

Exporting, labour demand and wages in South Africa

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Abstract

For small economies, export led growth is the only viable policy strategy. In the context of South Africa, increased export growth must be a component of any growth strategy that seeks to address the high levels of unemployment and an unskilled labour force. However, the linkages between export behaviour and labour demand are complex and do not necessarily impact positively on unskilled labour demand. This paper investigates the direct linkages between export behaviour and labour market outcomes. We analyse the impact of export participation, intensity and destination on the demand for labour and subsequently wages paid. Our findings suggest that exporting has a significant impact on the labour market outcomes. Exporters to the rest of the world pay higher wages than domestic suppliers or exporters to the SADC region. At the same time, exporters to the SADC region are more likely to employ younger workers. Given South Africa's youth unemployment problem, one could conclude that the regional market is a potential outlet to grow firms that employ young, unskilled workers.

Introduction

Economic growth through exporting is one of the key policy recommendations of the International Panel on ASGISA, colloquially known as the Harvard Group. Increased exports, particularly in the manufacturing sector, has a number of virtuous properties including increasing the size of potential markets, diversification of revenue streams, earning foreign exchange to pay for imports and interactions in the foreign market that may lead to increased productivity (learning-by-exporting). Importantly in the South African context increased exports which result in the growth of firms and potentially the entry of new firms can increase labour demand and consequently reduce unemployment.¹ For South Africa, with its high levels of unemployment, this is a key policy goal.

However, the relationship between increased exports and decreased unemployment is not necessarily straightforward. A negative² exporting-unemployment relationship depends on a number of factors. These include the ability of firms to enter the export market or for current exporters to increase exporting. These changes in export behaviour need to be accompanied by increases in output or changes in output composition which impact on labour demand. This change in labour demand must increase the demand for those types of people who are currently unemployed. This is the direct channel through which exporting could impact on unemployment but there are also other potential indirect relationships that may affect the population of firms and prices of both final output and inputs that may have negative consequences for unemployment.

Increases in firm-level productivity related to export market participation may lead to these more productive firms gaining domestic market share at the expense of less productive firms (see Tybout, 2003, for empirical evidence and Melitz, 2002, for a theoretical model). If these less productive firms are more labour intensive and decrease in size as a result of this increased competition then there may potentially be increased unemployment. Changes in labour demand and in the demand for other inputs that may result from export expansion may change relative prices of these inputs. These changes in prices may also induce substitution effects. In addition to this, there may be complementarities between inputs. Thus, an increase in exports that increases demand for unskilled labour may be constrained if unskilled and skilled labour are complements (as Behar, 2008, suggests) and the pool of skilled labour is limited. There may also be second round effects where exporters buy inputs from more labour-intensive domestic firms, thus increasing labour demand.

This paper attempts to assess the various links, particularly the direct link, between increased exports and decreased labour demand. To do this it examines the various relationships that need to exist. Secondly, it uses firm-level data matched with workers to

¹ Increased exports are also desirable even in the unlikely event that they increase only revenue but have no impact on labour demand. If costs rise by less than revenues this would mean higher government tax revenues.

² In this paper the use of the term ‘negative relationship’ refers to the direction of the relationship between the two variables – i.e. as one variable increases the other decreases. Thus, a negative relationship between exporting and unemployment is good in the sense that increased exporting leads to decreased unemployment.

establish whether exporters employ different types of individuals and whether wages are related to exporting.

Trade and labour demand

Various studies have investigated the linkages between trade and labour demand in South Africa (see, for example: Dunne & Edwards, 2006; Edwards and Behar, 2006; Jenkins 2004, Jenkins 2008). The general consensus of these studies is that increased trade flows have led to a shift in the demand for skilled labour and insufficient demand for unskilled labour.

The majority of these studies have followed the standard two country-two good trade model which predicts that the demand for inputs is driven by the factor intensity of goods and the relative factor endowment of the country. Markusen and Venables (2008) question the implications of assumptions of the standard trade model and present a multi-country, multi-good approach to trade. They suggest that according to the standard trade model, countries with average relative endowments should find it difficult trade with the rest of the world. Markusen and Venables' model on the other hand shows that trade costs and fragmented production allow even these "middle" countries to engage in trade.

This is particularly relevant in the context of South Africa. Edwards and Golub (2004) show that South Africa struggles to maintain cost competitiveness against developed as well as developing countries. While South Africa is natural resource abundant, it is neither labour nor capital abundant. Natrass (1998) contemplates that South Africa as a typical middle income country cannot compete against more labour abundant countries and therefore experiences net job losses due to trade liberalisation.

