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Working Paper No. 196

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Heterogeneous Exporter Behaviour: Exploring the Evidence for Sunk-Costs and Hysteresis

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Abstract: Recent economic literature suggests the importance of sunk costs and hysteresis in explaining export patterns in international trade. To explore their empirical importance, we present a new conceptual framework that distinguishes six different types of exporter behaviour, and apply this framework to a unique longitudinal data set on Irish manufacturing. Our analysis allows us to identify significant numbers of manufacturers who engage in 'exporter re-switching behaviour'. The magnitude of these numbers leads us to question the widespread importance of sunk costs. In response to export-market shocks, we find strong evidence of both heterogeneous exporter responses and hysteresis.

Key words: heterogeneous exporters, sunk costs, re-switching behaviour
JEL Classification: E32, F14

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Heterogeneous Exporter Behaviour: Exploring the Evidence for Sunk-Costs and Hysteresis

1. Introduction

Recent theoretical models (e.g. Baldwin and Krugman (1989); Dixit (1989); Melitz (2003); Bernard, Eaton, Kortum and Jensen (2003) and Yeaple (2005)) and empirical literature (e.g. Bernard and Jensen (2004 a and b); Roberts and Tybout (1997) and Das, Roberts and Tybout (2007)) have focused on the presence of sunk costs in international trade. Many of these papers suggest that hysteresis, that is, past exporting behaviour influencing future exporting behaviour, provides evidence of significant sunk costs in entering export markets. Such hysteresis implies exporter persistence, with firms expected to continue their previous exporting behaviour in the face of international shocks, either favourable or unfavourable, in order to avoid the sunk costs of re-entering export markets.¹

In this paper we examine the empirical evidence of sunk costs and hysteresis for a small open economy. The existing empirical literature relates primarily to economies where domestic markets are large (France, Germany, the UK, and US), so that firms are likely to have already achieved scale and scope economies before they start to export.² By contrast, in small open economies, exporting will often be necessary for firms to achieve the economies of scale and scope not possible within a small domestic market.³ We suggest that for exporters in such small economies, it may not be possible to stay exporting in adverse conditions and furthermore that the potential benefits of trade, such as scale efficiencies and learning, may outweigh the sunk costs of re-entering the export market. Consequently, less export market persistence, and consequently less hysteresis may be found amongst firms in smaller compared with larger economies.

To explore exporter heterogeneity we define a new conceptual framework that extends the usual distinctions in the literature between export starters, stoppers and continuers. The framework distinguishes six categories of exporters in any period of time: export starters, export re-starters, export growers, export decliners, export stoppers and export re-stoppers.

¹ In other words, firms are slow to export because of sunk costs but once they start to export, they continue to export even in adverse conditions.

² See Greenaway and Kneller (2007) for a recent review of the literature.

³ For example, exporting allows manufacturers to specialise in a range of products and increase their output levels beyond the limits of their own domestic markets (Aw, Chung and Roberts, 2000), thereby overcoming the constraints of the domestic market on achieving minimum efficient scale (Hansson and Lundin, 2004).

A particular feature of this framework is a distinction between firms that are starting to export for the first time (export starters) and those who ‘restart’ exporting, having previously exported but stopped (export re-starters). The distinction between starters and re-starters is important as the likely costs of entering an export market for the first time may be expected to be higher than the costs associated with entering the export market on second or subsequent occasions, so that in effect it is easier to re-start than to start exporting.⁴

The distinction between stoppers and re-stoppers captures the difference between temporary exits (re-stoppers) from the export market compared with permanent exits (stoppers). We refer to these firms that re-enter and re-exit the market as ‘re-switchers’.⁵

The impact of an exogenous shock can be expected to be very different if the population of exporters is one for which re-entering and re-exiting is commonplace. As mentioned previously the barriers to exporting are likely to be lower for firms that are re-entering the export market. To explore exporter responses to exogenous shocks, we apply decomposition techniques to an unbalanced panel data set on Irish indigenous manufacturing firms which, on average, export one third of their output. Specifically we look at an export boom (1999-2000) and an export slump (2001-2002). In addition we explore exporter heterogeneity over the whole period 1985-2003. Our results confirm that while there is some evidence of hysteresis among exporters in the export slump, there is strong evidence of exporter heterogeneity. Evidence of heterogeneity is captured by the extent to which some plants expand and enter or re-enter the export market even during a dramatic export slump when the majority of plants are cutting exports and exiting or re-exiting the export market.

