



Australian Government
Department of Industry,
Innovation and Science

Office of the
Chief Economist

RESEARCH PAPER 7/2016

Export behaviour and business performance: Evidence from Australian microdata

Razib Tuhin and Jan A. Swanepoel

February 2017

Abstract

This paper uses firm-level data from the Business Longitudinal Analysis Data Environment (BLADE) to examine the dynamic relationship between business export behaviour and performance. The results show that exporters are, on average, larger than non-exporters. Businesses demonstrate superior growth performance in the lead up to foreign market entry, but this growth differential diminishes shortly after beginning to export. We take entry into and exit from the export market into account to find that continuous, but not intermittent, exporters perform significantly better in all performance measures than non-exporters. Exporting is also associated with a higher probability of business survival.

JEL Codes: F10, F14, D22, L25

Keywords: exporter, firm, performance, Australia, microdata



Australian Government
Department of Industry,
Innovation and Science

Office of the
Chief Economist

For further information on this research paper please contact:

Razib Tuhin

Industry and Firm Analysis Section

Department of Industry, Innovation and Science

GPO Box 9839

Canberra ACT 2601

Phone : +61 2 6276 1084

Email: Razib.Tuhin@industry.gov.au

Disclaimer

The views expressed in this report are those of the author(s) and do not necessarily reflect those of the Australian Government or the Department of Industry, Innovation and Science.

© Commonwealth of Australia 2016

This work is copyright. Apart from use under Copyright Act 1968, no part may be reproduced or altered by any process without prior written permission from the Australian Government.

Requests and inquiries concerning reproduction and rights should be addressed to chiefeconomist@industry.gov.au. For more information on Office of the Chief Economist research papers please access the Department's website at: www.industry.gov.au/OCE



Creative Commons Licence

With the exception of the Coat of Arms, this publication is licensed under a Creative Commons Attribution 3.0 Australia Licence.

Creative Commons Attribution 3.0 Australia Licence is a standard form license agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work. A summary of the licence terms is available from

<http://creativecommons.org/licenses/by/3.0/au/deed.en>. The full licence terms are available from <http://creativecommons.org/licenses/by/3.0/au/legalcode>.

The Commonwealth's preference is that you attribute this publication (and any material sourced from it) using the following wording:

Source: Licensed from the Commonwealth of Australia under a Creative Commons Attribution 3.0 Australia Licence. The Commonwealth of Australia does not necessarily endorse the content of this publication.

Key points

- Over a third of Australia's exporters are concentrated in four industry divisions: Mining, Manufacturing, Wholesale Trade and Information Media and Telecommunications.
- Around 3,000 businesses export since birth.
- On average, exporters are larger than non-exporters in terms of employment, value-added and capital expenditure. Labour productivity and average wages are also higher for exporters.
- Exporters grow faster than non-exporters in the lead up to foreign market entry. But this growth differential diminishes in a few years.
- A significant proportion of businesses enter and exit the export market every year.
- Continuous, but not intermittent, exporters perform significantly better in all performance measures than non-exporters.
- Exporting is associated with a higher probability of business survival.

1. Introduction

Exporting is a key mode of internationalisation for many businesses. It is also an important element of growth strategies in many countries. In Australia, exports have also contributed significantly to our nation's prosperity (McLean 2013). Australia's GDP more than doubled in the 25 years to June 2016, and over a quarter of this increase is accounted for by exports.¹ While the once-in-a-generation mining boom has reaffirmed the national gains from exporting, firm-level benefits include higher sales, economies of scale, insurance against weak domestic demand, knowledge and technology diffusion and export-led innovation and productivity growth (Giles & Williams 2000a, 2000b; López 2005).

Recognising these benefits, the Australian Government supports exporters through measures such as the Export Market Development Grants, Tradex and Duty Drawback Scheme as well as agencies such as Austrade and the Export Finance and Insurance Corporation. Other notable Commonwealth initiatives to facilitate exporting by Australian producers include recent free trade agreements with key Asian economies as well as the Industry Growth Centres Initiative that aims to improve the capability of the key growth sectors to engage with international markets and access global supply chains.

Two phenomenon experienced by exporters provide the basis for government assistance for exporters. First, the rationale for export promotion policies rests on the expected dynamic gains from exporting (Welch & Wiedersheim-Paul 1979; Czinkota 1982; Seringhaus & Rosson 1990). It is argued that exporting firms 'learn' from their foreign market contacts (buyers, suppliers, competitors, etc.), and the knowledge thus accumulated result in productivity-improving innovations (Baldwin & Gu 2003; Keller 2004; Harris & Li 2008). Moreover, there is evidence of knowledge spillovers from exporters to non-exporters (Jung & Lee 2014; Munoz-Sepulveda & Diego 2015).

