Learning by Exporting: Evidence from Three Transition Economies

by

Michael Bleaney, Igor Filatotchev and Katharine Wakelin

The Authors

Michael Bleaney is Professor in the School of Economics, University of Nottingham, Igor Fililatotchev is Reader in the School of Management and Organisational Psychology, Birbeck College, University of London and Katharine Wakelin is a Research Fellow in the Leverhulme Centre for Research on Globalisation and Labour Markets (GLM), University of Nottingham.

Learning by Exporting: Evidence from Three Transition Economies

by

M. Bleaney, I. Filatotchev and K. Wakelin

Abstract

Several recent studies have tested whether firms learn by exporting, in the sense that a history of exporting improves measures of firm performance *ceteris paribus*. These studies have found little or no evidence of learning by exporting in either developed countries (Germany, U.S.) or developing countries (Colombia, Morocco). We test the learning-by-exporting hypothesis for three transition economies (Belarus, Russia, Ukraine). The results indicate that, for the firms in our survey, current employment is significantly positively related to the export share of output in the previous period. These findings are consistent with the idea that exporting accelerates the process of learning by firms in transition economies.

Outline

Non-Technical Summary

There has been much recent research interest in the interaction between exporting and firm efficiency. A consistent finding is that better-performing firms in an industry are more likely to be exporters. There has been less research on whether firms learn by exporting, or in other words whether there is feedback from exporting to firm performance. Most of the existing papers provide virtually no evidence of significant improvements in firm performance as a consequence of exporting, in either advanced or developing countries. In this paper we investigate the learning-by-exporting hypothesis for a sample of firms in the former Soviet Union (Belarus, Russia and Ukraine). Arguably, if learning by exporting exists at all, transition economies are the best place to look for it, because the relationships between suppliers and customers were so different under central planning, as was also the quality of products. Consequently, many products that would not survive on the world market continued to circulate in planned economies. With the collapse of central planning, all firms had to learn how to survive in the emerging market environment. We investigate whether those firms which had established contacts with the world market, or were able to do so early in the transition, were able to learn faster and so perform better than those which did not.

In comparison with previous research on advanced and developing countries, there are some specific issues which arise in the context of transition economies. One is that rapid inflation makes it very difficult to use performance measures defined in money terms. Because of this, the only measure of firm performance that we use is employment. This does, however, entail some complications, because the high proportion of insider share owners may induce firms to be reluctant to fire employees as output falls. Since we have data on share ownership, our empirical strategy is to control for these factors by including ownership variables in the regressions. In general, we find that employment performance is not related to the proportion of outside shareholders. Our data also allow us to investigate whether having a partnership with a foreign firm improves performance (this is an alternative route by which learning might take place).

We find evidence of significant learning-by-exporting effects in the former Soviet Union, in contrast to previous research. This may of course reflect the particular circumstances of transition economies. If so, learning by exporting may prove to be a transient phenomenon even in the former Soviet Union. As the transition proceeds, performance differences between exporting and non-exporting firms may disappear: this would be consistent with the lack of evidence for learning by exporting elsewhere in the world. Our finding that learning-by-exporting effects are stronger in low-export sectors than in high-export light industry could also be construed as indicating that such effects will disappear as these economies become more fully integrated into the world market. Nevertheless our results provide some evidence that, at least in the early stages of the transition when learning must have been most rapid, learning by exporting was significant in the former Soviet Union.

1 Introduction

There has been much recent research interest in the interaction between exporting and firm efficiency. A consistent finding is that better-performing firms in an industry are more likely to be exporters (Aw and Hwang, 1995; Bernard and Jensen, 1999; Bernard and Wagner, 1997; Bleaney and Wakelin, 1999; Clerides *et al*., 1998). A simple explanation for this finding is provided by a sunk-cost model, in which only the more efficient firms make sufficient profits in export markets to compensate for the fixed costs of entering these markets.

