Non-tariff barriers faced by South African firms: Are there any lessons?*

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Abstract

Exports and export growth are cornerstones of South African economic development policy, although they are not explicitly mentioned in ASGISA. One implication of an export-orientated economy is that many of its exporters must, of necessity, conform to the technical requirements in export markets. Here, it is shown that local exporters, particularly smaller firms, often incur export delays associated with meeting foreign technical requirements. The research, therefore, supports policies aimed at increasing the use of local conformity- assessment activities and improving information availability for local firms looking to meet foreign technical requirements.

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1
Introduction

There is an increasing preference in the international community, including South Africa, for export-led growth to achieve robust and stable economies. Chen, Otsuki and Wilson (2004: 2) suggest further that export promotion is a priority goal for every country. However, export promotion must be based on the appropriate use of a country's comparative advantage within an international environment that encourages free trade. South Africa, through the Department of Trade and Industry (DTI, 2004), has identified the Small, Micro and Medium Enterprise (SMME) sector as a sector of the economy deserving encouragement and support. To grow and prosper, all firms, especially SMMEs, must improve their ability to meet customers' needs and regulators' technical requirements at internationally competitive prices.

Despite the obvious opportunities associated with exporting and encouragement to export, Clarke (2005) shows trade performance in eight African countries (excluding South Africa) to be poor, partly because they have both inadequate customs administrations and various restrictive trade and customs regulations. The inadequate performance in overcoming restrictive trade and customs regulations could be owing to actions undertaken at the firm level. Bateman and Zeithaml (1993), for example, suggest that, while many large firms are inclined to be proactive when seeking opportunities for profitable exporting, many SMMEs are reactive.

With the launch of the Accelerated and Shared Growth Initiative–South Africa (ASGISA) in 2006, the government listed six constraints that were hindering the growth potential of South Africa. The research in this paper focuses on two of the six: (1) barriers to entry, limits to competition and limited new investment opportunities (2) deficiencies in state organisation, capacity and leadership. Under barriers to entry, the ASGISA brochure (Office of the Presidency, 2006) suggests that "Competition law and industrial policies need to be strengthened to counteract these factors". Under deficiencies in state organisation, the brochure states that "Certain weaknesses in…the capacity of key institutions, including

those providing economic services…constrain the country's growth potential".

It can be inferred from the brochure that there is an implicit appreciation within ASGISA of the need to help exporters sell their wares to the international community, some of which can be provided by key institutions in government and appropriate industrial strategy. Edwards and Lawrence (2006), however, argue that ASGISA policy should be more focussed on trade than it is, suggesting that external constraints could be hampering trade performance, but they also state that "South Africa's weak trade performance has been a self-inflicted wound". Their analysis is focussed primarily on the effects of South Africa's own trade policy.

This research, on the other hand, considers the institutions and industrial policy surrounding conformity assessment and technical regulations that might help smaller firms in particular globalise their operations. Although some of the problems might be self-inflicted, many of them are externally inflicted. The primary focus of this paper, then, is on problems that a small set of actual and potential South African exporters have encountered while trying to export their products around the world. The problems are shown to be most acute for smaller firms, as well as for firms that need to satisfy product assessors in foreign countries. Furthermore, the difficulties are most acute for firms trying to export to the European Union (EU) and to countries in Africa that lie outside the Southern African Development Community (SADC). The primary reason for the difficulties lies in the need to satisfy certain product assessments and locating the appropriate information for doing so.

The remainder of the paper is organised as follows. Section 2 discusses technical regulations and conformity assessment, while also considering relevant research related to these non-tariff barriers to trade. In order to address the issues in the paper, a survey of South African exporters was undertaken. That survey and the characteristics of its respondents are described in Section 3. An analysis of the survey data is presented in Section 4, while Section 5 concludes the research and offers some policy insight related to the findings set out in Section 4.

2
Past research and relevant background

One of the primary features of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) was an effort to liberalise non-tariff barriers to trade.[1] At the time, the most common of these barriers were quotas and voluntary export restraints. However, as non-tariff barriers to trade include any extant non-tariff policies that make importing or exporting difficult, non-tariff barriers to trade include many other possible policies, such as anti-dumping,[2] import/export licensing, import substitution and product conformity assessment, the latter being the focus of this paper.