Second, entering foreign markets is costly. A first-time exporter needs to incur initial costs for marketing and communication, achieving regulatory compliance, establishing commercial relationship with buyers, product customisation, etc (Baldwin 1989; Roberts & Tybout 1997). Since smaller businesses are more likely to lack the ability to incur such costs, they are generally the main target for export assistance.

Besides learning, there is also a beneficial competition effect of exporting. Exporters compete in foreign markets where competition can be more intense than at home. Hence, export behaviour is viewed as an indicator of the international competitiveness of a business. This suggests there is a robust relationship between exporting and business performance (Alvarez & López 2005; Kostevc 2009).

However, good performance can also be a cause, rather than an effect, of exporting. For more productive firms, expansion through exporting is often a natural way forward when they hit the ceiling of domestic demand. The fact that exporters have a productivity advantage before they start exporting suggests

¹ Authors' calculation based on ABS cat. no. 5204.0, 2015–16, Table 2

self-selection — exporters are more productive, not as a result of exporting, but because only the most productive firms are able to overcome the costs of entering export markets (Bernard, Jensen & Wagner 1997; Arnold & Hussinger 2005).

Knowing the predominant form of the relationship between business export behaviour and performance is important for informing policies that seek to promote growth through exporting. To set appropriate policy goals, we need to understand how firms become exporters. To set reasonable expectations about the effects of export promotion policies, we need to understand what happens to firms after they enter the export market. Without empirical evidence of how firms perform prior and subsequent to exporting, we are at risk of selecting inappropriate policies.

In this paper, we analyse the interaction between exporting and business performance. Our analysis is centred on two key questions: do well-performing firms become exporters and do exporters outperform non-exporters? To address these questions, we consider business performance before, during, and after exporting. We examine measures important to businesses, such as value-added and productivity, as well as those important to the workers, such as employment and wages.

The Australian firm-level results presented in this paper contribute to the international economic literature showing that:

- exporters are generally larger in terms of employment, output and productivity, and pay higher wages, than otherwise comparable non-exporters (Aw & Hwang 1995; Bernard & Jensen 1995)
- superior business performance is more likely to precede, rather than follow, exporting (Wagner 2007).

The creation of the Business Longitudinal Analysis Data Environment (BLADE) has made it possible to conduct more sophisticated microdata analysis of business performance in Australia. In the context of this paper, microdata can shed more light on a number of important policy questions, such as:

- Is a solid business performance track record a prerequisite for initial export success?
- What are the entry barriers to foreign markets?
- Do new exporters grow in subsequent years?
- Do continuous exporters outperform intermittent exporters?
- What are the impacts of export promotion policies and free trade agreements on business export behaviour and firm performance?
- Is diversification in terms of products and/or destinations good for business performance?
- What are the characteristics of high growth exporters?

This research attempts to answer some of these questions using BLADE data. Beginning with a statistical overview of Australian exporters, the paper provides evidence on:

- the average size gap between exporters and non-exporters in terms of selected performance indicators
- business performance before and after foreign market entry
- the performance of continuous and intermittent exporters
- the impact of exporting on the probability of business survival.

Although causal relationships are not examined, the empirical evidence presented in this paper is strongly suggestive. Australian businesses demonstrate superior performance several years before beginning to export. The evidence on business performance after foreign market entry is less clear cut, since current export status is a poor guide for future performance. However, exporters demonstrate a higher probability of survival than non-exporters.

A significant proportion of businesses start and stop exporting every year. As such, it is necessary to distinguish between continuous and intermittent exporters. The results suggest continuous, but not intermittent, exporters perform significantly better in all performance measures than non-exporters.

2. Data

This paper uses Business Activity Statement (BAS) data for the period 2004–05 to 2013–14, and follows the methodology of Bernard & Jensen (1999). BAS data is part of the BLADE that integrates administrative data and Australian Bureau of Statistics (ABS) survey data using the ABS business register as the integrating spine. Data linkage occurs through the ABS Business Register by using the Australian Business Number (ABN) as the primary linking variable.

