Macro-Micro Linkages in Trade: How are Firms Adjusting to Trade Liberalisation, and does Trade Liberalisation lead to improved Productivity in South African Manufacturing Firms?

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1 INTRODUCTION

A feature of the post-apartheid economy in South Africa has been its reintegration into the global economy. Trade liberalisation has been a cornerstone of government policy since 1994, indeed prior to 1994 (see Bell, 1993). There has been extensive research analysis of trade issues in post-apartheid South Africa, including evaluation of the impact of trade liberalisation. A set of studies (for example Fedderke and Vaze, 2000) have examined the effect of trade liberalisation on effective protection showing declining levels of effective protection. Others, (for example Roberts, 2000) have studied the impact of liberalisation on the level of exports. A number of studies have explored the impact of liberalisation on the labour market, with Edwards (2001) arguing that technological change, rather than trade liberalisation, is the primary cause of falling employment in South Africa. Bhorat (2000) finds that trade liberalisation has had a positive impact of labour demand in manufactures. A feature of all of these studies is the focus on macroeconomic, or economy-wide, effects of liberalisation. To be sure, there have been a number of micro-level studies examining the competitiveness of the manufacturing economy, or of one or other industry (for example, Barnes 1998 on the automotive industry, Roberts 2001 on the plastics industry). There is, however, no systematic study in South Africa on the relationship between trade liberalisation at the macro level, and its micro or firm-level adjustment effects. It is this gap in the South African trade and industry literature that this paper proposes to address. Specifically, this paper aims to explore how manufacturing firms are adjusting to the liberalization of trade, how firms are adjusting their production in the face of a change in incentive structures, how they are dealing with the currency risks associated with increased international trade, and the linkages between export growth and productivity at the level of the firm.

Following Rodrik (1995), it is possible to distinguish four arguments for trade policy reform, and its concomitant economic growth effects: (i) trade liberalisation reduces static inefficiencies that arise out of a misallocation of resources; (ii) outward-oriented economies are better able to cope with adverse external shocks; and (iii) more competitive economies are less prone to wasteful rent-seeking activities; and (iv) trade liberalisation fosters dynamic efficiency gains primarily through learning and technological change. At

the level of the firm, our primary concern here is with the fourth argument, that trade liberalisation enhances learning and technological development.

Following the seminal work of Jim Tybout on the microdynamics of trade there have been a number of studies internationally examining the relationship between exports and productivity at the level of the firm (see Tybout 2000, Roberts and Tybout 1996). A number of studies comparing the performance of exporting firms with non-exporters in both developed and developing countries find some evidence that exporters are more productive (see, for example, Aw and Hwang 1995, Pavcnic, 2002, Tybout and Westbrook 1995, Bernard and Jensen 1999, Girma et al, 2002). However, it may be that firms that are relatively more productive self-select into the export markets, so that, as Clerides et al (1998) point out, the correlation between exports and productivity may be a reflection of causality in one or both directions.

Firm-level studies of the type outlined above are quite data-intensive. Although the issue of exports and firm-level productivity is clearly an important policy issue in South Africa, data limitations have made it difficult systematically to study the effects of liberalisation on South African firms. A recent Ethekwini Municipality-World Bank survey of manufacturing firms in the greater Durban area provides extensive firm level data for a representative sample of South African firms. The dataset contains a range of performance indicators for 225 large manufacturing firms in the Greater Durban Manufacturing Area (GDMA) area (see Devey et al, 2003 for details of the survey).

We begin by presenting an overview of manufacturing in the Durban area and report on the GDMA survey, highlighting the methodology and key objectives and findings of the survey. We then focus on the international trade issues, reporting on how firms in the GDMA are responding to trade liberalisation. We report here on three sets of issues: the export orientation of firms, the effects of volatility in exchange rates, and on a set of trade policy issues. Finally, we present some concluding remarks.

2 OVERVIEW

The province of KwaZulu-Natal (henceforth KZN) is an important contributor to national economic performance. KZN accounts for 15.5% of South Africa's gross domestic product and contributes 22% of South Africa's manufacturing gross domestic product. Within KZN industries, manufacturing amounts to 23% of the province's gross domestic product at market prices (Statistics South Africa, 2002). Within the province, manufacturing activities are principally located in the Greater Durban Metropolitan Area (GDMA): according to WEFA/Global Insight estimates, the GDMA would account for about 60% of KZN gross geographic value added at basic prices. A small number of sectors dominate the area's composition of manufacturing activities. According to Monitor Company (2000), the three most important sectors in terms of their geographic gross contribution to the Durban economy are "industrial chemicals" (17%), "food and food products" (13.7%) and "paper and paper products" (9%). Employment, however, is concentrated in "clothing" and "food and food products" (respectively 20% and 11%).[1]

More generally, the Monitor Company (2000) emphasises that manufacturing in the GDMA, whilst an important economic sector is not particularly competitive.[2] The firms operate in a difficult local context. First, the firms are involved with the production of low value added goods. Second, local demand is weak - retail demand in Durban would be only 9% of national total - and declining. This feature is influenced by a comparatively low level of income per capita and high rates of unemployment and poverty (see also HSRC, 2002 and UNDP, 2003). Third, the report notes an "exaggerated skills deficit, relative to both Johannesburg and Cape Town" (p. 7), and a net outflow of skilled workers both, to other South African provinces and abroad.

Beyond the general context outlined above, consistent information about GDMA firms is

[1] The 1996 Census of Manufacturing and HSRC (2002, p. 21) give somwhat different figures.

[2] With the objective of identifying the quality of manufacturing expansion in the GDMA, the Trade Monitor Company, in collaboration with Durban Unicity, focused in 2000 on the "long term economic strategy for the city". The report which resulted from this work presented two main criteria of performance. The first, *relative competitiveness*, proxies for the relative opportunities associated with a further expansion of individual manufacturing and economic sectors. The second, *relative attractiveness*, takes into account the developmental importance of the sectors and the impact these would have on the Durban economy if they expanded. The first dimension focuses on indicators of productivity, shares of world exports and export propensity. These are used to indicate that there is a potential for a sustained growth. The second dimension concern the importance of the sectors for the local economy - growth and size – but takes a qualitative perspective by incorporating job prospects and job quality (i.e. average wages).

lacking. This lends importance to manufacturing data and thus to the set of GDMA manufacturing firm surveys carried out in 2002 and 2003, one of which is the focus of this paper. The surveys were designed with several purposes in mind. One is to allow an up-to-date assessment of the current difficulties facing firms, to consider the extent to which these vary across firms and the ways in which firms adapt to them. The exercise also aimed to outline areas of policy change that are tailored to the circumstances in the GDMA. The set of formal surveys which focuses respectively on firms with less than or more than fifty employees further enables light to be shed on how firms select their factors of production and allocate their resources. The particular survey used for this paper and which was undertaken between May 2002 and April 2003 considered firms with at least fifty employees.