The paper is organized as follows: Section 2 gives a brief overview of the recent theoretical and empirical literature on firm heterogeneity and the sunk costs of trade together with details of the conceptual framework we develop to explore exporter heterogeneity. Section 3 shows how the methodology is applied to the Irish data, and Section 4 presents the associated empirical evidence on the export behaviour of Irish-owned firms focusing in particular on re-starters and re-stoppers. Section 5 contains our conclusions.

⁴ Thus plants re-entering the export market can be expected to have a greater chance of being continuing exporters than plants that are entering for the first time.

⁵ Our definition of re-switchers differ from ‘switchers’, a term used by Clerides, Lach and Tybout (CLT) (1998) to define a type of firm that “switched exporting status more than once during the sample period” (CLT, 1998, p.916), or as defined by Bernard and Jensen (1999), switchers are firms that enter and exit, that is, they are “both in and out” (p.4) of the export market during the period.

2. Exploring Exporter Heterogeneity

Theoretical models by Baldwin and Krugman (1989) and Dixit (1989) focus on the existence of sunk costs resulting in persistence or hysteresis in international trade. The presence of high sunk costs associated with entering the export market are argued to be the cause of persistent resistance to export market entry by US firms in, for example, the face of depreciation of the US dollar in the mid-1980s. Hysteresis in international trade implies that, as a consequence of the presence of sunk costs, past exporting behaviour influences current exporting behaviour. As a result, firms that have already entered the export market are more likely to continue exporting even in the face of unfavourable international conditions that may make trading unprofitable, at least in the short term. A consequence of this is that the activities of continuing exporters, rather than the activities of starters or stoppers, will be expected to dominate any changes in aggregate exports.

The increased availability of micro level data sets for different countries has led to new analyses of economic behaviour that focus on the issue of sunk costs and the heterogeneous nature of firms. Empirical evidence using these data sets has shown that firms, even those within the same sub-sector, react very differently to macroeconomic and international stimuli in the presence of the sunk costs of export market entry (Bernard and Jensen, 1995, 1999 and 2004a and b; Roberts and Tybout, 1997; Clerides et al., 1998; Wagner, 2004 and Das, Roberts and Tybout 2007). In the context of globalisation, these studies point to the limitations of sectoral level analyses based on the concept of “the representative firm”, as heterogeneity is evident between exporters and non-exporters, and among exporting firms. In effect, firms differ in their decisions to export or not export, in the extent to which they export, and in the geographical areas into which they export.

The empirical studies suggest that successful theoretical frameworks for studying firms and the decision to export should incorporate intra-industry heterogeneity. As a result of the emerging empirical evidence, innovative new models of international trade incorporating firm heterogeneity have been developed, e.g., Melitz (2003), Bernard et al., (2003), Yeaple (2005), and Bernard et al., (2007). These recent trade models are founded on the assumption that in the presence of sunk costs only more productive firms will enter into the export market. The models are primarily concerned with the heterogeneity of productivity performance of firms that result in resource reallocations from less efficient firms and sectors producing only for the home market to more efficient firms and industries that engage in

international trade. These “new” trade models provide solid micro foundations to underpin the recent empirical findings on firms’ export heterogeneity.

Various different methodologies are being used to explore firm-level heterogeneity. One approach is the use of decomposition techniques to examine changes over time and how they can be attributed to changing industry structure. For example, Bernard and Jensen (2004b) decompose the growth in aggregate exports into the contributions from starters, stoppers, continuers and switchers using the US Census of Manufacturing for 1987 and 1992. Wagner (2004) uses decomposition techniques to examine the heterogeneity of exporters in the German state of Lower Saxony for each two-year interval in the period 1995 to 2002. He decomposes exporters and the changes in manufacturing exports into contributions from firms that enter the export market (starters), continuing exporting firms with increasing, constant and decreasing export values, and firms that exit the export market (stoppers). Gleeson and Ruane (2007) replicate Wagner’s study using Irish data; they attribute the greater heterogeneity amongst Irish exporters to the larger share of exports in the value of total sales.⁶

While Wagner’s methodology provides a useful insight into exporter heterogeneity, it treats all firms that start exporting in a particular two-year period as identical. In particular, it does not distinguish between firms that have previously exported, exited and are re-starting, and those which are exporting for the first time. Given the acknowledged importance of sunk costs in exporting, these two types of firms can be expected to be quite different. Similarly, when in a two-year period a firm exits the export market, no distinction is made between firms that subsequently re-start exporting and those that cease exporting completely.

3. Methodology

Manufacturing firms are compared over two year intervals for the period 1985-2003. Since this study is about exporters, firms that did not export at any time during the period are excluded from the data set. Using the period 1995-1996 as an example, each of the exporting firms in this two-year period is classified as belonging to one of the following six categories:

- (i) **Growers:** continuing exporters that experienced an increase in export values between 1995 and 1996.