BLADE contains administrative data on more than two million actively-trading Australian businesses. It includes Australian Taxation Office (ATO) data, IP Australia data and some Department of Industry, Innovation and Science (DIIS) programme data. ATO data items are sourced from:

- BAS — submitted by businesses to report their GST obligations; data items include total sales, export sales, wages & salaries, capital & non-capital purchases
- Business Income Tax (BIT) — submitted by businesses to report taxable income or loss on one of four form types (Company, Partnership, Sole Trader and Trust)
- Pay as you go (PAYG) — provided by businesses to report personal income tax obligations of their employees; this is used to model Full-Time Equivalent (FTE) and headcount employment counts.

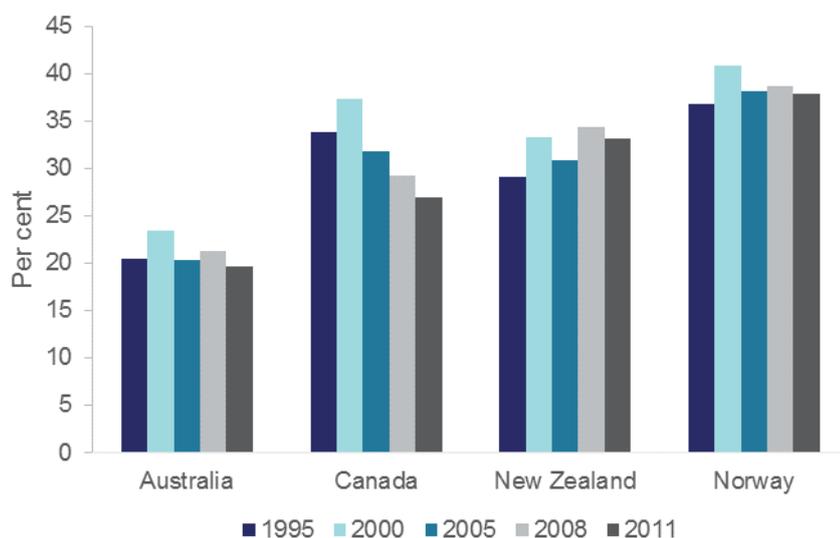
The administrative data (BAS, BIT and PAYG) are reported to the ATO for core business operational requirements. This data has limitations in terms of use for

statistical purposes and users.² There is also a lag of about 18 months for new ATO information to be added to BLADE.

3. An overview of Australian exporters

According to the ABS *Business Characteristics Survey*, 7.1 per cent of Australian businesses sold goods and services to overseas markets in 2014–15, down from 8.4 per cent 10 years earlier.³ In line with the decreasing share of exporting businesses, the proportion of private sector employment accounted for by foreign final demand is also muted for Australia. As Figure 3.1 shows, around a fifth of Australia’s private sector employment depend on the demand of its trading partners. This is much smaller compared to other advanced resource-exporting countries such as Canada, New Zealand and Norway.

Figure 3.1: Private sector employment sustained by foreign final demand, per cent of total



Source: OECD *Science, Technology and Industry Scoreboard 2015*

Within the dataset, more than 65,000 Australian businesses are identified as exporters in any given year.⁴ Goods feature prominently in Australia’s export basket, and thus over a third of exporters are concentrated in just four industry divisions — Mining, Manufacturing, Wholesale Trade and Information Media &

² For more information, see: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/8171.0>

³ ABS cat. no. 8167.0, 2014–15 and 2005–06

⁴ Businesses that report at least \$2,000 (in current prices) of export sales in BAS are counted as exporters. This is consistent with the ABS definition of an exporter. The number of exporters as reported in the ABS cat. no. 5368.0.55.006 – Characteristics of Australian Exporters is less than this due to a number of additional exclusions.

Telecommunications.⁵ Exporters account for 8–14 per cent of all businesses in these industries.

As shown in Table 3.1, the median employment level of exporters in these industries ranged between 5 and 17 workers in 2013–14. The age of the median exporter was 9–12 years in the same year.

Table 3.1: Median values of key characteristics and indicators for exporters in selected industry divisions, 2013–14

Key statistics (median)	Mining	Manufacturing	Wholesale Trade	Information Media & Telecom.
Turnover ^a	7,800	2,109	1,654	397
Export value ^a	1,373	105	112	42
Capital expenditure ^a	40	7	1	0
No. of workers ^b	17	15	8	5
Age (years)	12	12	10	9
Export to turnover ratio	0.52	0.07	0.09	0.15

Notes: a. Thousand dollars in current prices, rounded to the nearest thousand; b. head count

Source: Calculation based on the microdata from BLADE

The median export value in 2013–14 varied widely, ranging from around \$1.4 million for Mining to about \$40,000 for Information Media & Telecommunications. In addition, the median export values for Manufacturing and Wholesale Trade were around \$100,000 in current prices.