The survey under consideration here contains eight main research themes,[3] the first part of which focuses on the constraints as they are reported by the firms' chief executive officers (CEOs) or managing directors. Each of the remaining themes is structured in such a way as to explore and assess a range of drivers of and impediments to growth. As will be shown in this paper, the responses are complex, displaying variations across firm size classes and sectors.

The methodology of the survey undertaken in the GDMA closely follows that of the Greater Johannesburg Metropolitan Area (GJMA) survey (see Chandra *et al.*, 2001). However, one difference between the two surveys is that whereas two sets of weights were applied to the GJMA survey, so that the results are representative at the municipal and national level, the data for the GDMA has been weighted so that the sample is representative at the municipal level only. The overall method of selecting firms for interviews is similar across the two surveys.

A few more detailed methodological points should be made at the onset. First, as already noted, weights have been applied to ensure that the observations from the 225 GDMA firms interviewed across sectors are representative of the GDMA population of firms. The Bureau of Market Research at UNISA, in charge of carrying out the survey, consulted a series of sources to establish a comprehensive list of firms in order to draw sampling

[3] These are "general", "production", "financial", "purchase", "human resources", "sales/marketing", "administrative" and "port" related issues.

frames. Difficulties emerged in this part of the exercise in terms of the classification of firms and for the purpose of stratifying the large firms by size. Alternative sampling frames from which to gather the sampling quota of firms to interview were therefore designed.[4] Further adjustments had to be made after fieldwork to take into account relocations and downsizing of firms.[5] The final set of weights was arrived at following a further process of consultation with industry experts. The total frame universe has been tied to 600 final firms and weights derived accordingly. These are presented in Table 1. About one in three existing large manufacturing firms was interviewed.

Second, firms are stratified according to their size and sectors of activities. Firms with 50 to 99 employees are distinguished from those with 100 to 199 employees and those with 200 or more employees. We describe these as respectively type 1, type 2 and type 3 firms. The GDMA manufacturing sectors covered by the survey are "food processing and beverages", "textiles", "paper and furniture", "chemical products", "iron and steel", "metal products", "electrical and electronic machinery", "vehicles and automotive components", "leather and footwear" and "non-metallic mineral products". There was no firm in the GJMA survey in the last two of these sectors.

Third, firms were asked to classify constraints in three main categories: "major", "moderate", and "not a problem". "Not applicable" formed an additional category. We generally applied weights of 1 and of 0.5 to "major" and to "moderate" constraints. A zero weight has been applied to "not important" or "not applicable".

In terms of the data analysis, the significance of differences is tested at the five percent level whenever possible and relevant. The tables generally report the results from Pearson Chi Square tests. Other tests performed were post hoc Scheffe and Tamhane tests for mean differences.

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[4] For example "…they lacked employment size group classifications, they had a limited number of firms for certain sectors and they showed geographic location problems. In some cases information on firms were outdated (i.e. non-existing or a change in contact details)." (Bureau of Market Research, GDMA Field Work Report)

[5] Issues emerged for two sectors, "leather and footwear" and "iron and steel". For the former, downward adjustments to a first set of weights were made for mid to large size firms to take into account of the reduced importance of this sector in the GDMA economy. For the latter sector, an adjustment was made to shift a mid-size firm (within the large firm sectoral subset) into the largest group. This is because no firm was surveyed in the "iron and steel" sector that had a number of employees equal to or in excess of 200. Here only the size class, not the number of employees (173), was changed.

Table 1. Firms surveyed, weights and GDMA universe

	Firms surveyed classified according to size and sector				Weights applied			GDMA final frame/universe			
Sector	**50-99**	**100-199**	**200+**	**Total**	**50-99**	**100-199**	**200+**	**50-99**	**100-199**	**200+**	**Total**
Food processing & beverages	7	6	8	**21**	2.714	3.000	3.000	19	18	24	**61**
Textiles	18	15	14	**47**	2.778	2.867	4.214	50	43	59	**152**
Paper & furniture	19	9	12	**40**	1.526	2.889	2.500	29	26	30	**85**
Chemical products	8	10	10	**28**	6.250	3.500	3.800	50	35	38	**123**
Iron and steel	1	3	1	**5**	2.000	1.333	2.000	2	4	2	**8**
Metal products	8	4	4	**16**	2.875	4.250	2.250	23	17	9	**49**
Electrical and electronic machinery	9	3	3	**15**	1.111	4.000	3.000	10	12	9	**31**
Vehicles & automotive components	5	7	8	**20**	2.800	1.714	1.875	14	12	15	**41**
Leather & footwear	4	1	6	**11**	2.750	5.000	1.667	11	5	10	**26**
Non-metallic mineral products	13	5	4	**22**	1.077	1.000	1.250	14	5	5	**24**
Total	**92**	**63**	**70**	**225**				**222**	**177**	**201**	**600**

Having stressed some similarities in the methodology and framework of the GJMA and GDMA surveys, it should be emphasised that the two survey are generally not comparable. In particular, there are a series of *contextual* differences.[6] First, activities in Durban are conditioned by the presence of the largest container port in southern Africa. Second, about four years separate the two surveys. From the perspective of the business sector important changes had occurred over the period, in particular in regard to the abolition of specific government support measures.[7] Alternative measures were put in place to promote efficiency improvements, to invest and to export.[8] Policy changes have also been made in the area of labour legislation to address historical employment disadvantages to specific groups. In particular, the Employment Equity Act (EEA) and the Skills Development Act (SDA) were enacted in 1998 and the Skills Development Levies Act followed in 1999. New and more recent trade opportunities have emerged through two important preferential deals, the Trade and Development Cooperation Agreement with the European Union and the Africa Growth and Opportunity Act with the USA. The international economy has also been relatively volatile over the period, involving September 11 effects, recession in the US and periods of low growth of international trade. The currency also appreciated very substantially in the run up to the survey.

The change in the Rand-Dollar exchange rate is important for methodological purposes. This is because the main period of sharp exchange rate reversal (in March 2002) occurred a few months before the GDMA fieldwork interviews were initiated.[9] The subsequent appreciation of the Rand has fundamentally altered the interpretation of whether the exchange rate is a driver of, or a constraint to, growth.

Having established some methodological pointers, we can now focus on setting out the some fundamental aspects of the manufacturing sector in the GDMA.