2.1 Technical and other standards

According to the Organisation for Economic Cooperation and Development (2000b), regulations can be divided into three categories. *Economic regulations* are direct interventions into market decisions, such as pricing, competition, and market entry or exit. *Social regulations* protect public interests like health, safety, the environment and social cohesion. Finally, *administrative regulations* involve paperwork and administrative formalities, by means of which governments collect information and intervene in individual economic decisions. Standards and the assessment of conformity to those standards can be classified under any of these three categories.

Standards are known to have existed as early as 7000 BCE, when cylindrical stones were used as weight units in Egypt (Breitenberg, 1997). Since that time, the use of standards has steadily increased. Research in Canada (Industry Canada, 1998) has shown a rapid rise in the number of standards used by most of Canada's main trading partners. The Canadian research was further supported by the US Department of Commerce (USDoC, 2004), which believes that these standards have led to improvements in technical efficiency, product compatibility, resource allocation, information dissemination and product innovation, while reducing transaction costs. Transaction costs

are likely to be lower when standards increase the transparency of product information, which raises the compatibility of products and components (Maskus, Otsuki & Wilson, 2004).

Chen *et al.* (2004) argue that instead of enhancing trade, as might be expected from standardisation, standards abroad may also hurt export performance for a number of reasons. First, governments are able to set standards and technical regulations based on domestic firms' product characteristics or technology capacity, which can raise foreign exporters' costs to accommodate these requirements. Second, the difference in standards across markets limits a firm's scale of production. Third, there is often an implicit time delay in standards as well as an information barrier for exporters. The United Nations Industrial Development Organisation (UNIDO, 2004) has shown that any lack of international coordination or mutual recognition of technical infrastructure, together with non-uniform technical regulations, creates technical barriers to trade (TBT). These are recognised as potential impediments for both developed and developing countries in accessing global markets. According to the OECD (2000a), the impact of technical standards on trade flows is exacerbated by obligations to comply simultaneously with disparate requirements.[3] Failure to prove compliance effectively prevents the firm from accessing the selected foreign market. The prospect of the firm generating additional revenue from exports, some of which could have been used to offset the costs incurred in the conformity-assessment process, is also nullified.

Harmonisation of standards benefiting firms is likely to require a set of international standards; unfortunately there is, according to Kalenga and Kirk (2003), no accepted definition of "international standard". The OECD (1999) argues that definition difficulties are complicated by the lack of agreement between the standardising bodies themselves. However, in the case of the International Standards Organisation (ISO) and the International Electro-technical Commission (IEC), which are the dominant bodies in their respective fields, the World Trade Organization (WTO)

has accepted their standards. Other standards, typically for specific sectors, are developed by treaty organisations with national governments as members (USDoC, 2004). Other standard-setting bodies include the International Telecommunications Union (ITU), Codex Alimentarius (Codex), and the International Bureau of Weights and Measures (BIPM). The primary commonality for the standardisation, whether local or international, of a technical or other specification is elaboration by consensus and subsequent use, regardless of whether the standards are voluntary or mandatory.

Even in the case of international standards, those standards could still be used to local advantage, especially if the standards regime favours, even by chance, a particular region or idea. For example, trade regulations, which treat American capitalism as a universal standard, do not respect market organisation diversity (Gray, 2002). Meanwhile, American exporters feel that the European Union (EU) commands disproportionate influence in standards bodies, like ISO and IEC, because these bodies allow one country to use only one vote regarding any standards-setting issue (USDoC, 2004). More relevantly for South Africa, Chen *et al.* (2004) present evidence that developing countries have suffered considerable export losses owing to their inability to respond to restrictive and variant environmental standards that they were not allowed to influence. Recognising these difficulties, the WTO (2000) has set down further guidelines encouraging the participation and elaboration of interests other than those previously vested in the process of standards development.

2.2 Conformity assessment

Conformity assessment is the internationally recognised term referring to the procedures that determine, directly or indirectly, whether relevant requirements in technical regulations or standards have been fulfilled.[4] These procedures may include sampling, testing, inspection, evaluation and verification, as well as the assurance of conformity, registration, accreditation, approval and any combinations of these (Peet, 1997). Conformity-assessment tools

are used for virtually every customer-supplier transaction. To ensure that competent service providers perform these activities, governments are increasingly creating national accreditation bodies, which ensure a level playing field for conformity-assessment providers.