There has been less research on whether firms learn by exporting, or in other words whether there is feedback from exporting to firm performance. Bernard and Jensen (1999) test this hypothesis for a large sample of US manufacturing plants. They regress the change in various measures of firm performance on *last-period* export status, size and various plant characteristics. Performance variables tested are: total employment, shipments, value added per worker, total factor productivity, average wage, share of non-production employment in total employment, production worker wage and non-production worker wage. They find that exporting is associated with a higher subsequent growth rate of employment and sales, but not of productivity.

Bernard and Wagner (1997) carry out a similar exercise for German manufacturing plants in Lower Saxony, based on an annual survey by the state statistical office. Using data from 1978 to 1992, they find that exporters have significantly *lower* wage growth, productivity growth, and growth in sales and sales per worker in the subsequent period than do non-exporters, despite the fact that only the more successful firms tend to export.

Clerides et al. (1998) study large samples of firms in Mexico, Colombia and Morocco. They use average variable cost (AVC) and labour productivity (LAB) as performance indicators. They find that previous exporting experience (exports in years t-1, t-2, and t-3) is almost always insignificant (they present results for three separate industries for Morocco and Colombia) and where significant has a positive coefficient (i.e. exporting increases costs). They conclude that "the patterns we found in the actual data resembled our no-learning-by-exporting scenario, under which the positive association between export status and productivity is due solely to the self-selection of relatively more efficient plants into foreign markets" (pp. 941-2).

2

These papers, then, provide virtually no evidence of significant improvements in firm performance as a consequence of exporting, in either advanced or developing countries. In this paper we investigate the learning-by-exporting hypothesis for a sample of firms in the former Soviet Union (Belarus, Russia and Ukraine). Arguably, if learning by exporting exists at all, transition economies are the best place to look for it, because the relationships between suppliers and customers were so different under central planning, as was also the quality of products. In planned economies, market power typically lay with the supplier rather than the customer, who was often forced to accept whatever was offered (Kornai, 1980). Consequently, many products that would not survive on the world market continued to circulate in planned economies. The transition process required firms to readjust rapidly. With the collapse of central planning, all firms had to learn how to survive in the emerging market environment. We investigate whether those firms which had established contacts with the world market, or were able to do so early in the transition, were able to learn faster and so perform better than those which did not.

In comparison with previous research on advanced and developing countries, there are some specific issues which arise in the context of transition economies, particularly the former Soviet Union. One is that rapid inflation makes it very difficult to use performance measures defined in money terms. In a previous survey in Russia involving two of the present authors, it was clear that some respondents interpreted questions about sales and profits in real terms and some in nominal terms, despite the questions being phrased in real terms. Because of this, the only measure of firm performance that we use is employment. This does, however, entail some complications, because the high proportion of insider share owners may induce firms to be reluctant to fire employees as output falls (all industries in all three countries experienced output reductions over the period of our survey). For a discussion of these issues see Aghion and Blanchard (1998) and Filatotchev *et al*. (1999). Since we have data on share ownership, our empirical strategy is to control for these factors by including ownership variables in the regressions which we estimate. In general, we find that employment performance is not related to the proportion of outside shareholders. Our data also allow us to investigate whether having a partnership with a foreign firm improves performance (this is an alternative route by which learning might take place).[1]

A second issue is the definition of an export. In most countries that is straightforward, but in this case we have data on three categories of exports: exports to the Commonwealth of Independent States (CIS), to former CMEA countries outside the CIS, and to other countries. We take the view that, since the CIS was formerly one country, such exports may to a large extent represent the continuation of relationships established under central planning, and therefore we exclude these from our definition of exports.

2   Theory and Data

In standard theories of perfect or imperfect competition, all firms are destined to earn normal profits in the long run, or leave the industry, because of the absence of barriers to entry. Because the world is always changing, however, no industry that we actually observe is in this long-run state. Firms are continually in the process of learning about new technologies, new products, new ways of organising their operation etc. Any snapshot of an industry at one point in time will reveal some firms to be more efficient and more profitable than others. An important way in which firms manage to be one step ahead of the competition is that they are quicker to learn from their environment. Of particular relevance here is the possibility of learning through trade, so that exporting firms learn something from their export activity that can be applied with advantage in the home market. Of course, if this is true, even non-exporters will eventually learn the same lesson from importers, but this may be a slower process. In developing or transition economies, firms are not typically in the forefront of technology, and a partnership with a foreign firm may help to speed up the process of importing innovation.

