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October 2008

Online at <http://mpa.ub.uni-muenchen.de/16906/>  
MPRA Paper No. 16906, posted 22. August 2009 / 12:17

# **SOUTH AFRICAN EXPORTING FIRMS: WHAT DO WE KNOW AND WHAT SHOULD WE KNOW?**

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## **ABSTRACT**

Policies to stimulate export growth and diversify the composition of exports in South Africa are now high on the government's agenda. In order to understand exporting and its impact on job creation, one needs to understand how firms function, what determines, or constrains, exporting at the firm level and the links between export behaviour and labour demand. An understanding of these relationships, particularly over time, is also essential for the implementation and evaluation of export related policies. This paper reviews the evidence on South African exporting firms, highlighting what we know, and what we do not know. A key conclusion is that our understanding of firm level export behaviour is severely constrained by the lack of adequate firm data, particularly panel data.

## **SOUTH AFRICAN EXPORTING FIRMS: WHAT DO WE KNOW AND WHAT SHOULD WE KNOW?**

Since the early 1990s South African export growth has been mediocre relative to other middle-income economies (Alves and Edwards, 2006; Hausmann 2008). It has also been mediocre relative to import growth leading to a current account deficit that exceeded 7 percent of GDP in 2007. Such a situation is likely to act as a constraint to future growth. The current growth strategy, as outlined in the Accelerated and Shared Growth Initiative (ASGISA), is investment-intensive and is likely to place further pressure on the trade balance. A key message from the recently completed Growth

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Study on South Africa led by the Harvard University Center for International Development, is that if South Africa is to achieve the desired growth target of 6 percent, export growth needs to rise substantially (Hausmann, 2008).

Policies to stimulate export growth and diversify the composition of exports in South Africa are now high on the government's agenda. The National Industrial Policy Framework (NIPF) launched by the Department of Trade and Industry in 2007 argues that "improving our non-traditional export performance – particularly in more sophisticated, value added products – is an important objective for industrial policy" (DTI, 2007: 23). Furthermore, it acknowledges that "in boosting exports, both to address employment creation and current account deficits, the sector processes will also need to consider constraints to exports" (DTI, 2007: 23). The policies being considered therefore extend beyond standard concerns regarding the level of the real exchange rate. Micro-level policies, infrastructure development, trade policies and incentives under the new industrial policy framework are to be utilised to stimulate export growth.

However, in order to design policies that can effectively increase exports, we need to know how the export process works. Much of the empirical and policy literature on trade flows in South Africa has focused on aggregate or industry-level data. Yet, aggregate exports are merely the sum of exports at the firm level. It is firms that make the decisions as whether to enter or exit the international market and how much to export. Furthermore, it is firms that drive labour demand. Thus, in order to understand exporting and its impact on job creation, one needs to understand how firms function, what determines, or constrains, exporting at the firm level and the links between export behaviour and labour demand.

This paper summarises what we are beginning to know about exporting in South Africa, what we need to know, and the types of data required in order to better understand the export process and its links to other parts of the economy. The focus is primarily on the manufacturing sector, but similar considerations will most likely apply to the primary sector. Our expectation is that more micro-level analysis using better data at the firm level will form a key component of government's policy evaluation strategy.

The paper is structured in seven parts. The first section provides an

aggregate overview of trade policy and trade performance in South Africa from 1970. Section 2 then briefly looks at the firm-level characteristics of exporters including export participation and export orientation using firm data from foreign economies and South Africa. The remainder of the paper then explores these relationships in more detail: the exporting-productivity relationship in section 3; the size-exporting relationship in section 4; the exporting-labour demand relationship in section 5 and the importing-exporting association in section 6. Section 7 concludes the paper with a discussion on the types of firm-level data required to improve our understanding of export behaviour.

#### TRADE FLOWS AND TRADE POLICY IN SOUTH AFRICA: A BRIEF HISTORY.

South African trade performance and trade policy since the 1970s is characterised by distinct periods. These changes are shown in Figure 1, which presents trade volumes and a measure of tariff protection, namely the ratio of collection duties to the value of merchandise imports, from 1970. Non-gold export volumes are also shown.

Historically South African trade policy was driven by an import substitution industrialisation objective (Edwards *et al.*, forthcoming 2009). The domestic economy was protected by high trade barriers, particularly quantitative restrictions, and output growth was in part achieved through the substitution of domestic for imported products (Tsikata, 1999). Industrial incentives also encouraged the beneficiation of iron ore and coal products.

Some reforms, including the replacement of quantitative restrictions with tariffs, were implemented from as early as the mid-1970s. These reforms arose in response to a decline in the contribution of import substitution policies towards growth, a continued dependence on gold as a source of foreign exchange and diminished export pessimism brought about by rapid export-led growth in some of the newly industrialised countries of South East Asia (Jenkins *et al.*, 1997). Nevertheless, in 1994 when the democratically elected government took office, protection remained high in many sectors and the tariff structure was complex compared to a range of other developing economies. The average tariff on

manufactured goods was 18 percent, with tariffs in excess of 60 percent on wearing apparel and motor vehicles. Import surcharges were also still being used to restrict import volumes. These surcharges, which were also used in 1977 and 1982, were implemented in response to the balance of payments crises in 1985 and had a substantial impact on overall protection, for example raising average protection by 5 percentage points in 1990 (Edwards *et al.*, forthcoming 2009).

