's change in FMA,

Results are reported in table 3a, for the period as a whole, and 3b, for the two sub periods. Reading across the first row of the tables we see that North America derived virtually all of its FMA growth from itself. This result reflects the dominance of Canada in North America's FMA. Canada benefits much more from being located close to the USA than the USA benefits from being located close to Canada, and thus FMA in Canada is large relative to that in the United States. Own region FMA growth in Canada accounts for over 98% of total FMA growth.

Latin America was much more dependent on FMA growth from outside the region – almost entirely so in the first period. Of these extra-regional sources, North America is far away the most important. Turning to Europe, Western Europe provides the source of FMA growth both for itself and for Eastern Europe.

The striking features of Sub-Saharan Africa are the negative contribution of the own region effect, and the lack of a dominant external source of FMA growth. North America was most important in both periods, followed by Western Europe, and augmented in the first period by FMA growth from the Middle East and North Africa.

The Asian figures illustrate two main points. One is the dominant role of intra-regional linkages with SE Asia, and the other is the growth in the importance of SE Asia for the rest of Asia. This arises partly from the growing import demands of SE Asia and partly also from the westwards expansion of economic activity in the SE Asia region. It is also interesting to look down the SE Asia column in table 3B, indicating the contribution of this region to FMA growth in other regions; the region now provides a major potential source of demand for African exports. The final two columns of appendix table

A1 report the results of the decomposition for individual countries. In the interests of brevity, we focus on the contribution of a country's own region and of other regions.

4. Regional trade intensities:

In the gravity model used so far trade frictions between countries are measured simply by distance and whether or not the countries share a common border. In this section we present a brief exploration of the importance of regional trading, by allowing the costs of trading within a region to differ from those of trading between regions.

To capture the idea that the costs of trading within a region may differ from those of trading between regions, we augment our model of bilateral trade frictions in the gravity equation (distance and the existence of a common border) with dummies for whether two countries lie within the same geographical regions. Our measure of bilateral trade costs becomes Install Equation Editor and double-click here to view equation.

where f_r is the coefficient on the dummy for whether countries i and j lie within region r. This specification allows for differences in trade costs on within-region transactions and between-region transactions in an extremely general way that imposes a minimal degree of structure on the data. At the same time, we are able to analyze how the coefficient on the with-region trade dummy changes over time and to relate these changes to explicit policy-based attempts at regional integration including for example NAFTA and the European Union.

The results of estimating the gravity equation including the within-region trade dummy are reported in Table 4. The within-region dummies capture anything that affects the ease of trading within the region, and it is not therefore surprising that some of the estimated coefficients are negative particularly at the beginning of the sample period. Sub-Saharan Africa is a case in point, where a recent literature has emphasized the importance of physical geography and infrastructure in explaining trade and development in Africa (see, for example, Gallup et al. 1998 and Limao and Venables 2001). Africa has few East-West navigable rivers to facilitate water-borne trade within the continent, and there is much evidence of low levels of transport infrastructure investment that may impact particularly severely on within-region trade. International political conflict and patterns of specialization clearly also play a role. For example in the Middle-east, within-region conflict and the importance of petroleum exports

to industrialized countries outside the region generate a negative estimated within-region effect.

Over time, we observe a systematic increase in the estimated values of almost all the within-region effects. This provides evidence of the increasingly regionalization of international trade that does not reply on a particular parameterization of the regional integration process. Nonetheless, one important explanation for increasingly regionalization is clearly the proliferation of Regional Preferential Trade Agreements. This is particularly clear for North America. Here at the beginning of the sample period, we find a negative within-region effect, which may reflect policies of import substitution in Mexico that particularly restricted within-region trade or the fact that the capital cities of Canada and United States (on which our measures of distance are based) are closer than the true economic centres (taking into account the whole distribution of economic activity). Nevertheless, over time we observe a rise in the estimated within-region effect that is both large and statistically significant. Thus, the estimated coefficient becomes positive and statistically significant in the period 1990-3 during which NAFTA was signed.

Other examples of the importance of trade policy in shaping regional integration include Western and Eastern Europe. In Western Europe, we again observe a systematic rise in the estimated within-region effect over time. In Eastern Europe, the value of the within-region effect follows an inverted U-shape, rising between the 1970s and 1980s consistent with the policies of COMECON in stimulating trade with the former Soviet bloc and declining markedly in the 1990s following the fall of the Berlin wall and the abandonment of the COMECON system of public procurement and trading preferences.

5. Determinants of export performance.

As a matter of definition, a country's exports are the product of its supply capacity, s_i, and foreign market access, F_i. We now turn to the question of what determines supply capacity? We expect that it depends on country size, endowments, geography, institutions and, in equilibrium, the potential return to exporting, which in turn depends on foreign market access. Our objective in this section is to econometrically estimate the importance of these factors. We contribute to a growing literature on the role of geography in determining the ratio of trade to income (see, in particular, Frankel and Romer 1999, Leamer 1988, and Wei 2000).

5.1 Analytics:

In order to endogenise supply capacity we have to add to the material of section 2 some general equilibrium structure of the economy. From equations (8) and (5) the quantity of country *i*'s total

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exports of a single variety, Install Equation Editor and double-click here to view equation., are given by

We summarise the general equilibrium of the economy by supposing that the price of exportables is a

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function of the total quantity of exports, this given by

where c_i is a measure of comparative costs in the export sector and a_i is a measure of the size of the economy. The function $w()$ captures the fact that as the export sector expands it draws resources out of other sectors of the economy – import competing and non-tradeables. Resources used in the export sector are proportional to the volume of its output, $n_i x_i$, and their impact on the economy depends on their quantity relative to the size of the economy, a_i. Drawing resources out of other sectors tends to bid up their prices, raising costs and hence price in the export sector. Logarithmically differentiating

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(15) and (16) gives,

where Install Equation Editor and double-click here to view equation. denotes a proportional change and ? is the elasticity of prices in the export sector with respect to the quantity of resources used in the sector. Eliminating the change in price gives

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The total value of exports, Install Equation Editor and double-click here to view equation., (equation (8)) varies according to,

where the second equation uses (17). One further step is needed, which is to specify whether export volumes vary through changes in the number of varieties, *n*, or output per variety, *x*. Monopolistic competition theory implies that equilibrium output per commodity is a constant,

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At the other extreme, if the number of varieties that can be produced by a country is fixed,

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These equations form the basis of the econometric investigation, with variation in terms provided by cross-country observations. Notice that the coefficient on foreign market access in these equations is not generally equal to zero, reflecting the endogeneity of supply capacity. Thus if s is large relative to ? (or, in the second equation if s > 1), then the coefficient on Install Equation Editor and double-click here to view equation. is less than unity. High levels of foreign market access are associated with a less than proportional increase in exports as diminishing returns occur: the diminishing returns stem from bidding up factor prices and, in the second case, sliding down the demand curve for the fixed set of varieties.

