

**How Big is Big Enough?
Firm Size as a Barrier to Exporting
in South Carolina's Manufacturing Sector**

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This paper reports on the initial stages of a project designed to assess the international trade activities and potential of small and rural firms in South Carolina. Funded by the U.S. Department of Agriculture through PSA (SC-1100572), the project is designed to analyze the trade logistics transaction costs impeding trade and production integration by small and/or rural firms in South Carolina, and to identify implementable public/private interventions for ameliorating these costs. This research is conducted through Clemson University's Center for International Trade, in conjunction with the South Carolina Department of Commerce and the South Carolina State Ports Authority.

Executive Summary

The purpose of this paper is ask whether there is a minimum size that firms must achieve to take advantages of the benefits of exporting from the United States. An analysis of 2,822 firms in 49 different industries in South Carolina, a rapidly growing, export-driven state, was conducted to address this question. This paper builds on the contributions of previous research in the areas of SMEs and export success, and SMEs in the export development process. Analysis of manufacturing exports from South Carolina indicates that firm size serves as a necessary, as well as a sufficient, condition for export success among small manufacturing firms. Firms with fewer than 20 employees appear to be too small to sustain viable exporting activities. Reasons for this are discussed, and implications for managers and policy makers are offered.

How Big is Big Enough? Firm Size as a Barrier to Exporting from the United States

Much research on international business in recent years has focused on the globalization of business strategy (c.f. Bartlett and Ghoshal 1992; Julien, Joyal and Deshaies 1994; Levitt 1983; Werther 1996). Reductions in tariffs and the free flow of goods, labor and capital across international borders has made it possible for many firms to strategically coordinate the financing, production and marketing of products on a worldwide basis, capitalizing on economies of scale previously unimaginable.

This strategic approach, however, has limited direct value for smaller firms. One characteristic common to all global firms is that they are big; most small and medium sized enterprises (SMEs) lack the capital, or the brand power to attract the capital, necessary to exercise this approach. For most SMEs, strategic choices react to globalization, rather than take advantage of it (Julien, Joyal and Deshaies 1994). Given this reality, exporting continues to be the best available option for internationalization of SMEs.

Small and medium sized manufacturing enterprises are the backbone of industrial production in the United States. Small manufacturing firms account for the overwhelming majority of all manufacturing employers in the U.S. According to the most recent Census of Economics (U.S. Bureau of the Census 2000), 90.21% of all manufacturing firms in the United States employ 100 or fewer employees, and 66.79% fewer than 20. Medium size firms (here defined as 100-499 employees) account for an additional 8.4% of manufacturers. Since most manufacturing firms are small, it is important that small firms understand the international exporting process and, as will be

discussed shortly, much attention has been devoted to the process of export development for small firms.

The purpose of this paper is to address the question of whether firm size is a necessary condition for export activity. In the U.S. context, is there a minimum size that firms must first achieve to take advantage of the benefits of exporting? An analysis of 2,848 firms in 49 different industries in South Carolina, a rapidly growing, export-driven state, was conducted to address this question. This paper builds on the contributions of previous research in the areas of SMEs and export success, and SMEs in the export development process. Analysis of manufacturing exports from South Carolina indicates that firm size serves as a necessary, as well as a sufficient, condition for export success among small manufacturing firms. Reasons for this are discussed, and implications for managers and policy makers are offered.

Firm Size and the Benefits of Exporting

The role of SMEs in the international marketplace is well-developed in two important streams of export research: sufficient conditions for export success, and the export development process.

Size as a Sufficient Condition for Export Success

Much attention has been devoted to controllable and uncontrollable factors related to export success (c.f., Bijmolt and Zwart 1994; Calof 1993; Moini 1995; Ogbuehi and Longfellow 1994; Wolff and Pett 2000). In most studies firm size is treated as a contributing variable to export performance. Usually, these papers focus on firm size as a determinant of success of firms in international marketing and exporting. Results of these studies are mixed. Some studies have found no relationship between firm size and

export success (Bonaccorsi 1992; Bilkey and Tesar 1977; Cavusgil 1982; Czinkota and Johnson 1983; Diamantopoulos and Inglis 1988; Holzmuller and Kasper 1991; Moini 1995; Moon and Lee 1990). Others have found a positive relationship (Abdel-Malik 1974; Reid 1982; Christensen, De Rocha and Gertner 1987; Kaynak and Kothari 1984; Lall and Kumar 1981; Tookey 1964), while still others have found an inverse relationship (Cooper and Kleinschmidt 1985).