⁶ The author’s note that firms in Lower Saxony can more easily achieve scale economies without exporting outside Germany than Irish firms can because of the small scale of the Irish market.

- (ii) **Starters:** firms that did not export in 1995 or at any previous date but did export in 1996.
- (iii) **Re-starters:** firms that had exported and ceased exporting at some period prior to 1995 and re-entered the export market in 1996, but did not export in 1995.
- (iv) **Decliners:** continuing exporters that experienced a decrease in export values between 1995 and 1996.
- (v) **Re-stoppers:** firms that exited the market in 1996, having exported in 1995, and subsequently re-entered the export market in a later year.
- (vi) **Stoppers:** firms that reported exports in 1995 but not in 1996, or in any subsequent year.

The number of exporters between the two years in an interval is the sum of the first three types (the export creators) and the last three types (the export destroyers). To show the relative contribution of each type of exporting firm to total exporters, the shares of each type of exporting firm are calculated for each two-year interval for the period 1985 to 2003.

To apply this methodology, re-starters and re-stoppers have to be identified separately in the data and classified as such throughout. The effect of this is that if, following entry, they subsequently exit and re-enter, they are then classified from this first exit as re-starters and/or re-stoppers as appropriate. Obviously firms that cease exporting just once in our timeframe could ultimately re-enter and hence could be latent re-stoppers unless they cease production entirely. In other words, all stoppers are potential re-entrants unless they cease production entirely, and, of course, they could ultimately become re-stoppers.

There are four stages involved in the construction of the panel and identification of types of exporters. The first stage involves matching the cross-section plant-level data across years by a unique plant identifier number. Once the plant-level data are longitudinally linked, those plants where it was not possible to determine the true nature of the exporting behaviour (due to a discontinuity of export observations) were excluded. The third stage involves separating plants into groups defined by current period export behaviour with regard to their total exports (TE). First we have the continuing exporters: export growers [$TE_{t-1} > 0$, $TE_t > 0$ and $TE_{t-1} < TE_t$] and export decliners [$TE_{t-1} > 0$, $TE_t > 0$ and $TE_{t-1} > TE_t$], where t is the current period. Second, we have the firms which change from not exporting to exporting in the two-year period. These are the export starters [$TE_{t-1} = 0$, $TE_t > 0$ and $TE_{t-k} = 0$ for all previous years

(k)] and the export re-starters [$TE_{t-1}=0$, $TE_t>0$ and $TE_{t-k}>0$].⁷ Finally we have the firms that changed from exporting to not exporting over the period: export stoppers [$TE_{t-1}>0$, $TE_t=0$, and ($TE_{t+j}=0$) for all future years (j); and export re-stoppers [$TE_{t-1}>0$, $TE_t=0$, and $TE_{t+j}>0$ for some (j)]. The fourth stage involves calculating the shares of exporting firms for each type of exporter plant for each two-year time period.

The exporter type classifications are possible using the Irish data since the constructed data set comes from a Census of Industrial Production (CIP), which is conducted annually by the Irish Central Statistics Office (CSO). It covers the years 1985 to 2003 inclusive and all manufacturing plants with three or more employees are required to respond to the survey under Statute. Although the CIP covers all plants with three or more employees, some of the export records were missing in some years in the data set, and these firms were excluded from the analysis.⁸ In the CIP Census form, a plant's exports are reported as a measure of export intensity, that is, the percentage of the firm's turnover that is exported. In order to calculate the value of exports, the percentage of exports is multiplied by total turnover for each firm, and the nominal export values were converted to euros and deflated⁹ to obtain real export values.¹⁰

Figure 1 sets out a framework which allows us to examine the responses of the different types of firms over each two-year period. In the first instance we decompose all exporters into export creators and export destroyers. Export creators (destroyers) are defined as the sum of all firms that contribute to expanding (contracting) total real exports over a two-year interval. We then disaggregate each of these two groups of exporters into three subgroups, giving us six types of exporting firms: export growers (firms which saw their real exports grow between the two periods), export starters (firms which began to export for the first time over the period), export re-starters (firms which has previously exported and returned to the export market over the period), export decliners (firms whose real exports declined over the period), export stoppers (firms that exited the export market over the period for the only or final time) and export re-stoppers (firms that exited the export market but subsequently re-entered). These various exporter types are expressed as shares of the total number of

⁷ In the case of each firm that began to export over the period, its previous export status was examined to determine whether it was an export starter or re-starter.