Other terms in the equations are as would be expected. Cross-country variation in internal

geography is captured by Install Equation Editor and double-click here to view equation., entering with negative coefficient providing the price elasticity of export demand is greater than unity. Domestic size, Install Equation Editor and double-click here to view equation., increases the value of exports, although not necessarily proportionately. And a high cost export sector (reflecting weak comparative advantage) reduces exports.

5.2 Estimation:

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Our empirical specifications are based on the following equation:

The dependent variable is the value of exports, and GDP and population are included as two separate measures of country size. F_i is foreign market access as calculated in section 3 above. t_i represents the internal geography of the country, and is measured empirically using the percentage of the population living within 100km of the coast or rivers.

To capture the comparative costs of exporting in each country, c_i, we use a measure of institutional quality from the cross-country growth literature (see, for example Acemoglu et al. 2001 and Knack and Keefer 1997). The measure is an index of the risk of expropriation of extent of property rights protection from Holmes et al (1997), and has been extensively used in the empirical growth literature to measure institutional quality, 'social infrastructure', or 'social capability.' A higher value of the index corresponds to better institutional quality.

We also include a full set of dummies for the 9 geographical regions that control for unobserved heterogeneity across regions in the determinants of export performance, including other unobserved institutions, features of technology, and characteristics of countries.

Before presenting estimates of equation (22), a number of points merit discussion. First, the measure of Foreign Market Access (F) included on the right-hand side as a determinant of countries export performance has itself been constructed from the export data. However, foreign market access depends on market capacities in all *other* countries, weighted by bilateral trade costs (equation (7)).

It is constructed from the solution of a system of simultaneous equations for all countries' total exports and total imports, and any individual country's exports enter this system of simultaneous equations as just one out of the *2N* observations on exports and imports. To ensure that in practice shocks to an individual country's exports are not driving our measure of foreign market access, we also construct for each country an alternative measure that completely excludes information on the own country's exports. In this alternative measure, F^*, we exclude one country i at a time and solve the system of equations in (7) to (10) for the $N-1$ other countries $j \neq i$ (excluding information on country i's exports to and imports from these other countries). This yields measures of market capacity and supplier capacity in all other countries $j \neq i$. The alternative foreign market access measure for country i's is then constructed as the trade cost weighted sum of these market capacities. We repeat the analysis for all countries $i \in N$. We use this as a robustness check, and the measure turns out to be very highly correlated with the FMA measure of section 4.

Second, the income term, GDP_i, may itself be endogenous. We consider two approaches to this problem. First, we impose a theoretical restriction that $\beta_1 = 1$, and take as the dependent variable the export to income ratio, V_i/GDP_i. In this specification, we focus on the ability of the explanatory variables to explain variation in the share of exports in GDP. Second, we use lagged values of GDP_i for the independent variable. We begin by estimating equation (22) using the cross-section variation in the data and focus on the final time period 1994/97. Here, the corresponding lagged income variable is 1990-93.

Estimation results are reported in Table 5. The first column gives our base specification, using the lagged GDP variable. As expected the coefficient on GDP is positive and highly significant, although also significantly less than unity, reflecting the fact that large economies are less open than smaller ones. This suggests that working with the ratio of exports to GDP as dependent variable would be inappropriate. The other size measure, population, is insignificant.

We find a positive and statistically significant effect of both internal and external geography in determining exports. The coefficient on F is significantly less than unity, indicating that an increase in FMA reduces supply capacity so increases exports less than proportionately. This is in line with the theoretical discussion above, as the expansion in exports raises costs and prices in the sector. This finding is also consistent with the earlier work (Redding and Venables 2001) which shows that a higher level of FMA is associated with higher wages.[3]

Finally, risk of expropriation has a negative and statistically significant effect on the trade ratio, consistent with an important role for the protection of property rights in determining countries ability to export.

The second column of table 5 gives results for the specification with the export ratio taken as independent variable. Coefficients on *F* and on *t* are similar to those in the first column. However, the population term becomes negative and significant, and the coefficient on institutional quality becomes smaller and insignificant. The fact that smaller economies tend to export less is being captured by the negative coefficient on population, and perhaps also by negative correlation between institutional quality (now with a smaller coefficient) and per capita income.

Columns 3 and 4 repeat the exercise with an alternative measure of market access discussed above, *F**. Signs and significance levels are unchanged using this alternative variable.

5.3 Effects by region

We use these econometric estimates to shed light on patterns of export performance across the 9 geographical regions. To what extent are the divergent performances of these regions explained by this model, and which of the independent variables are driving the performance of different regions?

The expected value of exports by region k relative to the expected value for the world, Install Equation Editor and double-click here to view equation. , can be expressed as a linear function of regional deviations in

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independent variables times their estimated coefficients. Formally, regression equation (22) implies that, where μ_k is the regional dummy of equation (22), and remaining terms are the regional contributions of

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the independent variables:

Thus, Install Equation Editor and double-click here to view equation. is region k's average FMA, relative to the world, times the estimated coefficient on FMA. Terms $a_k(t)$ and $a_k(c)$ are the analagous measures for internal

geography and institutions, while size effects are combined in $a_k(a)$.

We illustrate results for each region in figure 2, where values are based on the estimates given in the first column of table 5, estimated for 1994-97. The first bar reported for each region, labelled $a_k(V)$, is the region's export performance relative to the world average, once size effects have been conditioned out, i.e., Install Equation Editor and double-click here to view equation. .

Remaining bars sum to this first bar, since they divide $a_k(V)$ into four components (see equation (23)). Bars 3-5 give the contributions of market access, F, internal geography, t, and institutions, c. The residual, after controlling for these factors, is the regional dummy μ_k, illustrated as the second bar in each chart.

What do we learn from this decomposition? North America (including Mexico) has high trade relative to the world, given its income and population. This is explained partly by relatively good market access and partly by institutions. It is offset by relatively poor internal geography leaving a substantial unexplained residual. Western Europe's high level of exports is accounted for by a combination of good market access, good internal geography and good institutions, leaving virtually nothing to the residual dummy variable. For Eastern Europe, the benefits of good market access and better than average internal geography and institutions are not fully reflected in the actual level of trade, leaving a large negative regional dummy. This is consistent with the idea that the legacy of communism during the post-war period has had a long-lasting effect on Eastern Europe's exports, captured here in the regional dummy.