Similar inter-industry differences are apparent for the export to turnover ratio⁶ and capital expenditure. The median export to turnover ratio for Mining is over 0.5 in 2013–14, reflecting the high export intensity of the industry. However, at the median, only 7 per cent of Manufacturing turnover is generated from exports. Finally, the median capital expenditure was \$40,000 for Mining-industry exporters, but much less for other industries.

3.1 Born-global businesses

Businesses that start exporting since birth — the so-called ‘born-global’ businesses — are of particular interest. While larger and more mature businesses are more likely to export, born-global businesses defy this trend. This highlights their underlying strength (e.g. in terms of productivity or innovation) that enables them to enter the export market in the same year they start business operation.

⁵ Successive results presented in the paper are based on the businesses from these four industry divisions only.

⁶ This ratio shows the proportion of turnover generated from exports.

Across all industries, there were around 3,000 (about 5 per cent of all exporters) born-global businesses in 2013–14.⁷ They are highly export-oriented — generating, on average, a third of the turnover from exports. However, they are not big employers. In most industries, the median employment in born-global businesses varies between 1 and 3 workers. By and large, born-global businesses do not stand out in terms of the median capital expenditure either.

While they are found in all industries, nearly half of all born-global businesses are from Wholesale Trade and Professional, Scientific & Technical Services. The median export value generated by born-global businesses of these two industries ranged between \$35,000 and \$67,000 in 2013–14.

4. Average size gap between exporters and non-exporters

Before we discuss the sources of the differences between exporters and non-exporters, we provide evidence on the magnitude of the size gap for a variety of business performance indicators. The analysis uses longitudinal data on around 350,000 firms for the decade to 2013–14, and takes into account their size, age, ANZSIC industry class, jurisdiction, year of operation and unobserved heterogeneity.⁸

Table 4.1 shows the average size gap between exporters and non-exporters in terms of the levels of selected performance indicators.

Table 4.1: Average size gap between exporters and non-exporters in the levels of selected performance indicators, 2004–05 to 2013–14

<i>Performance indicators⁹</i>	<i>Level in exporter over and above non-exporter (per cent)</i>
Employment	23.8
Value-added	40.2
Labour productivity	13.4
Average wage	11.5
Capital expenditure	7.6

Source: Estimation based on the microdata from BLADE

⁷ Key statistics for born-global businesses vary little over time. For example, the statistical profile of the 2004–05 cohort of born-global businesses is similar to that of the 2013–14 cohort.

⁸ Data on every business is not available for every year due to entry and exit.

⁹ Employment is the number of workers (headcount), value-added is turnover minus operating expenses, labour productivity is value-added per full-time equivalent (FTE) worker, average wage is total wage bill divided by total FTEs. Value-added, labour productivity, average wage and capital expenditure are in 2011–12 prices.

The numbers in Table 4.1 are the coefficients on the export status (*Exporter*) of firm *i* in year *t* estimated from a regression of the form:

$$\ln X_{it} = \alpha_i + \beta_1 \text{Exporter}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Age}_{it} + \beta_4 \text{Industry}_i + \beta_5 \text{State}_i + \beta_6 \text{Year}_t + \varepsilon_{it}$$

where $\ln X_{it}$ is the natural logarithm of the level of the performance indicator in question, $\text{Exporter}_{it} = 1$ if firm *i* in year *t* is an exporter and 0 otherwise, Size_{it} is measured by \ln value-added for the employment equation and \ln employment for all other equations, Age_{it} is firm age in years, Industry_i is the 4-digit ANZSIC class of firm *i*, State_i is the jurisdiction of operation of firm *i*, Year_t is the year of operation and ε_{it} is a firm-specific, time-varying unobserved error term. Therefore, all observed variables on the right-hand side, except Size_{it} and Age_{it} , are indicator variables.

Relative to non-exporters, exporters are on average about 24 per cent larger in employment and around 40 per cent larger in value-added. In addition, full-time workers in exporting businesses are over 13 per cent more productive, and receive 11.5 per cent more in average wages. Exporters also commit 7.6 per cent more in capital expenditure than non-exporters.

These results suggest there are substantial differences between exporters and non-exporters in terms of performance. Measures of employment, output, productivity, wage and investment are larger for exporting businesses. The remainder of the paper examines the sources of these large differentials.