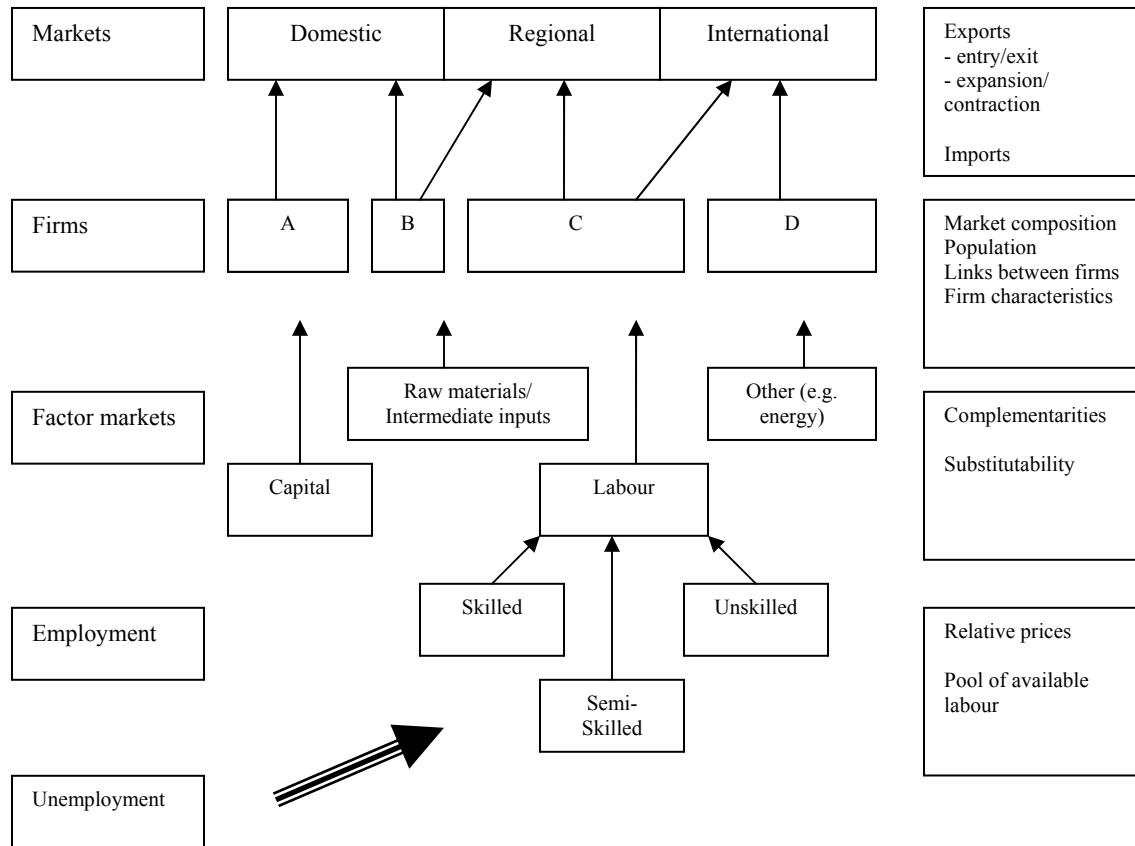
Most of the studies on trade and employment in South Africa concentrate on the impact of imports on labour demand or use aggregated data for their analysis. Whilst at the aggregate level exports might have become more skill intensive, it is not clear to what extent firm level characteristics as well as the export destination impact on labour demand. The destination of exports is of particular interest in light of Markusen and Venables' argument. Edwards and Schöer (2002) indicated that South Africa's exports to the SADC region restructured into globally declining industries and falling revealed comparative advantage indicators. This might be because South Africa uses the regional market as an outlet for products which cannot compete in the world market. Thus, the trade costs, as proposed by Markusen and Venables, seem to isolate South Africa and the region sufficiently to generate a cost advantage for South African producers in the region. This would suggest that regional and international markets are segmented and that the demand for labour may differ between firms that serve these distinct markets. Firm-level data is useful to investigate this.

Links between export participation and unemployment

Figure 1 presents a schematic view of the relationship between exporting and labour demand. Firms make a decision as to which markets they participate in, here simplified into the domestic, regional (SADC), and international (outside of SADC) markets. They choose not only the number of markets but also the intensity of participation – i.e. the percentage of output exported to each market. They also choose the frequency of participation – i.e. whether to participate continuously or whether to sporadically enter and exit. There are a number of factors that influence the type of export participation. A large body of evidence suggests that there are fixed costs of entry associated with exporting (see Baldwin and Krugman, 1989, for a model, Tybout, 2003, for a summary of evidence and Rankin, Söderbom and Teal, 2006, for evidence from Africa). These may vary by destination and these fixed costs of entry are likely to lead to state-dependence (i.e. continuous exporting). There may also be different productivity thresholds required for entry and continued participation in various export markets. There is abundant evidence that exporters are more productive than non-exporters and that mostly these productivity differences precede entry into the export market (so called self-selection) (see Wagner, 2007, for a summary). There is less evidence for what causes the amount exporting, although the ‘stylised-facts’ in the United States, South Africa and a number of other African countries suggest that most exporters export a small proportion of their output and that a large amount of aggregate exports is generated by a small number of intensive exporters (Rankin, 2005, and Bernard *et al.* 2007).

