

## Cross-countries differences in exporting performance, and differences in productivity, wages and innovation rates between exporting and non-exporting firms in Brazil

Márcio E. M. Borges\*, Paulo Ricardo S. Oliveira

### Abstract

In this research we investigate whether more technologically complex countries have better trade performance and whether exporting firms in Brazil tend to perform better in terms of productivity, innovation and wages when compared with non-exporting firms. For that, we employed formal tests for distributional equality as proposed by Fligner and Policello (1981). Results show that most technologically complex countries tend to have better trade performance and exporting firms tend to perform better in terms of productivity and pay higher average wages when compared with non-exporting firms. However, tests for innovation performance differences between exporting and non-exporting firms are inconclusive.

### Key words:

Exporting premia, Economic Complexity, Fligner and Policello test.

### Introduction

Several papers on the field of evolutionary economics have investigated the role of the countries technology capabilities in economic development and the existence of differences between exporting and non-exporting firms in terms of economic performance – the so called exporting premia. International studies corroborate that exporting firms tend to have superior economic performance in terms of productivity, wages, innovation, among others.

Here, we investigate whether most technologically complex countries are those with better exporting performance, and if exporting firms in Brazil perform better in terms of productivity, wages and innovation rates when compared to the non-exporting firms.

### Results and Discussion

For both analyses we employed formal tests of distributional equality based on the notion of stochastic (in)equality proposed by Fligner and Policello (1981). Country-data come from the Baci trade dataset and from the Observatory of Economic Complexity. We proxied technology complexity with the Economic Complexity Index (ECI). Firm-data come from the World Bank Enterprise Survey. FP Test null hypothesis is that of distributional equality. When the null hypothesis is rejected, if the signal of the test is positive (negative), the second distribution has higher probability of assuming greater (smaller) values rather than the first distribution.

Results indicate that most technologically complex countries tend to perform better in terms of trade. Exporting firms (direct and indirect exporting), in turn, perform better in terms of productivity and they pay higher average wages. Direct exporting firms tend to have higher productivity and wages when compared non-exporting firms. However, indirect exporting firms tend to perform worse in terms of productivity and wages when compared to direct exporting firms.

Tests for innovation differences between exporting and non-exporting firms are inconclusive. We argue that it is due to the inadequacy of using investments in machinery and equipment as a proxy for innovation performance. Unfortunately, there are no others proxies for innovation performance in the World Bank Enterprise Survey. Box 1 shows the main test results.

### Box 1. Test Results

Hypotheses (Alternative)	FP Test	P-value	Result
Most economically complex countries hold higher shares of global markets	U= 387.67	2.2e-16	True
Most economically complex countries have higher per capita exports	U = 81.56	2.2e-16	True
Exporting firms perform better in terms of productivity	U =3.21	0.0013	True
Exporting firms pay higher average wages	U= 5.23	1.645e-07	True
Exporting firms performs better in terms of innovation	U=1.29	0.1973	N.a.

### Conclusions

Based on test results, our study corroborates that countries' technology capabilities are a determinant of countries' trade performance. Moreover, the hypothesis of exporting premia seems to hold in the case of Brazil, since tests results indicate that exporting firms tend to have higher productivity and pay higher average wages in relation to non-exporting firms. In terms of economic policy, industrial and commercial policies need to be aligned to pursue economic development.

### Acknowledgement

We acknowledge the financial support of the Service for Student Support (SAE/UNICAMP).

BERNARD, A. B.; JENSEN, B. J. Exceptional exporter performance: cause, effect, or both? *Journal of International Economics*, v. 47, n. 1, p. 1–25, 1999.

FLIGNER, M.; POLICELLO II, G. Robust rank procedures for the Behrens-Fisher problem. *Journal of the American Statistical Association*, v. 76, n. 373, p. 162–168, 1981. ISSN 01621459.

GRAZZI, M. Trade and profitability: Is there an export premium? Evidence from Italian manufacturing firms. 2009.

SERTI, F.; TOMASI, C. Self-selection and post-entry effects of exports: Evidence from Italian manufacturing firms. *Review of World Economics*, v. 144, n. 4, p. 660–694, 2008.