Aggregate factors operating at the industry level will also have a large impact on firm performance. Employment growth in the individual firm will be strongly influenced by domestic demand and other conditions (such as changing comparative advantage) within the sector. Massive declines in demand are a recognised feature of transition in the former Soviet Union. To control for this we include the change in sectoral output for the relevant country in the regression.[2] There may be other sectoral factors that we have not included, and to control for these omitted variables we test for industry fixed and random effects.

---

[1] There is considerable evidence that foreign-owned firms (or firms undertaking joint ventures with foreign firms) are more export-oriented than comparable domestic firms (MacCharles, 1987; Willmore, 1992).

It is virtually impossible to say, on theoretical grounds alone, which of the many possible mechanisms by which firms learn to improve efficiency are important in practice. Careful empirical work is required. In this study, we use data on manufacturing firms in Belarus, Russia and the Ukraine. The hypothesis which we test is whether employment in period t is higher for firms that had a higher ratio of exports to sales in period t-1, given their ownership structure and employment level in period t-1. In an alternative version we replace the export sales ratio with a dummy variable that is equal to one for exporters and zero for non-exporters (again in period t-1), with similar results. This allows us to test if it is merely the fact rather than the quantity of exports which matters for learning. We pool the data for the two samples in order to maximise degrees of freedom, but we test for equality of coefficients between the two samples, and where appropriate we allow the coefficients to differ. Thus the equation which we estimate is:

$$N_t = a_{it} + bN_{t-1} + cX_{t-1} + dY_t + \text{ownership variables} + \text{country dummies} \qquad (1)$$

where N represents employment, X is the export share of output, Y is the change in output for the particular industry in that country, according to official statistics, and the subscripts i and t indicate respectively the sectoral attachment of the firm and the date of the sample (1997 or 1998). We find that the data strongly prefer a random industry effects specification.

Data and Sample

In order to test the hypotheses developed above, a sample of medium and large-sized manufacturing firms from each country was sought, covering the main industrial regions and sectors. Since the major focus of this research is on the export activities of former state-owned enterprises, *de novo* private start-ups were deliberately excluded and the sample comprised privatised companies only, concentrating on firms that had been privatised for at least one year, in order to eliminate distortions that might be associated with the very early stages of privatisation.

The same questionnaire was applied to each country in two consecutive surveys in 1997 and 1998, after being piloted in Moscow, Kiev and Minsk in 1996 and 1997. The questionnaire was translated from English into local languages with the assistance of local counterparts (the

---

[2] These data are taken from official statistics. In fact output fell in every sector over the period, reflecting the large falls in aggregate output which each of the countries were experiencing.

translation was checked by independent retranslation into English). The questions related to measurable company characteristics (employment, export sales, the companies' ownership structure, Board composition, etc.) for the period 1994-97, and could be answered by reference to companies' unpublished financial reports and share-ownership records. The questionnaires were addressed to the presidents of companies, who were considered more likely to be involved in the export decisions of their firms. Although the presidents of the enterprises were contacted as key respondents, it was considered important to establish a sufficient level of response reliability, and returns from a randomly-selected 5% of companies in each country were checked by at least two of the survey organisers on a personal visit. During these visits, several representatives of each firm were interviewed independently and access to written records was obtained; no significant differences were identified between the questionnaire responses and the information contained in companies' documents such as payroll lists and share registers.

In Russia, with the help of Russian Economic Barometer (a research centre which has conducted business surveys since 1991 using a network of 500 respondents from different industries and regions), there were few difficulties in generating a representative sample of privatised companies. In Ukraine and in Belarus it was not possible to produce a truly random sample of firms, but we are confident that the samples obtained varied sufficiently in terms of size, industrial composition and regional affiliation to provide a good approximation to a random sample.