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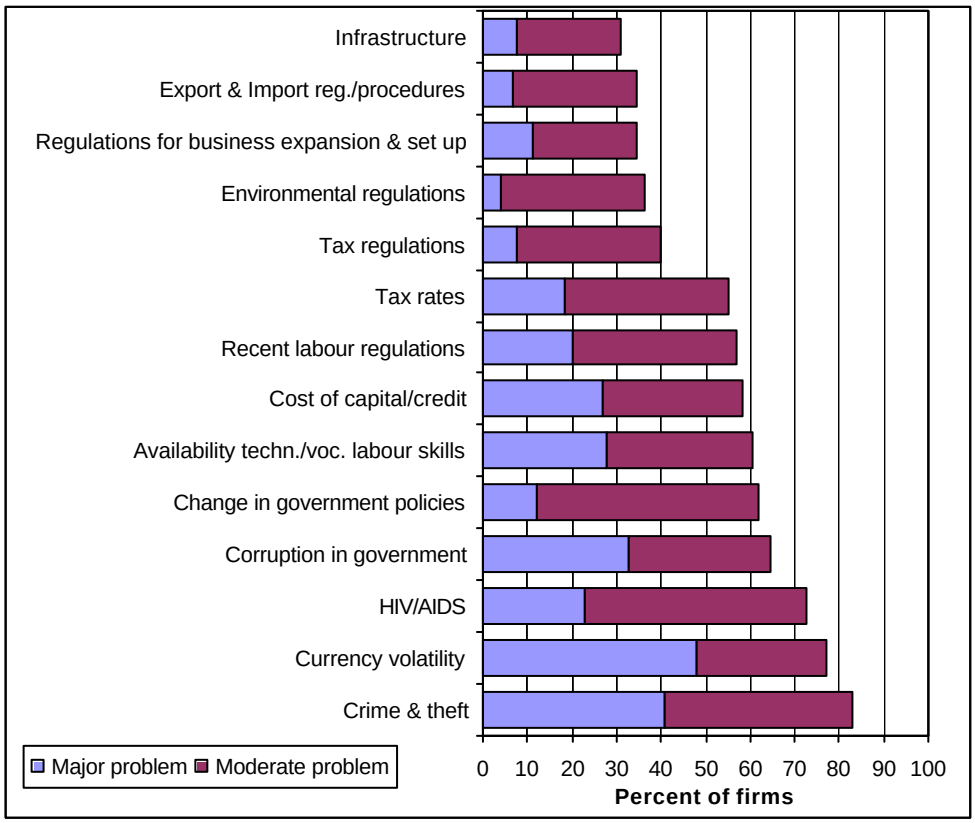
[6] This is besides modifications to some of initial GJMA questions and the fact that the Durban questionnaire considers at least one new theme, the impact of the HIV/AIDS on manufacturing performance.

[7] Producers of primary goods (notably steel but also paper and primary foods) were important beneficiaries of the General Export Incentive Scheme (GEIS), which was dismantled in 1997.

[8] Some of these are sector specific: the Motor Industry Development Program and the Duty Credit Certificate Scheme apply respectively to the "automotive" and "textiles and clothing" sectors. Others (e.g. the Export Marketing and Investment Assistance Scheme) provide support for researching foreign markets and end-customers in any sector.

[9] There were signs subsequently that the currency would depreciate again. However the appreciation of the Rand went further in September 2002 when the interviews were conducted.

Figure 1. Index of CEO rankings on constraints to growth (600 firms) – GDMA, 2002/2003



Note: Excludes information from 16 companies (2.7% of firms) specifying constraints "other" than those listed above.

For the GDMA firms overall, the top five constraints to expansion were crime and theft (for 83% of firms), currency volatility (77%), HIV/AIDS (72.5%), corruption in government (64.5%) and changes in government policy (61.7%) (Figure 1). The latter is a complex factor since the changes at hand refer to a redirection of local and national overall socio-economic priorities. Some of the top ranked combined constraints differ from those obtained through the GJMA survey. In the latter, the top five constraints were crime and theft, *cost of capital and credit*, depreciation of or weak Rand, *recent labour regulations* and corruption in government. By and large, the firms' position towards the main factors of production in the GDMA is distinct from that noted for the GJMA/South Africa. HIV/AIDS was not included as a factor of constraint in the latter survey and "changes in government polices" ranked eighth. Returning to the GDMA survey, the top five *major* problems were currency volatility (47.8%), crime and theft (41%), corruption in government (32.7%), availability of labour (27.9%) and cost of capital and credit (26.9%). Although there are generally systematic significant differences in the extent to which the constraints vary across firm size, currency volatility is an important exception for all firm

sizes. As for skill shortages, these are more important to type 2 and type 3 firms than to type 1 firms. The latter appear more vulnerable to other factors (e.g. finance).

As will be shown below, the pattern of constraints varies by firm characteristics. We now turn to these characteristics.

There is a complex pattern of manufacturing in the GDMA. Nuances can be identified in terms of the age of the firms, their employment contribution, the structure of ownership etc. Table 2 reports some basic aspects of the GDMA manufacturing structure below.

Table 2. Distribution of full-time employees according to firm's size – GDMA, 2002/2003

		No. of employees		
	All firms	50 to 99	100 to 199	200 and above
Mean	272	69	139	612
Median	127	68	130	400
Mode	60	60	120	200
Standard deviation	510.33	14.77	29.02	775.40
Total employees	163042	15375	24576	123092
% of total (emp.)		9.4	15.1	75.5
Firm Number	600	222	177	201
% of total (firms)		37	29.5	33.5

The most numerous size category is with the smaller firms of 50 to 99 employees. Having said that, a large proportion of the workforce is with firms of 200 or more employees. These absorb 75.5% of GDMA employees compared to 15.1% with size 2 firms. On average, there are 272 full time employees per firm although there is a wide variation in the distribution of employees per firm within the size 3 group.

"Textiles" and "chemical" dominate GDMA manufacturing (Table 3). Whilst other important sectors ("paper and furniture" and "food processing and beverages") are associated with dynamic clusters located in the GDMA, the employment contribution of a small sector, "vehicles and automotive components" is also notable in the data.[10] Further sectoral nuances are with the pattern of employment according to gender. Although male workers amount to 68.9% of the workforce (based on 547 firms), textile firms employ 53% of the GDMA female workforce. A final notable feature of the workforce is a

[10] One point to note about the data is that all sectors are equally distributed across various size groups. In other words, no sector is predominantly located in a particular size class.

relatively recent growth of part time employees between 1997 and 2001. These workers would constitute about 7% of the large GDMA firms' workforce.