5. Business performance before exporting

This section examines business performance before their foreign market entry. For tracking performance over shorter intervals, the dataset is divided into two sub-periods:

- 2004–05 to 2008–09
- 2009–10 to 2013–14

Businesses that enter the export market in the final year¹⁰ of each sub-period are compared against non-exporters in terms of the initial¹¹ levels of selected performance indicators.

In other words, we form a sub-sample by selecting only those firms that did not export between 2004–05 and 2007–08 (2009–10 and 2012–13) inclusive. We categorise as exporters, those firms in the sub-sample who exported in the final year, 2008–09 (2013–14). We consider systematic differences in the pre-export levels of firm performance through a regression of the following form:

$$\ln X_{i0} = \alpha_i + \beta_1 \text{Exporter}_{iT} + \beta_2 \text{Size}_{i0} + \beta_3 \text{Age}_{i0} + \beta_4 \text{Industry}_i + \beta_5 \text{State}_i + \beta_6 \text{Year}_0 + \varepsilon_{i0}$$

where $\ln X_{i0}$ is the natural logarithm of the level of the performance indicator in the first year of the sub-period, Exporter_{iT} is an export dummy for the last year of the sub-period, Size_{i0} and Age_{i0} are size and age of firm *i* in the first year of the sub-period, Industry and State are as before, Year_0 is the first year of

¹⁰ 2008-09 for the first sub-period and 2013–14 for the second

¹¹ 2004-05 for the first sub-period and 2009–10 for the second

operation of firm i and ε_{i0} is a firm-specific unobserved error term in the first year of operation of firm i .

The coefficient on the export dummy in the last year of a sub-period, β_1 , measures the premium for future exporters T years before beginning to export. It must be emphasised that this is not a test for a causal relationship.

The results in Table 5.1 show that the differences between future exporters and non-exporters are still substantial. For example, businesses that enter the export market in 2008–09 were already 10.4 per cent larger in employment in 2004–05.

Table 5.1: Pre-export size gap between future exporters and non-exporters in the initial levels of selected performance indicators

Performance indicators	Level in future exporter over and above non-exporter (per cent)	
	2004–05	2009–10
Employment	10.4	11.9
Value-added	12.5	18.3
Labour productivity	–	–
Average wage	–	–
Capital expenditure	5.0	2.9

Notes: ‘–’ denotes statistically insignificant estimates.

Source: Estimation based on the microdata from BLADE

Relative to non-exporters, exporters also had higher levels of output and investment four years before beginning to export. For example, businesses that enter the export market in 2013–14 invested about 3 per cent more than non-exporters in 2009–10. However, no statistically significant difference between future exporters and non-exporters is apparent in terms of labour productivity and wages.

While future exporters already have the desirable characteristics, we also want to learn how they perform in the run up to entering the foreign market. Hence, export market entrants in the final year of each sub-period are compared against non-exporters in terms of the average pre-export growth in the selected variables.

To evaluate the changes in firm performance leading up to exporting, we run a regression of the following form:

$$\% \Delta X_{iT-1} = (\ln X_{iT-1} - \ln X_{i0}) / (T-1) = \alpha_i + \beta_1 \text{Exporter}_{iT} + \beta_2 \text{Size}_{i0} + \beta_3 \text{Age}_{i0} + \beta_4 \text{Industry}_i + \beta_5 \text{State}_i + \beta_6 \text{Year}_0 + \varepsilon_{i0}$$

The coefficient on the export dummy in the last year, β_1 , measures how much faster future exporters were growing per year over the preceding $T-1$ years, controlling for initial size, age and year of operation as well as State and industry.

Estimates presented in Table 5.2 show that future exporters grew faster than non-exporters during the four years before their foreign market entry.

Table 5.2: Average annual pre-export growth differentials between future exporters and non-exporters

<i>Performance indicators</i>	<i>Growth in future exporter over and above non-exporter (percentage points)</i>	
	<i>2004–05 to 2007–08</i>	<i>2009–10 to 2012–13</i>
Employment	0.6	0.6
Value-added	2.6	1.7
Labour productivity	4.4	2.6
Average wage	4.7	3.4
Capital expenditure	3.2	2.1

Source: Estimation based on the microdata from BLADE

For example, the average employment growth rate for businesses that become exporters in 2008–09 was 0.6 percentage point higher per year between 2004–05 and 2007–08. Future exporters also realised significantly faster growth in other variables.

While not determining the causal relationship from firm performance to exporting, the results in Tables 5.1 and 5.2 suggest exporters outperform non-exporters even before beginning to export.

