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Research Report

Product relatedness and firm exports in China

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Product relatedness and firm exports in China*

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Introduction

One of the most impressive dimensions of China's stellar export performance is the rapid diversification of the exports of its products. Since the 1980s, products "Made in China" have pervaded all sectors of world trade, including those that are typically considered to belong to the specialization areas of more developed countries, such as high-tech electronics and computers. . . . / . . .

* For a longer and more technical version of this paper see Sandra Poncet and Felipe Starosta de Waldemar, « Product relatedness and firm exports in China », FERDI Working Paper 58, 2012.

.../... China's rapid export upgrading is especially puzzling as the production of goods requires capabilities and products which vary greatly in their knowledge requirements. Since countries can only diversify by building on what they already have, China's export diversification suggests a particularly efficient ability to capitalize on its existing productive knowledge and exploit the links between products. Recent work has argued that the main factor behind successful upgrading is the consistency of the new industries with the country's latent (and evolving) comparative advantages.

► Products are of unequal merit

The recent strand of the literature has revived the claim that structural transformation is a key engine of economic growth. The main argument is that not all products have the same degree of relatedness (and hence the same position in the product space); as a result products have different potential, notably as platforms for jumping up to new economic activities. Greater link density between products is predicted to yield positive spillovers, such as knowledge externalities and economies of scale and scope. This relationship between production structure and economic performance has been found in a number of macro-level pieces of work: countries which are specialized in products with dense connections to other goods grow faster.

Little is however known on the efficiency gains from product spillovers on firm export performance. Analogously to the country-level effect, link density between products is expected to yield a premium for products that are close to those in the local export basket. The underlying idea is that they will then share similar requirements in terms of institutions, infrastructure, resources, technology, or some combination thereof. Products with denser connections to the local productive structure

should grow faster as they can capitalize on existing local capabilities.

► Evaluating the role of product relatedness on export performance

A recent study by Poncet et Starosta de Waldemar analyzing detailed level information of exports of Chinese firms confirms that the export performance of firms is associated positively with how their products relate to local comparative advantages.

This study relies on the indicator of proximity for each pair of products proposed by Hidalgo et al. (2007)¹. It is based on the idea that two products are similar when they are co-exported by numerous countries. A high co-exporting probability signals that they have similar requirements for their production in terms of institutions, infrastructure, resources, technology, or some combination thereof.

Computations are carried out for the year 2000 using bilateral trade flows around the world for the 5016 products in the international HS6 classification. Table 1 sets out the proximity measures for some particular product pairs, providing illustrative examples of how products are related to each other. Digital computers have a proximity value of 0.02 with oil, so that over the whole sample of countries exporting computers or oil with revealed comparative advantage, only 2% export the other product with revealed comparative advantage at the same time. This low value clearly indicates distinct requirements needed for the export of the two products. On the contrary, computers have relatively high proximity (0.32) to cars, suggesting that the requirements for computer and car export are quite similar.

1. Hidalgo, Cesar, Bailey Klinger, Albert-Laszlo Barabasi, and Ricardo Hausmann. 2007, « The Product Space Conditions the Development of Nations » *Science* 317(5837): 482-487.

Table 1. Bilateral proximity : selected pairs

	HS Code	Rice	Cotton T-shirt	Colour TV	Digital computer	Cars spark ignition engine < 1000 cc
Oil	270900	0.15	0.08	0.07	0.02	0.02
Rice	100610		0.09	0.04	0	0.09
Cotton T-shirt	610910			0.12	0.06	0.08
Colour TV	852810				0.03	0.4
Digital Computer	847120					0.32

Notes: The Hs for cars is 870321

► Results call for the exploitation of the pre-existing local specialisation

Findings that exports grow faster for goods that have denser links with those currently produced in the firm's locality suggest that density of links between products gives rise to export-enhancing spillovers. The authors however find that this positive export effect is mainly limited to domestic firms and ordinary trade activities. This result is consistent with the firms (mostly foreign) which are engaged in processing trade activity being less embedded in their local environment, and consequently their export performance being less related to how well their products conform to the local production structure.

Moreover, this relationship is stronger for more productive firms, indicating that spillover diffusion is contingent upon sufficient absorptive capacity.



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