Technical regulations serve little purpose if the conformity-assessment system is weak or non-existent.[5] For Southern African Development Community (SADC) countries,[6] possibly on account of the strong technological component associated with competent conformity assessment, weak assessment systems are a problem (SADC, 2003).[7] However, the problems are likely to be even worse throughout the rest of Africa, in countries lying outside of trading blocs. Because the assessment system in many developing countries is inadequate, many developed countries have an inherent suspicion of products imported from developing countries, so they often insist on retesting after importation. However, the use of an internationally-recognised accreditation regime by a country that is a signatory to the WTO TBT Agreement is meant to allow that country to rely on the terms of the agreement to establish the competence of their conformity-assessment system.[8] In other words, the use of an accreditation system should reduce the possibility of goods being denied access, or being retested upon entry, on the basis of inadequate conformity assessment (UNIDO, 2004).

At the international level, accreditation is increasingly being accepted as the most transparent and non-discriminatory mechanism for proving that those who provide conformity-assessment services are competent to do so. The use of regional and international recognition arrangements between accreditation bodies can therefore be expected to provide an increasingly important instrument in international trade policy to support the appropriate use of international standards. The growing importance of accreditation is demonstrated by the fact that the Global Approach adopted within the EU played an important role in the accreditation of conformity assessment bodies. The Commission of the European Communities (EC) has acknowledged, after several years of implementation, that, in practice, most designating authorities in Europe now rely to varying degrees on their national accreditation bodies to assess and oversee the bodies they designate (EC, 2002).

Nearer to South Africa, it has been found that, in almost all SADC Member States, compliance of commodities with the requirements of the technical regulations has not yet been effectively and efficiently verified (SADC, 2003). Contrary to international developments, a number of regulators within SADC member states, especially those with some laboratory capacity, tend to favour the approach of testing in their own laboratories (SADC, 2003). Additional testing is an extremely expensive option for the country as a whole.[9] Furthermore, some authorities make use of their legal powers in this regard to ensure income for their commercial operations. Despite these problems, the fact that South Africa is part of the SADC appears to mitigate the effect. Below, we find that firms do not experience problems in exporting to the SADC, because of conformity assessment difficulties. However, the same cannot be said for the rest of Africa.

3
Method, survey and data

In order to examine the role of SANAS, the local accreditation body, a survey was undertaken to learn from firms, especially SMMEs, the sorts of problems they encountered locally and internationally regarding conformity assessment activities and access to markets.[10] The questionnaire, available on request from the authors, contained two sections, one on the domestic market and another on the export market. After permission had been sought and granted, the questionnaire was provided to regional chambers of business and members of the export council for distribution to their respective memberships. The use of chambers of business and export councils as distribution channels for the questionnaire was considered to be a relatively quick and cost-effective way of reaching a large sample of existing local firms. It was also thought that the use of this particular type of distribution channel would add further credibility and so enhance the probability

of a recipient completing and returning the questionnaire, an assumption strengthened by the fact that all of the participating organisations had been approached and had indicated a willingness to assist.[11]

The issue of validity was addressed by initially selecting a large target population, the membership of chambers of commerce and the export council. The questionnaire was created to solicit a definite and unambiguous response. It was distributed indirectly via the secretariat of the various participating organisations, with their implied endorsement of the research, so respondents were able to remain anonymous, if they wished.

3.1 The survey instrument

The initial questions were used to segment the respondents into various categories, starting with the size of the company and the sector in which they were operating. The next set of questions was used to determine their previous exposure to, as well as selection and use of conformity assessment and its impact on their business. The export section of the questionnaire was answered by actual and potential exporters, where potential exporters were those who expected to start or were seriously considering exporting their wares.[12] Firms were asked to provide information on a wide range of conformity-assessment activities for both the local market and the export market. Responses were either binary, e.g., they either did or did not have difficulty obtaining contracts, because their products or practices were not certified; categorical, e.g., the size of the firms could be micro, small, medium, or large; or the responses were based on the Likert scale, e.g., the most difficult part of conformity assessment, "Understanding the technical requirements", could be ranked from 1 (not important) to 5 (very important). In other words, there are no continuous variables in the data.

3.2 Respondent characteristics

A total of one hundred and thirty-two local firms provided responses to the questionnaire, which equates with a response rate of ± 2.4 percent.[13] Given the low response rate, it is not clear whether the information provided below is representative of all firm activities and problems in South Africa, although the numbers are not unrealistic. For example, 52 per cent of the respondents came from Gauteng, the most industrialised and populated province, while 11 per cent of the replies were from Natal, which includes the primary shipping port in South Africa. These two sets of replies were provided via the two provincial Chambers of Business. A further 16 percent of the respondents replied via the Capital Equipment Export Council. In all, three sources provided nearly 79 per cent of the completed questionnaires. As the survey responses were concentrated as they were, it is possible that the analysis sample is biased towards certain types of firms, or certain types of activities. Despite the potential data concerns, the data does contain some interesting information that can help inform policy towards conformity assessment in South Africa, and, hopefully, will help firms obtain the certification needed for their successful entry into the export market.