6. Exporter performance after exporting

Exporters accumulate knowledge on foreign consumers, competitors and technology (Silva, Afonso & Africano 2012). Competition is also greater in the export market (Kostevc 2009). Since learning and competition generally lead to performance improvement, it is expected that exporting may also improve business performance.

This section examines exporter performance after their foreign market entry. The growth performance of businesses that export in the initial year¹² of each sub-period is compared against that of non-exporters. To do this, we run a regression of the following form:

$$\% \Delta X_{iT} = (\ln X_{iT} - \ln X_{i0}) / T = \alpha_i + \beta_1 \text{Exporter}_{i0} + \beta_2 \text{Size}_{i0} + \beta_3 \text{Age}_{i0} + \beta_4 \text{Industry}_i + \beta_5 \text{State}_i + \beta_6 \text{Year}_0 + \varepsilon_{iT}$$

The results for the annual rates of change and the average annual growth over the intervals are presented in Tables 6.1 and 6.2 respectively.¹³

Over one-year horizons (Table 6.1), exporters grow faster than non-exporters in employment, but not in value-added. For example, the annual employment growth for businesses that exported in 2004–05 was 0.1 percentage point higher during 2004–05 to 2008–09. However, the annual value-added growth for these businesses was 1.3 percentage points lower over the same period.

Table 6.1: Annual post-export growth differentials between initial exporters and non-exporters

Performance indicators	Growth in initial exporter over and above non-exporter (percentage points)	
	2004–05 to 2008–09	2009–10 to 2013–14
Employment	0.1*	0.2
Value-added	-1.3	-1.7
Labour productivity	4.8	3.1
Average wage	6.3	4.4
Capital expenditure	-1.0	0.9*

Notes: * denotes statistically weak estimates.

Source: Estimation based on the microdata from BLADE

Labour productivity and average wage in exporters also increase at significantly higher rates than for non-exporters. Also notable is the finding that the average wage growth differential is larger than the labour productivity growth differential. The results for capital expenditure growth are mixed.

¹² 2004-05 for the first sub-period and 2009-10 for the second

¹³ If X is a variable in natural logarithm, then the annual growth in X is given by $\Delta X_t = X_t - X_{t-1}$ and the average annual growth in X between year T and year 0 is given by $\Delta X_T = (X_T - X_0)/T$.

In terms of the average growth during the intervals (Table 6.2), exporters outperform non-exporters only in labour productivity and average wage. Within a few years after foreign market entry, exporters show slower (or no faster) growth than non-exporters in terms jobs, output and investment.

Table 6.2: Average annual post-export growth differentials between initial exporters and non-exporters

Performance indicators	Growth in initial exporter over and above non-exporter (percentage points)	
	2004–05 to 2008–09	2009–10 to 2013–14
Employment	–0.1	–
Value-added	–1.3	–1.5
Labour productivity	2.0	1.7
Average wage	2.6	2.6
Capital expenditure	–0.7	–

Notes: ‘–’ denotes statistically insignificant estimates.

Source: Estimation based on the microdata from BLADE

7. Performance of continuous and intermittent exporters

Some of the results presented in the previous section are likely to contrast with the general policy expectation regarding the growth performance of exporters. However, it should be noted that subsequent export behaviour of businesses that exported in the first year of a period is not taken into account for the analysis in Section 6.

In fact, there is significant churn in export market participation. On average, around 10 per cent of exporters stop, while nearly 5 per cent of non-exporters start, exporting every year. Hence, to understand the source of the discontinuity in exporter performance, it is necessary to examine the impact of business entry and exit in relation to export markets on subsequent business performance.

The large number of businesses moving in and out of export markets means that initial export status is poorly correlated with subsequent export behaviour, especially over longer intervals. As such, businesses in the dataset are classified into three distinct groups:

- continuous exporters — export every year of the period under observation
- non-exporters — do not export in any year
- switchers — change their export status within an interval.

Taking any two of these groups at a time, the growth performance of one group is compared against that of the other. Annual growth differentials in the variables are reported in Table 7.1. Differences in the average annual growth during 2004–05 to 2013–14 are shown in Table 7.2.

The results are much clearer this time. In terms of the annual growth (Table 7.1), continuous exporters perform significantly better than both non-exporters and switchers. The employment growth rate in continuous exporters is 0.5 percentage point higher than that of non-exporters or switchers.