Table 3. Distribution of large manufacturing firms according to activities and sectoral contribution to employment – GDMA, 2002/2003

	No. of firms	Distribution of firms (%)	Sectoral employment	Contribution to employment (%)
Textiles	152	25.3	53 150	32.6
Chemical products	123	20.5	23 031	14.1
Paper and furniture	85	14.2	21 199	13.0
Food processing & beverages	61	10.2	19 903	12.2
Metal products	49	8.2	5 606	3.4
Vehicles & automotive components	41	6.8	21 028	12.9
Electrical & electronic machinery	31	5.2	8 829	5.4
Leather and footwear	26	4.3	4 212	2.6
Non-metallic mineral products	24	4	4 979	3.1
Iron and steel	8	1.3	1 106	0.7
Total	**600**	**100**	**163 042**	**100**

Note: The contribution to employment is based on the total number of reported full time employees.

The large GDMA firms are comparatively old (73.2% of firms were set up before 1995). This characteristic matters insofar as age is positively related to size. Age does not preclude changes and transfers in ownership were reported to have taken place over time (though peaking in 1999/2000). The firms are nationally owned (with the exception of firms in the chemical sector) and, by and large, have no parent company (for 66% of all firms).[11] Only for 17.5% of firms that had a parent company was the parent company located within the Province (14.6% in Durban and 2.9% elsewhere in KZN). The reminder is in Gauteng. A final feature of the area is that it displays a fair proportion of firms owned by previously disadvantaged individuals (PDIs – African, Asian/Indian, Coloured). 37.5% of firms in the GDMA are in this category compared to a national figure of 16% for 1998. Moreover full PDI ownership (100%) dominates: of the 225 PDI firms, 149 (66.2%) are *entirely* owned by PDIs. PDI ownership is independent of firm size but varies across sectors.

Having set out some general features of the GDMA firms we next turn attention to detailing the trading profile of firms.

[11] When there is a parent company, it is associated with larger size firms (in 61.7% of type 3 firms). As for the sectoral distribution of parent companies, it is complex. When there is a parent company, it is generally located overseas (in 41.8% of the cases from n=263). In other words, across the manufacturing sector in the GDMA, 18.2% of firms have a parent company *with* headquarters outside South Africa.

3 TRADING PROFILE OF FIRMS

3.1 INTRODUCTION

The industrial development of Durban has been based largely on its status as the primary port of South Africa and on a policy of import-substitution (see Valodia, 1999). Before the First World War, Durban was largely a town that functioned as a port centre, with related commercial activities. The initial Maydon Wharf reclamation scheme was undertaken to provide a large bulk storage facility thereby entrenching Durban's status as a port. Initial attempts by the city authorities to develop an industrial base in the city were not immediately successful (see Katzen, 1961). After the second World War, however, manufacturing industry grew rapidly in Durban. For example, land used for manufacturing purposes in Durban grew from 692.5 acres to 1135 acres between 1949 and 1954 (Katzen, 1961). During this period, the industrial areas of Mobeni, Amanzimtoti, Jacobs and the Northern areas grew rapidly. This rapid growth fostered industrial development in the adjacent areas of Pinetown and New Germany. The period 1966 to 1972 saw the industrial economy of the GDMA growing at a high rate. This growth was most pronounced in textiles, clothing, chemicals, fabricated metals and motor vehicles, classic import-substituting industries. Industrial development in the city then stagnated in the 1980s and early 1990s (Valodia, 1999).

The 1990s saw a fundamental change in the orientation of industrial policy in South Africa – from a policy of import substitution to one that sought to integrate the South African economy into the global economy. How did Durban firms respond to this change in policy?

Table 4. Firm status with regard to foreign markets – GDMA 2002/2003

		50-99 emp.	100-199 emp.	200+ emp.	**Total**
Exporter only	Count	17	10	6	**33**
	% within status	51.5	30.3	18.2	**100**
	% within size	7.7	5.6	3.0	**5.5**
Exporter & importer	Count	90	72	146	**308**
	% within status	29.2	23.4	47.4	**100**
	% within size	40.5	40.7	73.0	**51.4**
Importer only	Count	28	39	27	**94**
	% within status	29.8	41.5	28.7	**100**
	% within size	12.6	22.0	13.5	**15.7**
Neither exports nor imports	Count	87	56	21	**164**
	% within status	53.0	34.1	12.8	**100**
	% within size	39.2	31.6	10.5	**27.4**
Total	**Count**	**222**	**177**	**200**	**599**
	% within response	37.1	29.5	33.4	**100**

Note: Statistically significant association between size and trade (χ^2=71.133, df=6, ρ<0.05).

Table 4 shows the pattern of Durban's firms integration into international trade. The majority of firms (72.6%) are involved in international trade – either as exporters, importers or both. Most firms engaged in international trade are involved in *both* exporting and importing, with a very small percentage of firms engaged in international trade on the export side only. A larger percentage of firms are engaged in trade on the import side only. The data suggests that there is a strong relationship between firm size and international trade. More than half of firms not engaged in international trade in any way are type 1 firms. At the opposite extreme almost half of the firms that are involved in both importing and exporting are firms employing more than 200 workers. Whilst 39.2% of smaller firms (size class 1) do not engage in any way in international trade, this figures decreases to 31.6% and 10.4% for medium sized (size class 2) and larger firms (size class 3) respectively. Larger firms in the GDMA seem therefore to have been more successful at incorporating their activities in the international economy.

Table 5. Firm Status as importer and/or exporter by sector – GDMA, 2002/2003

		Food processing & beverages	Textiles	Paper and furniture	Chemical products	Iron and steel	Metal products	Electrical & electronic machinery	Vehicles & automotive components	Leather & footwear	Non-metallic mineral products	Total
Exporter only	Count			10	10		8		3		3	**34**
	% within status			29.4	29.4		23.5		8.8		8.8	**100**
	% within sector			11.8	8.1		16.3		7.1		13.0	**5.7**
Exporter & importer	Count	35	46	41	93	7	20	27	24	5	11	**309**
	% within status	11.3	14.9	13.3	30.1	2.3	6.5	8.7	7.8	1.6	3.6	**100**
	% within sector	57.4	30.3	48.2	75.6	87.5	40.8	87.1	57.1	19.2	47.8	**51.5**
Importer only	Count	9	37	18	14			2	3	7	4	**94**
	% within status	9.6	39.4	19.1	14.9			2.1	3.2	7.4	4.3	**100**
	% within sector	14.8	24.3	21.2	11.4			6.5	7.1	26.9	17.4	**15.7**
Neither exports nor imports	Count	17	69	16	6	1	21	2	12	14	5	**163**
	% within status	10.4	42.3	9.8	3.7	0.6	12.9	1.2	7.4	8.6	3.1	**100**
	% within sector	27.9	45.4	18.8	4.9	12.5	42.9	6.5	28.6	53.8	21.7	**27.2**
Total	Count	**61**	**152**	**85**	**123**	**8**	**49**	**31**	**42**	**26**	**23**	**600**

Note: Statistically significant association between sector and trade (χ^2=164.389, df=27 and ρ<0.05) but 35% of cells have an expected count less than 5 and minimum expected count is 0.44 so that it is not valid to use the statistic.