Sub-Saharan African has low trade volumes given its income level, and these are accounted for by below average performance on all three measures, and some negative residual. Although we are able to explain some of the above average trade ratios in South-East Asia, there remains a substantial positive residual which in part is likely to be explained by the entrepot activities of Hong Kong and Singapore. The outcome for Oceania combines low market access with good internal geography and institutions.

5.4. 1994-97 vs 1982-85:

Figure 2 gives results for 1994-97, and in figure 3 we reproduce this information (the solid bars) and also give the comparable numbers for 1982-85. This involves re-estimating the export equation using

data for this earlier period, and then decomposing changes just as we did on figure 2. Results of the estimation are given in appendix table A2, and are similar to those for the later period.

Inspection of figure 3 shows that the MENA region and the Other Asia region experienced a substantial deterioration of their performance in the latter period compared to the former. The performance in the earlier period is not accounted for by the explanatory variables of the model, although for MENA can be attributed to oil revenues. Sub-Saharan Africa also experienced a deterioration, attributable largely to the relative deterioration of institutions in SSA. Regions that improved their performance include North America, South-East Asia, East Europe and Latin America. For Latin America and East Europe some of the improvement was due to an improvement in institutional quality.

6. Concluding comments.

This paper examines the extent to which countries' export performance is determined by their external geography, their internal geography, and their institutional quality. We first undertook an exact decomposition of export performance into externally and internally driven parts -- foreign market access and supplier capacity respectively. A substantial part of the overall variation in export performance is accounted for by variation in foreign market access, and similarly changes in FMA account for part of countries' export growth. Looking at this in regional detail, North America and Western Europe obtained important regional effects which were absent in Sub-Saharan Africa and Other Asia.

Remaining sections of the paper endogenised supply capacity, drawing out the combined roles of market access, internal geography and institutions. Results indicate that almost all of Sub-Saharan Africa's poor export performance can be accounted for by the contribution of these variables.

Table 1 : Bilateral trade equation estimation (country, partner dummies)

$\ln(X_{ij})$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Obs	9981	9981	9981	9981	9981	9981	9981
Period	1970/73	1974/77	1978/81	1982/85	1986/90	1990/94	1994/97
$\ln(dist_{ij})$	-0.831	-0.866	-0.882	-0.883	-0.853	-0.866	-0.866
	(0.072)	*(0.062)*	*(0.059)*	*(0.061)*	*(0.050)*	*(0.050)*	*(0.046)*
$bord_{ij}$	0.532	0.494	0.483	0.449	0.528	0.607	0.688
	(0.179)	*(0.157)*	*(0.154)*	*(0.160)*	*(0.146)*	*(0.151)*	*(0.152)*
Country dummies	yes	yes	yes	yes	yes	yes	yes
Partner dummies	yes	yes	yes	yes	yes	yes	yes
Estimation	WLS	WLS	WLS	WLS	WLS	WLS	WLS
F(·)	96.56	106.83	124.23	128.43	172.00	198.71	212.87
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.863	0.850	0.852	0.844	0.897	0.906	0.898
Root MSE	0.879	0.890	0.891	0.954	0.761	0.700	0.723

Notes: Huber-White Heteroscedasticity robust standard errors in parentheses. $\ln(X_{ij})$ is log bilateral exports from country *i* to partner *j* plus one; $\ln(dist_{ij})$ is bilateral distance between countries *i* and *j*; $bord_{ij}$ is a dummy for whether the two countries share a common border. All specifications include exporting country and importing partner fixed effects. To control for measurement error in bilateral trade flows that is correlated with the volume of trade, observations are weighted by the product of country and partner GDP.

Table 2: Regional Sources of Export Growth, 1970/73-1994/97, Percentage Rates of Growth

Region	Period	Exports	Foreign Market Access	Supplier Capacity
Benchmark	Periods 1-7 (70/73-94/97)	326.3%	106.5%	106.5%
	Periods 1-4 (70/73-82/85)	104.4%	42.9%	42.9%
	Periods 4-7 (82/85-94/97)	108.5%	44.5%	44.5%
North America	Periods 1-7 (70/73-94/97)	288.99%	166.07%	110.86%
	Periods 1-4 (70/73-82/85)	92.74%	59.42%	54.00%
	Periods 4-7 (82/85-94/97)	101.82%	66.90%	36.92%
Latin America	Periods 1-7 (70/73-94/97)	193.32%	110.82%	48.11%
	Periods 1-4 (70/73-82/85)	90.17%	40.39%	43.45%
	Periods 4-7 (82/85-94/97)	54.24%	50.17%	3.25%
Western Europe	Periods 1-7 (70/73-94/97)	269.37%	94.29%	96.82%
	Periods 1-4 (70/73-82/85)	75.05%	33.02%	34.12%
	Periods 4-7 (82/85-94/97)	111.01%	46.06%	46.75%
Eastern Europe	Periods 1-7 (70/73-94/97)	187.43%	94.84%	39.62%
	Periods 1-4 (70/73-82/85)	44.03%	33.95%	10.95%
	Periods 4-7 (82/85-94/97)	99.56%	45.45%	25.84%
Sub-Saharan Africa	Periods 1-7 (70/73-94/97)	70.38%	86.44%	-7.24%
	Periods 1-4 (70/73-82/85)	54.18%	34.71%	10.80%
	Periods 4-7 (82/85-94/97)	10.50%	38.40%	-16.28%
N Africa and M East	Periods 1-7 (70/73-94/97)	189.77%	102.82%	41.20%
	Periods 1-4 (70/73-82/85)	245.48%	48.38%	135.71%
	Periods 4-7 (82/85-94/97)	-16.13%	36.69%	-40.10%
SE Asia	Periods 1-7 (70/73-94/97)	826.17%	146.35%	238.04%
	Periods 1-4 (70/73-82/85)	233.67%	47.88%	119.01%
	Periods 4-7 (82/85-94/97)	177.57%	66.59%	54.35%
Other Asia	Periods 1-7 (70/73-94/97)	371.95%	117.80%	119.31%
	Periods 1-4 (70/73-82/85)	76.45%	45.74%	21.01%
	Periods 4-7 (82/85-94/97)	167.48%	49.44%	81.23%
Oceania	Periods 1-7 (70/73-94/97)	166.82%	104.30%	29.86%
	Periods 1-4 (70/73-82/85)	48.35%	37.34%	7.89%
	Periods 4-7 (82/85-94/97)	79.85%	48.75%	20.36%

Notes: Regional variables are the sum of those for countries within a region. See Appendix A for the countries included in each region.