Few studies have focused on the role firm size plays as an antecedent to export success. With the exception of Cavusgil's dissertation (1976), which observed that firm size played a role in determining whether firms were able to engage in exporting, none of the literature considers the importance of firm size as a necessary pre-requisite for exporting. For the most part, firm size as a necessary condition for export engagement has been ignored. The importance of firm size as a variable in export success relies on firms making the decision to export; that is, the question of firm size as a necessary condition for export participation *precedes* its importance as a sufficient condition for export success. If there is a size below which export is not a viable strategy for firms, then small firms are excluded from the benefits of the exporting. Worse, resources may be diverted (both by those firms and by public agencies) to achieve export success, and away from domestic growth strategies that would benefit firms more. For these reasons, the question of whether size serves as a barrier to export success is worthy of study.

Firm Size and the Export Development Process

Firm size has played a role in understanding the process firms follow to become an exporter. Much has been written on the export development process. A variety of models (Bilkey and Tesar 1977; Cavusgil 1982; Crick 1995; Czinkota 1982; Moini 1995;

Moon and Lee 1990; Rao and Naidu 1992) have emerged in the international and small business literatures addressing the issue of firm size and the exporting process, each adding descriptive insight into the process by which firms evolve into exporters.

Leonidou and Katsikeas (1996) evaluated and synthesized these and other models of the export development process, and concluded that the process involves three main phases of export development. Firms in the *pre-engagement* phase are uninvolved in exporting, or considering export but not currently doing so, or have discontinued export activities. Firms involved in sporadic exporting are classified as *initial* phase exporters. These firms desire increased international involvement, but cannot manage the demands of exporting in a consistent manner. *Initial* firms do not consider exporting central to their business strategies. The *advanced* phase includes firms with extensive, consistent export experience. Here exporting activities play an important role in firms' strategy development and implementation.

The efficacy of export process is best evaluated in this third stage, and studies of export success usually rely on firms in this category. Is it possible that smaller firms are less likely to achieve the *advanced* phase of exporting, or that they move through the export process more slowly?

The Research Question

The role of firm size in export success and export development is well-established as a research topic. What is not clear from the existing literature is whether an empirical lower limit exists that defines the boundaries of export success, or engagement in the export development process. From an export success perspective, the question is: ***Can firm size serve as a necessary prerequisite for exporting engagement?*** That is, is there a

minimum size needed for export success? From the point of view of the export development process, the same question might be posed: *At what point does firm size affect the ability of firms to capitalize on the export development process?*

Within any industry there are forces that shape the distribution of firm sizes. Economies of scale, capital and labor intensity, target markets, industry-specific tariff and non-tariff barriers, and niche opportunities all affect the number and size of competitors within an industry. Not all competitors within an industry need be the same size (Fujita, Krugman and Venables 1999). Firms of different sizes can pursue different international strategies successfully. In industries where production economies of scale dominate decision making to the exclusion of other internal or external environmental variables, there should be no distinction between the size distribution of firms competing domestically and the size distribution of firms competing internationally. If, however, external variables affect the ability of firms to compete internationally, there should be a difference between the size distribution of exporting and non-exporting firms. If minimum firm size is a necessary condition for export success, then exporting firms will be larger than non-exporting firms.

Methodology and Data

To test whether size serves as a necessary prerequisite for export engagement, a predictive model of export activity was developed to calculate the expected number of firms engaged in exporting. Conditional probabilities of firm size distributions were compared to the actual distributions of exporting firms, across a range of diverse industries.