The protective trade regime prior to the 1990s is also reflected in the stagnant growth in trade volumes between 1970 and 1990. Merchandise import volumes in 1990 were no higher than then they were in the early 1970s, despite continued, albeit declining, growth in GDP. Merchandise exports rose, but at a slow 1 percent per annum from 1971-1990. This to a large extent reflects the decline in gold exports as non-gold export volumes grew by 4 percent per annum over this period. The effect of the mediocre trade performance was the increased isolation of South Africa from the world market and a decline in merchandise trade (exports plus imports) as a share of GDP from 56 percent in 1980 to 37 percent in 1990.

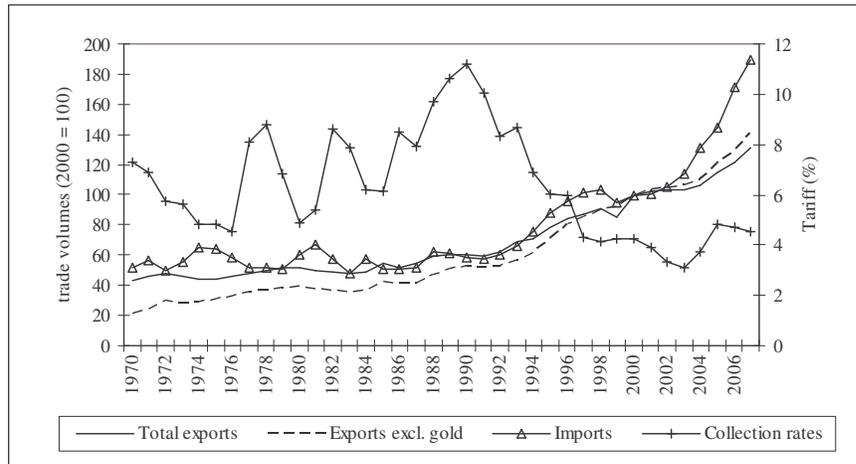


Figure 1. Trade volumes and trade protection in South Africa from 1970  
 Notes: Own calculations using Reserve Bank Data. Collection rates include import surcharges used in 1970s and 1980s.

The 1990s signal a significant opening up of the economy, first

through reductions in surcharges and then through reductions in tariffs from 1994 as South Africa implemented its offer made in the Uruguay Round of the World Trade Organisation (then GATT). Average manufacturing tariffs fell from 18 percent in 1994 to approximately 10 percent by 2000 (Edwards, 2005). From 2000, further reductions in average protection were achieved in response the implementation of the European Union – South Africa and the Southern Africa Development Community (SADC) free trade agreements. By 2006 average protection had fallen to 8.9 percent (Edwards *et al.*, forthcoming 2009).

Trade volumes also accelerated. Import volumes grew by a multiple of 3.3 from 1990-2007 with particularly strong growth from 2000 (in excess of 10 percent per annum). Total exports doubled over the same period and non-gold exports grew by a multiple of 2.7 (see Figure 1). The export bundle therefore continued to diversify out of primary products, once again largely due to declining gold volumes whose share of total exports fell from 30 percent in 1990 to 7 percent in 2007.

Export diversification, however, is also evident in manufacturing. Edwards and Lawrence (2008 forthcoming) use industry level data and decompose manufacturing exports into commodity and non-commodity exports. The latter are products for which the share of primary commodity inputs in final sales exceeded 10 percent in 2000. They find that exports of non-commodity manufactures increased 3-fold over the 1990-2004 period, compared to 1.6-fold for commodity manufactures. Similarly, Edwards (2002) finds that the sectoral composition of manufactured exports shifted towards skill-intensive sectors during the 1990s. While the rapid growth of vehicles under the Motor Industry Development Programme (MIDP) from 1995 accounted for a substantial share of the diversification identified in both Edwards (2002) and Edwards and Lawrence (2008 forthcoming), the relationships remain even if this sector is excluded.

Despite the improved trade performance from 1990, South Africa trade performance has lagged other developing economies such as Malaysia, Thailand, Indonesia, Kenya, Brazil, Korea, etc. The relatively poor performance is clearly reflected in Figure 2 which presents the average annual growth in the US\$ value of exports from 1990-2006. Export growth in South Africa lagged the aggregate rate

in all income categories, including the upper-middle-income group in which it is placed, resulting in a decline in its share of world trade from 0.8 percent in 1990 to 0.5 percent in 2006. South Africa's share of developing country trade fell more dramatically from 5.9 percent to 2.5 percent over the same period.

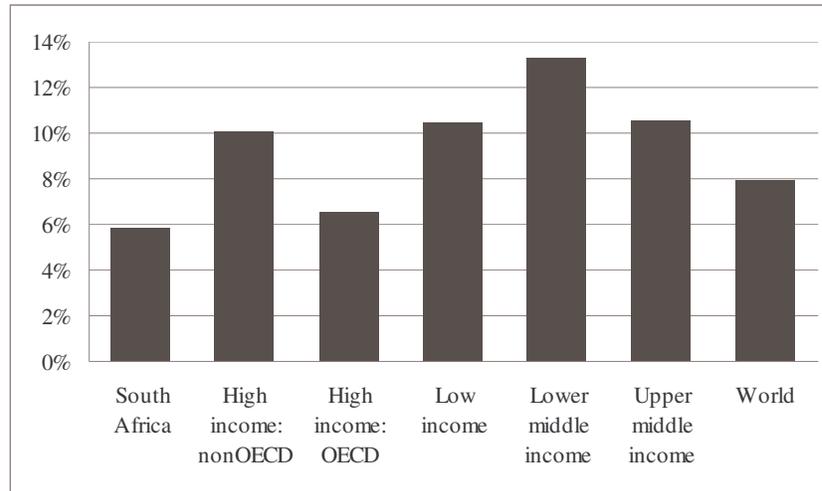


Figure 2. Comparative perspective of South African annual growth in export value (US\$ current, 1990-2006)

Notes: Own calculations using World Development Indicator data. Sample consists of 166 countries for which data are available for 1990 and 2006. China is located within the lower-middle-income group, while India is located in the low-income group. High export growth in these large countries, raises the aggregate growth for these groups.