Table 3a Percentage Growth Contributions of Partner Regions to the FMA Growth of Each Exporting Region

Periods 1-7 (1970/73-1994/7)

	FMA	North America	Latin America	Western Europe	Eastern Europe	Sub Saharan Africa	MENA	South East Asia	Other Asia	Oceania
North America	166.07%	141.42%	3.22%	9.53%	0.29%	-0.43%	1.30%	9.82%	0.33%	0.59%
Latin America	110.82%	59.11%	19.32%	13.99%	0.42%	-0.86%	2.18%	14.93%	0.55%	1.19%
Western Europe	94.29%	15.49%	1.45%	61.91%	2.01%	-0.53%	2.90%	10.15%	0.50%	0.41%
Eastern Europe	94.84%	14.38%	1.44%	60.67%	2.99%	-0.57%	3.66%	11.21%	0.60%	0.45%
Sub-Saharan Africa	86.44%	27.24%	4.57%	23.79%	0.75%	-2.44%	6.00%	23.84%	1.36%	1.34%
N Africa and M East	102.82%	20.36%	2.35%	33.04%	1.08%	-1.08%	23.91%	20.67%	1.65%	0.83%
South-East Asia	146.35%	19.10%	2.18%	13.04%	0.46%	-0.72%	3.40%	104.67%	1.88%	2.34%
Other Asia	117.80%	21.29%	2.56%	19.43%	0.71%	-1.02%	7.67%	58.39%	7.10%	1.67%
Oceania	104.30%	29.99%	5.13%	13.18%	0.44%	-1.02%	3.22%	46.60%	1.26%	5.49%

Notes: a region's Foreign Market Access (FMA) is the sum of the values of FMA for all countries within that region. Regional FMA growth is decomposed into the percentage contributions of each partner region using equation (12). Regions are reported in row

Table 3b Percentage Growth Contributions of Partner Regions to the FMA Growth of Each Exporting Region
Periods 1-4 (1970/73-1994/7)

	FMA	North America	Latin America	Western Europe	Eastern Europe	Sub Saharan Africa	MENA	South East Asia	Other Asia	Oceania
North America	59.42%	51.56%	0.35%	2.36%	-0.11%	-0.22%	1.84%	3.22%	0.25%	0.18%
Latin America	40.39%	27.89%	1.42%	3.17%	-0.17%	-0.48%	3.07%	4.72%	0.41%	0.36%
Western Europe	33.02%	7.42%	0.01%	18.07%	-0.27%	-0.17%	4.20%	3.24%	0.40%	0.12%
Eastern Europe	33.95%	6.81%	-0.00%	18.28%	-0.35%	-0.17%	5.22%	3.57%	0.48%	0.13%
Sub-Saharan Africa	34.71%	12.55%	-0.06%	6.20%	-0.25%	-1.03%	8.58%	7.23%	1.08%	0.41%

N Africa and M East	48.38%	9.50%	-0.03%	10.32%	-0.24%	-0.32%	21.09%	6.45%	1.37%	0.25%
South-East Asia	47.88%	8.54%	-0.12%	2.88%	-0.19%	-0.49%	4.82%	30.18%	1.39%	0.86%
Other Asia	45.74%	9.62%	-0.12%	4.81%	-0.25%	-0.59%	10.73%	16.86%	4.13%	0.55%
Oceania	37.34%	13.10%	-0.24%	2.32%	-0.22%	-0.81%	4.51%	15.30%	0.95%	2.43%

Table 3c Percentage Growth Contributions of Partner Regions to the FMA Growth of Each Exporting Region

Periods 4-7 (1982/85-1994/97)

	FMA	North America	Latin America	Western Europe	Eastern Europe	Sub Saharan Africa	MENA	South East Asia	Other Asia	Oceania

North America	66.90%	56.37%	1.81%	4.50%	0.25%	-0.13%	-0.34%	4.14%	0.05%	0.26%
Latin America	50.17%	22.23%	12.75%	7.71%	0.42%	-0.27%	-0.64%	7.27%	0.10%	0.59%
Western Europe	46.06%	6.07%	1.08%	32.96%	1.71%	-0.27%	-0.98%	5.19%	0.08%	0.22%
Eastern Europe	45.45%	5.65%	1.08%	31.65%	2.50%	-0.30%	-1.16%	5.71%	0.09%	0.24%
Sub-Saharan Africa	38.40%	10.90%	3.44%	13.06%	0.75%	-1.05%	-1.91%	12.33%	0.21%	0.69%
N Africa and M East	36.69%	7.32%	1.60%	15.31%	0.89%	-0.51%	1.91%	9.59%	0.19%	0.39%
South-East Asia	66.59%	7.14%	1.56%	6.87%	0.43%	-0.16%	-0.96%	50.37%	0.33%	1.00%
Other Asia	49.44%	8.01%	1.84%	10.03%	0.66%	-0.29%	-2.10%	28.50%	2.04%	0.77%
Oceania	48.75%	12.30%	3.91%	7.91%	0.48%	-0.15%	-0.94%	22.79%	0.23%	2.23%

Table 4: Bilateral trade equation estimation and within-region trade costs (country, partner dummies)