Of our 92 respondents, 11 (12.0 per cent) were from the micro- classification of between 1 – 5 staff, 46 (50 per cent) were from the small classification of between 6 and 49 staff, and 34 (37.0 per cent) were from the medium classification.[14] Firms were allowed to list all the sectors in which they operated, and various sectors of industry are represented. However, the most common activity was manufacturing, in which 53 firms were operating. An additional 15 firms operated in the wholesale and retail sector, 13 in agriculture or agro-processing and nine in the mining sector. There were six construction firms, one transportation firm and another firm that conducted communications activities. A large number (51 responses) of these firms participated in at least some conformity assessment activities. Many of those participating firms (37) are likely to have been participating because their products have to comply with South African technical regulations. Finally, only 11 firms admitted to not being awarded business contracts because their products were not certified.

Of the respondents used in the analysis, 85 either were current exporters or had planned to

join the rank of exporting firms, which suggests that the dataset is skewed towards exporting firms. Exporting (or expected exporting) activities were concentrated in manufacturing (56), agriculture and agro-processing (15), wholesale and retail trade (five) and other activities (nine). Firms could export (or expect to export) to the European Union (47), Eastern Europe (seven), the USA and Canada (26), South America (16), Japan (eight), China (nine), other countries in the Far East (18), the Middle East (20), Australia and New Zealand (32), the Southern African Development Community (28), the rest of Africa (53), and other locations (two).[15]

Most of these exporters or potential exporters (61.0 per cent) are expected to comply with technical regulations in their export markets, while many (35.3 per cent) have difficulty locating information on these technical requirements. Furthermore, the difficulties are causing export delays (25.9 per cent) or keeping firms out of their potential export market (14.1 per cent). The difficulties experienced by South African firms appear to be similar to those experienced by other African firms. For example, Clarke (2005) found that 40 per cent of exporters in Ethiopia, Kenya, Mali, Mozambique, Senegal, Tanzania, Uganda and Zambia experienced customs and trade regulations as a serious obstacle. Furthermore, the average delay experienced by firms in these countries, *sans* Zambia and Uganda, was significantly longer than the average delays experienced by firms in either the Philippines or China (Clarke, 2005).

4
Empirical analysis of the survey

Highlights from the previous section show that a large number of firms are already participating in conformity assessment activities, and are expected to do so in their local market, their export markets or both. Despite the current assessment activities, exporters and potential exporters admitted having difficulty in accessing their export markets, partly because they are required to certify their products Further, they do not have access to the appropriate information allowing them to meet the technical regulations in foreign markets.

4.1 Differences according to firm characteristics

Initially, the data is examined to determine whether conformity assessment activities, contract awards and difficulties associated with conformity-assessment activities differ according to firm characteristics. A few results from rank-sum tests, based on firm size are presented in Table 1. The results suggest that small and micro firms (between one and 20 workers) are different from the rest of the firms in the data, and that medium firms (between 21 and 200 workers – see footnote 13) are different from the rest of the firms. The results are further segregated according to export orientation. Although actual assessment activities were considered, the results concerning the importance of each of the different assessment activities were insignificant, which suggests that firm size does not determine the importance of the assessment activity. However, firm size does impact on contract awards related to product certification, as well as whether or not payment for service and locating a reputable service provider present difficulties related to carrying out conformity assessments. Most of the results presented in the table show significant differences by firm size, as judged by the probability that the null hypothesis of no difference is true. For example, using a confidence level of 10 per cent, eight of the 10 percentages are significant.

Table 1
Ranksum tests of sample equality by size of firm and export orientation

Variable of interest	Non-exporters		Exporters	
	1–20 workers*	21–200 workers**	1–20 workers*	21–200 workers**
Not awarded contract, lack of certification #	2.7%	4.1%	10.8%	17.5%
Paying for service is most difficult ##	21.1%	16.9%	6.7%	2.8%
Locating reputable provider is most difficult ##	6.2%	4.5%	1.9%	0.7%

Note: Percentage represents probability that null hypothesis of rank-sum test is true.

Null hypothesis*: Micro and small firms are the same as the rest of the firms.