Empirical analysis of aggregate trade flows provides some indication of the determinants of South Africa's export performance. Standard estimates of aggregate export functions indicate that exports respond positively to a real depreciation (elasticity ranges from 0.5 to over 2) and a rise in foreign income (elasticity exceeds 1) (Golub and Ceglowski, 2002; Alves and Edwards, 2006) and a reduction in unit labour costs (Edwards and Golub, 2004). More recently, Edwards and Lawrence (2008 forthcoming) estimate, using a panel of 44 manufacturing sectors from 1990 to 2004, that reductions in the anti-export bias brought about by trade liberalisation contributed

significantly towards improved export volumes, particularly of non-commodities. The standard variables in international literature that explain export performance (Goldstein and Kahn, 1985) appear to apply to South Africa as well.

What is not fully understood is the firm level behaviour that lies behind these trends in South Africa. In what follows we draw on existing empirical literature to explore various characteristics of South African exporters that are traditionally related to export performance.

#### **WHAT DOES EXPORTING LOOK LIKE AT THE FIRM LEVEL?**

The stylised facts regarding exporters at the firm level are reasonably well known. As reviewed by (Bernard *et al.*, 2007) for the US, exporters are larger, more productive, pay more, and are more skill- and capital-intensive than non-exporters. Exporting is also rare – only 4% of all U. S. firms and only 18% of manufacturing firms export – and aggregate exports are concentrated – the top 10 percent of exporting firms in the US accounted for 96 percent of total U.S. exports. The average exporting firm exports very little, concentrated in only a limited number of products, to a small number of destinations.

South African exporters display similar characteristics (Rankin, 2002; Rankin 2005; World Bank, 2005), as can be seen from Table 1. This table presents the difference between South Africa exporters and non-exporters using data from the World Bank's and Greater Johannesburg Metropolitan Council's Greater Johannesburg Metropolitan Area (GJMA) survey of 1999. This survey interviewed firms with more than 50 employees in the GJMA – the industrial heartland of South Africa. These results suggest that exporters are significantly larger, produce more output and value-added per employee and are older and more likely to be foreign owned than non-exporters.

Table 1. The characteristics of non-exporting and exporting firms in South Africa

	Output per employee		Value added per employee		Employment		Capital per employee		Age		Foreign ownership	
	Non exporter	Exporter	Non exporter	Exporter	Non exporter	Exporter	Non exporter	Exporter	Non exporter	Exporter	Non exporter	Exporter
Mean	10.28	10.70***	9.44	9.76**	4.51	5.05***	9.57	9.75	17.35	22.78*	0.14	0.29*
Std Dev.	0.56	0.65	0.69	0.79	0.75	0.85	1.16	1.22	16.13	17.61		
N	43	104	42	102	43	104	43	104	43	104	43	104

Source: Rankin (2005)

Notes: The values for gross output per employee, value added per employee, employment and capital per employee are given in natural logarithms; firm age is in years and foreign ownership is the proportion of observations of firms that have some foreign ownership.

There are a smaller number of observations for value added per employee because taking the natural logarithm eliminates observations with negative value added.

\*\*\* is significant at the 1% level, \*\* is significant at the 5% level and \* is significant at the 10% level.

Table 2 presents comparative data on export propensity and the share of output exported by size for various countries including South Africa. Two different studies are used, namely the World Bank Investment Climate Survey data presented in World Bank (2005) and the Greater Johannesburg Metropolitan Area survey presented in Rankin (2005). The data for the other African countries presented in Rankin (2005) comes from the Regional Programme on Enterprise Development (RPED) surveys begun by the World Bank in the early 1990s and continued by the Centre for the Study of African Economies (CSAE), University of Oxford. The Nigerian data was collected by researchers at the CSAE under the auspices of the United Nations Industrial Development Organisation (UNIDO).

This Table is useful for two reasons. Firstly, we are able to compare the sensitivity of results to different surveys. Secondly, the data provides some insight into the composition of aggregate exports. Similar levels of aggregate exports can be the result of completely

different patterns of behaviour. At the one extreme, all the exports may come from one very large firm with no other firms participating in the export market. At the other extreme, all firms in the population may participate in the export market but each export very little. Similarly, changes in export performance arise from a combination of new entries and/or an expansion of exports by existing firms, both large and small. A detailed understanding of these different sources of export growth are important for the formulation of appropriate policies to stimulate growth. For the extreme of one large firm, policy needs to focus on increasing entry of new firms into the export market. In the second case, policy needs to encourage existing firms to export more. The policies are not necessarily equivalent.

We first focus on the export propensity. Two main conclusions can be drawn from the data presented. Firstly, large firms are more likely to export than small firms. This relationship is found for all the African countries included in the analysis and will be discuss in more detail later.

The second finding, related to this, is that country level export participation rates are sensitive to the sampling strategy employed. In the study by Rankin (2005), South African firms in 1998 were more likely to participate in the export market than their African counterparts, except possibly for large firms in Kenya. In contrast, according to the World Bank's Investment Climate Assessment for 2003, only 30 percent of South African firms are exporters, a substantially lower proportion than in Kenya and Senegal, but a greater proportion than in Tanzania, Uganda and Ethiopia. Given that the sampling strategy employed differed between these two surveys it is impossible to know whether export participation among South African firms changed over this period. This data also shows that South African export participation is similar to those in Brazil and Poland, but much lower than in Malaysia and the best performing Chinese provinces.