Surveys were carried out in each of the three countries over the period January to July 1997, and, again, during the same months in 1998. The 1997 survey instrument asked for responses relating to 1994 as well as to 1996, whilst the 1998 survey asked for responses relating to 1997. Altogether there were 224 companies in the sample, roughly 75 from each of the three countries. In the regression results reported below, the maximum sample size is 192 companies: 32 companies were omitted because of empty cells in their responses. Since ownership data were not available for all of these companies, the sample falls to 137 companies when ownership variables are included in the regression.[3] A standard test of non-response bias did not indicate significant differences (at $p \leq 0.05$) between respondent and non-respondent groups in variables such as country and industry distributions, number of employees and ownership structure.

Table 1 gives some descriptive statistics for the variables to be included in the regression for each country. As the employment data show, the firms in the sample are very large on average, with over a thousand employees each in Belarus and Ukraine. This is a feature of many of the privatised companies in the former Soviet Union. Employment has a large standard error in all three countries, indicating a high degree of variation in firm size. Firms in Russia are noticeably smaller than in either of the other two countries. Russian firms also stand out as having a much lower propensity to export than firms in the other two countries. They export less than 3% of their output on average, compared with 10% in Belarus and 7% in Ukraine. In general, all three countries exhibit a low propensity to export relative to firms of similar size in industrialised countries (the sample for the UK used in Bleaney and Wakelin, 1999, has a propensity to export of 43%). All three countries have experienced large falls in domestic output: on average industry output has declined by over 35% in Russia and Ukraine; Belarus has experienced less decline with a fall of 25% on average. The low proportion of shares owned by outsiders (i.e. people other than the managers and the employees of the company) reflects the methods of privatisation used, which heavily favoured insider ownership.

3   Results

We begin by presenting export share regressions for 1996 and 1997 (Table 2). As mentioned above, previous studies have found more profitable firms to be more likely to export. Since we lack reliable data on profitability or efficiency, we use ownership variables, employment, and industry and country dummies as regressors. Ownership and country dummies are insignificant, but specialisation in light industry (textiles) and a larger number of employees are each associated with a larger export share. The impact of both these variables is larger in 1997 than in 1996, suggesting significant evolution over time. In 1996 a light industry company is estimated to have a 12% higher export share than companies in other industries, other things being equal. In 1997 the figure is 15%. Size effects more than doubled between 1996 and 1997, from an estimated 2.3% increase in export share for an additional thousand employees in 1996 to 5.8% in 1997.

---

[3] The number of observations used in the regression is twice the number of companies because of the pooling of the data.

Our main results are shown in Tables 3 and 4. In Table 3 we use the previous period export share of output as the measure of lagged export activity; in Table 4 we use lagged export status (a binary variable that takes the value one if a firm exports in the relevant period and zero if it does not). Fixed industry effects are rejected relative to random effects using the Hausman test, and the data strongly prefer a random effects specification, as indicated by the Wald statistics. The data are pooled across the two years; testing the coefficients for variation across time indicated that this was a problem only for the lagged employment variable, for which we allow the coefficient to vary between samples. In order to allow for possible simultaneity bias, we also estimated the regressions instrumenting the lagged export ratio by the regressors in Table 2. Results indicated significant endogeneity problems for the export ratio, but not export status. In response to this we also estimated the regressions in Table 3 by two-stage least squares (results not shown), and in each case the point estimate of the lagged export coefficient moved further from zero than in the OLS estimates, which indicates that the estimated coefficients in Table 3 have not been distorted upwards by endogeneity.[4]

Regression (1) in Table 3 controls for ownership effects. These are statistically insignificant, as also are the country dummies, but there do appear to be some significant differences between the 1996 and 1997 samples. There is strong persistence in employment levels, as one would expect, although the coefficient is significantly smaller for the later sample. A firm's employment performance is strongly positively correlated with the change in the real output of its sector. After allowing for these effects, we find lagged exports to be positively correlated with current employment (*t*-statistic of 3.91).

Regression (2) shows our preferred specification, with statistically insignificant variables eliminated. Without ownership variables, the sample size is larger, because we lack ownership data for some firms, and in this larger sample the differences between the 1996 and 1997 surveys disappear. Lagged employment has a similar coefficient to regression (1), but an even higher *t*-statistic (4.47). In both regressions, the estimated short-run employment effect is an extra six employees for every extra 1% in export share, which is similar in size to the estimated effect of an extra 1% growth in sectoral output.