Market structure and the population of firms also play an important role in exporting behaviour. The link between size and export participation is common across countries and robust to specification changes. One explanation of the exporting-size relationship may be that exporters need to incur certain regular costs in the export market which only larger firms are able to afford. Another explanation is that larger firms may have outgrown the local market, or may have some market power in the domestic market and increases in output would drive down local prices and revenue. The distribution of the population of firms in the local market is also important for exporting. A size distribution with a ‘missing-middle’ of medium sized firms would mean that there would be few firms that could grow and enter the export market. Das, Roberts and Tybout (2001) found that among Colombian chemical producers there were very few marginal exporters and these firms added very little to total aggregate exports.

Figure 1. The relationship between export behaviour and unemployment



Crucially, the links between exporting and labour demand depends on the choice of production technology. Firms may produce different goods for different markets or different types of firms may be better able to compete in various markets. Thus, exporters may choose a different production technology to non-exporters and within the exporting group firms may differ based on export intensity, frequency or destination. The production technology determines the composition of inputs in the production process. This is represented in the ‘Factor markets’ row in the figure and inputs are divided into capital, raw materials and other intermediate inputs, labour and other costs such as energy. The combinations of these inputs depend on the complementarities and substitutability between the inputs. Production technology may change through participation in the export market (learning-by-exporting where firms become more productive through participation in the export market) and through import effects as imported intermediate goods or capital stock embody new technology. The input mix is a result of the marginal revenue products of these inputs and thus of the relative prices of these inputs. Thus input price changes, of for example wages, the cost of capital or import tariffs that change intermediate input prices, will change this mix and depending on the output market may have productivity effects.

Labour can be further divided into at least three types: skilled; semi-skilled and the unskilled. The effect of exporting on unemployment depends on the demand for particularly the unskilled but also to some extent the semi-skilled among exporters. This will depend on the production technology chosen, which in turn may depend on the export destination, frequency and intensity. It will also depend on the substitutability and complementarities between these types of labour and between them and other inputs including capital. Behar, 2008, finds that for South African manufacturing, skilled labour and unskilled labour are complements but that semi-skilled and unskilled labour are substitutes. Thus, the ability of exporters to absorb unskilled labour may be constrained by the availability and price of skilled labour.

The discussion so far has focussed on the direct links between exporting and unemployment. There may also be other indirect effects that affect the population of firms and thus unemployment. More productive exporting firms may expand in the domestic market and drive out less productive firms (Tybout, 2003, provides a summary of evidence on this). If these firms are more labour intensive, and these workers who lose their jobs cannot find new employment, unemployment may increase. There may also be links between exporting firms and firms that produce only for the domestic market. Increased exports may result in an increased demand for intermediate inputs produced by domestically-focused firms. This may cause these firms to expand and increase labour demand. Alternatively, exporting firms may switch suppliers for price or technology reasons and move to importing intermediate inputs. This would lead to a contraction among domestic suppliers and a decrease in labour demand.

In summary, the links between export behaviour and labour demand can be complex, and require an understanding of individual relationship between markets, firms and factors of production which can only be analysed with firm-level data.

The export behaviour of South African firms

Edwards, Rankin and Schöer (2008) summarise what we currently know about South African exporting firms. These firms conform to the stylised facts of exporting observed in a number of other countries. Exporters are larger and more productive than non-exporters. Exporting is also limited to a minority of firms and most of these firms export only a small amount of output. Although the South African data cannot tell us what the overall figures for the population of firms are, these results are similar to those of the US where only 4% of all firms and only 18% of manufacturing firms export and the top 10 percent of exporting firms in the US accounted for 96 percent of total U.S. exports (Bernard *et al.* 2007).

Size is strongly associated with participation in the export market (Anjinho and Rankin, 2008). The productivity-exporting relationship among South African firms seems to be dependent on the export destination. It is only firms that export outside of SADC that seem to have higher productivity than non-exporters (Rankin, 2001).

In the South African context, little work has been done on the types of people employed by exporters and the wages that these individuals earn. There is evidence from other countries that exporters pay a wage premium (Wagner, 2007 summarises this) but much of this work does not control for individual characteristics and thus, for example, this premium may be because exporters hire more educated people. There are at least two studies that attempt to control for the individual characteristics of workers employed by exporting firms by using matched firm and worker data (Schank, Schnabel and Wagner, 2008, and Munch and Skaksen, 2006). These are both for developed countries (Denmark and Germany) and both find that the exporting wage premium is associated with export intensity rather than merely export participation. Munch and Skaksen (2006) find that when interacted with firm level skill intensity much of the direct impact of exporting is absorbed. They thus argue that exporting firms increase their use of highly educated labour to differentiate their products and avoid intense competition in lower-wage international markets. The South African workforce is both relatively more skilled and higher paid than those in regional (SADC) markets but less skilled and lower paid than those in the important export markets of the developed world. Thus, exploiting the regional dimension of exporting helps us to understand the nature of the wages and exporting relationship.