$\ln(X_{ii})$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Obs	9981	9981	9981	9981	9981	9981	9981
Period	1970/73	1974/77	1978/81	1982/85	1986/90	1990/94	1994/97
$\ln(dist_{ij})$	-0.669	-0.690	-0.710	-0.779	-0.704	-0.688	-0.740
	(0.089)	*(0.077)*	*(0.076)*	*(0.081)*	*(0.071)*	*(0.075)*	*(0.086)*
$bord_{ij}$	0.778	0.659	0.578	0.526	0.488	0.416	0.401
	(0.145)	*(0.124)*	*(0.119)*	*(0.120)*	*(0.112)*	*(0.113)*	*(0.118)*
Within N America	-0.467	-0.277	-0.205	-0.333	-0.019	0.417	0.543
	(0.289)	*(0.271)*	*(0.281)*	*(0.278)*	*(0.273)*	*(0.327)*	*(0.335)*
Within L America	-0.531	-0.278	-0.168	-0.013	0.313	0.626	0.580
	(0.233)	*(0.202)*	*(0.201)*	*(0.209)*	*(0.191)*	*(0.201)*	*(0.240)*
Within W Europe	0.565	0.642	0.732	0.657	0.811	0.876	0.802
	(0.161)	*(0.140)*	*(0.135)*	*(0.142)*	*(0.130)*	*(0.142)*	*(0.172)*
Within E Europe	1.038	-0.274	3.424	4.139	4.014	2.409	1.817
	(1.452)	*(1.750)*	*(0.305)*	*(0.280)*	*(0.261)*	*(0.212)*	*(0.256)*
Within Sub-Sahar. Africa	-3.913	-4.067	-4.849	-5.615	-5.200	-1.485	-1.334
	(0.586)	*(0.609)*	*(0.609)*	*(0.525)*	*(0.449)*	*(0.316)*	*(0.322)*
Within N Africa & ME	-2.972	-4.225	-4.903	-4.257	-4.073	-3.631	-3.381
	(0.658)	*(0.595)*	*(0.704)*	*(0.664)*	*(0.683)*	*(0.804)*	*(0.853)*
Within SE Asia	0.852	0.638	0.225	-0.174	-0.217	-0.232	-0.382
	(0.297)	*(0.272)*	*(0.265)*	*(0.293)*	*(0.223)*	*(0.219)*	*(0.230)*
Within Other Asia	-4.650	-0.715	-0.422	-0.574	-0.860	-0.356	-1.278
	(1.637)	*(0.751)*	*(0.962)*	*(0.773)*	*(0.788)*	*(0.634)*	*(0.789)*
Within Oceania	0.929	1.090	1.214	0.965	1.177	1.483	1.591
	(0.525)	*(0.429)*	*(0.431)*	*(0.339)*	*(0.289)*	*(0.290)*	*(0.390)*
Country dummies	yes	yes	yes	yes	yes	yes	yes
Partner dummies	yes	yes	yes	yes	yes	yes	yes
Estimation	WLS	WLS	WLS	WLS	WLS	WLS	WLS
F(·)	114.70	122.28	135.48	144.06	182.60	173.11	177.95
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.868	0.856	0.859	0.853	0.903	0.912	0.904
Root MSE	0.864	0.873	0.869	0.933	0.736	0.677	0.701

Notes: Huber-White Heteroscedasticity robust standard errors in parentheses. $\ln(X_{ij})$ is log bilateral exports from country *i* to partner *j* plus one; $\ln(dist_{ij})$ is bilateral distance between countries *i* and *j*; $bord_{ij}$ is a dummy for whether the two countries share a common border. All specifications include exporting country and importing partner fixed effects. Within N America is a dummy that takes the value 1 if *both* trade partners lie within North America and zero otherwise. The other within-region dummies are defined analogously. Since the within-region dummies exploit bilateral information they are separately identified from the country and partner fixed effects. To control for measurement error in bilateral trade flows that is correlated with the volume of trade, observations are weighted by the product of country and partner GDP. To capture the effects of NAFTA, Mexico is included in the definition of North America.

Table 5: the role of internal geography, external geography, and institutions in determining export performance, 1994-97.

Dependent Variable	ln(*V*)	ln(*V/GDP*)	ln(*V*)	ln(*V/GDP*)
Period	1994/97	1994/97	1994/97	1994/97
Observations	95	95	95	95
ln(GDP(1991-93))	0.734		0.730	
	(0.052)		*(0.051)*	
ln(population)	-0.038	-0.262	-0.025	-0.256
	(0.057)	*(0.043)*	*(0.057)*	*(0.043)*
ln(*F*)	0.460	0.479	0.342	0.298
	(0.195)	*(0.205)*	*(0.119)*	*(0.127)*
% Pop within 100km coast & rivers	0.581	0.416	0.596	0.441
	(0.191)	*(0.061)*	*(0.187)*	*(0.199)*
institutional quality	0.202	0.023	0.198	0.016
	(0.062)	*(0.387)*	*(0.061)*	*(0.061)*
Region Effects	yes	yes	yes	yes
Estimation	OLS	OLS	OLS	OLS
	F(13,81)= 137.6	F(12,82)= 7.732	F(13,81)= 142.2	F(12,82)= 7.747
Prob > F	0.000	0.000	0.000	0.000
R^2	0.957	0.531	0.958	0.531

Notes: Standard errors in parentheses. Cols 1- FMA as computed in section 3. Cols 4-5 FMA computed omitting own country, F*.

Appendix A :

Counties and regional groupings as indicated in Table A1

Table A1 : Country Sources of Export Growth and the Regional Concentration of Foreign Market Access Growth, Panel A; Logarithmic growth rates.

Country	Period	SC	FMA	Exports	Own Region FMA	Other Region FMA
Canada	70/73-82/85	2.7%	55.3%	58.0%	69.4%	4.5%
	82/85-94/97	2.4%	53.4%	55.9%	65.3%	5.3%
Mexico	70/73-82/85	140.5%	38.3%	178.8%	36.3%	10.4%
	82/85-94/97	45.0%	50.2%	95.2%	48.8%	16.4%
United States	70/73-82/85	42.2%	18.8%	61.0%	3.3%	17.3%
	82/85-94/97	32.1%	39.9%	72.1%	19.4%	29.7%
Argentina	70/73-82/85	3.9%	25.5%	29.4%	0.5%	28.5%
	82/85-94/97	34.3%	49.3%	83.7%	30.3%	33.5%
Bolivia	70/73-82/85	12.6%	26.0%	38.5%	-1.6%	31.2%
	82/85-94/97	-43.1%	46.6%	3.5%	24.8%	34.6%
Brazil	70/73-82/85	72.2%	27.4%	99.5%	-1.6%	33.1%
	82/85-94/97	-6.9%	41.3%	34.5%	14.1%	37.1%
Chile	70/73-82/85	17.0%	25.3%	42.3%	-2.0%	30.8%
	82/85-94/97	60.9%	44.5%	105.4%	19.9%	36.2%
Columbia	70/73-82/85	21.3%	33.9%	55.2%	3.3%	37.1%
	82/85-94/97	43.1%	38.3%	81.4%	11.7%	35.0%
Costa Rica	70/73-82/85	4.6%	37.7%	42.3%	5.1%	40.7%
	82/85-94/97	48.7%	37.5%	86.2%	8.3%	37.2%
Dominican Republic	70/73-82/85	-10.5%	40.4%	29.8%	2.7%	47.1%
	82/85-94/97	73.6%	34.2%	107.7%	3.3%	37.4%
Ecuador	70/73-82/85	92.2%	33.1%	125.2%	2.0%	37.2%
	82/85-94/97	-8.5%	39.3%	30.8%	11.1%	37.0%
El Salvador	70/73-82/85	-32.9%	36.6%	3.7%	2.2%	42.0%
	82/85-94/97	-20.3%	39.4%	19.0%	8.6%	39.6%
Guatemala	70/73-82/85	-0.2%	37.2%	37.0%	2.2%	42.9%
	82/85-94/97	-18.0%	44.7%	26.6%	7.3%	49.0%
Haiti	70/73-82/85	103.3%	39.6%	1.43%	2.2%	46.3%
	82/85-94/97	-167.0%	36.4%	-130.6%	6.8%	37.2%
Honduras	70/73-82/85	6.1%	36.6%	42.7%	2.1%	42.1%
	82/85-94/97	-46.0%	38.3%	-7.7%	7.7%	38.9%
Jamaica	70/73-82/85	-56.8%	40.8%	-16.0%	2.9%	47.6%
	82/85-94/97	3.6%	35.5%	39.1%	4.4%	38.3%
Nicaragua	70/73-82/85	-73.4%	36.7%	-36.7%	2.7%	41.7%
	82/85-94/97	-27.8%	38.9%	11.2%	9.1%	38.6%