Null hypothesis**: Medium firms are the same as the rest of the firms.

#: Variable of interest is binary, 0 = no and 1 = yes.

##: Variable is categorical, 1 = not important up to 5 = very important.

In Table 2, results of rank-sum tests by the firm's main operating sector are provided. These results, similar in nature to those reported in Table 1, examine the conformity-assessment activities conducted, as well as contract awards and conformity-assessment difficulties faced by the different firms. For example, using a 15 per cent level of confidence, 14 of the 36 results presented in the table show significant differences between firms operating in that sector relative to firms operating in other sectors.[16] The results show that the agriculture and agro-processing sector is generally different from all other sectors, especially as far as their views on the importance of various conformity-assessment activities are concerned. The result is plausible, because many agricultural exports are inspected, either locally or abroad, and many of the other conformity-assessment activities are not used by this sector. Furthermore, the results also suggest that only manufacturing firms face difficulties accessing conformity assessment, due to either the costs of service or locating a reputable service provider.

Table 2
Ranksum tests of sample equality by firm's main operating sector and export orientation

Variable of interest #	Non-exporters	Exporters	Non-exporters	Exporters	Non-exporters	Exporters
	Agriculture and agro-processing*		Manufacturing**		Other businesses***	
ISO 14000 is most important	14.2%	12.7%	71.8%	28.9%	22.1%	8.6%
QS 9000 is most important	12.6%	13.4%	29.1%	11.8%	19.7%	9.6%
VDA 6 certification is most important	17.3%	16.3%	28.8%	6.9%	25.9%	23.4%

Consignment inspection is most important	10.2%	9.1%	84.2%	51.5%	13.7%	17.1%
Paying for service is most difficult	71.5%	61.1%	2.8%	0.4%	21.9%	39.5%
Locating reputable provider is most difficult	94.5%	76.3%	30.3%	10.8%	39.1%	58.2%

Note: Percentage represents probability that null hypothesis of rank-sum test is true.

Null hypothesis*: Agriculture and agro-processing firms are the same as the rest of the firms.

Null hypothesis**: Manufacturing firms are the same as the rest of the firms.

Null hypothesis***: Firms in other businesses are the same as the rest of the firms.

#: Variable is categorical, 1 = not important up to 5 = very important.

Other businesses include mining, construction, transportant, communication and other non-retail sectors.

4.2 Empirical analysis

The preceding results suggest differences across firms and across sectors, in terms of accessing conformity assessment as well as in terms of actual assessment needs. In the empirical analysis, we consider whether or not any of these differences can explain the difficulties encountered by firms when trying to export their products. The model considered is a simple binary one.

$$(1) \qquad y_i = \begin{cases} 1, \text{ if the firm has experienced export difficulties} \\ 0, \text{ if no export difficulties have been experienced} \end{cases}$$

We assume that the prob $(y_i = 1 \mid X) = f(X\beta)$, and that f follows an extreme value distribution, such that

$$(2) \qquad \text{prob}(y_i = 1 \mid X) = \frac{e^{X\beta}}{1 + e^{X\beta}}.$$

The model is then estimated as a logit regression, and the parameters from the regression are reported in Table 3.

The independent variables included in the regression include dummy variables for the following aspects: firm size, the firm's main sector of operation, whether or not the firm's products must conform to South African technical regulations, the regions to which the firm exports, whether or not the products have to conform to technical regulations in their respective export markets, and whether or not it is difficult to obtain information on these regulations.

Finally, there was a series of dummy variables measuring whether or not the products have to pass inspection by foreign regulatory bodies, go through government laboratory testing, and pass a consignment inspection. Summary statistics of the analysis variables and a brief description of those variables are presented in Table A1.

The model was estimated on four separate occasions, and additional explanatory variables were added each time. The initial regression included only firm size and sector variables, while subsequent regressions included: export destinations, local conformity-assessment activities and foreign conformity-assessment activities and issues.

As expected, given the non-parametric results presented in the previous subsection, firm size is an important determinant of whether or not export problems are incurred. In nearly all specifications, having 50 or fewer employees is associated with an increase in the probability of incurring export difficulties. When export

destinations were added to the regression, both the European Union and non-SADC Africa were associated with an increased likelihood of export problems; notably, exporting to the SADC does not present significant delays or other export problems. However, export destination effects were not robust to the inclusion of conformity-assessment requirements at the export destination, so that the need for complying with foreign regulations and difficulties in obtaining information regarding those regulations, as well as the inspection of products and laboratory testing explain away the destination effects.