⁸ These omitted firms are relatively small in number. They account for 8.3 per cent of firm numbers; 3.3 per cent of total turnover; 3.2 per cent of gross output; 4.0 per cent of total employment and 6.8 per cent of total exports over the entire period. Some 53.3 per cent of the omitted firms are exporters.

⁹ Deflation is by the relevant index from the from the CSO's Producer Price Index, with 2000 as the base year.

¹⁰ For the period 1985-1990, total turnover data were not available and gross output is used as a proxy.

exporters in a given two-year interval. Taking re-starters and re-stoppers together, we have export re-switchers.

Figure 1 here

What is unique about this classification is the distinction between starters and re-starters and stoppers and re-stoppers. As noted above, the distinction between starters and re-starters is particularly important as the latter have advantages in re-entering export markets over starters in that they have already incurred some of the sunk costs of entering export markets and have gained valuable experience of foreign markets from previous international transactions.¹¹ The presence of any significant number of re-switchers raises the question of just how important hysteresis and sunk costs are in export market behaviour, as they indicate the existence of numbers of firms whose relationship to export markets is intermittent, that is, rather than remain in or out of the export market, they enter, exit and re-enter the export market at least once over the observation period.

4. Results

Figure 2 shows that considerable volatility exists in net export growth rates over the period, with the greatest volatility occurring in the 1999-2002 period. In 1999-2000 there was an export boom during which net export growth was almost 35 per cent. This was followed in 2001-2002 by a decline in exports of over 26 per cent. As a consequence the 1999-2002 period provides a natural experiment for us to examine exporter behaviour in response to an export boom and bust.

The number of exporting firms varies over the years, as does the proportion of total exporting firms, with on average some 51 per cent of all manufacturers engaging in exporting in any year. The dynamics underlying the aggregate export statistics were decomposed in terms of growers, starters, re-starters, decliners, re-stoppers and stoppers, for each of the eighteen two-year intervals between 1985 and 2003. A note of caution is required in interpreting the data for starters and stoppers at the beginning and end of 1985-2003. The high share of starters in the early years and stoppers in the later years reflects the

¹¹ The difference between re-starters and starters will be greater the more recent the period in which the firm previously exported.

impossibility of identifying re-starters from the period prior to 1985 and re-stoppers after 2003.¹² The overall picture for exporter participation (the *extensive margin*), that is, the numbers and shares by type of exporting firms, is presented in Tables 2 and 3 respectively.

Figure 2 here

Tables 2 and 3 show that continuing exporters (growers and decliners) comprise the dominant group amongst exporter categories over the whole period; this suggests evidence in favour of hysteresis.¹³ Moving into the 1999-2000 boom, the number of growers increased by one third, which represented a very modest (one percentage point) increase in their share of total exporters. In effect the boom was characterised by a marked increase in the numbers and shares of starters and re-starters, which does not appear to be consistent with sunk-costs being particularly significant. The boom saw the number of export decliners fall by over one third, with their share of total exporters being halved between 1998/1999 and 1999/2000. While the number and share of re-stoppers fell in the boom, there was an increase in the number and share of stoppers, pointing to the scale of heterogeneity in firm behaviour.

The export slump, 2001-2002, was characterised by an increase in the number and share of decliners over the period 2000-2001, as might be expected in the presence of sunk cost induced hysteresis. The decline in the number and share of stoppers and re-stoppers in the slump further supports the significance of hysteresis. There was a decline in the number and share of growers and re-starters in the slump, but a significant increase in the number and share of starters, which again points to exporter heterogeneity.

Three results emerge from Tables 2 and 3. Firstly, there is significant exporter heterogeneity, with large numbers of firms expanding and contracting exports as well as entering and exiting export markets in each two-year interval, including the boom and the slump periods. Secondly, export market re-entry and re-exit are quite common, which is consistent with firms, having exported once, experiencing little difficulty in re-entering export markets. This suggests that sunk costs may not be important to exporting, or if they have been incurred once, they do not re-occur at the same level. Third, while sunk cost

¹² It is likely that some of the starters between 1985 and 1988 are in fact re-starters, while some of the stoppers in the years following 2000 may turn out to be re-stoppers, i.e., they may re-enter and re-exit the market later.

¹³ Growers accounted for almost 36 per cent during the boom, which is virtually identical to the share of starters and re-starters in that year and only slightly above the period average (35 per cent). Decliners accounted for almost 44 per cent of exporters during the slump, which is very much higher than the average of 28 per cent for the period overall, and higher than the share of stoppers and re-stoppers in the slump year (16 percent).

induced hysteresis may explain the large proportional changes in growers and decliners during the boom and bust years respectively, the fact that large changes in the shares of starters/re-starters and stoppers/re-stoppers also occur in the boom and bust years gives support to idea that sunk costs may not have the widespread relevance attributed to them in the recent trade literature.