Table A1 : Country Sources of Export Growth and the Regional Concentration of Foreign Market Access Growth, Panel B

Country	Period	SC	FMA	Exports	Own Region FMA	Other Region FMA
Panama	70/73-82/85	-16.0%	35.6%	19.6%	1.8%	41.0%
	82/85-94/97	6.0%	38.5%	44.5%	9.4%	37.7%
Peru	70/73-82/85	-10.8%	30.4%	19.6%	1.2%	34.4%
	82/85-94/97	-2.0%	43.1%	41.2%	17.7%	36.2%
Trinidad and	70/73-82/85	34.0%	36.6%	70.5%	3.0%	41.2%
Tobago	82/85-94/97	-74.3%	34.4%	-39.9%	4.6%	36.5%
Uruguay	70/73-82/85	41.9%	14.4%	56.3%	-6.4%	21.9%
	82/85-94/97	-7.4%	62.7%	55.3%	58.5%	28.7%
Venezuela	70/73-82/85	33.4%	36.2%	69.6%	1.9%	41.8%
	82/85-94/97	-38.6%	38.9%	0.3%	10.6%	37.0%
Austria	70/73-82/85	36.8%	25.1%	61.9%	16.8%	11.7%
	82/85-94/97	46.2%	43.5%	89.8%	39.8%	14.7%
Belgium	70/73-82/85	11.1%	29.2%	40.3%	24.9%	9.0%
(incl Luxembourg)	82/85-94/97	37.4%	39.4%	76.8%	40.5%	7.8%
Denmark	70/73-82/85	20.4%	27.3%	47.7%	19.6%	11.7%
	82/85-94/97	29.6%	40.9%	70.5%	39.6%	10.9%
Finland	70/73-82/85	31.7%	26.7%	58.4%	12.0%	18.6%
	82/85-94/97	57.3%	34.1%	91.5%	23.6%	17.1%
France	70/73-82/85	24.6%	25.9%	50.6%	18.0%	11.6%
	82/85-94/97	35.8%	42.3%	78.2%	42.6%	10.1%
Germany	70/73-82/85	24.3%	24.9%	49.2%	14.5%	13.8%
	82/85-94/97	31.7%	40.3%	72.1%	32.3%	17.3%
Greece	70/73-82/85	50.2%	33.8%	84.1%	15.4%	24.9%
	82/85-94/97	18.4%	33.5%	51.9%	23.5%	16.4%
Ireland	70/73-82/85	70.4%	29.4%	99.8%	18.6%	15.6%
	82/85-94/97	84.9%	37.4%	122.4%	32.1%	13.3%
Italy	70/73-82/85	34.2%	29.8%	64.0%	15.2%	19.5%
	82/85-94/97	47.9%	36.1%	84.0%	28.5%	15.0%
Netherlands	70/73-82/85	27.9%	27.9%	55.8%	21.5%	10.7%
	82/85-94/97	17.5%	38.5%	56.0%	37.5%	9.5%
Norway	70/73-82/85	65.8%	27.6%	93.4%	15.0%	16.8%
	82/85-94/97	20.4%	33.7%	54.1%	24.8%	15.2%
Portugal	70/73-82/85	19.2%	32.4%	51.6%	16.1%	22.2%
	82/85-94/97	81.5%	40.4%	121.9%	32.5%	17.3%

Table A1 : Country Sources of Export Growth and the Regional Concentration of Foreign Market Access Growth, Panel C

Country	Period	SC	FMA	Exports	Own Region FMA	Other Region FMA
Spain	70/73-82/85	69.5%	30.5%	100.0%	15.1%	20.5%
	82/85-94/97	77.1%	34.8%	111.9%	26.2%	15.5%
Sweden	70/73-82/85	5.5%	29.2%	34.7%	16.0%	17.9%
	82/85-94/97	33.3%	34.0%	67.3%	24.3%	16.2%
Switzerland	70/73-82/85	29.1%	27.6%	56.7%	20.5%	11.4%
	82/85-94/97	36.1%	41.6%	77.7%	41.7%	9.8%
Turkey	70/73-82/85	82.9%	31.3%	114.2%	11.8%	24.9%
	82/85-94/97	62.6%	30.5%	93.1%	19.2%	16.5%
United Kingdom	70/73-82/85	31.2%	32.6%	63.9%	22.7%	15.8%
	82/85-94/97	31.1%	30.1%	61.2%	22.0%	13.1%
Albania	70/73-82/85	61.3%	31.2%	92.5%	0.0%	36.5%
	82/85-94/97	-57.0%	31.7%	-25.3%	1.3%	36.0%
Bulgaria	70/73-82/85	23.9%	30.4%	54.3%	-0.7%	36.3%
	82/85-94/97	-9.8%	35.9%	26.1%	3.0%	40.2%
Czechoslovakia	70/73-82/85	2.8%	27.1%	29.9%	-0.5%	31.6%
	82/85-94/97	57.4%	43.5%	100.9%	2.9%	51.6%
Hungary	70/73-82/85	-12.0%	29.9%	18.0%	-0.6%	35.5%
	82/85-94/97	36.9%	34.7%	71.7%	3.3%	38.2%
Poland	70/73-82/85	0.4%	27.3%	26.8%	-0.2%	31.5%
	82/85-94/97	45.6%	40.3%	86.0%	1.8%	47.8%
Romania	70/73-82/85	39.0%	32.0%	71.1%	0.1%	37.6%
	82/85-94/97	-33.8%	32.5%	-1.4%	2.4%	35.9%
Angola	70/73-82/85	13.7%	26.6%	40.3%	-2.8%	33.3%
	82/85-94/97	-72.9%	34.1%	45.1%	-1.9%	39.9%
Benin	70/73-82/85	4.7%	31.0%	35.7%	3.1%	33.2%
	82/85-94/97	-6.2%	27.8%	21.7%	-4.9%	37.0%
Cameroon	70/73-82/85	93.2%	31.8%	125.0%	3.7%	33.7%
	82/85-94/97	-76.5%	27.5%	-49.0%	-5.1%	36.7%
Cote d'Ivoire	70/73-82/85	26.4%	28.5%	54.8%	-1.5%	34.5%
	82/85-94/97	-25.9%	33.0%	7.0%	-1.1%	40.1%
Ethiopia	70/73-82/85	-41.2%	35.0%	-6.3%	-0.8%	42.7%
	82/85-94/97	-35.3%	30.5%	-4.8%	-0.9%	36.5%
Gabon	70/73-82/85	99.2%	30.1%	129.2%	0.9%	34.2%
	82/85-94/97	-17.8%	30.0%	12.2%	-3.5%	38.4%