Like the previous studies of wages and exporting in these two developed countries, this study uses matched firm and worker data. This data is drawn from the World Bank's Investment Climate Assessment of 2004 that surveyed predominantly manufacturing firms in the metropolitan areas of Gauteng, Western Cape, Eastern Cape and KwaZulu-Natal. As part of this survey, a subset of workers were interviewed in most firms. These workers were asked questions about the personal characteristics, earnings and membership of unions. The export behaviour of the firms that these people are employed in can be extracted from the firm level information.

What type of people do exporters employ?

Table 1 provides some summary statistics of the differences between individual characteristics between those that work for non-exporters and exporters. These are OLS regression results that initially contain only a dummy for direct export participation (columns (1), (3), (5) and (7)), but then also control for sectors, job types, firm size and location (columns (2), (4), (6) and (8)). Although exporters are more likely to employ older workers, males and those with more education these differences are no longer significant once sector specific factors, job types, firm size and province are controlled for. Once these factors are controlled for, people who work for exporters are less likely to be union members than those that work for non-exporters.

Table 1. Do exporters employ different types of people?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Male		Age		Education (years)		Union membership	
Direct exporter	0.0539***	-0.00405	0.977**	0.0645	0.219**	-0.0175	-0.0222	-0.0791***
	(0.0203)	(0.0190)	(0.380)	(0.430)	(0.105)	(0.0986)	(0.0288)	(0.0298)
Controls for:								
Firm size	No	Yes	No	Yes	No	Yes	No	Yes
Job type	No	Yes	No	Yes	No	Yes	No	Yes
Sector	No	Yes	No	Yes	No	Yes	No	Yes
Province	No	Yes	No	Yes	No	Yes	No	Yes
Observations	4084	3994	4102	4018	4094	4010	4082	3992
R-squared	0.003	0.285	0.003	0.107	0.002	0.221	0.001	0.195
*** p<0.01, ** p<0.05, * p<0.1								
Robust standard errors in parentheses. These are clustered by firm.								

Next we examine whether the amount exported makes any difference. We classify firms that exported more than one-third of their total output as significant exporters. Table 2 presents these summary statistics. Employees in significant exporters are on average younger than in firms that export a small amount, however these differences do not persist when other factors are controlled for.

Table 2. Do significant exporters employ different people to other exporters?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Male		Age		Education (years)		Union membership	
Significant exporters	-0.0393	-0.0136	-1.186*	-0.586	0.243	0.0684	0.0250	0.0463
	(0.0322)	(0.0259)	(0.661)	(0.694)	(0.167)	(0.180)	(0.0463)	(0.0437)
Controls for:								
Firm size	No	Yes	No	Yes	No	Yes	No	Yes
Job type	No	Yes	No	Yes	No	Yes	No	Yes
Sector	No	Yes	No	Yes	No	Yes	No	Yes
Province	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2449	2406	2453	2410	2447	2404	2434	2391
R-squared	0.001	0.300	0.003	0.117	0.002	0.218	0.000	0.224
Robust standard errors in parentheses. These are clustered by firm.								
*** p<0.01, ** p<0.05, * p<0.1								

Next we split exporters between those that do not export to SADC and those that do.³ Without controlling for firm, sector and location characteristics males, those who are younger and those that have less education are more likely to work for firms that export to SADC. Males and age remain significant when these other factors are controlled for.

Table 3. Do SADC exporters employ different people to other exporters?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Male		Age		Education (years)		Union membership	
SADC exporters	0.0842***	0.0709**	-1.092*	-1.262*	-0.288*	0.258	0.0296	0.0168
	(0.0275)	(0.0293)	(0.580)	(0.660)	(0.159)	(0.208)	(0.0507)	(0.0517)
Controls for:								
Firm size	No	Yes	No	Yes	No	Yes	No	Yes
Job type	No	Yes	No	Yes	No	Yes	No	Yes
Sector	No	Yes	No	Yes	No	Yes	No	Yes
Province	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1544	1501	1550	1507	1543	1500	1544	1501
R-squared	0.008	0.314	0.004	0.150	0.004	0.238	0.001	0.265
Robust standard errors in parentheses. These are clustered by firm.								
*** p<0.01, ** p<0.05, * p<0.1								

Lastly, we include the three classifications of export behaviour together. Table 4 reports these results. Once we control for various firm factors as well as job types the only significant difference is that SADC exporters employ younger people than those employed by other firms.