The Data

The 2000-2001 South Carolina Industrial Directory (South Carolina Department of Commerce 2000) was used to identify exporting and non-exporting firms in South Carolina. Firm information of location, SIC code, number of employees, and years of operation was gathered. While voluntary in nature, there are commercial advantages for firms to be listed in the Directory (similar to listing in the Yellow Pages). Of the 5,207 manufacturing firms reported in the most recent Census of Economics (U.S. Bureau of the Census 2000), 3,997 (76.8%) are listed in the South Carolina Industrial Directory. Firms included in the directory are self-described exporters (or non-exporters). Exporting is important to their business operations, since it is an internally imposed designation and, as such, these firms are considered to be in the “advanced” phase of exporting (Leonidou and Katsikeas 1996).

Industrial categories were included in the study if they had a large number of firms, or a large number of exporting firms. A total of 2,848 firms, in 49 three-digit SIC industrial sectors, were included in various analyses. Firms were classified according to size, as very small, or “micro” (fewer than 20 employees), “small” (20-99 employees), “medium” (100-499) and “large” firms (500 or more). These size classifications, though not the labels, were taken from the U.S. Census Bureau. Consistent with Wolff and Pett’s (2000) suggestion, very small firms were considered as a separate category.

Predicting Size Distribution within Industries

If the number and size distribution of firms within an industry are known, and given the number of exporting firms, a conditional probability of the number of firms by

size for each exporting industry can be calculated. Thus, for example, the number of small firms exporting in a given industry would be:

$$(1) \quad E(\text{Small}) = (\text{Total Firms}) * P(\text{Exporting}|\text{Small})$$

$$= (\text{Total Firms}) * (\text{Exporting Firms}/\text{Total Firms}) * (\text{Small Firms}/\text{Total Firms}).$$

By subtracting the estimated number of a size classification of firms, E(Small), from the actual number of exporting firms of that size we can determine if the number of small exporting firms are over- or under-represented in a given industry. The same can be done for micro, medium and large firms in each industry.

For example, South Carolina has 120 firms designated by SIC code 355, “Special Industry Machinery and Equipment,” of which 70 are micro, 38 small, 10 medium and 2 large (South Carolina Department of Commerce 2000). Accordingly, 76 firms export, of whom 39 employ fewer than 20 workers (“micro”). Based on the number of firms of each size within the industry, and the total number of advanced exporting firms,

$$E(\text{Micro}) = (\text{Total Firms}) * P(\text{Exporting}|\text{Micro})$$

$$= (\text{Total Firms}) * (\text{Exporting Firms}/\text{Total Firms}) * (\text{Micro Firms}/\text{Total Firms})$$

$$= (120) * (76/122) * (70/122)$$

$$= 44.33 \text{ firms.}$$

Then, Micro Exporters – E(Micro) = 39 – 44.33 = -5.33, indicating that between five and six fewer micro firms engage in export than would be expected if export decisions were determined by the economies of scale of the special industrial machinery and equipment industry, to the exclusion of non-scale explanations.

Accessing Statistical Significance

For each 3-digit SIC code, the distribution of exporting and non-exporting firms was compared. Chi-Square tests were used to determine whether the distribution of firm

sizes of exporting firms differed from those of non-exporting firms. In categories with small numbers, a Fisher's Exact T-Test was performed (Torok, et al. 1998). Significant differences in distribution were used to infer significance of difference between actual and predicted numbers of exporting firms.

It should be noted that analysis in this study is within industries. Industries differ in their labor and capital intensity. Further, productivity differs among industries. The weight-to-value ratio among products makes it profitable for some industries to export, but unprofitable for others. However, these differences are between, but not within industries. Because the export predictions are calculated within industries, we have controlled for differences in productivity, labor and capital intensity, and product characteristics.