Although the estimates show the associations, they do not provide easily interpretable conclusions. For that reason, marginal effects were also estimated for each of the four models.

Given the model, $\text{prob}(y_i = 1 \mid X) = f\,(X\beta)$, and the fact that all $x \in X$ are dummy variables, a discrete change in any of the right-hand-side variables will provide a measure of the discrete change in the probability, i.e.

$$(3) \qquad \frac{\Delta\text{prob}\,(y_i\,1 \mid X,\ \Delta x \in X)}{\Delta x}$$

$$= \text{prob}\,(y_i = 1 \mid X,\ x = 1) -$$

$$\text{prob}\,(y_i = 1 \mid X,\ x = 0).$$

Therefore, the estimated marginal effects show the predicted change in the probability of the firm incurring an export-related problem. Selected estimated marginal effects are provided in Table 4, which, like Table 3, contains estimates from each of the four regressions.

Table 3
Selected estimates from logit regressions

	Variable of interest	Regression 1 LL = −47.87	Regression 2 LL = −41.60	Regression 3 LL = −37.77	Regression 4 LL = −30.80
Firm size	1–5 workers	1.0674	1.9475 **	1.9105 *	2.3036
		(0.81)	(0.91)	(1.05)	(1.52)
	6–20 workers	2.0463 ***	2.4402 ***	2.6442 ***	3.4897 ***
		(0.74)	(0.95)	(0.91)	(1.23)
	21–49 workers	1.4842 **	1.8036 **	1.6789 *	2.4905 **
		(0.64)	(0.83)	(0.88)	(1.07)
Export destinations	European Union		1.6591 **	0.6673	0.0991
			(0.72)	(0.81)	(1.07)
	Australia and New Zealand		−0.7645	−0.3969	0.1990
			(0.72)	(0.87)	(1.26)
	Africa (non-SADC)		1.2712 *	1.0780	0.4505
			(0.67)	(0.76)	(0.80)
Technical regulations	Comply with foreign regulations			1.3477 **	1.1512 *
				(0.62)	(0.65)
	Information difficult to obtain			1.1394 *	1.4062 *
				(0.60)	(0.83)
	Inspection by foreign governments				1.3508
					(0.84)
	Government laboratory testing				2.9996 ***
					(1.18)

Standard errors in parenthesis. *** Significant at 1%; ** Significant at 5%; * Significant at 10%

Dependent variable: Kept out of market or delayed export to market (mean = 0.354).

Other insignificant variables included in regression: agriculture and agro processing, manufacturing, retail (sectors); East Asia, SADC, USA and Canada, South America (export destinations); and product complies with South African technical regulations.

The estimated marginal effects show that firm size effects become more important as additional explanatory variables are included in the regression. For example, with only firm size and sector, having between six and 21 workers is associated with a probability increase of 0.47; however, when all right-hand-side variables are used in the regression, that same number of workers results in a predicted probability that is 0.70 higher.[17] When only destination effects are included, the predicted probability of export difficulties is 0.33 higher for EU destinations and 0.25 higher for non-SADC destinations in Africa, although these effects disappear when consignment assessment activities are included in the regressions. The effect of consignment assessment activities is also rather strong. For example, the predicted probability of export problems rises by 0.22, 0.30, 0.30 and 0.63 when the product has to comply with foreign technical regulations, the firm finds it difficult to obtain the appropriate information on these foreign technical regulations, the product is inspected by foreign regulatory bodies, and a foreign government tests the product in a laboratory, respectively.

Table 4
Selected marginal effects (at the mean) from logit regressions

	Variable of interest	Regression 1 phat = 0.331	Regression 2 phat = 0.306	Regression 3 phat = 0.298	Regression 4 phat = 0.282
Firm size	1–5 workers	0.2548 (0.19)	0.4507 ** (0.18)	0.4421 ** (0.22)	0.5189 * (0.29)
	6–20 workers	0.4706 *** (0.15)	0.5436 *** (0.17)	0.5788 *** (0.15)	0.7011 *** (0.15)
	21–49 workers	0.3429 ** (0.14)	0.4057 ** (0.17)	0.3757 ** (0.19)	0.5365 *** (0.20)
Export destinations	European Union		0.3291 *** (0.13)	0.1366 (0.16)	0.0200 (0.22)
	Australia and New Zealand		–0.1559 (0.16)	–0.0814 (0.18)	0.0407 (0.26)
	Africa (non-SADC)		0.2461 ** (0.12)	0.2086 (0.14)	0.0885 (0.15)
Technical regulations	Comply with foreign regulations			0.2660 ** (0.12)	0.2223 * (0.12)
	Information difficult to obtain			0.2499 * (0.13)	0.3025 * (0.17)
	Inspection by foreign governments				0.2989 * (0.18)
	Government laboratory testing				0.6348 *** (0.17)

Standard errors in parenthesis. *** Significant at 1%; ** Significant at 5%; * Significant at 10%

phat predicted probability of export problems at sample mean and estimated coefficients.