Table 4. Does export behaviour influence the type of people employed?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Male		Age		Education (years)		Union membership	
Direct exporter	0.0552*	-0.0117	2.143***	0.746	0.419**	-0.143	0.0212	-0.0651
	(0.0305)	(0.0307)	(0.630)	(0.734)	(0.188)	(0.182)	(0.0456)	(0.0490)
Significant exporter	-0.0516	-0.00504	-1.855**	-1.086	0.0104	0.0480	-0.0260	0.0310
	(0.0368)	(0.0293)	(0.767)	(0.781)	(0.203)	(0.208)	(0.0567)	(0.0500)
SADC exporter	0.0569*	0.0440	-1.856***	-1.350**	-0.224	0.313	0.0194	0.0275
	(0.0298)	(0.0294)	(0.615)	(0.655)	(0.201)	(0.199)	(0.0538)	(0.0502)
Controls for:								
Firm size	No	Yes	No	Yes	No	Yes	No	Yes
Job type	No	Yes	No	Yes	No	Yes	No	Yes
Sector	No	Yes	No	Yes	No	Yes	No	Yes
Province	No	Yes	No	Yes	No	Yes	No	Yes
Observations	3126	3036	3146	3062	3138	3054	3139	3049
R-squared	0.009	0.292	0.007	0.118	0.005	0.234	0.001	0.207
*** p<0.01, ** p<0.05, * p<0.1								
Robust standard errors in parentheses. These are clustered by firm.								

In summary, once basic controls for basic firm characteristics (including size and job types), sector and province are imposed it is mainly export destination that significantly affects the type of people employed. Those employed by SADC exporters are more likely to be male and younger than those employed by non-SADC exporters. If all three

³ Some of these SADC exporters export outside of SADC but the base category (exporter) is exclusively outside of SADC exporters.

dimensions of export behaviour are controlled for together – export participation, intensity and destination – it is only age that enter significantly. SADC exporters are more likely to employ younger people than other firms.

What about wages?

The second part of the question on labour demand and exporting is whether there is a difference in earnings between those that work for firms with different types of exporting behaviour. To do this we estimate a standard Mincerian earnings equation of the following form:

$$\ln W_{ij} = \alpha + \beta_1' X_i + \beta_2' Z_j + \delta \text{Export}_j + \varepsilon_{ij}$$

Where:

W_{ij} is wages for individual i in firm j ;

X_i is a vector of individual characteristics such as age and education;

Z_j is a vector of firm-specific characteristics including firm size and productivity measures;

Export_j is an indication of export behaviour; and

ε_{ij} is a standard i.i.d. error term.

Table 5 presents the earnings functions results that control for direct export participation at the firm level. Education displays the expected positive relationship with earnings although this is not significant. The age-earnings profile is concave, with earnings increasing with age but at a decreasing rate. Males earn between 10-13% more than females and workers belonging to a union earn approximately 10% less than non-union workers.⁴ Caution needs to be displayed when analysing the production controls as the one-stage process followed is actually equivalent to substituting the residuals of a production function into the earnings equation. This means that the coefficients on the capital/worker, raw materials/worker and other costs/worker are a combination of the production function effects and the earning function effects. We have assumed constant returns to scale in the production function (Rankin, 2005 suggests that this is a valid assumption) and thus the coefficient on the employment variable can be interpreted as the impact of firm size on wages. The output/employment coefficient can be interpreted as the impact of total factor productivity on wages. As expected, there is a significant positive effect of size on earnings. The results for productivity are only significant once profit is controlled for. The direct exporting dummy variable suggests that there is no significant effect of export participation on earnings levels.

⁴ This negative union premium is unexpected but Abramowitz (2008) investigates this further.

Table 5. Mincerian earnings functions controlling for export participation.

VARIABLES	(1) Ln(monthly earnings)	(2) Ln(monthly earnings)
Education	0.0356 (0.0233)	0.0509** (0.0236)
Education ²	0.00108 (0.00126)	0.000232 (0.00127)
Age	0.0341*** (0.00845)	0.0361*** (0.0104)
Age ²	-0.000242** (0.000103)	-0.000262** (0.000129)
Male	0.128*** (0.0270)	0.0973*** (0.0301)
Ln(employment)	0.0818*** (0.0162)	0.0812*** (0.0189)
Ln(output/worker)	0.00285 (0.0326)	0.143** (0.0673)
Ln(capital/worker)	-0.00986 (0.0129)	-0.0589** (0.0238)
Ln(raw materials/worker)	0.0455* (0.0248)	-0.00470 (0.0332)
Ln(other costs/worker)	0.0536*** (0.0173)	0.0476* (0.0251)
Union	-0.120*** (0.0348)	-0.116*** (0.0393)
Ln(profit/capital)		-0.0470** (0.0198)
Direct exporter	-0.0532 (0.0401)	-0.0307 (0.0468)
Controls for:		
Job types	Yes	Yes
Sectors	Yes	Yes
Provinces	Yes	Yes
Observations	3491	2789
R-squared	0.628	0.633
*** p<0.01, ** p<0.05, * p<0.1		
Robust standard errors in parentheses. These are clustered by firm.		