Findings

Initially, all three-digit SIC categories in South Carolina were tested for significant differences in distributions between exporting and non-exporting firms. Table One reports on the 31 industries where significant differences exist between exporting and non-exporting firms. Using the predictive models, firms with fewer than 20 employees appear to be substantially under-represented (noted in *italics*), relative to their industry peers. In some industries, the break between over- and under-representation is higher than 20 employees. For example, in labor-intensive textile industries, or capital-intensive tire and electronics industries, even medium firms are under-represented. Across all 31 industries, though, it appears that micro firms are less likely to engage in exporting than predicted. In no industry are firms with 20 or fewer employees over-

represented (noted in **bold**) among exporting firms. We conclude that 20 employees is a necessary condition for export success, *regardless of industry*.

To assess the robustness of these findings, the export patterns of the largest industries, largest exporting industries, and largest employment industries were examined. Table Two summarizes the findings of the predictive model for the 26 largest manufacturing (i.e., most numerous) industries in South Carolina. Significantly different industries are italicized, and greater or lesser differences are highlighted. In industries where exporting/non-exporting differences are not significant, only differences of at least |1| firm were considered. All industries with 40 or more firms were analyzed (26 industries, including 2,271 firms, of which 752 export). With the exception of synthetic broadwoven fabrics, the minimum standard of 20 employees holds.

The largest exporting industries in South Carolina (i.e., most exporting firms) were examined. Industries with at least 15 exporting firms (26 industries, including 1,857 firms, of which 853 export) are reported in Table Three. Again, with the exception of synthetic broadwoven fabrics, 20 is a minimum barrier to exporting.

The exception to the general case is SIC-222, synthetic broadwoven fabrics. The model predicted one micro firm exporting. In fact, there were two, each employing 13 people. One produces biaxial and uniaxial fiberglass fabric, while the other produces reinforced fiberglass fabric used in fire curtains. Both are highly specialized, niche products, for which economies of scale are limited. This anomaly reflects either the specialized nature of the work done by these firms, or the fact that textiles is a declining industry in South Carolina and most of the large exporting producers have moved offshore to more effectively compete globally.

We conclude that the minimum firm size needed to engage in exports is 20 employees, and that this result is robust.

Discussion

Given the nature of analysis, then, it is interesting that there is such a consistent pattern across industries. While some industries appear to have export breakpoints above 20 employees, in no case (with the exception of the non-statistically significant case of synthetic broadwoven fabrics) do firms with fewer than twenty employees exceed expectations for exporting. We conclude, then, that twenty employees is the minimum necessary condition for exporting, regardless of productivity, labor and capital intensity, or product characteristics.

Why is this the case? Several explanations are possible, depending on whether one interprets these results in light of size as a determinant of export success, or a critical factor to the export development process. These alternatives are not mutually exclusive; we believe that the true explanation is some combination of the following.

First, global standardization benefits large firms at the expense of small ones. Especially among industrial goods, this is true in two ways. On the one hand, large firms can capitalize on production economies of scale more easily than smaller firms. To take advantage of the benefits of standardization firms must make huge investments in production capacity, and smaller firms either cannot afford these investments, or are no longer considered small if they make such investments.

On the other hand, integration into global production systems requires firms to meet standards of industrial certification (e.g., ISO 9000, ISO14000). For micro and small firms, the costs of certification can be prohibitive. In South Carolina, for example,

the cost for ISO training and certification ranges from \$30,000 to \$750,000. This is an unrealistic, if nonetheless important, investment for firms with fewer than 20 employees. Increasingly, lacking ISO certification has become a barrier to entry into the global marketplace (Elmuti 1996).

Second, the international reduction in variable transactions costs has been replaced by an increase in fixed transactions costs. Global reductions in tariffs have been accompanied by increases in non-tariff barriers (Lincoln and Naumann 1991). These non-tariff costs are fixed in the sense that they do not vary with levels of production or export, while tariffs vary with the value or quantity exported.

These fixed transactions costs impact small firms and large firms equally, but not proportionally. Large firms can more easily afford to assign resources (human, capital, time) to address the NTBs associated with trade. The shift from tariff to non-tariff barriers facilitates trade for large firms, but hurts a small firm's ability to export. Below 20 employees, firms appear to be overwhelmed by the fixed costs of exporting.