Dependent variable: Kept out of market or delayed export to market (mean = 0.354).

Other insignificant variables included in regression: agriculture and agro processing, manufacturing, retail (sectors); East Asia, SADC, USA and Canada, South America (export destinations); and product complies with South African technical regulations.

As can be seen in the table, the estimated marginal effects in each of the models are rather large, which suggests great potential for improving export opportunities for local firms. Although local authorities are not likely to be able to greatly influence foreign technical regulations, the local authorities ought to be able to mitigate the problems by (a) helping firms, especially smaller firms, obtain the appropriate information regarding foreign technical requirements, and (b) providing a service to local firms that is recognised by all export destinations, especially those in the EU and the rest of Africa, where many of the problems are occurring. The latter of these two activities may prove to be political. It may be necessary, for example, to negotiate conformity-assessment agreements that allow South African exporters to use more local facilities to bypass foreign government laboratory testing or inspection.

5
Conclusions

This paper contains an analysis of a South African firm survey. Although the survey was small, encompassing only 85 (of which 82 could be used) actual and potential exporting firms, a number of broad conclusions and simple policy recommendations can be gleaned from the analysis. The research has shown that local South African firms, especially smaller firms, have noticeable difficulties in exporting their goods. The results presented here are similar in nature to the research by Clarke (2005), which shows that larger firms are more likely to export, possibly because they have fewer export-related difficulties. The export difficulties experienced by firms in this dataset are strongly influenced by the technical regulations that must be adhered to at the export destination, especially when the information on those regulations is not easy to obtain. However, the difficulties, as estimated here, are not specific to industry or export destination; rather, they are determined by the need to meet the export destination's regulations and the types of assessment activities undertaken in the export destinations.

Given the results of the analysis, the research can point to areas in which the local export promotion and conformity-assessment bodies can make a positive impact to improve the export performance of South African firms. Importantly, these bodies can work more closely with smaller firms to help them obtain the appropriate technical regulations. Furthermore, these bodies can work to develop closer political ties that might alleviate the need for foreign inspection activities.

Unfortunately, although many of the firms use local conformity-assessment service providers, the use of these services does not significantly alter the likelihood of incurring export delays or having products banned from certain export markets, even though many of these export markets require conformity assessment.[18] The statistical observation that local conformity assessment does not improve export opportunities in such situations suggests that the export promotion and conformity-assessment bodies have either not been able to convince enough local firms to assess their export goods or, as is more likely, have not been able to convince foreign bodies to accept the local assessment. Further efforts should be made to isolate the likely reason for the inefficacy of local assessment when it comes to helping local firms in their efforts to access export markets.

Endnotes

*   The data used in the analysis was originally published in Peet and Koch (2006). The research presented here represents the work of the authors and does not necessarily represent the views of SANAS or the DTI. The authors would like to thank two anonymous reviewers for their inputs into this document. All other remaining errors are the sole responsibility of the authors.

1   Amjadi and Yeats (1995) argued that the Uruguay Round of GATT was not likely to provide many benefits for Africa, as most African countries were part of preferential trade agreements, such as the Lomé Convention. Furthermore, the increased competition from those countries originally left out of those (primarily quota based) preferential agreements was likely to harm African export performance.

2   Although anti-dumping penalties are based on imposing additional tariffs, the policy is not an explicit tariff, and is therefore treated as a non-tariff barrier for the purposes of this analysis. Bekker (2006) argues that anti-dumping duties are primarily for protection purposes, because many of the anti-dumping filings are in sectors accounting for insubstantial portions of international trade. Although those protectionist measures were undertaken primarily by developed economies following the Uruguay Round, South Africa, from January to June 2004, initiated more anti-dumping actions than any other country or trading region (Jafta, 2006).

3   In the case of dairy products, they found standards for sanitation, permitted additives, maximum veterinary drug residue levels and nutrition labelling. Firms in their study found the harmonisation of standards to be very helpful in reducing costs of product redesign and testing (OECD, 2000a).