Table 5 breaks down this information by sector. A large percentage of firms in the "iron and steel" (87.5%), "electrical and electronic machinery" (87.1%) and "chemical" (75.6%) sectors are engaged in international trade as importers *and* exporters. Other sectors with a large percentage of firms involved in international trade, as both importers and exporters, are "vehicles" (57.1%) and "food" (57.4%). Over half of the firms in 'footwear and leather' (53.8%) are focused exclusively on the domestic economy, as is a large percentage of firms in "textiles" (45.4%) and "metal products" (42.9%).

Table 6. Export orientation of Firms – GDMA, 2001

Percentage Exported	No. of firms	Percent of Exporting Firms
<10	129	39.8
10 –19	83	25.7
20 – 39	54	16.8
40 – 59	30	9.3
60 – 99	25	7.6
100	3	0.9
Missing cases	**17**	
Total	**342**	**100**

Table 6 measures the extent of export orientation by measuring the proportion of annual sales that is exported. Of the firms that do export, most export less than 10% of their sales. On average exporting firms exported 20.2% of their annual sales in 2001. However, as the table shows there is wide dispersion around this average. Less than one fifth of firms (17.7%) export 40% or more of their sales. As expected – though not reported here - there are large differences in the level of export orientation by sector. Firms in "leather and footwear", an industry that has faced high levels of import competition, are the most export oriented with the average firm exporting 40% of sales. Firms in "food" appear to be focused primarily on the domestic market.

Table 7. Exports by destination – GDMA, 2001

	Firms exporting to specified destination (%)	Average percent of exports sold to specified destination
SADC	74.3	56.8
Western Europe	45	43.5
Rest of Africa	36.6	22.9
Asia	25.3	22.35
Australasia	24.4	34.45
North America	20.6	34.4
Central/East Europe	9.1	43.2
Rest of Americas	6.9	18.6

Note: since firms export to more than one market the percentages do not add to 100%.

Table 7 shows the destination of exports from Durban firms. SADC is the main market, with 74.3% of firms exporting to that market. This makes up 56.8% of total exports of Durban firms. Some sectoral variations on this again emerge: most "textiles" firms export to the Western European and North American markets. 81% of firms in "vehicles" export to Western Europe.

3.2 EXCHANGE RATE SHOCKS AND EXPORT BEHAVIOUR

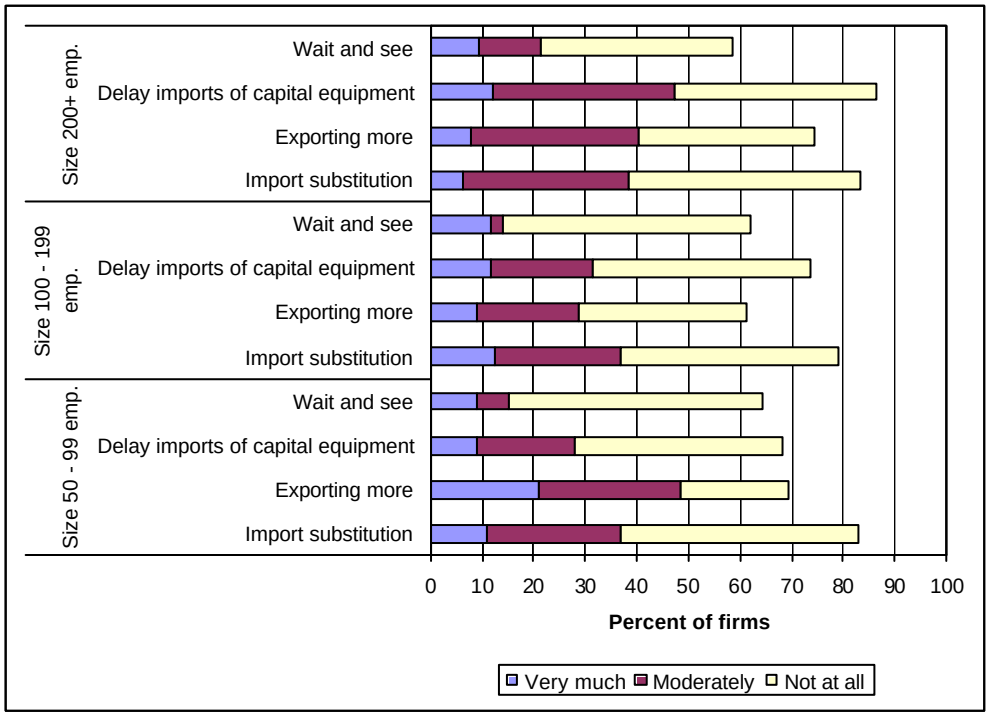
The re-integration of the South African economy into global markets has not only allowed firms to increase their exports, it has also had the effect of increasing competition and the volatility of the South African economy. An important aspect of this volatility has been fluctuations in the exchange rate. The fieldwork for the GDMA survey was conducted just after a period of major depreciation of the Rand and during a period when the Rand was appreciating. From the analysis of CEOs responses, we know that this volatility is a key constraint on firm growth.

Firms were asked to explain their response to the depreciation for the period up to September 2001, when the Rand was depreciating steadily and was valued at around 8 to the US dollar, and for the period from mid-September when the Rand was first depreciating steeply (it was valued at around 10 to the US dollar) before appreciating (from February 2002).

Firms responded to the depreciation in a series of ways (Figure 2). Firm-size related differences are observed: in the period prior to September 2001, smaller firms were able to export more than larger firms, even though larger firms are more export oriented. A significant proportion (just over 20%) of large (size 3) firms adopted a cautious "wait and see" approach, suggesting that although exports did grow, the export response to the depreciation was muted, particularly for larger firms. It may be that larger firms were unable to expand their production to fully exploit the new export opportunities because expanding their production depended on imports of machinery, which were curtailed in response to the depreciating currency. Positively, the depreciation may have offered small firms an important entry opportunity into export markets. This is unlike the GJMA where it was the *larger* rather than the smaller firms that were able to increase their exports most when the currency depreciated.