From an export development perspective, high fixed costs of exporting are important to the extent that they make it difficult for firms to move from the *pre-engagement* phase of exporting to the *initial* phase. However, like the costs associated with ISO certification, once these costs are absorbed the development process should move rapidly.

Third, the results may reflect the fact that large firms move through the export development process more rapidly than small firms. It is possible that the success rates of reaching the advanced phase of exporting for large and small firms are similar, but that large firms get there faster. Since the data represent the accumulation of

firms in the advanced stage, differences may reflect a maturity difference between micro, small, medium and large firms. This is not necessarily a function of firm age, but instead of firm maturity (some product of age and resources). Big firms may be younger, but they may have the means to grow up faster.

Fourth, large firms may be better organized to capitalize on the benefits of globalization than small firms. Firm size has long been a topic of interest in the field of organizational theory, where the number of employees is an accepted measure of size (Ford and Slocum 1977). Hodge and Anthony (1991) argue that as firms increase in size they become more formalized, and task differentiation and specialization increase. Daft (1986) adds that organizations develop more operating rules, and rely more heavily on written communication and documentation. Small firms, conversely, tend to operate without formal rules or procedures, decisions tend to be collective, and specialization occurs among labor activities before management responsibilities (Mintzberg 1979). It is quite possible that large organizations are better suited to fulfill the tasks and responsibilities necessary to take advantage of export opportunities. The same organizational structures necessary for running a large organization makes a firm good at exporting.

Finally, small firms may be integrated into international trade, but indirectly. Rather than exporting themselves, smaller non-exporting firms may capitalize on the expanding global economy by working through production integration networks, supplying larger manufacturers whose products are exported. This indirect involvement in international trade is as legitimate in its importance as direct exporting, but does not show up in export trade data. The value-added impact of small

manufacturers is absorbed in the export involvement of large firms. For these firms, international success is not measured through exports.

Firms in a global economy are offered three basic strategies for international engagement. First, they can pursue strategies of globalization. Globalization strategies involve labor, production and capital decisions that maximize returns to firms. Foreign direct investments (FDI), whether as wholly owned subsidiaries, joint ventures or contract manufacturing, reflect globalization. Unfortunately, this is a strategic option largely closed to small firms, given the resources required to engage the marketplace in this way. Second, firms can pursue import (for retailers and wholesalers) / export (for manufacturers) strategies. The export development process research has focused on this, and with good reason. Given scale economies, this is a more viable option for small firms than other possible strategies. For most of this century, international business meant exporting for small and medium sized manufacturers.

A third option available to small firms, is to export indirectly, through production integration with larger firms (Dicken 1998). When large firms and multinational corporations were vertically-integrated production operations, small and medium-sized firms represented competitors to larger firms. With the decomposition of large firms, and the outsourcing of many responsibilities, including manufacturing, networks of firms, large and small, create the virtual firms of the new economy. These networks are built around large manufacturers of either domestic or international origin with webs of smaller, component manufacturers within close proximity. From the perspective of a traditional export development model, a small manufacturer of molded plastic that sells to a large manufacturer of goods with plastic components that, in turn, exports would not

be considered “international,” but from the perspective of production integration it would.

Conclusions

In the United States, how small is too small to export? The answer appears to be 20 employees. Firms with more than 20 employees appear to be taking advantage of export opportunities, at or above expected rates.

Implications for Managers and Policy Makers

If barriers for very small firms are the fixed costs of NTBs or standardization, then managers and policy makers need to adapt their strategies to enhance the likelihood of exporting by emphasizing growth strategies over exporting. For managers, the focus needs to be on becoming a firm with sufficient production to employ at least 20 workers. While 20 workers is not the cause of export opportunity, it is indicative of a level of productive capacity necessary for at least the initial phase of exporting. The managerial objective of these firms should be to become big enough to make exporting a viable strategic consideration. For policy makers, the focus for micro firms should be on fostering domestic growth, rather than on exporting. For those firms under 20 in size that want to export, policy focus should be on building cooperative associations that can combine resources to distribute the fixed costs of exporting. Government resources are best used to minimize the fixed costs facing small and micro exporters.