This former result suggests that, despite the marked heterogeneity in exporter behaviour, there is clear evidence that many firms chose to stay in the market with reduced sales rather than to exit in the slump. This supports earlier evidence of hysteresis in response to negative shock (for example, Das, Roberts and Tybout (2007)). However, the latter result suggests a strong response by firms to positive market conditions and that entry into and exit from export markets happens readily. Evidence of the volatility in exporter behaviour appears in the high levels of ‘exporter churning’ as firms enter/re-enter and exit/re-exit export markets; on average these accounted for more than 37 of exporters. While it is clear that continuing exporters dominate, ‘re-switchers’ account for a volatile and non-negligible share of total exporters, with the sum of re-starters and re-stoppers averages 14 per cent per year over the period, as Figure 3 illustrates.¹⁴ This suggests that sunk costs are not that important for the relatively large group of firms that ‘re-switch’ as they are willing to move in and out of the export market in good and bad times.

Figure 3 here

5. Conclusions

Our framework and unique data set allow us to explore exporter heterogeneity in greater depth than previously done in the literature, through the identification of a group of re-switching firms, whom we name as re-starters and re-stoppers. These firms account for 14 per cent of exporters and over 37 per cent of entrants and exiters on average over the period.

We find strong evidence of exporter heterogeneity in terms of export participation, over contrasting business-cycle periods. A large number of firms experience export destruction in export boom periods and correspondingly, a large number of firms experience export creation during export slumps. Despite the importance of churning in terms of entering and exiting export markets, continuing exporters (both growers and decliners) dominate exporter shares,

¹⁴ We left and right censor the time series because of the difficulty of identifying re-starters from the period prior to 1985 and re-stoppers in the later years

more so in a slump than in a boom. The tenacity of export decliners in a slump suggests evidence in support of the hysteresis hypothesis. These findings throw further light on the discussion of hysteresis in international trade associated with the sunk costs of export market entry. Das, Roberts and Tybout (2007) find that sunk costs for exporters are substantial and, in order to avoid re-incurring these costs, firms tend to continue exporting even when their current net profits are negative. However, the high incidence of export re-switching activity, as evident in the large shares of export re-starters and re-stoppers, raises questions for the widespread importance of sunk costs and hysteresis in international trade. The existence of this re-switching activity may imply that sunk costs do not act as a barrier to export market participation for all export destinations and/or sectors equally.

According to Dixit (1989), if a firm leaves a foreign market “its distribution network and brand recognition will disintegrate rapidly and need to be rebuilt” should it re-enter the market. Recent theoretical and empirical papers that incorporate sunk costs of export market entry follow Dixit’s assumption on the decaying nature of these investments. However, it may be that, for some destinations and product markets at least, this investment or some element of it, once made, is permanently available to the firm. Thus this paper re-affirms the relevance and importance of recent trade models that incorporate firm heterogeneity while at the same time questioning the widespread presumption that sunk costs of entering export markets are always significant and hence act as a barrier to international trade.

The findings of this paper may also have some implications for policy. It may be the case that indigenous Irish manufacturing firms exhibit exceptionally high but volatile rates of participation in exporting because of the deliberate policy emphasis in Ireland towards exporting, which may encourage firms to start to export too early. It may also reflect need for enterprises in a small country to start exporting at an early stage of their development because of the small size of the domestic market, and that export supports can be effective. From a policy perspective, an exporter expansion populated by re-starters is likely to have somewhat different implications to one populated by entirely new exporters, in terms of the likely barriers to exporting.

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Figure 1: Decomposition of Exporters by Type