Table 7.1: Annual growth differentials for continuous exporters vs non-exporters vs switchers, 2004–05 to 2013–14

<i>Performance indicators</i>	<i>Growth in the first group over and above the second group (percentage points)</i>		
	<i>Continuous exporter vs non-exporter</i>	<i>Continuous exporter vs switcher</i>	<i>Switcher vs non-exporter</i>
Employment	0.5	0.5	0.1
Value-added	2.7	1.9	0.3
Labour productivity	3.3	2.2	0.8
Average wage	3.6	2.5	0.8
Capital expenditure	1.0	1.1	0.6

Source: Estimation based on the microdata from BLADE

Growth rates of output, productivity, wages and investment are around 1–3 percentage points higher for continuous exporters. In addition, even switchers outperform non-exporters in terms of one-year growth rates in all variables.

Analysis of the average growth over the entire period (Table 7.2) shows that continuous exporters pull much further ahead of non-exporters in terms of output, productivity and wages. A similar pattern emerges when continuous exporters are compared to switchers. However, employment and value-added grow no faster in switchers than in non-exporters. Switchers still outperform non-exporters in terms of the average growth in labour productivity, wages and capital expenditure.

Table 7.2: Average annual growth differentials for continuous exporters vs non-exporters vs switchers, 2004–05 to 2013–14

<i>Performance indicators</i>	<i>Growth in the first group over and above the second group (percentage points)</i>		
	<i>Continuous exporter vs non-exporter</i>	<i>Continuous exporter vs switcher</i>	<i>Switcher vs non-exporter</i>
Employment	0.6	0.5	–
Value-added	3.9	1.7	–
Labour productivity	6.3	2.3	1.2
Average wage	7.4	3.1	1.3
Capital expenditure	1.2	1.1	0.3

Notes: ‘–’ denotes statistically insignificant estimates.

Source: Estimation based on the microdata from BLADE

8. Exporting and business survival

The analysis in the preceding sections is conditional on the business having survived. This section presents evidence on arguably the most important potential benefit from exporting — business survival. Given the costs of business failures and the resulting dislocation of workers, any benefit from exporting in terms of a higher survival rate would be significant.

Empirical studies of exporters have shown that business export status is associated with a higher survival rate (Wagner 2013). To determine if exporting has any effect on firm survival in Australia, we estimate a probit model of the form:

$$S_{it} = 1 \text{ if } \beta_1 X_{it-1} + \beta_2 Y_{it-1} + \varepsilon_{it} > 0$$

$$S_{it} = 0 \text{ otherwise}$$

where S_{it} equals 1 if the firm survives from year $t-1$ to year t , X_{it-1} is a vector of firm performance indicators (levels of employment, output, labour productivity, average wages and capital expenditure), and Y_{it-1} is the export status of the firm, in year $t-1$.

The results presented in Table 8.1 strongly support the hypothesis that exporting is associated with a higher probability of business survival. On average, an exporter is about 8 per cent more likely to survive to the following year than a non-exporter with similar characteristics. The levels of employment, value-added, labour productivity and capital expenditure are also positively correlated with the probability of business survival.

Table 8.1: Exporting and business survival

<i>Business characteristics in year $t-1$</i>	<i>Change in probability of survival in year t</i>
Exporter	7.8
Employment	9.2
Value-added	3.7*
Labour productivity	4.3*
Average wage	–
Capital expenditure	3.2*

Notes: Numbers represent the increase in the probability of business survival from a one standard deviation increase in the variable (or a switch from 0 to 1 for the export status).

‘–’ denotes statistically insignificant estimates. * denotes statistically weak estimates.

Source: Estimation based on microdata from BLADE

9. Conclusion

This paper uses microdata on Australian businesses to study the dynamic relationship between their export behaviour and performance. Business performance of exporters, both before and after exporting, are compared against that of non-exporters to provide evidence whether exporters outperform non-exporters.

The results show that Australian exporters, on average, employ more workers and produce more output relative to non-exporters at any point in time. Labour productivity, average wages and capital expenditure are also higher for exporters. Finally, exporting is associated with a higher probability of business survival. This points to the importance of government programmes aimed at promoting Australia's export and other international economic interests.

Australian businesses demonstrate superior performance both in terms of levels and growth of key performance variables in the lead up to foreign market entry. Pre-export performance advantage, however, may diminish relatively quickly unless businesses can export in a persistent manner. In other words, current export status is a poor guide for future business performance. Only continuous exporters outperform non-exporters consistently.