The different findings across the two Kenyan surveys are also likely to be driven by sampling strategies that differ in the number of large firms they sample. Most of the results presented here are unweighted means because in many cases the population characteristics are unknown. Thus, a sample containing a higher proportion of larger firms will be more likely to have higher export

participation rates given the relationship between size and exporting.

Table 2. Export propensity and export orientation by country and size

	World Bank (2005)	Rankin (2005)			
	total	total	small	medium	large
<i>Export propensity, % of firms exporting</i>					
South Africa	34	71		53	78
Ghana		18	4	13	54
Kenya	58	36	6	37	72
Nigeria		9	6	8	13
Senegal	43				
Tanzania		17	4	20	43
China	15				
China – Hangzhou	42				
China – Shenzhen	58				
Brazil	31				
Lithuania	44				
Poland	31				
Malaysia	62				
<i>Export orientation, % exported if a firm exports</i>					
South Africa	14	19		16	19
Ghana		49	41	53	49
Kenya	18	28	32	22	31
Nigeria		37	75	60	10
Senegal	22				
Tanzania		26	22	26	27
China	11				
China – Hangzhou	23				
China – Shenzhen	48				
Brazil	8				
Lithuania	28				
Poland	10				
Malaysia	37				

Notes: Small < 20 employees; medium 21-74; large ≥ 75

The sensitivity of the firm characteristics to sampling strategy has important consequences if one wants to track South African export participation over time. The most important is that a comprehensive and reliable population list is required from which the sample can be drawn. If this is the case, then the relationship between the sample and the population is known and weighting techniques can be used. Statistics South Africa (StatsSA) compiles a business register which it uses as a sampling frame for its surveys. Thus any firm-level survey from which reliable data can be obtained and which needs to be comparable over time requires access to this business register. This

will also ensure some consistency between economic data drawn from firm-level analysis and that provided by Statistics South Africa.

If the population is not known, or the frame is unreliable, then the next best solution is to follow a consistent sampling strategy and to draw a sample that is comparable over time. As the discussion above illustrates, export participation rates are driven by the size distribution of firms within the population, and by the relationship between firm size and exporting. If the size distribution is unknown then in order to be able to say anything about the size exporting relationship, the sample distribution by firm size would need to remain constant. Panel data, which tracks the same firms over time, would be one way to investigate how export propensity changes, although this would miss changes in the underlying composition of the population of firms.

What about the amount exported once a firm participates in the export market? The lower half of Table 2 presents the percentage of output exported by exporters for the two studies analysed. What is striking is the low proportion of output that is exported by South African exporters. In both studies, South African firms export less than 20 percent of their output which is lower, and in some cases by a substantially amount, than the other African economies (Ghana, Kenya, Nigeria and Tanzania) as well as Malaysia and China. The proportion of sales exported in South Africa, however, exceeds that of Brazil and Poland, although interestingly aggregate export growth in SA from 1990-2006 (6 percent) lagged both these countries by a significant margin (10-14 percent).

Although illustrative of aggregate export orientation, these percentages do not adequately reflect important variations in the underlying distribution of the amount exported by firm size. Fig. 3 illustrates this distribution and compares South African exporters to those in Ghana, Kenya, Nigeria and Tanzania. What is apparent from this figure is that there are very few South African firms that specialise in exporting – almost half the firms in the sample export less than 10 percent of their output and very few export more than 30%. This is similar to findings for U.S. exporters where most of total exports are driven by a small number of exporting firms and that for the manufacturing sector the mean percentage of shipments exported for those firms that do export is 15 percent (Bernard *et al.*, 2007).

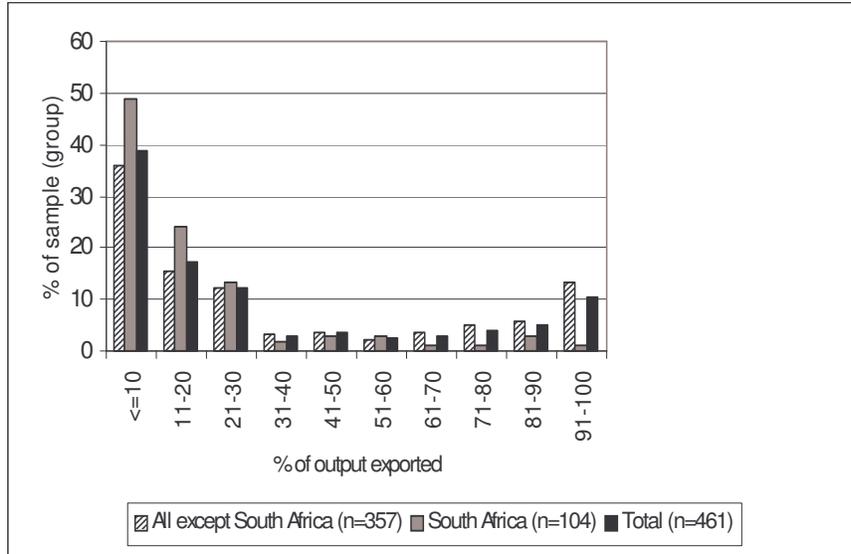


Figure 3. Distribution of the percentage of output exported if a firm exports – African firms

Source: Rankin (2005)

Notes: Data drawn from the GJMA survey for South Africa. The other African countries are: Ghana; Kenya; Nigeria and Tanzania. The origin of this data is described above.