Table A1 : Country Sources of Export Growth and the Regional Concentration of Foreign Market Access Growth, Panel D

Country	Period	SC	FMA	Exports	Own Region FMA	Other Region FMA
Ghana	70/73-82/85	-72.0%	30.6%	-41.4%	1.5%	34.2%
	82/85-94/97	30.0%	30.3%	60.3%	-3.3%	38.6%
Guinea	70/73-82/85	85.4%	28.9%	114.3%	-1.9%	35.4%
	82/85-94/97	-26.5%	33.5%	7.0%	-1.2%	41.0%
Kenya	70/73-82/85	26.2%	31.1%	57.2%	-1.8%	38.2%
	82/85-94/97	-13.8%	32.5%	18.7%	-0.5%	38.9%
Madagascar	70/73-82/85	-47.7%	30.2%	-17.6%	-1.5%	36.7%
	82/85-94/97	-70.0%	35.5%	-34.5%	0.0%	42.6%
Malawi	70/73-82/85	18.8%	26.6%	45.4%	-3.6%	34.0%
	82/85-94/97	-20.1%	34.1%	14.0%	0.3%	40.4%
Mali	70/73-82/85	-214.3%	31.2%	-183.0%	0.5%	36.1%
	82/85-94/97	-13.3%	32.6%	19.3%	-1.3%	39.9%
Mauritius	70/73-82/85	31.5%	31.0%	62.5%	-1.5%	37.7%
	82/85-94/97	68.0%	36.3%	104.3%	-0.5%	44.2%
Mozambique	70/73-82/85	-138.7%	24.3%	-114.5%	-3.5%	30.9%
	82/85-94/97	-84.0%	36.3%	-47.7%	4.1%	39.6%
Nigeria	70/73-82/85	79.9%	30.2%	110.0%	-1.0%	36.2%
	82/85-94/97	-68.2%	33.0%	-35.2%	-0.7%	39.7%
Senegal	70/73-82/85	-15.0%	30.6%	15.6%	-1.3%	37.1%
	82/85-94/97	-65.4%	34.2%	-31.2%	-0.9%	41.6%
South Africa	70/73-82/85	-6.4%	29.4%	23.0%	-1.2%	35.4%
	82/85-94/97	28.7%	36.9%	65.5%	-0.5%	45.1%
Sudan	70/73-82/85	-54.6%	35.9%	-18.7%	-0.8%	44.1%
	82/85-94/97	-111.3%	29.9%	-81.3%	-0.5%	35.4%
Tanzania	70/73-82/85	-66.3%	29.6%	-36.7%	-2.3%	36.8%
	82/85-94/97	-35.0%	33.5%	-1.5%	0.0%	39.7%
Uganda	70/73-82/85	-65.8%	30.1%	-35.6%	-1.8%	37.0%
	82/85-94/97	-32.1%	31.8%	-0.3%	-0.6%	39.0%
Zaire	70/73-82/85	-41.6%	28.8%	-12.8%	-0.9%	34.3%
	82/85-94/97	-78.1%	32.1%	-46.0%	-1.3%	39.2%
Zambia	70/73-82/85	-113.6%	28.6%	-85.0%	-0.8%	33.9%
	82/85-94/97	-68.0%	34.6%	-33.4%	1.6%	39.8%
Zimbabwe	70/73-82/85	148.4%	21.7%	170.0%	-6.8%	31.1%
	82/85-94/97	18.0%	34.4%	52.4%	1.7%	39.3%

Table A1 : Country Sources of Export Growth and the Regional Concentration of Foreign Market Access Growth, Panel E

Country	Period	SC	FMA	Exports	Own Region FMA	Other Region FMA
Algeria	70/73-82/85	111.1%	31.5%	142.7%	5.7%	31.4%
	82/85-94/97	-72.9%	34.1%	-38.7%	0.4%	40.3%
Egypt	70/73-82/85	61.9%	33.8%	95.8%	13.8%	26.4%
	82/85-94/97	-45.8%	33.9%	-11.9%	0.4%	36.2%
Iran	70/73-82/85	84.0%	39.8%	123.8%	18.8%	30.0%
	82/85-94/97	-70.2%	32.0%	-38.2%	-2.9%	40.7%
Israel	70/73-82/85	26.9%	46.8%	73.7%	34.2%	25.5%
	82/85-94/97	83.7%	21.0%	104.7%	-7.5%	30.9%
Jordan	70/73-82/85	141.7%	38.4%	180.2%	26.9%	20.0%
	82/85-94/97	-22.4%	41.0%	18.6%	24.4%	26.4%
Kuwait	70/73-82/85	-6.0%	54.3%	48.3%	44.9%	27.2%
	82/85-94/97	-91.9%	20.1%	-71.8%	-8.8%	31.0%
Lebanon	70/73-82/85	-56.0%	41.9%	-14.1%	27.6%	24.4%
	82/85-94/97	-54.3%	30.0%	-24.3%	4.0%	31.1%
Morocco	70/73-82/85	8.2%	32.4%	40.6%	6.6%	31.8%
	82/85-94/97	16.5%	33.9%	50.4%	-1.9%	42.3%
Oman	70/73-82/85	93.0%	49.4%	142.4%	33.8%	30.0%
	82/85-94/97	-20.4%	32.1%	11.6%	3.0%	34.8%
Saudi Arabia	70/73-82/85	103.5%	35.8%	139.2%	15.1%	27.8%
	82/85-94/97	-81.2%	35.1%	-46.1%	3.7%	38.3%
Syria	70/73-82/85	72.8%	34.6%	107.5%	18.5%	22.9%
	82/85-94/97	8.0%	35.6%	43.6%	9.6%	33.1%
Tunisia	70/73-82/85	85.2%	32.6%	117.8%	7.8%	30.7%
	82/85-94/97	46.9%	29.7%	76.7%	-2.3%	36.9%
United Arab Emirates	70/73-82/85	180.8%	49.4%	230.2%	34.9%	29.0%
	82/85-94/97	-32.2%	23.4%	-8.8%	-7.8%	34.2%
Cambodia	70/73-82/85	-312.2%	32.7%	-279.5%	22.4%	16.4%
	82/85-94/97	349.3%	61.5%	410.8%	69.7%	15.3%
China	70/73-82/85	91.5%	-38.6%	130.1%	31.3%	15.7%
	82/85-94/97	112.6%	48.8%	161.4%	48.0%	14.9%
Hong Kong	70/73-82/85	82.2%	38.6%	120.8%	29.3%	17.8%
	82/85-94/97	104.4%	51.5%	155.9%	51.2%	16.1%
Indonesia	70/73-82/85	136.6%	37.7%	174.3%	27.1%	18.7%
	82/85-94/97	-4.9%	49.3%	44.5%	46.0%	17.8%