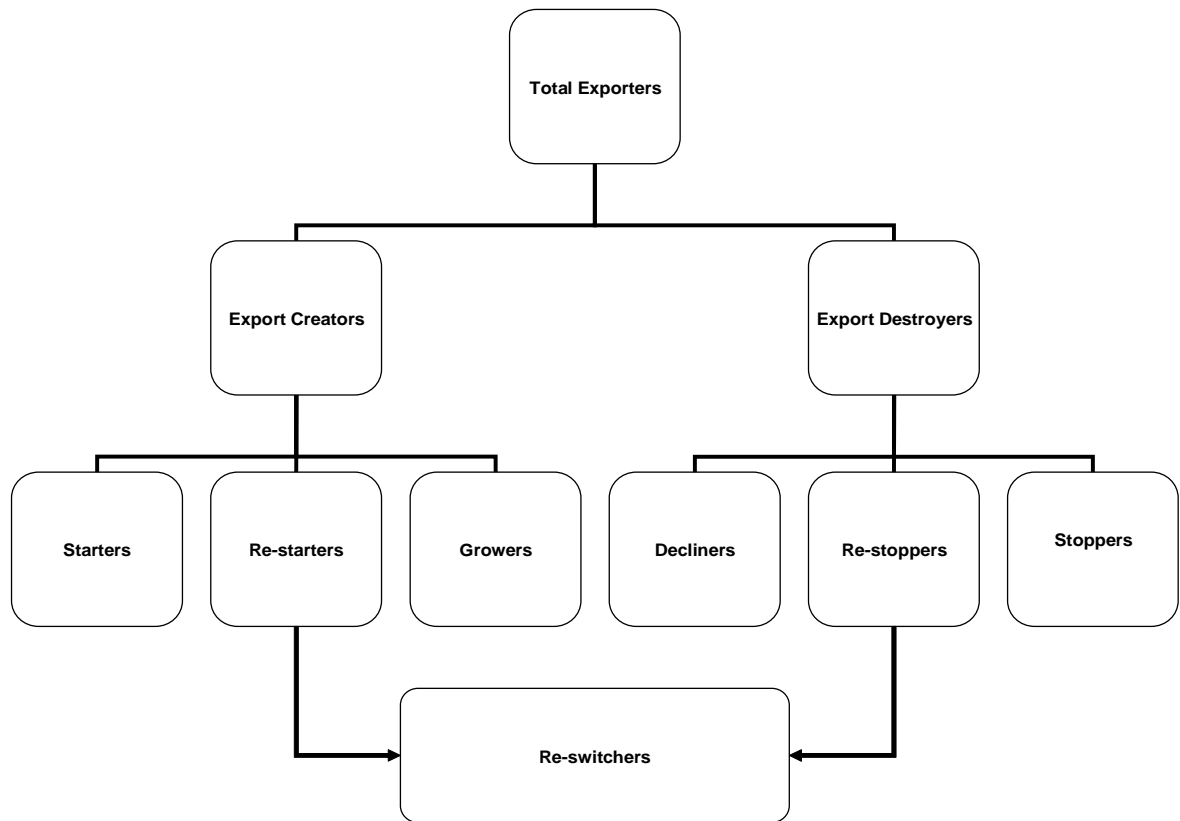


Figure 2: Net Export Growth for Indigenous Manufacturing, 1985-2003

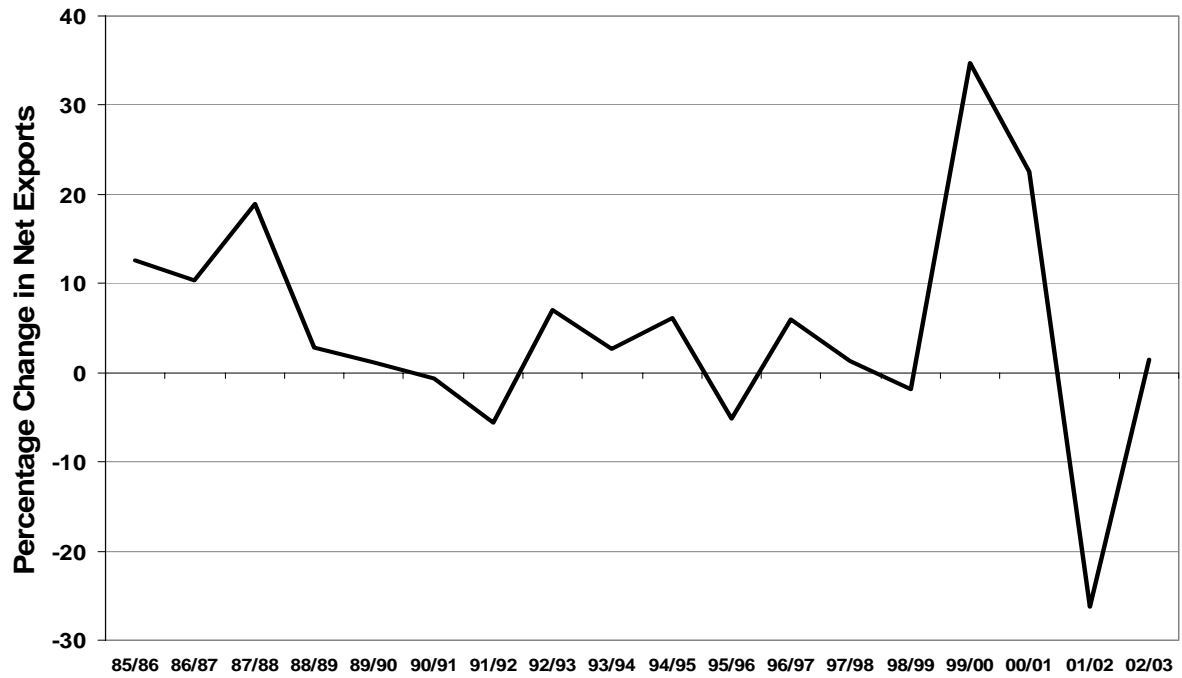


Figure 3: Patterns of Export Market Re-entry and Re-exit, 1988-2001

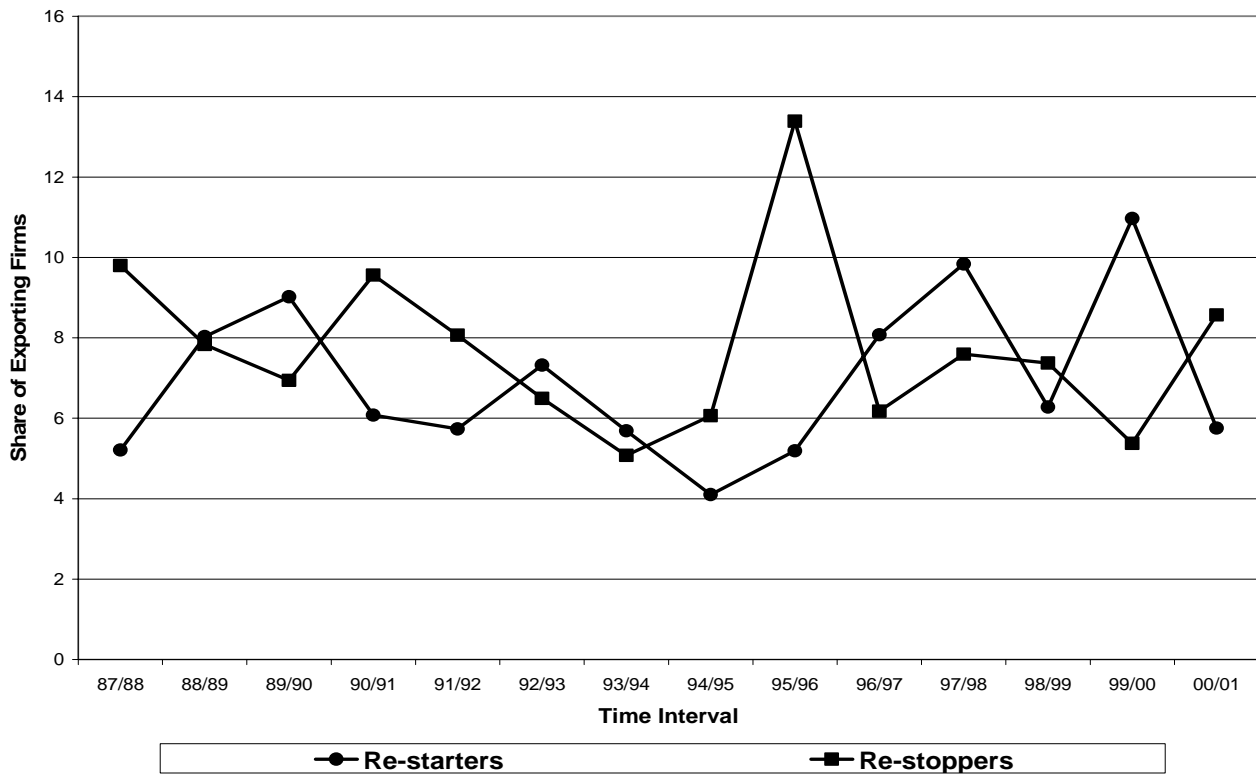


Table 1: Statistics on Exporting Firms and Exports, 1985-2003

| Year | No. of Exporting Firms | Percentage of Firms that Export | Percentage of Re-switchers* |
|------|------------------------|---------------------------------|-----------------------------|
| 1985 | 1,449 | 43.4 | |
| 1986 | 1,394 | 42.3 | 13.4 |
| 1987 | 1,517 | 45.1 | 12.1 |
| 1988 | 1,543 | 46.0 | 15.0 |
| 1989 | 1,747 | 52.5 | 15.9 |
| 1990 | 1,941 | 59.0 | 16.0 |
| 1991 | 1,917 | 58.2 | 15.6 |
| 1992 | 1,838 | 56.7 | 13.8 |
| 1993 | 1,928 | 58.7 | 13.8 |
| 1994 | 2,005 | 60.2 | 10.8 |
| 1995 | 1,906 | 57.4 | 10.2 |
| 1996 | 1,530 | 46.1 | 18.6 |
| 1997 | 1,620 | 46.9 | 14.3 |
| 1998 | 1,685 | 48.3 | 17.4 |
| 1999 | 1,753 | 48.4 | 13.7 |
| 2000 | 2,280 | 58.6 | 16.3 |
| 2001 | 1,871 | 49.4 | 14.3 |
| 2002 | 1,914 | 47.5 | 9.4 |
| 2003 | 1,794 | 45.0 | 8.6 |
| Mean | 1,770 | 51.0 | 13.8 |

Source: Own estimates from CSO data.