The results presented in this section suggest that South African exporting firms conform with the stylised facts about exporters in other countries. In this respect they look and behave similarly to U.S. exporters. They are bigger, more productive, more capital intensive and older than non-exporters. They have relatively low export participation rates, but also once they do enter the export market they only export a relatively small proportion of output. One possible explanation of this pattern may lie in the similarities between the U.S. and South African economies – they both have relatively large domestic markets, neighbouring markets are relatively small and they are geographically far from the markets of developed countries.

There are also other possible explanations for the observed pattern. These include the fact that the markets for the types of products that South African firms export internationally may be limited, or that exporting to these markets is only occasional (*i.e.* international

distributors/firms approach South African firms for once-off deliveries), or that firms use these markets merely as a ‘vent-for-surplus’. Further understanding of which of these explanations are correct requires data that observes firms over time. The lack of this type of data means that very little can be said about the dynamic nature of exporting in South Africa. The results presented here are all cross-sectional and thus cannot be linked with aggregate changes in exports over time. Thus, these studies are unable to decompose aggregate export growth into within-firm increases in exports and/or entry of new firms into the export market. To do so requires a randomly sampled firm-level panel which is lacking for South Africa.

In the next section we turn to the links between productivity and exporting and how aggregate and firm-level findings can be reconciled.

### EXPORTING AND PRODUCTIVITY

Cross-country and aggregate level analyses of the relationship between exports and economic growth, as measured by increases in output or improved productivity are widely studied. Openness to trade is predicted to improve productivity growth through enhanced competitive pressures, access to new technology embodied in imported inputs, access to a wider range of complementary intermediate inputs and scale economies as export firms expand.

There is a broad consensus that exports are generally not harmful to economic growth. Numerous studies find a positive association between exports and growth, but the results, particularly using cross-country data, are often sensitive to the definition of openness, the sample period and the selection of countries (Rodrik and Rodriquez, 1999).

Positive associations between aggregate exports and productivity are also found in the empirical literature on South Africa. Belli *et al.*, (1993), Jonsson and Subramanian (2001), Arora and Bhundia (2003) and Fedderke (2006) evaluate the relationship between openness and productivity using aggregate data or industry data and all find positive associations. Jonsson and Subramanian (2001), for example, estimate that 10 percentage point increase in openness (measured as the ratio of the sum of real imports and real exports to real GDP) leads to a 5 percent increase in total factor productivity in the long

run.

Other studies have focussed on the relationship between exports and productivity directly. Edwards and Golub (2004) estimate a strong positive association between exports and labour productivity using data for 28 industries over the period 1970-97. Jenkins (2008) estimates the effect of export orientation on TFP within a labour demand function using a panel of 28 manufacturing industries from 1980-2001. His results are very sensitive to the inclusion of industry and time fixed effects and the relationship is significant in only half the estimates (elasticity of approximately -0.02).

The aggregate export-productivity relationship masks the heterogeneity of the relationship at the firm level. As such it is difficult to identify whether the relationship reflects improvements in productivity at the firm level or changes in the firm composition within the industry. For example, exporters tend to be more productive than non-exporters. Reductions in trade costs that drive out relatively inefficient firms and stimulate growth of existing exporters will drive up aggregate productivity without necessarily enhancing productivity within existing firms. Firm-level evidence within the US suggests that this effect is prevalent (Bernard *et al.*, 2007). Without firm level data over time, the firm level sources of aggregate productivity growth in South Africa will remain unknown.

Evidence from other countries provides additional insight into the links between productivity and exporting at the firm-level. Much of the firm-level work on the relationship between productivity and exporting has focussed on whether more productive firms select themselves into exporting – the self-selection hypothesis – or whether firms become more productive once they enter the export market – the learning-by-exporting hypothesis. These hypotheses are not mutually exclusive. Empirical research, which examines firm productivity over time, has found that self-selection predominates. This is the case for the USA (Bernard and Jensen, 1999, 2001), Germany (Bernard and Wagner, 1997), Colombia and Mexico (Clerides, Lach and Tybout, 1998) and Morocco (Fafchamps, El Hamine and Zeufack, 2002). The learning-by-exporting hypothesis is supported for China (Kraay, 1999) and Slovenia (De Loecker, 2004).

The evidence for African firms is mixed. Bigsten *et al.*, (2004) and Van Biesebroeck (2005) find evidence of both self-selection and

learning-by-exporting. For example, Bigsten *et al.* (2004) find very strong learning-by-exporting effects in the 1990s for various African countries (Cameroon, Ghana, Kenya, and Zimbabwe). Their estimates imply that exporting is associated with a productivity gain in terms of value added of 20-25 percent in the short-run and up to 50 percent in the long run. These are substantial gains and suggest considerable productivity gains for Africa if it orientated its manufacturing sector towards exporting (Bigsten and Söderbom, 2006).

Rankin, Söderbom and Teal (2006) however, find that once size and previous export participation is controlled for productivity is no longer significant for export participation, suggesting that self-selection is not important in the African context. This work, based on panel data for up to seven years for Ghanaian, Kenyan and Tanzanian firms, indicates that it is the size of the firm rather than productivity that matters. Large firms are generally more productive than smaller firms and this may in part explain earlier findings.

All these studies rely on firm level panel data that is able to discern entry and exit into the export market. Further, the calculation of productivity in these studies requires comprehensive information detailing the production relationship from the value of output to the cost of intermediate inputs. This information can then be used to estimate a production function from which productivity estimates (the residual) can be derived. A key requirement in this process, however, is the appropriate deflation of output and inputs. The production function is based on real values. Failure to appropriately deflate output and input values will result in price changes being erroneously attributed to the productivity variable.