This suggests policies that merely attempt to increase the number of exporters may not be enough to produce the expected gains in terms of improved business performance. It may be necessary to examine the performance dynamics of new exporters on an ongoing basis to identify the causes of their failure in foreign markets. It will also be of value to study persistent exporters more closely to identify the drivers of their success.

One reason for their success might be innovation activities. The *Australian Innovation System Report 2016* for example shows that persistent innovators significantly outgrow other businesses in terms of sales, value added, employment and profit.¹⁴ Following through with new exporters together with learning from persistent ones will inform export promotion policies and help make them more effective.

¹⁴ Department of Industry, Innovation and Science (2016) *Australian Innovation System Report*, Office of the Chief Economist, p. 30

References

- Alvarez R and López R (2005) Exporting and performance: Evidence from Chilean plants, *Canadian Journal of Economics*, 38(4), pp. 384–400
- Arnold J and Hussinger K (2005) Export behavior and firm productivity in German manufacturing: A firm-level analysis, *Review of World Economics*, 141(2), pp. 219–243
- Aw B and Hwang A (1995) Productivity and the export market: A firm-level analysis, *Journal of Development Economics*, 47(2), pp. 313–332
- Baldwin R (1989) Sunk-cost hysteresis, National Bureau of Economic Research, Working paper no. 2911, Cambridge
- Baldwin J and Gu W (2003) Export-market participation and productivity performance in Canadian manufacturing, *Canadian Journal of Economics*, 36(3), pp. 634–657
- Bernard A and Jensen J (1995) Exporters, jobs, and wages in US manufacturing: 1976–1987, *Brookings Papers on Economic Activity: Microeconomics*, pp. 67–119
- Bernard A and Jensen J (1999) Exceptional exporter performance: Cause, effect, or both?, *Journal of International Economics*, 47, pp. 1–25
- Bernard A, Jensen J and Wagner J (1997) The good go abroad: Evidence from longitudinal micro data on German and US exporters, in S Laaksonen (ed), *The Evolution of Firms and Industries – International Perspectives*, Statistics Finland, Helsinki, pp. 489–500
- Czinkota M (1982) *Export Development Strategies*, Praeger Publishers, New York
- Department of Industry, Innovation and Science (2016) *Australian Innovation System Report*, Office of the Chief Economist
- Giles J and Williams C (2000a) Export-led growth: A survey of the empirical literature and some non-causality results, Part I, *Journal of International Trade & Economic Development*, 9(3), pp. 261–337
- Giles J and Williams C (2000b) Export-led growth: A survey of the empirical literature and some non-causality results, Part II, *Journal of International Trade & Economic Development*, 9(4), pp. 445–470
- Harris R and Li Q (2008) Evaluating the contribution of exporting to UK productivity growth: Some microeconomic evidence, *World Economy*, 31(2), pp. 212–225
- Jung Y and Lee S (2014) Spillover effects and the decision to export in Korean manufacturing firms, *Journal of the Asia Pacific Economy*, 19(4), pp. 588–603
- Keller W (2004) International technology diffusion, *Journal of Economic Literature*, 42(3), pp. 752–782

- Kostevc C (2009) Foreign market competition as a determinant of exporter performance: Evidence from Slovenian manufacturing firms, *World Economy*, 32(6), pp. 888–913
- López R (2005), Trade and Growth: Reconciling the Macroeconomic and Microeconomic Evidence, *Journal of Economic Surveys*, 19(4), pp. 623–648
- McLean I (2013) *Why Australia prospered: The shifting sources of economic growth*, Princeton University Press, Princeton
- Munoz-Sepulveda J and Diego R (2015) Geographical and industrial spillovers in entry decisions across export markets, *Applied Economics*, 47(37–39), pp. 4168–4183
- Roberts M and Tybout J (1997) The decision to export in Colombia: An empirical model of entry with sunk costs, *The American Economic Review*, 87(4), pp. 545–564
- Seringhaus R and Rosson P (1990) *Government Export Promotion*, Routledge, London
- Silva A, Afonso O and Africano A (2012) Learning-by-exporting: What we know and what we would like to know, *International Trade Journal*, 26(3), pp. 255–288
- Wagner J (2007) Exports and productivity: A survey of the evidence from firm-level data, *World Economy*, 30(1), pp. 60–82
- Wagner J (2013) Exports, imports and firm survival: First evidence for manufacturing enterprises in Germany, *Review of World Economics*, 149, pp. 113–130
- Welch L and Wiedersheim-Paul F (1979) Export promotion policy: A new approach, *Australian Journal of Management*, 4(2), pp. 165–176