In Table 6 instead of controlling for export participation we control for the level of exports. Firms that export more than one-third of their output are classified as significant exporters. Columns (1) and (2) are for the sample of all firms, (3) and (4) are for exporters only. Across all specifications the point estimates are similar and these are significant at the 10% level in three cases. These results suggest that it is the level of exporting that matters for wages and that individuals employed in firms that export a large amount of their output earn up to 20% more than non-exporters or firms that export less than one-third of their output.

Table 6. Mincerian earnings functions controlling for export intensity

	(1)	(2)	(3)	(4)
	All firms		Exporters only	
VARIABLES	Ln(monthly earnings)	Ln(monthly earnings)	Ln(monthly earnings)	Ln(monthly earnings)
Education	0.0328 (0.0236)	0.0490** (0.0238)	0.0640*** (0.0244)	0.0552** (0.0254)
Education ²	0.00122 (0.00127)	0.000366 (0.00127)	-0.000916 (0.00131)	-0.000382 (0.00139)
Age	0.0370*** (0.00841)	0.0379*** (0.0103)	0.0217* (0.0124)	0.0200 (0.0153)
Age ²	-0.000276*** (0.000102)	-0.000282** (0.000128)	-8.95e-05 (0.000149)	-6.49e-05 (0.000186)
Male	0.128*** (0.0269)	0.0984*** (0.0300)	0.183*** (0.0330)	0.172*** (0.0366)
Ln(employment)	0.0698*** (0.0158)	0.0753*** (0.0187)	0.0880*** (0.0215)	0.0932*** (0.0264)
Ln(output/worker)	-0.00691 (0.0331)	0.117* (0.0712)	0.0175 (0.0343)	0.148 (0.0921)
Ln(capital/worker)	-0.0102 (0.0128)	-0.0585** (0.0232)	-0.00346 (0.0178)	-0.0662* (0.0344)
Ln(raw materials/worker)	0.0503** (0.0255)	0.00878 (0.0380)	0.0408 (0.0258)	-0.00206 (0.0426)
Ln(other costs/worker)	0.0475*** (0.0174)	0.0452* (0.0251)	0.0251 (0.0224)	0.0237 (0.0384)
Union	-0.116*** (0.0345)	-0.116*** (0.0393)	-0.166*** (0.0445)	-0.143*** (0.0516)
Ln(profit/capital)		-0.0440** (0.0193)		-0.0650** (0.0287)
Significant exporter	0.196*** (0.0623)	0.148* (0.0819)	0.213*** (0.0670)	0.135 (0.0949)
Controls for:				
Job types	Yes	Yes	Yes	Yes
Sectors	Yes	Yes	Yes	Yes
Provinces	Yes	Yes	Yes	Yes
Observations	3491	2789	2094	1691
R-squared	0.631	0.634	0.634	0.631
*** p<0.01, ** p<0.05, * p<0.1				
Robust standard errors in parentheses. These are clustered by firm.				

South African exporting firms are likely to face two different and distinct markets – a regional market where levels of productivity required for entry are lower and an international market where required productivity thresholds are higher. To test this we isolate those firms that export to SADC. These are compared to all firms in columns (1) and (2) and exporters only in columns (3) and (4). The results are robust to all specifications and across comparison groups – firms that export to SADC pay significantly lower wages than other exporters and other types of firms. These differences are in the region of 15-22%.

Table 7. Mincerian earnings functions controlling for export destination.