Firm surveys, therefore, needs to collect price level data for each firm. Unfortunately, many of the firm surveys in South Africa did not collect this price data. This includes the National Enterprise Survey and the World Bank Greater Johannesburg Metropolitan surveys conducted in late 2000. More recently, the World Bank Investment Climate surveys conducted in 2003 and then again in 2007/8 have also not collected firm price deflators. An important attribute of this survey is that it contains a panel dimension, but the lack of price deflators seriously circumscribes the ability to analyse productivity relationships using this data. It therefore remains difficult to establish causal links between productivity and exporting in a South African

context.<sup>1</sup>

## SIZE AND EXPORTING

As discussed in section 2, there is a robust relationship between firm size (as measured by employment) and exporting. In all work on Africa in general, and South Africa in particular, the size of the firm and export participation are robustly linked regardless of specification (see Söderbom and Teal, 2000, 2003, Bigsten *et al.*, 2004, van Biesebroeck 2005, Rankin, 2002, Rankin, 2005, Rankin, Söderbom and Teal, 2006).

One explanation for the robust size-exporting relationship is that firms face fixed costs of entry into the export market. Examples of these may be making contact with, or travelling to meet foreign buyers, organising bank accounts or export permits, or investing in new capital equipment so as to be able to produce goods of the required standard. This explanation is supported by a number of theoretical models that incorporate sunk costs of entry into exporting (*e.g.* Dixit, 1989, Baldwin, 1988, and Baldwin and Krugman, 1989). Firms will only enter and incur these sunk costs if the discounted stream of future profits made in the export market is greater than the stream of domestic profits. If they anticipate that future exchange rate movements or policy developments will make exporting unprofitable they will not export. Models with sunk costs also predict that firms that begin exporting in response to a large shock, such as an unanticipated exchange rate devaluation, may continue exporting even when this shock is reversed. These models predict persistence in export participation, with firms remaining in the export market once they enter. In these models aggregate export responsiveness to shocks or regime shifts depends critically upon cross-firm heterogeneity in marginal costs and foreign demand. There may be many firms on the verge of exporting that will enter the export market in response to a positive shock, or there may be very few.

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<sup>1</sup> Rankin (2002), using cross-sectional data, has shown that there is no association between exporting in general and productivity among South African manufacturing firms. Instead it is only firms that export outside of the SADC region that are more efficient than both non-exporters and SADC-only exporters.

Das, Roberts and Tybout (2001) examine the importance of sunk costs for Colombian chemical producers. They find that entry costs are typically large, but vary greatly across producers. They also find that there is substantial cross-plant heterogeneity in gross expected export profit streams. The large entry costs make expectations about future exporting conditions important for many producers. However, for large scale exporters the expected profits from exporting far exceed the option value of being in the exporting market, implying that entry and exit amongst these firms is limited. In fact sunk costs, expectations and entry and exit are most important for small-scale marginal exporters who contribute little to aggregate export revenues.

This finding has a number of implications for South Africa. The first is that knowledge of the underlying distribution of South African firms, in terms of both size and productivity, is important. We do not know how many potential exporters are on the threshold of entering the export market, and as discussed above, this threshold may be measured in terms of productivity, size or a combination of the two. The second implication is that we do not know how firms in general, and exporters in particular, respond to changes in macroeconomic conditions over time. A weaker exchange rate may make exporting more profitable but firms may treat exchange rate changes as temporary and not take advantage of these opportunities. Another consideration may be that it is only the marginal exporters rather than the larger participants in the export market that can, and do, change the quantity they export as a result of these changes.

Recent work suggests that South African firms may enter the export market at smaller sizes than firms in a number of comparator countries (Anjinho and Rankin, 2008). This may be partly explained by the frequent occurrence of regional exporting among South African firms.

A second explanation for the link between firm size and exporting has to do with the size of the domestic market. 'Successful' firms may outgrow the domestic market and thus in order to generate further profits need to export. This explanation would explain why firms enter the regional market, where the tastes may be similar to the domestic market. Both these explanations are dynamic in nature and require data that tracks firms over time.

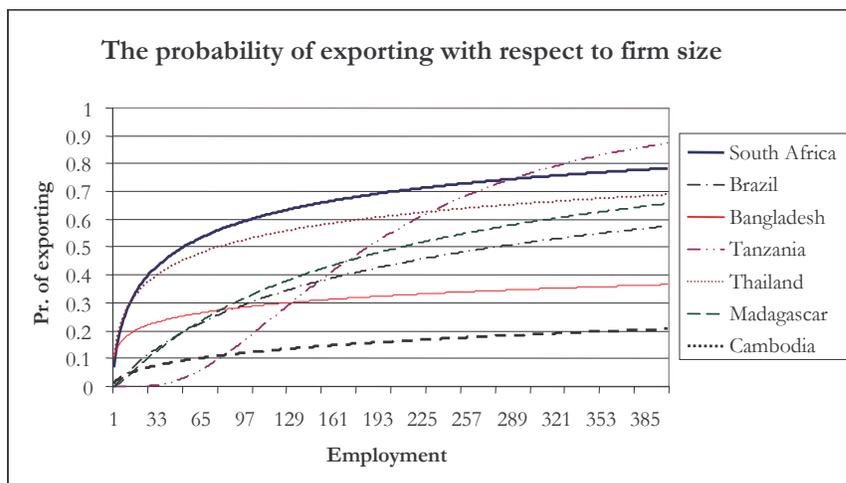


Figure 4. Probability of exporting with respect to firm size  
Source: Anjinho and Rankin (2008)

### EXPORTING AND LABOUR DEMAND

In his assessment of the South African economy, Dani Rodrik (2006:1) argues that “weakness in particular of export-oriented manufacturing has deprived South Africa from growth opportunities as well as from job creation at the relatively low end of the skill distribution”. In this view, exporting provides entry into the export market, allows firms to break domestic market constraints and thus expand in size. Increases in size have an obvious impact on labour demand. Further, manufacturing goods tend to be relatively unskilled-labour-intensive compared to services. Structural shifts towards manufacturing and away from services are thus expected to be employment creating, particularly of less-skilled labour. This is important in a South African context given the high levels of unemployment.