---

[4] Because the Table 2 regressions are not a good fit, these are poor instruments, and this is reflected in a substantially reduced R-squared and much higher standard errors in the 2SLS results compared with those shown in Table 3.

Regressions (3) and (4) in Table 4 repeat the same exercise for lagged export status. The results are very similar but the *t*-statistics are somewhat smaller (and not significant at the 1% level in regression (3)). For given employment in the current period, exporters are estimated to have an additional 120 employees in the subsequent period relative to non-exporters, a figure which represents a more than 10% difference in employment for the average firm.

Since the share of exports is particularly high in light industry, we also re-estimated regressions (2) and (4) allowing the lagged export coefficient to be different in the light industry sector. The results are shown in Table 5. In both cases exports are estimated to have a larger positive impact on subsequent employment in other (low-export) sectors than in the high-export light industry sector. This suggests that learning by exporting is more important in more insulated sectors where current export activity is low (although the differences are less significant when export status is used rather than export ratios).

4   Conclusions

We have found evidence of significant learning-by-exporting effects in the former Soviet Union. Our results are in marked contrast to previous research, which has failed to find such effects in either developed or developing countries. This may of course reflect the particular circumstances of transition economies, where historically the domestic market environment has been very different from that of the outside world. If so, learning by exporting may prove to be a transient phenomenon even in the former Soviet Union. As the transition proceeds, performance differences between exporting and non-exporting firms may disappear: this would be consistent with the lack of evidence for learning by exporting elsewhere in the world. Our finding that learning-by-exporting effects are stronger in low-export sectors than in high-export light industry could also be construed as indicating that such effects will disappear as these economies become more fully integrated into the world market. Nevertheless our results provide some evidence that, at least in the early stages of the transition when learning must have been most rapid, learning by exporting was significant in the former Soviet Union.

References

Aghion, P., and O.J. Blanchard. 1998. "On Privatization Methods in Eastern Europe and their Implications," *Economics of Transition* 6, 87-99.

Aw, B.-Y., and A.R. Hwang. 1995. "Productivity and the Export Market: a Firm-Level Analysis," *Journal of Development Economics* 47, 313-332.

Bernard, A.B., and J.B. Jensen. 1999. "Exceptional Exporter Performance: Cause, Effect, or Both?" *Journal of International Economics* 47, 1-25.

Bernard, A.B., and J. Wagner. 1997. "Exports and Success in German Manufacturing," *Weltwirtschaftliches Archiv* 133, 134-57.

Bleaney, M.F., and K. Wakelin.1999. "Sectoral and Firm-Specific Determinants of Export Performance: Evidence from the United Kingdom," *Centre for Globalisation and Labour Markets* Discussion Paper no. 99/12, University of Nottingham.

Clerides, S.K., S. Lach and J.R. Tybout. 1998. "Is Learning by Exporting Important, Micro-Dynamic Evidence from Colombia, Mexico and Morocco*," Quarterly Journal of Economics* 113, 903-48.

Filatotchev, I., M. Wright and M.F. Bleaney. 1999. "Privatization, Insider Control and Managerial Entrenchment in Russia," *Economics of Transition* 7, 481-504.

Kornai, J. 1980. *Economics of Shortage*. Amsterdam: North Holland.

MacCharles, D.C. 1987. *Trade Among Multinationals: Intra-Industry Trade and National Competitiveness*. London: Croom Helm.

Willmore, L. 1992. "Transnationals and Foreign Trade: Evidence from Brazil," *Journal of Development Studies* 28, 314-35.

Table 1. Descriptive statistics of the sample

	Belarus	Russia	Ukraine
Firm employment	1,027 (961)	614 (1,002)	1,041 (2,328)
Export share of sales (%)	9.96 (19.87)	2.65 (8.84)	7.07 (17.70)
Sector growth (%)	-25.33 (14.55)	-36.98 (14.49)	-39.78 (15.80)
Outside ownership (%)	17.49 (18.69)	25.04 (24.55)	26.66 (26.50)
Number of observations	152	241	146

Notes

Means (standard errors) are calculated across the three years and firms for each country.