	(1)	(2)	(3)	(4)
	All firms		Exporters only	
VARIABLES	Ln(monthly earnings)	Ln(monthly earnings)	Ln(monthly earnings)	Ln(monthly earnings)
Education	0.0302 (0.0271)	0.0601** (0.0269)	0.0429 (0.0346)	0.0624** (0.0287)
Education ²	0.00151 (0.00148)	-0.000184 (0.00141)	0.000552 (0.00190)	-0.000777 (0.00153)
Age	0.0425*** (0.00932)	0.0522*** (0.0108)	0.0341** (0.0158)	0.0577*** (0.0191)
Age ²	-0.000367*** (0.000114)	-0.000490*** (0.000135)	-0.000281 (0.000192)	-0.000573** (0.000237)
Male	0.137*** (0.0312)	0.111*** (0.0346)	0.241*** (0.0412)	0.247*** (0.0449)
Ln(employment)	0.0810*** (0.0178)	0.0844*** (0.0214)	0.0939*** (0.0266)	0.119*** (0.0322)
Ln(output/worker)	-0.00347 (0.0354)	0.196** (0.0995)	0.0238 (0.0285)	0.303** (0.139)
Ln(capital/worker)	-0.00870 (0.0161)	-0.0564** (0.0274)	0.0165 (0.0279)	-0.0683 (0.0474)
Ln(raw materials/worker)	0.0461 (0.0298)	-0.0482 (0.0597)	0.0150 (0.0297)	-0.112 (0.0817)
Ln(other costs/worker)	0.0719*** (0.0196)	0.0646*** (0.0249)	0.0604** (0.0289)	0.0616 (0.0421)
Union	-0.118*** (0.0413)	-0.128*** (0.0477)	-0.196*** (0.0566)	-0.202*** (0.0637)
Ln(profit/capital)		-0.0391* (0.0224)		-0.0727** (0.0350)
SADC exporters	-0.167*** (0.0515)	-0.145** (0.0572)	-0.220*** (0.0704)	-0.169** (0.0842)
Controls for:				
Job types	Yes	Yes	Yes	Yes
Sectors	Yes	Yes	Yes	Yes
Provinces	Yes	Yes	Yes	Yes
Observations	2640	2087	1290	1026
R-squared	0.644	0.658	0.661	0.677
*** p<0.01, ** p<0.05, * p<0.1				
Robust standard errors in parentheses. These are clustered by firm.				

Next we control for all types of export behaviour. These results confirm the earlier findings – merely participating in the export market does not seem to be associated with different levels of earnings; there is some evidence that significant exporters pay higher wages; but the destination of exports matters for earnings. Those firms participating in the SADC market actually pay lower wages than other firms.

Table 8. Mincerian earnings functions controlling for export behaviour.

	(1)	(2)	(3)	(4)
	All firms		Exporters only	
VARIABLES	Ln(monthly earnings)	Ln(monthly earnings)	Ln(monthly earnings)	Ln(monthly earnings)
Education	0.0280 (0.0271)	0.0577** (0.0268)	0.0645** (0.0293)	0.0629** (0.0283)
Education ²	0.00163 (0.00147)	-2.28e-05 (0.00140)	-0.000835 (0.00155)	-0.000859 (0.00151)
Age	0.0451*** (0.00928)	0.0548*** (0.0108)	0.0344** (0.0164)	0.0581*** (0.0208)
Age ²	-0.000396*** (0.000113)	-0.000521*** (0.000135)	-0.000287 (0.000200)	-0.000594** (0.000258)
Male	0.138*** (0.0311)	0.113*** (0.0345)	0.245*** (0.0432)	0.262*** (0.0475)
Ln(employment)	0.0745*** (0.0187)	0.0761*** (0.0215)	0.0908*** (0.0285)	0.114*** (0.0334)
Ln(output/worker)	-0.00816 (0.0343)	0.173* (0.0999)	0.0294 (0.0296)	0.339** (0.145)
Ln(capital/worker)	-0.00830 (0.0160)	-0.0583** (0.0268)	0.0120 (0.0285)	-0.0711 (0.0474)
Ln(raw materials/worker)	0.0476 (0.0292)	-0.0361 (0.0601)	0.0266 (0.0311)	-0.120 (0.0869)
Ln(other costs/worker)	0.0671*** (0.0197)	0.0616** (0.0250)	0.0528* (0.0309)	0.0432 (0.0429)
Union	-0.116*** (0.0409)	-0.125*** (0.0472)	-0.197*** (0.0583)	-0.195*** (0.0669)
Ln(profit/capital)		-0.0373* (0.0220)		-0.0748** (0.0355)
Direct exporter	0.0186 (0.0695)	0.0732 (0.0915)		
Significant exporter	0.147** (0.0738)	0.0984 (0.0942)	0.124 (0.0786)	0.0332 (0.104)
SADC exporter	-0.171** (0.0690)	-0.190** (0.0855)	-0.196*** (0.0735)	-0.174* (0.0909)
Controls for:				
Job types	Yes	Yes	Yes	Yes
Sectors	Yes	Yes	Yes	Yes
Provinces	Yes	Yes	Yes	Yes
Observations	2640	2087	1243	989
R-squared	0.647	0.659	0.665	0.679

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses. These are clustered by firm.

Conclusion - What do these results mean?

These results suggest that exporting does not seem to influence the type of person employed, at least for a set of observable characteristics, but that export behaviour does affect wages. Individuals with identical observable characteristics will earn more working for firms that export more than one-third of their output, and will earn significantly less if they work for firms exporting to the SADC region. This is after controlling for firm-level productivity and individual characteristics. They suggest that there may be unobservable characteristics, potentially related to individual productivity or skills and thus associated with wages, that are correlated with regional exporting.