Rodrik’s (2006) analysis, however, is based on industry level data. Firms are characterised by substantial heterogeneity. The employment decision and intensity of exporters often differs starkly from non-exporters. As mentioned above, in general, exporters are larger, pay higher wages, are more productive, use more skilled workers, and are more capital-intensive than their non-exporting

counterparts (Bernard *et al.*, 2007). The aggregate data used in Rodrik's (2006) analysis largely reflects production for the domestic market given the low proportion of exporters amongst SA firms and the low proportion of sales accounted for by exports in these firms. Thus, in order to understand exporters' contribution to labour demand one needs to examine exporting at the firm-level.

There are three particular areas of research where more understanding is required on the links between exporting and labour demand. The first is the types of people employed by exporters. Research on the U.S. suggests that exporters are both more skill- and capital-intensive than non-exporters. In South Africa unemployment is more common among the lower educated (Bhorat and Oosthuizen, 2005). It thus seems likely that expansion of exporters, assuming that they are similar in characteristics to current exporting firms, will require relatively more skilled workers. If this is the case it may be that the lack of skilled labour constrains export participation. It is also important to understand the complementarity between workers of different skills. Behar (2008) using a cross-section of firm-level data (the National Enterprise Manufacturing Survey) for South Africa finds that skilled and unskilled workers are complementary. If this is indeed the case, then improving skills levels may have important consequences for unemployment and may help to increase export participation.

The second potential area of research is the dynamic relationship between employment, wages and exporting. Exporting can have an impact on employment and real wages if exporters are able to grow faster than non-exporters and absorb labour, or if real wages among exporters grow faster than among non-exporters. Bernard and Jensen (1999) find that in the United States entry into exporting is positively associated with increases in employment, shipments and wages. In an African context, entry into exporting is associated with significant growth in employment. Using data from Ghana, Kenya and Tanzania, Rankin (2005) finds that firms that enter exporting grow employment by 56 percent during the eight year period contiguous with entry into the export market.

Thirdly, re-orienting the economy towards exporting entails structural shifts at the industry level as well as at the firm-level. The international empirical evidence suggests that firm's respond to

increased international openness in a heterogeneous manner. For example, in the face of international competition from low-wage countries, firms switch towards products made with more capital and skilled labour (Bernard *et al.*, 2007). Further, low productivity firms are more likely to exit and higher productivity firms start to export. Thus, much of the restructuring occurs within industries and not between industries.

This restructuring has various implications for employment and wages. Firstly, the transition costs for workers may be lower than is predicted in classical trade models where labour is required to shift to different sectors with very different factor-intensities or skill requirements. In models of firm-heterogeneity, exporters that are expanding will draw on labour that is released from firms that are closing. The skill requirements are more likely to be similar within industries than between industries. Secondly, the structural shifts may nevertheless increase wage inequality. Exporters tend to pay higher wages, thus a rise in export production may actually increase wage inequality (Bernard *et al.*, 2007).

In order to understand these issues, panel data at both the firm and individual level is required. We need to know the types of individuals that exporters employ when they enter the export market. We also need to know the types of workers that are shed when firms face import competition, and where these individuals go. Datasets that link firms with workers and track both the firms and the workers over time are essential for this.

## **IMPORTING AND EXPORTING**

Recent theoretical literature on ‘fragmentation of production’ has emphasised the inter-connection of manufacturing industries. Production is spread across numerous national boundaries and the ability to integrate into these networks is an important mechanism through which to increase export production. Access to internationally priced inputs is a requirement of this process.

Aggregate level analysis suggests that barriers to inputs can have a significant negative impact on export performance. Edwards and Lawrence (2008 forthcoming) find that tariff liberalisation in South Africa from 1990 substantially reduced the cost of inputs, which in turn had a significant and positive effect on exports, particularly of

non-commodities. Collier and Venables (2007) use a difference-in-differences approach to estimate the effect of the African Growth and Opportunity Act (AGOA) on African exports to the US from 2000. SSA exports of apparel to the US quadrupled from \$400 million 1995 to \$1.6 billion 2005 in response to the implementation of AGOA. Their estimates suggest that the waiver on the rule of origin on textile inputs for some SSA countries is a significant source of this growth.

Firm-level evidence also reveals the importance of imported inputs for African exporters. Figure 5 presents the data on the proportion of material inputs imported directly by firms in a selection of African economies. What is striking is the very high proportion of imported material inputs used by exporters in many of the economies. The share exceeds 50 percent for exporters in Morocco, Mauritius and Madagascar and is significantly higher than for domestic firms. What is noticeable is the relatively low proportion (less than 20 percent) of inputs of foreign origin in South African firms. This may reflect the history of past isolation and a lack of integration into the global production network. The data could also reflect the wide availability of domestically produced intermediate inputs. Further research on these relationships, as well as the adjustment of firms to import liberalisation would require firm data of a panel nature.