Table A1 : Country Sources of Export Growth and the Regional Concentration of Foreign Market Access Growth, Panel F

Country	Period	SC	FMA	Exports	Own Region FMA	Other Region FMA
Japan	70/73-82/85	65.0%	37.4%	102.4%	19.4%	26.0%
	82/85-94/97	10.3%	53.1%	63.4%	44.9%	25.2%
Korea, Republic of	70/73-82/85	153.0%	41.1%	194.1%	35.3%	15.6%
	82/85-94/97	75.8%	36.8%	112.6%	30.4%	14.1%
Malaysia	70/73-82/85	68.3%	48.4%	116.6%	47.0%	15.3%
	82/85-94/97	62.0%	62.8%	124.9%	75.1%	12.3%
Papua New Guinea	70/73-82/85	60.5%	33.9%	94.4%	20.0%	20.4%
	82/85-94/97	31.8%	40.8%	72.6%	28.2%	22.1%
Philippines	70/73-82/85	22.3%	38.8%	61.1%	30.2%	17.2%
	82/85-94/97	49.6%	47.6%	97.2%	44.8%	16.2%
Singapore	70/73-82/85	110.4%	37.4%	147.8%	27.9%	17.5%
	82/85-94/97	80.4%	55.4%	135.8%	58.0%	16.0%
Taiwan	70/73-82/85	110.3%	43.1%	153.5%	37.2%	16.7%
	82/85-94/97	61.6%	49.7%	111.3%	49.5%	14.8%
Thailand	70/73-82/85	75.0%	36.6%	111.6%	24.3%	19.9%
	82/85-94/97	119.4%	47.6%	167.0%	43.6%	17.3%
Viet Nam	70/73-82/85	3.9%	39.8%	43.7%	31.0%	17.9%
	82/85-94/97	224.5%	53.5%	278.0%	55.0%	15.7%
Bangladesh	70/73-82/85	84.2%	37.4%	121.6%	3.7%	41.6%
	82/85-94/97	76.2%	42.7%	118.9%	2.1%	51.2%
India	70/73-82/85	18.5%	37.3%	55.7%	2.7%	42.5%
	82/85-94/97	64.0%	39.4%	103.4%	1.1%	47.2%
Nepal	70/73-82/85	-2.8%	37.5%	34.7%	4.6%	40.9%
	82/85-94/97	76.3%	43.1%	119.4%	2.5%	51.4%
Pakistan	70/73-82/85	12.6%	39.3%	51.9%	5.8%	42.4%
	82/85-94/97	44.0%	36.2%	80.2%	3.6%	40.1%
Sri Lanka	70/73-82/85	6.8%	36.6%	43.4%	3.6%	40.6%
	82/85-94/97	42.1%	39.4%	81.5%	0.5%	47.7%
Australia	70/73-82/85	8.8%	32.0%	40.8%	0.6%	37.1%
	82/85-94/97	18.7%	40.5%	59.2%	0.6%	49.3%
New Zealand	70/73-82/85	2.8%	31.5%	34.2%	4.2%	32.8%
	82/85-94/97	17.7%	39.0%	56.7%	3.8%	43.9%

Notes: columns (3)-(5) of the table are based on equation (9) and report logarithmic rates of growth for each country. Column (3) is the rate of growth of supplier capacity (SC); Column (4) is the rate of growth of foreign market access (FMA); Column (5) is the rate of growth of exports. The rates of growth of supplier capacity and foreign market access sum to the rate of growth of total exports. Columns (6) and (7) are based on equation (11). Column (6) reports the contribution of a country's own region FMA growth, while Column (7) gives the corresponding contribution of other region FMA growth. Note that, since Columns (6) and (7) are percentage rates of growth (?X/X) while Column (4) is a logarithmic rate of growth (?ln(X)), the final two columns do not sum exactly to Column (4). See Appendix A for details of the 9 geographical regions.

Table A2: the role of internal geography, external geography, and institutions in determining export performance, 1994-97, 1982-85.

	ln(*V*)	ln(*V*)
	1994-7	1982-85
Observations	95	95
ln(GDP(lagged))	0.734	0.802
	(0.052)	*(0.070)*
ln(population)	-0.038	0.140
	(0.057)	*0.075*
ln(*F*)	0.460	0.473
	(0.195)	*(0.250)*
% Pop within 100km coast & rivers	0.581	0.501
	(0.191)	*(0.239)*
institutional quality	0.202	0.094
	(0.062)	*(0.044)*
Region Effects	yes	yes
Estimation	OLS	OLS
	F(13,81)= 137.6	F(13,81)= 70.998
Prob > F	0.000	0.000
R^2	0.957	0.919

Notes: Standard errors in parentheses.

Endnotes:

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1. Beginning from initial values for m_i, s_i, FMA_i, and FSA_i we repeatedly solve the system of four equations in (7)-(8) for all N countries. Irrespective of initial conditions, the system rapidly converges to unique equilibrium values of m_i, s_i, FMA_i, and FSA_i.

2. This specification is more general than the standard gravity model, in which country and partner dummies are replaced by income and other country characteristics. In particular, the importer partner dummy capture variation in the manufacturing price index G that is a determinant of market capacity m, and this specification thus controls for what Anderson and van Wincoup (2000)n term 'multilateral resistance.'

3. Assuming that the monopolistic competition framework is the appropriate one, it is possible to back out some rough estimates of key parameters. Redding and Venables (2001) find that the elasticity of wages with respect to market access is around 0.3. Table xx suggests that the elasticity of the value of exports with respect to market access is around 0.45. Subtracting these, the elasticity of export quantities is around 0.15, implying an elasticity of wages with respect to export volumes of 2 (= 0.3/0.15). .