4   Many forms of conformity assessment are specific to the object being assessed, e.g., a product, a service or a management system. Other forms are specific to the body undertaking the assessment. For example, first-party assessment is provided by the manufacturer of the product, which makes a Supplier's Declaration of Conformity based upon an internal testing system, while third party certification or inspection is undertaken by an independent service provider, which may be a private company or an agency of the government (Joint Committee of Assistance to Developing Countries in Metrology, Accreditation and Standardization, 2004).

5   The assessment system involves the infrastructure for testing, calibration, certification, metrology and accreditation.

6   SADC, the Southern African Development Community, was established by treaty in 1992. The fourteen SADC member states are Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

7   Kalenga & Kirk (2003) note that, in the Southern African Development Community (SADC), given the limited availability of financial and human resources, the emphasis should be on the provision of conformity assessment services rather than building instructions in all fourteen SADC Member States.

8   Section 6.1.1 of the TBT Agreement states that "…verified compliance, for instance through accreditation, with relevant guides or recommendations issued by international standardising bodies shall be taken into account as an indication of adequate technical competence" (United Nations Conference on Trade and Development /GATT, 1995).

9   For example, the government may need to continue providing updated testing equipment, while the supplier is required to test and retest their goods every time the goods cross a border. In the end, the consumer pays a hefty add-on price.

10   The survey was originally undertaken for internal purposes, and an internal report for SANAS was made by Kruger (2003).

11   Unfortunately, the assumption as to the efficacy of the chosen distribution channel did not turn out as hoped.

12   Although potential export is vaguely stated, and it is only possible to separate actual from potential exporters by making a number of rather convoluted assumptions, the analysis below is based upon the set of actual and potential exporters, since the object of the research presented here is to examine the effect of conformity assessment activities on exporting possibilities.

13   Although the sample size is relatively small, with 92 SMME replies (69.7 per cent) out of the total of 132 respondents, a World Bank study (Wilson & Otsuki, 2004) determined their results for South Africa with only 70 respondents.

14   Although Ntsika, the enterprise promotion agency of the DTI, classifies the medium category of SMME enterprises as between 50 – 100 staff (NTSIKA 2001), the local questionnaire used a category of 50 – 200 staff. On the assumption that firms were more likely to have between 51 – 100 employees instead of 101 – 200, all these observations were included in the analysis.

15   The numbers in this section do not add up to 85, as firms could and do export to more than one region. Other locations are most likely to be either Mexico, which is not part of the USA or Canada, Russia, which is part of Eastern Europe and Asia, or the subcontinent, which is not specifically listed.

16   The wholesale and retail trade sectors are not included in any of these groups, since there were no significant results. Other business sectors, therefore, include all non-manufacturing, non-agriculture and non-retail sectors listed by survey respondents.

17   The initial probabilities are treated as such, so that a probability must lie in the unit interval. Therefore, an increase of 0.70, for example, could raise the overall predicted probability from 0.25 to 0.95.

18 The variable reflecting whether or not firms used local conformity-assessment activities was included in the regressions, but was not a statistically significant determinant of export difficulties, and, therefore, the estimates associated with this variable were not included in either Tables 3 or 4. The results are available upon request from the authors.

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Table A1
Summary statistics of variables used in regression

Variable definition (n=82 for all variables)	Mean	Std. Dev.
Kept out or delayed export (1=yes)	0.354	0.48
Firm size by number of workers		
Between 1 and 5 workers	0.134	0.34
Between 6 and 20 workers	0.195	0.40
Between 21 and 49 workers	0.293	0.46
Firm's main sector of operation		
Agriculture or agro processing	0.159	0.37
Manufacturing	0.610	0.49
Wholesale or retail trade	0.171	0.38
Export destinations		
European Union	0.561	0.50
Far-east (China, Japan, Asia)	0.305	0.46
Australia or New Zealand	0.390	0.49
Southern African Development Community (SADC)	0.329	0.47
Africa (non-SADC)	0.646	0.48
USA and Canada	0.317	0.47
South America	0.183	0.39
Conformity assessment activities		
Currently use South African services (1=yes)	0.415	0.50
Must comply with foreign regulations (1=yes)	0.573	0.50
Find it difficult to obtain foreign regulation information (1=yes)	0.342	0.48
Products inspected by foreign regulatory bodies (1=yes)	0.268	0.45
Products tests in foreign government facility (1=yes)	0.171	0.38