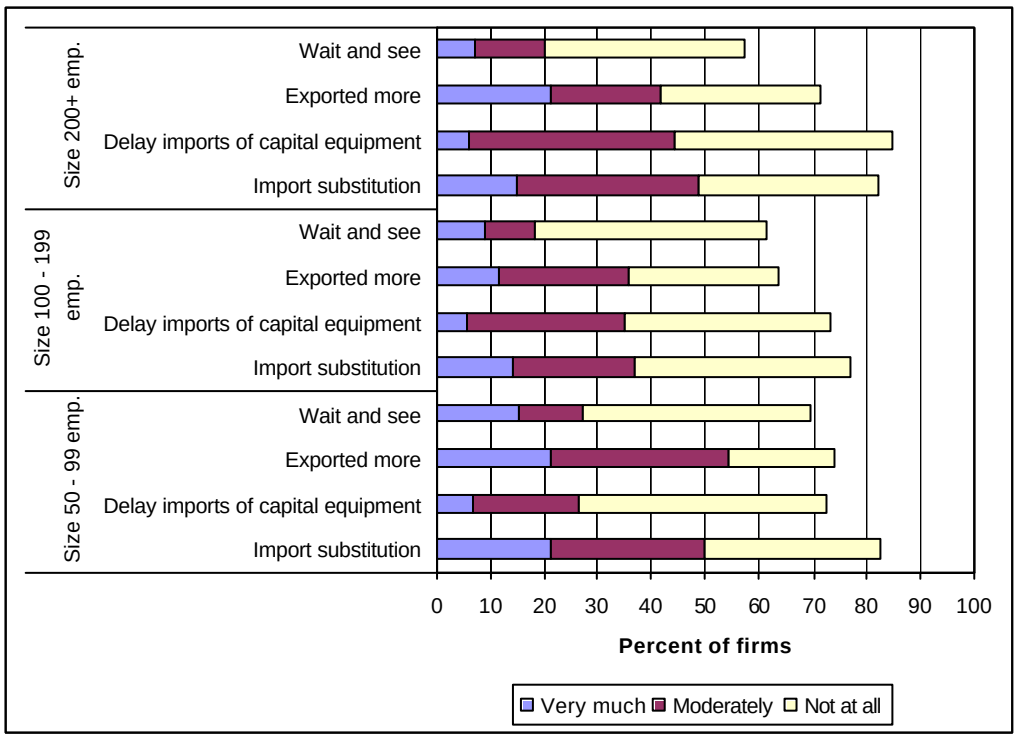
During the period of currency fluctuations (rapid depreciation followed by an appreciation – that is after mid-September 2001), smaller firms were again able to increase their exports more than larger firms (Figure 3). During this period, however, a larger proportion of small firms adopted a cautious approach.

Figure 2. Responses to depreciation – GDMA (to the beginning of September 2001)



Note: Exclude the "do not recall" responses.

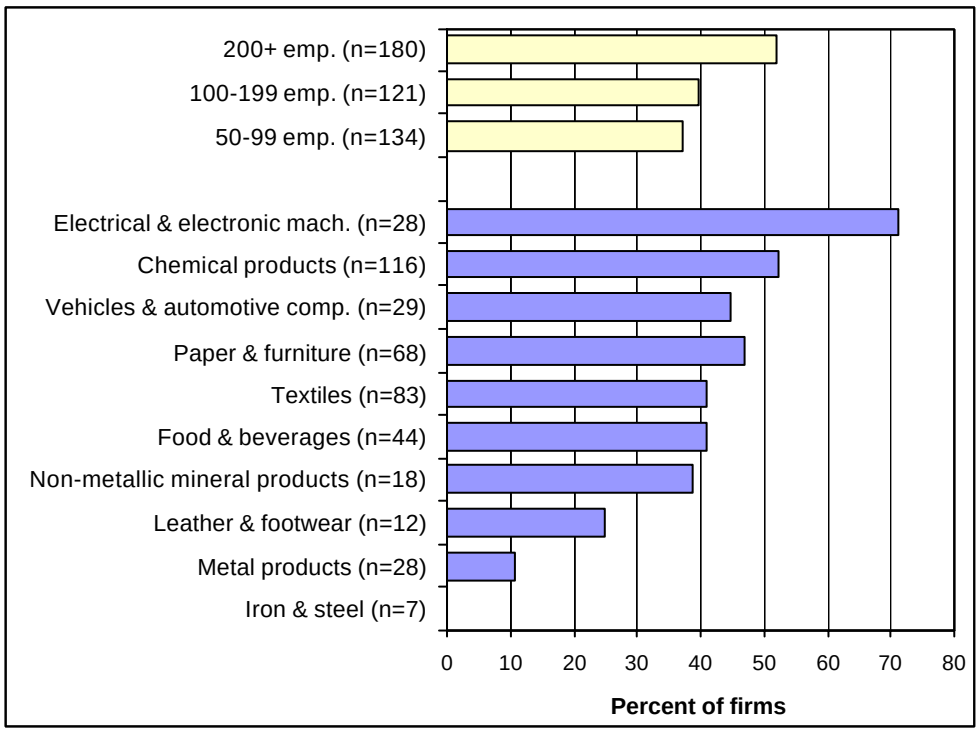
Figure 3. Responses to currency fluctuations – GDMA (from mid September 2001)



Note: As for above.

Since the firms did not fully exploit the export opportunities available, it is important to investigate how firms in the GDMA managed the currency risks arising out of international transactions.

Figure 4. Forward contracts on foreign currency exposure, 2001 (exporters and importers) – GDMA



Note: Associations between sector and size and hedging through forward contracts is statistically significant (χ^2=35.25, df=9, ρ<0.05 and χ^2=8.282, df=2, ρ<0.05, respectively).

As we would expect, firm size is an important factor explaining hedging. 52.3% of size 3 firms (of n=180) compared to 39.7% and 37.3% of medium sized and smaller firms respectively purchased forward cover (Figure 4). Industrial sector is also, as the Figure shows, an important factor in firm's hedging behaviour. 71.4% of importers and exporters in the machinery industry, where unit costs of imports and exports are likely to be high and therefore currency risk is likely to be high, purchased forward cover to reduce their risk. A significant proportion of firms in the chemicals, textiles, food, vehicles and minerals products sectors purchased forward cover. None of the firms in the iron and steel sector, and a small number of firms in metal products hedged their currency exposure. Although not detailed here, for both episodes, firms that hedged behaved less

cautiously and were able to export more. Firms that hedged were less inclined to delay imports of important capital equipment or to import substitute.

3.3 TRADE POLICY AND BARRIERS TO EXPORT GROWTH

Although the country has undergone a process of rapid trade liberalisation – protection levels have fallen and quantitative restrictions on trade have largely been removed – the South African economy is still characterised by relatively high levels of protection (Cassim, Onyango and Van Seventer, 2002). During the period of liberalisation, export incentives have also been eliminated, thereby reducing the incentives for firms to export. This is possibly one of the reasons why large numbers of firms in the GDMA remain focussed exclusively on the domestic market.