There may not be a lot small firms can do to change the speed with which they move through the export development process, relative to large firms. The results suggest, however, that watching and copying the export (or strategic) activities of large firms can be an impediment, rather than an aid, to export success. Large firms make

decisions based on their capability to mature through the export process. Small firms should not do as the big firms have done, since they cannot. Policy and academic efforts need to be directed at understanding those dimensions of the export development process unique, and most beneficial, to micro firms.

If organizational structure is the major barrier to export, micro firms should consider greater formalization of their operations. This may pay benefits domestically, as well as in the area of exports. These benefits, however, should be weighed against the flexibility and creativity afforded micro firms from less formal management styles.

For micro and small firms, engaging the global economy indirectly represents a legitimate internationalization alternative to traditional exporting. This paper neither measures nor estimates the involvement of small manufacturers in this latter form of globalization. This is left to future research. However, if indirect internationalization is the case, then the policy objectives of governments should be to attract and retain those core or basic businesses that are most likely to develop networks of supporting firms. Managerially, the objective of smaller firms shifts from finding international customers to finding larger domestic customers with international operations. Related and supporting industries should move production to capitalize on the ability of others to move product.

Limitations and Directions for Future Research

Unlike previous research in the area of small firms and export success, this study does not address the question of export intensity. It allows firms to self-report as exporters, but does not distinguish between those firms that export 5% of their production from those that export 95%. To this extent, while the study has addressed the issue of firm size as a necessary condition for exporting, it offers no new insights into the

valuable stream of research on firm size as a sufficient condition for export success. This is left to future research.

The figures presented in this paper reflect a reporting bias, which varies with firm size. When compared with the Census of Economics, the South Carolina Industrial Directory accounts for more than 76% of the 5,207 manufacturing firms in South Carolina, but only 53% of firms employing fewer than 20 workers. However, we have no reason to believe that these figures reflect an export decision bias. Indeed, if a bias exists among non-reporting firms, we would expect that those firms too overwhelmed by work to fill out state reporting forms would be too busy to explore export opportunities, or to overcome the challenges discussed above, as well. To this extent, if a reporting bias does exist, we believe that our calculations reflect conservative estimates of exporting by small and micro firms.

Finally, these data are all from the United States, and in particular from the southeastern United States. The threshold may vary among countries and regions of the world, so caution should be used in generalizing the size of the results. The threshold may be lower in European countries, where trade among nations may be more consistent with domestic trade in the U.S. In Asian countries, such as Singapore and Taiwan, the figure may be lower because of trade promotion policies. Conversely, in developing countries where infrastructure is not as well-developed the threshold may be higher. Parameters of infrastructure and trade policy were held constant in this study. Given these cautions, however, we are confident that thresholds exist, below which firms are not able to participate in the global economy through exporting.