Sector growth is change in output according to official statistics

Outside ownership is the % of voting shares held by institutional investors and external private individuals.

Table 2. Determinants of the export share of output (%)

Year:	1996	1997
Independent variables		
Constant	3.09 (1.25)	0.460 (0.14)
Employment	0.00234 (2.32)	0.00585 (3.60)
Proportion of shares owned by outsiders	-0.0665 (-1.35)	-0.0467 (-0.71)
Dummy for foreign partner	-0.152 (-0.06)	4.41 (1.33)
Belarus dummy	3.43 (1.11)	-1.90 (-0.48)
Ukraine dummy	-3.88 (-1.30)	3.43 (0.90)
Dummy for light industry	11.95 (3.89)	14.92 (3.74)
Sample size	150	151
R-squared	0.244	0.195
Standard error	14.19	18.01

Notes

The dependent variable is exports to non-CIS countries as a percentage of output. Figures in parentheses are *t*-statistics. Other than light industry (textiles etc.), for which a dummy is included, there were no significant differences across industries.

Table 3. Employment effects of export experience using export share of output

Regression no.:	(1)	(2)
Independent variables		
Constant	250.0 (2.78)	320.6 (6.23)
Dummy for 1997 sample	198.7 (3.14)	
Lagged employment	0.826 (23.15)	0.694 (37.69)
1997 dummy times lagged employment	-0.231 (-5.29)	
Sector output growth (%)	7.07 (4.42)	6.28 (5.31)
Lagged export share of output	6.59 (3.91)	6.61 (4.47)
Proportion of shares owned by outsiders	-0.156 (-0.15)	
Dummy for foreign partner	10.81 (0.20)	
Belarus dummy	2.71 (0.04)	
Ukraine dummy	-55.5 (-0.93)	
Sample size	274	384
R-squared	0.814	0.816
Wald test for random effects versus pooled (χ^2_9)	1155	1683

Notes

Dependent variable is employment. Pooled sample estimated with industry random effects. Figures in parentheses are *t*-statistics. Sector output growth is derived from official statistics for the individual country.

Table 4. Employment effects of export experience using export status

Regression no.:	(5)	(6)
Independent variables		
Constant	220.0 (2.40)	294.1 (5.48)
Dummy for 1997 sample	200.5 (3.09)	
Lagged employment	0.818 (21.66)	0.699 (35.98)
1997 dummy times lagged employment	-0.214 (-4.80)	
Sector output growth (%)	6.22 (3.84)	5.73 (4.75)
Lagged export status	121.0 (2.01)	125.8 (2.60)
Proportion of shares owned by outsiders	-0.462 (-0.43)	
Dummy for foreign partner	5.34 (0.18)	
Belarus dummy	25.7 (0.37)	
Ukraine dummy	-57.0 (-0.94)	
Sample size	274	384
R-squared	0.806	0.810
Wald test for random effects versus pooled (χ^2_9)	1098	1615

Notes

Dependent variable is employment. Pooled sample estimated with industry random effects. Figures in parentheses are *t*-statistics. Sector output growth is derived from official statistics for the individual country. Export status is equal to one for exporters, zero for non-exporters.

Table 5. Allowing for differential export effects in the light industry sector

Regression no.:	(5)	(6)
Independent variables		
Constant	308.7 (5.99)	304.2 (5.33)
Dummy for light industry sector (DL)		114.3 (1.45)
Lagged employment	0.691 (37.54)	0.699 (35.77)
Sector output growth (%)	6.01 (5.08)	6.37 (4.61)
Lagged export share of output	9.65 (4.79)	
Lagged export status		150.4 (2.85)
Light industry dummy times lagged export share	-5.89 (-2.21)	
Light industry dummy times lagged export status		-164.0 (-1.43)
Sample size	384	384
R-squared	0.818	0.811
Wald test for random effects versus pooled (χ^2_9)	1705	1620

Notes

Dependent variable is employment. Pooled sample estimated with industry random effects. Figures in parentheses are *t*-statistics. Sector output growth is derived from official statistics for the individual country. Export status is equal to one for exporters, zero for non-exporters.