The trade liberalisation process affects firms in a number of ways. On the one hand lower tariffs have the effect of increasing foreign competition in the domestic market. On the other hand, firms benefit from lower input costs, thereby allowing them to compete more effectively.

The first effect was felt significantly by only 12.3% and moderately by 26.1% of the GDMA firms that import (i.e. firms that import only and firms that export and import - Table 8). It is interesting to note that importing medium sized firms were most significantly affected by foreign competition, and that the larger firms were more significantly affected than the smaller firms. In total, 47% of firms did not feel that tariff liberalisation negatively affected their sales. There were important sectoral differences in how lower tariffs affected firms' sales. In "leather and footwear", 55.5% of firms sales was negatively affected by increased foreign competition as a result of lower tariffs. Other sectors where large numbers of firms (above 40%) were negatively affected were "vehicles", "textiles", "machinery" and "paper and furniture".

Table 8. Effect of lower tariffs on importing firms: reduced sales due to foreign competition – GDMA, 2002/2003

	Percent of firms in size classes and total			
Effect	50-99 emp.	100-199 emp.	200+ emp.	**Total**
Significant	7.8	19.0	11.3	**12.3**
Moderate	33.0	23.0	23.2	**26.1**
Little	20.0	9.0	14.4	**14.6**
None	39.1	49.0	51.2	**47.0**
Total	**100**	**100**	**100**	**100**
N	**115**	**100**	**168**	**383**

Reduced levels of tariff protection can have a positive impact by reducing the cost of inputs. A small proportion of importing firms perceived a significant reduction in input costs as a result of lower tariffs (Table 9). Medium sized firms, where most were negatively affected by lower tariffs, experienced the most significant positive effect.

Table 9. Effect of lower tariffs on importing firms: lower input costs – GDMA, 2002/2003

	Percent of firms in size classes and total			
Effect	50-99 emp.	100-199 emp.	200+ emp.	**Total**
Significant	12.2	13.6	6.5	**10.1**
Moderate	20.0	27.2	29.8	**26.2**
Little	14.8	14.6	13.1	**14.0**
None	53.0	44.7	50.6	**49.7**
Total	**100**	**100**	**100**	**100**
N	**115**	**103**	**168**	**386**

The motivation for trade liberalisation and export growth is based not only on the argument that lower tariffs foster competition and reduce lower input costs, but also on the argument that exports generate learning and dynamism among firms, thereby improving productivity. [12] In order to explore this issue we investigate whether exporting firms are younger than non-exporting firms (evidence of dynamism), whether exporting firms are more efficient at managing their stock levels, and whether exporting firms spend more on training their workers.

Table 10 shows the average age of firms in the GDMA by their import and export status. Firms that are focussed exclusively on the domestic market are, on average, younger than

[12] Although this argument is often made, it lacks empirical verification (see Clerides, Lach and Tybout, 1998).

firms that engage in international trade. Firms that are involved in both exports and imports tend to be the oldest firms in the GDMA. The differences in firm age are statistically significant.[13] There are other differences between trading and non-trading firms. In terms of the differences in the way firms manage their stocks, depending on their import and export status, firms that both import and export hold a product, on average, in their inventory for 45.9 days. This is higher than for firms that only import (34.1%), only export (28.7%) or neither import nor export (16.1%), and the differences are statistically significant.[14] Finally, firms that are both exporters and importers spend substantially more on training that all other firms. Firms that neither export nor import spend the least on training. These differences are statistically significant.[15]

Table 10. Basic characteristics of firms by export and import status

	Age of firm		Stock		Expenditure on training	
Type of Firm	No. of Firms	Mean Age of Firm	No of Firms	Mean number of days a product is held in stock	No of Firms	Mean total expenditure on training, R 000
Exporter only	34	21.0	29	28.7	14	263.6
Exporter & Importer	308	27.3	287	45.9	223	822.3
Importer only	94	21.4	81	34.1	51	100.9
Neither Importer nor Exporter	164	15.7	149	16.1	92	59.3
Total	**600**	**22.8**	**546**	**35.1**	**380**	**520.0**

The above information suggests that firms that both export and import stand out as a group compared to other firms, especially firms that neither export nor import. Firms that both export and import tend to be older, tend to hold a product in stock for a longer period of time, and tend to spend more on training. The evidence on whether exporting

[13] The analysis of variance test is significant at the 5% level (the F-statistic = 14.657). Post-hoc Tamhane tests show a statistically significant difference between firms that are "exporters and importers" (older) and "importers only" (second oldest group) and "neither exporter nor importer" (younger).

[14] The analysis of variance is significant at the 5% level (F statistics = 15.236). Post-hoc Tamhane tests show that firms that are "exporters and importers" are significantly different from firms that only export and from firms that "neither export nor import". Firms that "neither export nor import" are significantly different from all other classes of firms.

[15] The analysis of variance is significant at the 5% level (F statistics =8.422). Post-hoc Tamhane tests show that firms that are "exporters and importers" are significantly different from all other classes of firms.

(and exporting and importing firms) are more dynamic and productive is therefore mixed. Caution must, however, be exercised in making any conclusions based on these data. There may be good reasons for firms that both export and import to hold products in stock for longer periods of time (they may produce more complex products) and for these firms to be older (it may be that more experienced firms do better in the international market).

Figure 5. Firm ratings of barriers to export growth (342 firms) – GDMA, 2002/2003