* Re-switchers are the sum of re-starters and re-stoppers

Table 2: Numbers of Exporters by Type in Irish Manufacturing, 1985-2003

| | 85/86 | 86/87 | 87/88 | 88/89 | 89/90 | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 | 99/00 | 00/01 | 01/02 | 02/03 | Mean |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| Starters | 347 | 371 | 302 | 335 | 310 | 407 | 187 | 289 | 228 | 146 | 176 | 211 | 185 | 285 | 649 | 95 | 275 | 232 | 279.44 |
| Re-starters | 0 | 85 | 100 | 164 | 204 | 152 | 128 | 168 | 130 | 92 | 114 | 153 | 197 | 132 | 296 | 145 | 121 | 106 | 138.17 |
| Growers | 550 | 686 | 650 | 754 | 774 | 643 | 833 | 869 | 1006 | 897 | 769 | 721 | 679 | 726 | 966 | 831 | 522 | 693 | 753.83 |
| Decliners | 497 | 375 | 491 | 494 | 653 | 715 | 690 | 602 | 641 | 771 | 471 | 535 | 624 | 610 | 369 | 800 | 996 | 763 | 616.50 |
| Re-stoppers | 241 | 139 | 188 | 160 | 157 | 239 | 180 | 149 | 116 | 136 | 294 | 117 | 152 | 155 | 145 | 216 | 91 | 87 | 164.56 |
| Stoppers | 161 | 194 | 188 | 135 | 163 | 344 | 214 | 218 | 165 | 201 | 372 | 157 | 165 | 194 | 273 | 433 | 262 | 371 | 233.89 |
| Total | 1796 | 1850 | 1919 | 2042 | 2261 | 2500 | 2232 | 2295 | 2286 | 2243 | 2196 | 1894 | 2002 | 2102 | 2698 | 2520 | 2267 | 2252 | 2186.39 |

Source: Own estimates from CIP, 1985-2003.

Table 3: Shares of Exporters by Type in Irish Manufacturing, 1985-2003

| | 85/86 | 86/87 | 87/88 | 88/89 | 89/90 | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 | 99/00 | 00/01 | 01/02 | 02/03 | Mean |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| Starters | 19.32 | 20.05 | 15.74 | 16.41 | 13.71 | 16.28 | 8.38 | 12.59 | 9.97 | 6.51 | 8.01 | 11.14 | 9.24 | 13.56 | 24.05 | 3.77 | 12.13 | 10.30 | 12.84 |
| Re-starters | 0.00 | 4.59 | 5.21 | 8.03 | 9.02 | 6.08 | 5.73 | 7.32 | 5.69 | 4.10 | 5.19 | 8.08 | 9.84 | 6.28 | 10.97 | 5.75 | 5.34 | 4.71 | 6.22 |
| Growers | 30.62 | 37.08 | 33.87 | 36.92 | 34.23 | 25.72 | 37.32 | 37.86 | 44.01 | 39.99 | 35.02 | 38.07 | 33.92 | 34.54 | 35.80 | 32.98 | 23.03 | 30.77 | 34.54 |
| Decliners | 27.67 | 20.27 | 25.59 | 24.19 | 28.88 | 28.60 | 30.91 | 26.23 | 28.04 | 34.37 | 21.45 | 28.25 | 31.17 | 29.02 | 13.68 | 31.75 | 43.93 | 33.88 | 28.22 |
| Re-stoppers | 13.42 | 7.51 | 9.80 | 7.84 | 6.94 | 9.56 | 8.06 | 6.49 | 5.07 | 6.06 | 13.39 | 6.18 | 7.59 | 7.37 | 5.37 | 8.57 | 4.01 | 3.86 | 7.62 |
| Stoppers | 8.96 | 10.49 | 9.80 | 6.61 | 7.21 | 13.76 | 9.59 | 9.50 | 7.22 | 8.96 | 16.94 | 8.29 | 8.24 | 9.23 | 10.12 | 17.18 | 11.56 | 16.47 | 10.56 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Own estimates from CIP, 1985-2003.

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