These results also continue to add to the evidence that for South African firms regional and international markets are different and that different types of firms serve these markets (Rankin, 2002, Rankin, 2005, Edwards, Rankin and Schoer, 2008). This indicates that these regional markets are not stepping-stones to international markets.

The lower wages paid in firms that export regionally also suggests that this may be a direct channel through which to increase low-wage, and youth, employment and thus reduce unemployment. However, the regional market is protected from intense international competition through fragmentation, tariff barriers and high transport costs, although SADC aspires to improved regional integration. The impact of better infrastructure and continued regional integration on South African regional exporters is ambiguous. Lower transport costs and harmonised tariffs are likely to reduce the costs of participation in the regional market for both South African firms and their competitors. This may allow South African firms to expand further regionally but may also require higher levels of productivity. This is also likely to have an impact on the population of firms and thus labour demand.

This paper has suggested that the impact of exporting on labour demand is nuanced and depends on the type of export behaviour. Whilst striving for increased exports is laudable, policy needs to acknowledge that not all exporting is the same.

References:

- Abramowitz, I., 2008, "Does belonging to a union pay: Evidence from matched firm and worker data in South Africa?" Unpublished Honours Thesis, University of the Witwatersrand.
- Anjinho, N. and N. Rankin, 2008, "Exporting and size: Comparisons between developing countries" University of the Witwatersrand, mimeo.
- Baldwin, R. and P. Krugman, 1989, 'Persistent Trade Effects of Large Exchange Rate Shocks,' *Quarterly Journal of Economics*, 104(4): 635-654.
- Behar, A., 2008, "Does training benefit those who don't get any? Elasticities of complementarity and factor price in South Africa", Economic Research Southern Africa Working Paper 73.
- Bernard, A, Jensen, JB, Redding, S. and Schott, P. 2007, 'Firms in International Trade,' National Bureau of Economic Research Working Paper 13054
- Das, S., M. Roberts and J. Tybout, 2001. 'Market Entry Costs, Producer Heterogeneity, and Export Dynamics, Pennsylvania State University, mimeo, <http://econ.la.psu.edu/~jtybout/drtfinal1.pdf>.
- Dunne P, and L. Edwards (2007), 'Trade, Enterprise production and Employment', *Journal of Studies in Economics and Econometrics*, 31,2
- Edwards, L and A. Behar, 2006, 'Trade Liberalization and Labour Demand within South African Manufacturing Firms', *Journal of Studies in Economics and Econometrics*, 30, 2
- Edwards, L., N. Rankin and V. Schöer, 2008, 'South African exporting firms: What do we know and what should we know?' mimeo.
- Edwards L. and V. Schöer (2002), 'Measures of Competitiveness: A Dynamic Approach to South Africa's Trade Performance in the 1990s', *South African Journal of Economics*, 70:6
- Jenkins R, 2004, 'Globalization, Production, Employment and Poverty: Debates and Evidence', *Journal of International Development*, 16
- Jenkins R, 2008, 'Trade, Technology and Employment in South Africa', *Journal of Development Studies*, 44,1
- Markusen J.R. and A.J. Venables (2008), 'Interacting Factor Endowments and Trade Costs: A Multi-country, Multi-good Approach to Trade Theory', *Journal of International Economics*, 73

- Melitz, M., 2002, 'The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity,' National Bureau of Economic Research Working Papers: 8881.
- Munch, J. and J. Skaksen, 2006, 'Human Capital and Wages in Exporting Firms.' Economic Policy Research Unit, University of Copenhagen, Working Paper Series, 2006-10.
- Nattrass N, 1998, "Globalization and the South African Labour Market", TIPS monitor, volume 6
- Rankin, N., 2002, 'The Export Behaviour of South African Firms', Trade and Industrial Policies Strategy (TIPS) Working Paper.
- Rankin, N., 2005, 'The Determinants of Manufacturing Exports from Sub-Saharan Africa', unpublished D.Phil Thesis, University of Oxford.
- Rankin, N., M. Söderbom and F. Teal, 2006, "Exporting from manufacturing firms in Sub-Saharan Africa." *Journal of African Economies*, 15(4), 671-687
- Schank, T., C. Schnabel and J. Wagner, 2008, 'Higher wages in exporting firms: Self-selection, export effect, or both? First evidence from German linked employer-employee data.' University of Lüneburg Working Paper Series in Economics, No 74.
- Tybout, J., 2003, 'Plant- and Firm-level Evidence on the 'New' Trade Theories' in E. Kwan Choi and James Harrigan, ed., *Handbook of International Trade*, Oxford: Basil-Blackwell, 2003.
- Wagner, J., 2007, 'Exports and productivity: A survey of the evidence from firm-level data.' *The World Economy*, 30, 60-82.