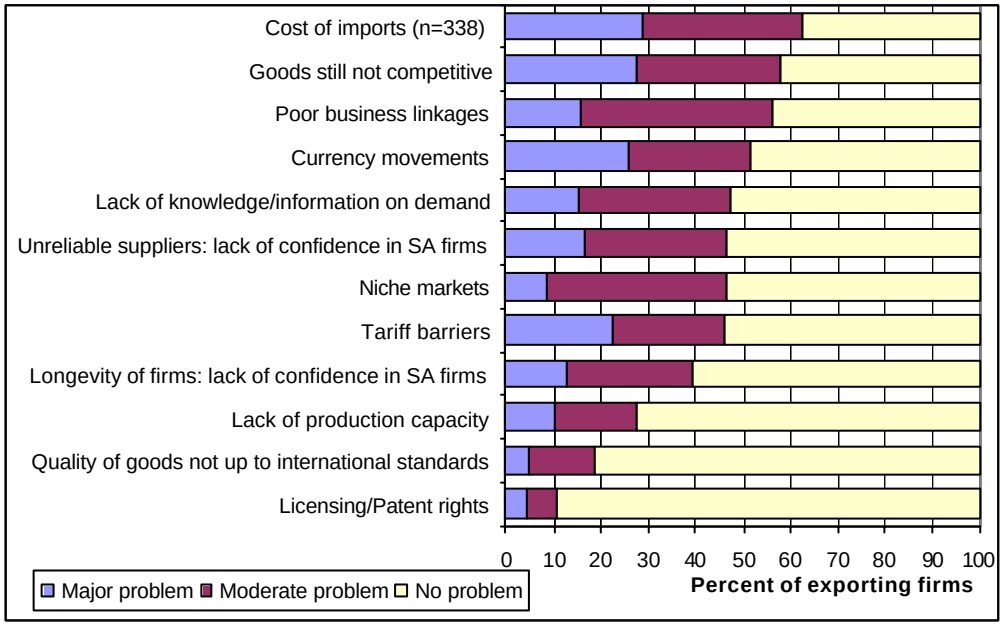
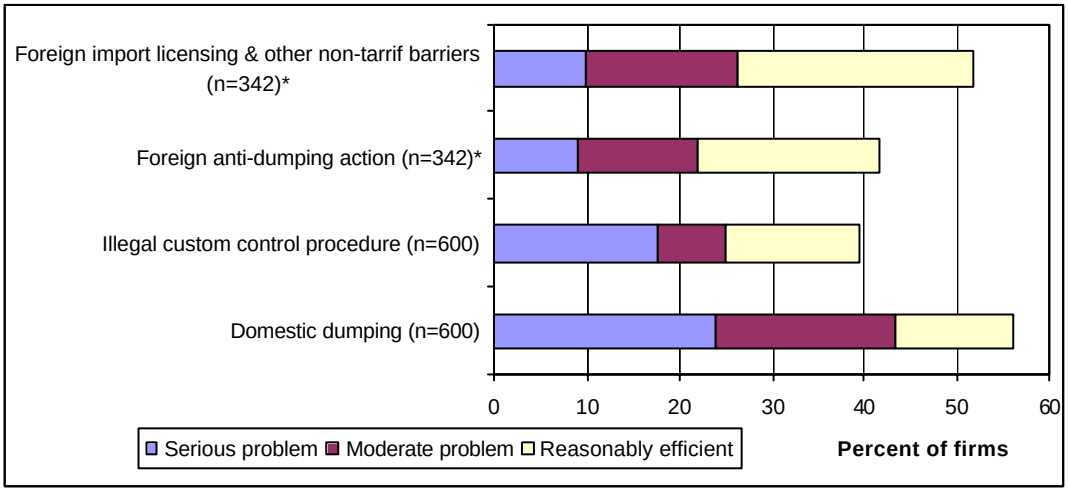


Figure 5 illustrates exporting firms' perceptions of the reasons why they were unable to increase their exports further (despite the depreciation in the Rand). The most important is the high cost of imports. This suggests, and is confirmed by our earlier evidence, that exports among GDMA firms are linked closely to imports. This is an important policy issue, since it suggests that the export response to depreciating currency is likely to be limited in the GDMA. Policies aimed at increasing exports will have to address the underlying competitiveness of firms. 57.8% of firms reported that the products are not competitive in international markets. Other important barriers to export growth are inadequate business linkages, the fact that currency movements may not have benefited GDMA firms in the particular export markets in which they operate, a lack of knowledge on demand for goods in the export markets, a lack of confidence in South African firms

as suppliers overseas, the fact that firms exported to niche markets where demand was not price sensitive and high tariff barriers abroad.

Firm size shapes how firms perceive these barriers to export growth. With respect to most of the barriers listed in Figure 5, the largest firms are less likely to be constrained by the particular barrier. These differences are statistically significant for most barriers - the exceptions being with currency movements and tariff barriers (with ranks that are not significantly different across firm sizes). Whilst not detailed here, there is moreover a complex pattern across firms being considered as unreliable suppliers and in terms of their quality standards. This varies by size; smaller firms, in particular, have some difficulties in producing to international standards.

Figure 6. Firm rating of trade barriers – GDMA, 2002/2003



Note: *: responses considered for exporting firms only.

Figure 6 presents firms' perceptions of the main obstacles in trading markets. Domestic dumping by foreign firms is a problem affecting 43.2% of GDMA firms. Illegal customs control procedures is also a significant problem for firms. A large number of exporting firms also reported being constrained by non-tariff barriers in foreign markets and, to a lesser extent, by foreign dumping actions which affected their exports.

Firm responses to these trade barriers differed in important ways by sector. Domestic dumping by foreign firms was a problem (major and moderate) for over 60% of firms in "textiles" and "leather and footwear" and was also a problem, though to a lesser extent,

for firms in "iron and steel". Dumping actions in foreign markets mainly affected exporting firms in "iron and steel", "leather and footwear" and "textiles" as a serious or moderate problem. Foreign import licensing was a problem for 65.7% of exporting firms in "food and beverages", for 42.9% of exporting firms in "iron and steel" and for 30.4% of exporting firms in "chemicals". Illegal custom control measures posed a problem for 35.5% of "machinery" firms, for 33.1% of those in "textiles", 32.8% of those in "food", 27.6% of those in "chemicals" and 26.9% of "leather and footwear" firms.

4 CONCLUSIONS

Many of Durban's firms are involved in international trade – either as exporters, importers or usually as both. The integrated nature of firms' activities both and exporters and importers and the integrated nature of their import and export decisions is a feature of firm activity in the GDMA manufacturing industry. The evidence from the GDMA suggests that studies which assess the impact of liberalisation in South Africa exclusively from the export or import side are missing important interactions between exporting and importing at the level of the firm.

Our findings suggest that there is a strong relationship between firm size and international trade. More than half of firms not engaged in international trade in any way are small firms. At the opposite extreme almost half of the firms that are involved in both importing and exporting are large firms employing more than 200 workers. Larger firms, it seems, have been more successful at integrating their manufacturing activities into global chains of production.

Firms responded to the depreciation of the Rand in a series of ways. Surprisingly, the data shows that in the period prior to September 2001, smaller firms were able to increase their exports more significantly than larger firms, even though larger firms are more export oriented. Overall, the larger firms might have been unable to expand their production to fully exploit the new export opportunities because expanding their production would have relied on imports of machinery. The depreciation in the currency

thus provided smaller firms with an important opportunity to enter the export market. As far as large firms are concerned, the findings reinforce our earlier argument about the integrated nature of firms' import and export decision making.

The impact of trade liberalisation has numerous effects on the firms. However, it is the importing medium sized firms that are the most significantly affected by foreign competition. Whilst the impact of lower tariffs on firms' sales varied across sectors, reduced levels of tariff protection can have a positive impact by reducing the cost of inputs. The data shows, however, that only 10% of importing firms perceived a significant reduction in input costs as a result of lower tariffs. This raises important challenges for policymakers.

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