**TABLE ONE: Differences between Predicted and Actual Export Activity,
by Firm Size and Industrial Classification**

SIC Classification	Micro – E(Micro)	Small – E(Small)	Medium – E(Medium)	Large – E(Large)
201 Meat Products	-7.33	-1.33	6.33	2.33
209 Misc. Food Preparation and Kindred Products	-2.76	2.61	0.16	-----
228 Yarn and Thread Mills	-0.38	2.29	-1.77	1.23
233 Women’s, Misses’ and Juniors’ Outerwear	-0.25	-0.42	-0.25	0.92
243 Millwood, Veneer, Plywood and Structural Wood Members	-4.42	0.65	3.76	-----
249 Misc. Wood Products	-1.65	-0.16	1.81	-----
251 Household Furniture	-4.09	-0.42	3.13	1.38
254 Partitions, Shelving, Lockers and Office and Store Fixtures	-1.25	-1.00	2.25	-----
265 Paperboard Containers and Boxes	-2.83	0.10	1.61	0.72
275 Commercial Printing	-5.81	3.35	2.50	-0.05
281 Industrial Inorganic Chemicals	-1.67	-0.51	2.65	-0.47
282 Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade	-2.12	-1.15	1.51	1.76
286 Industrial Organic Chemicals	-1.00	-2.60	2.80	0.80
287 Agricultural Chemicals	-2.64	2.86	-0.23	-----
301 Tires and Inner Tubes	-0.55	-1.64	-0.09	2.27
308 Misc. Plastic Products	-13.68	7.17	5.16	1.34
332 Iron and Steel Foundries	-0.91	-0.73	1.64	-----
334 Secondary Smelting and Refining of Nonferrous Metals	-1.50	2.00	-0.50	-----
336 Nonferrous Foundries (Castings)	-2.77	0.64	2.15	-----
342 Cutlery, Handtools and General Hardware	-2.29	0.14	3.00	-0.57
344 Fabricated Structural Metal Products	-11.39	3.65	14.29	0.75
349 Misc. Fabricated Metal Products	-5.50	3.00	1.50	1.00
352 Farm and Garden Machinery and Equipment	-1.88	0.75	0.75	0.38
353 Construction, Mining and Materials Handling and Equipment	-2.86	0.45	2.41	-----
354 Metalworking Machinery and Equipment	-10.49	6.46	3.48	0.55
355 Special Industry Machinery, Except Metalworking Machinery	-5.33	0.93	3.67	0.73
359 Misc. Industrial and Commercial Machinery and Equipment	-6.42	-0.08	5.72	0.79
362 Electrical Industrial Apparatus	-1.43	-1.68	1.73	1.39
363 Household Appliances	-2.00	0.50	0.50	1.00
364 Electrical Lighting and Wiring Equipment	-2.09	0.41	2.27	0.41
366 Communications Equipment	-2.00	2.00	-----	-----

**TABLE TWO: Differences between Predicted and Actual Export Activity:
Largest Industries in South Carolina, by Number of Firms**

SIC Classification	Micro – E(Micro)	Small – E(Small)	Medium – E(Medium)	Large – E(Large)
275 <u>Commercial Printing</u> (219)	-5.81	3.35	2.50	-0.05
344 <u>Fabricated Structural Metal Products</u> (185)	-11.39	-3.65	14.29	0.75
308 <u>Misc. Plastics Products</u> (177)	-13.68	7.17	5.16	1.34
359 <u>Misc. Industrial and Commercial Machinery and Equipment</u> (164)	-6.42	-0.08	5.72	0.79
355 <u>Special Industry Machinery, Except Metalworking Machinery</u> (120)	-5.33	0.93	3.67	0.73
354 <u>Partitions, Shelving, Lockers and Office and Store Fixtures</u> (115)	-10.49	6.46	3.48	0.55
327 Concrete, Gypsum, and Plaster Products (95)	0.03	-0.78	0.77	-0.02
239 Misc. Fabricated Textile Products (89)	-4.12	2.21	0.92	0.99
271 Newspapers: Publishing, or Publishing and Printing (85)	-----	-----	-----	-----
243 <u>Millwood, Veneer, Plywood, and Structural Wood Members</u> (84)	-4.42	0.65	3.76	-----
349 <u>Misc. Fabricated Metal Products</u> (82)	-5.50	3.00	1.50	1.00
371 Motor Vehicles and Motor Vehicle Equipment (81)	-2.99	-0.98	2.46	1.51
242 Sawmills and Planing Mills (76)	-2.16	0.29	1.87	-----
241 Logging (75)	-1.04	1.16	-0.12	-----
356 General Industrial Machinery and Equipment (69)	-1.22	0.25	1.16	-0.19
226 Dyeing and finishing Textiles, Except Wool (63)	-1.05	-2.40	0.87	2.57
222 Broadwoven Fabrics, Synthetic (54)	1.04	0.33	-1.89	1.18
201 <u>Meat Products</u> (54)	-7.33	-1.33	6.33	2.33
229 Misc. Textile Goods (51)	-0.63	-2.86	2.94	0.55
221 Broadwoven Fabrics, Cotton (51)	-0.78	-1.71	0.45	2.04
331 Steel Works, Blast Furnaces and Rolling and Finishing Mills (51)	-3.04	0.92	0.98	1.14
281 <u>Industrial Inorganic Chemicals</u> (49)	-1.67	-0.51	2.65	-0.47
265 Paperboard Containers and Boxes (46)	-2.83	0.10	2.65	-0.47
347 Coating, Engraving and Allied Services (46)	-2.00	1.30	0.70	-----
251 <u>Household Furniture</u> (45)	-4.09	-0.42	3.13	1.38
286 <u>Industrial Organic Chemicals</u> (45)	-1.00	-2.60	2.80	0.80

Analysis includes 2,271 firms, of whom 752 export (33.11%).