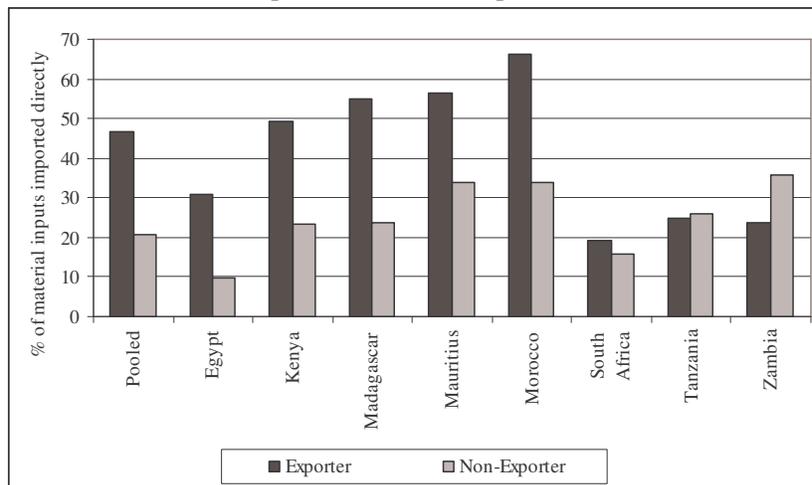


Figure 5. Inputs of foreign origin: manufacturing firms  
Source: Own calculations using World Bank Enterprise Survey data, post 2002.

## **WHAT ARE THE TYPES OF DATA THAT ARE REQUIRED TO IMPROVE OUR UNDERSTANDING ABOUT EXPORTS?**

Our understanding of the South African exporting process has been hampered by a lack of firm-level data. Despite this, a number of stylised facts emerge. Firstly, consistent with findings from other countries, South African exporters are larger, more productive and more capital intensive than non-exporters. There is also a robust link between firm size and export participation in South Africa. However, South African firms seem to enter the export market at smaller sizes than those in a selection of other countries. Secondly, South African exporters do not export very much of their output. The average amount exported is less than 20 percent of output and very few firms produce more output for the international market than for the domestic. This too is similar to export behaviour in the U.S. but this is generally lower than for other comparator countries. Thirdly, the destination of exports seems to matter. Firms that export within the SADC region are no more productive than those that produce solely for the domestic market. Exporting outside of the SADC region seems to require a higher productivity threshold.

These results say nothing about the dynamic nature of exporting in South Africa. We do not know whether firms are more productive prior to entry into the export market, as most of the evidence from other countries suggests, or whether they improve their productivity post-entry. This limits our understanding of how firm-level productivity changes and the entry and exit of firms influences aggregate productivity levels. Nothing is known about how firms change in size with entry and exit from the export market or whether firms initially expand into the regional market and then export internationally. Finally, very little is known about firm level responses to changes in macroeconomic variables, such as the exchange rate. Thus we do not know whether a weaker exchange rate would encourage more firms to enter the export market and/or encourage existing exporters to export more. Aggregate data suggests that there is a positive export response to a real devaluation but we know very little about how this will affect labour demand. This is a fundamental question given the suggestions of a weaker exchange rate emanating from the Growth Study on South Africa led by the

Harvard University Center for International Development and support for a weaker exchange rate policy from COSATU.

The other area where we know very little is the link between exporters and the rest of the economy. There are two areas of importance here. The first is the types of people that exporters employ. As discussed above, one argument for encouraging exporters is that they may be able to create jobs for the currently unemployed. However, exporters or those firms on the threshold of exporting may require people with different characteristics from those of the unemployed. The second area of importance is the relationship between exporters and other firms within the economy. Exporters may acquire inputs from firms that are more labour intensive and this could have implications for labour demand. Firms that export may also require imported inputs and thus tariffs may cause an anti-export bias.

**In order to begin to answer these types of questions we need at least three types of data.**

The first is population level data. The size distribution of firms is particularly important given the robust size exporting relationship. Statistics South Africa (StatsSA) has a business register that captures the population of firms by size. There are two complications with this though. The first is that this business register is not available to researchers or anyone outside of StatsSA although requests can be submitted for certain aggregate figures. The second is that all official figures define size based on turnover, and these size definitions differ between sectors. Related to this is that the business register contains limited information on employment. This turnover based definition makes comparisons across countries and across time very difficult.

The second type of data required is reliable firm level data. This needs to contain enough quantitative information to estimate at least a production function – output, inputs, employment, capital stock and investment. It also needs information on export behaviour, amount exported and export destination. Detailed employment and skills data are required. Finally, product data that allows for the construction of a firm level deflator and that can be linked with tariff lines is essential.

The third type of data is data that links firm level outcomes with labour demand. Some of this data would be collected from the firm (*e.g.* the number of employees by skills category or job-type).

However, linking employee level data with the firm data would be immensely valuable. This would allow for research that controls for individual employee effects. To do this would require interviewing a group of employees within the firm. Furthermore, following these employees over time, even if they left the firm, would allow researchers to track labour responses to changes in trade conditions. Thus, for example research could investigate how long it takes for those that lose jobs due to trade liberalisation to find new jobs.

An important aspect of both the firm level and individual level data would be the panel component. Firms would need to be followed over time so as to track how they respond to various changes and how they enter and exit the export market. Such data is also essential as it provides opportunities to robustly identify economic relationships, particularly of a dynamic nature, that are not possible using cross section data. This panel would not only be for exporting firms but for non-exporters as well. The panel would need to be structured so as to capture new entrants in the population of firms since with time panel datasets become less representative of the underlying population. There are at least two potential ways of doing this: firstly, by replacing firms that cease operating with newly established firms; and second, by using a rotating panel structure where a portion of the panel is replaced by a new sample in every round.

Availability of these types of data to researchers will not only enable us to better understand exporting in South Africa but will also shed light on issues related to investment, firm survival and success, productivity, labour demand, competition and technology. This understanding is vital for evidence based policy.

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