Underlined firm categories have significant differences between distributions of exporting and non-exporting firms at 0.05; italicized numbers indicate below expectations by < -1, bold indicates exceeding expectations by > 1.

**TABLE THREE: Differences between Predicted and Actual Export Activity:
Largest Exporting Industries in South Carolina, by Number of Firms**

SIC Classification	Micro – E(Micro)	Small – E(Small)	Medium – E(Medium)	Large – E(Large)
308 <u>Misc. Plastics Products (94)</u>	-13.68	7.17	5.16	1.34
355 <u>Special Industry Machinery and Equipment (76)</u>	-5.33	0.93	3.67	0.73
354 <u>Metalworking Machinery and Equipment (52)</u>	-10.49	6.46	3.48	0.55
371 Motor Vehicles and Motor Vehicle Equipment (52)	-2.99	-0.98	2.46	1.51
356 General Industrial Machinery and Equipment (44)	-1.22	0.25	1.16	-0.19
344 <u>Fabricated Structural Metal Products (44)</u>	-11.39	-3.65	14.29	0.75
349 <u>Misc. Fabricated Metal Products (41)</u>	-5.50	3.00	1.50	1.00
229 Misc. Textile Goods (37)	-0.63	-2.86	2.94	0.55
286 <u>Industrial Organic Chemicals (36)</u>	-1.00	-2.60	2.80	0.80
359 <u>Misc. Industrial and Industrial Equipment (34)</u>	-6.42	-0.08	5.72	0.79
282 Plastics Materials and Synthetic Resins (32)	-2.12	-1.15	1.51	1.76
239 Misc. Fabricated Textile Products (30)	-4.12	2.21	0.92	0.99
222 Broadwoven Fabrics, Synthetic (26)	1.04	0.33	-1.89	1.18
267 Converted Paper and Paperboard Products, Except Containers and Boxes (24)	-2.49	-0.43	1.60	1.76
281 <u>Industrial Inorganic Chemicals (23)</u>	-1.67	-0.51	2.65	-0.47
284 Soap, Detergents, and Cleaning Preparations, Perfumes, Cosmetics and Other Toilet Preparations (22)	-1.83	1.67	0.78	-----
331 Steel Works, Blast Furnaces and Rolling and Finishing Mills (22)	-3.04	0.92	0.98	1.14
367 Electronic Components and Accessories (22)	-1.68	-0.97	0.90	1.75
221 Broadwoven Fabrics, Cotton (20)	-0.78	-1.71	0.45	2.04
329 Abrasive, Asbestos, and Misc. Nonmetallic Mineral Products (19)	-0.23	0.60	-0.38	-----
353 <u>Construction, Mining and Materials Handling and Equipment (19)</u>	-2.86	0.45	2.41	-----
201 <u>Meat Products (18)</u>	-7.33	-1.33	6.33	2.33
226 Dyeing and Finishing Textiles, Except Wool (17)	-1.05	-2.40	0.87	2.57
242 Sawmills and Planing Mills (17)	-2.16	0.29	1.87	-----
228 Yarn and Thread Mills (15)	-0.38	2.92	-1.77	1.23
362 Electrical Industrial Apparatus (15)	-1.43	-1.68	1.73	1.39

Analysis includes 1,857 firms, of whom 853 export (45.93%).

Underlined firm categories have significant differences between distributions of exporting and non-exporting firms at 0.05; italicized numbers indicate below expectations by < -1, bold indicates exceeding expectations by > 1.

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