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Import competition from and offshoring to China: A curse or blessing for firms?☆

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ABSTRACT

We use Belgian manufacturing firm-level data over the period 1996–2007 to analyze the impact of imports from different origins on firm employment growth, exit, and skill upgrading. For this purpose, we use both industry-level and firm-level imports by country of origin and further distinguish between firm-level offshoring of final versus intermediate goods. Results indicate that China is different from both other low-wage and OECD countries. Industry-level import competition from China reduces firm employment growth and induce skill upgrading in low-tech manufacturing industries. On the other hand, import competition has no effect on firm survival, while offshoring of finished goods to China actually increases firms' probability of survival. In terms of skill upgrading, the effect of Chinese imports is large. Import competition from China accounts for 27% (48%) of the total observed increase – within and between firms – in the share of non-production (highly educated) workers in low-tech Belgian manufacturing over our period of analysis. Offshoring to China further accounts for a small but significant increase in the share of non-production workers.

1. Introduction

For many developed countries, the past decade has been characterized by large and rising imports from China, a loss in manufacturing employment, firm exit and offshoring of especially low-skilled jobs to low-wage countries. This has triggered a substantial amount of research both from trade economists and labor economists in search of a causal relationship between imports from low-wage countries and labor market outcomes in (especially) developed countries. The purpose of this paper is to contribute to this literature by using firm-level panel data for Belgium including information on firm imports by source country. The use of this data offers several distinct innovations compared to the previous literature. First, by using firm-level data, we can control for firm heterogeneity and analyze within-industry reallocation effects across firms which was not possible in studies using industry-level data. Second, by having access to imports at the firm-level, we can distinguish between an industry-wide import competition effect and a firm-specific effect for those firms importing goods directly from low-wage countries (offshoring). Third, the degree of disaggregation of our data allows us to further distinguish two different types of firm-level offshoring: offshoring of intermediate and finished goods.[1]

Our empirical strategy in part follows Bernard et al. (2006) – and Biscourp and Kramarz (2007). Bernard et al. (2006) study the effects of industry-level import competition from low-wage countries on US manufacturing firms' employment growth and survival. We perform a similar analysis while introducing firm skill upgrading as a new margin of adjustment to foreign competition and focusing on China. Our results confirm the (modest) negative impact of low-wage countries' import competition on firms' employment growth while further qualifying China as special with respect to number of dimensions. Above all, our findings indicate that import competition from China,

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[1] Finished goods are defined as imported products that correspond to the main production activity of a firm. Other imports are defined as imports of intermediate goods. The purpose of this distinction is to broadly account for the different nature of imports of goods that are 'ready to be sold' versus imports of goods that will be further processed as inputs within a firm. In this respect, the terms finished and intermediate do not refer in our analysis to the 'proximity' of goods to consumers (as is typically the case) but rather to different stages of the production process of a particular firm.

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but not from other low-wage countries, is responsible for a large fraction of the observed skill upgrading in Belgian manufacturing. Indeed, Rodrik (2006) and Schott (2008) already pointed out that Chinese exports have different characteristics with respect to other low-wage countries, i.e., they are more sophisticated and show more overlap with products of OECD countries. Furthermore, Bloom et al. (2011) show that Chinese import competition is responsible for 15% of European technology upgrading over the period 2000–2007.

Concerning our analysis of firm-level offshoring, previous industry-level studies[2] did not allow researchers to: (i) control for firm heterogeneity; (ii) distinguish within-firm adjustment from between-firm adjustment; (iii) take into account the different effects of international sourcing depending on the final versus intermediate nature of the imported goods. One notable exception is Biscourp and Kramarz (2007). Like them, we use firm-level imports and distinguish between offshoring of intermediate goods and of final goods by countries of origin. But unlike their study, we address the endogeneity problem inherent in the use of firm-level imports by adopting an IV strategy and exploiting product-country-level tariffs and trade weighted exchange rates. Indeed, while allowing for a sharper analysis, the use of firm-level imports raises additional concerns about endogeneity, and in particular simultaneity, something which we will discuss in more detail when presenting our IVs.

While we look at several firm performance measures in this paper, the skill upgrading measures are arguably the focus of our interest. Since the late 1980s, there has been rising concern about low-skilled workers in developed countries. Both job opportunities and wages for low-skilled workers are decreasing relative to high-skilled workers. Several explanations have been put forward with skill-biased technological change (SBTC) having played a major role. While labor economists have provided a sizable amount of firm-level evidence relating to technological change and skill upgrading,[3] firm-level studies focusing on trade channels have only just started to surface.[4]

However, some recent developments in both trade theory and applied trade analyses have challenged the SBTC view. First, some scholars have stressed the complementarity between trade and technology (Acemoglu, 2003). Trade liberalization may alter the returns of different technologies and induce skill-biased technological change and skill upgrading. Additionally, trade economists have recently extended the traditional HO model and shifted the focus away from trade in goods to trade in tasks as well as to offshoring and outsourcing (Feenstra and Hanson, 1996; Grossman and Rossi-Hansberg, 2008). These innovations also provide a rationale for trade-induced skill upgrading. Finally, the recent trade literature spurred by, among others, Melitz (2003) seminal paper emphasizes the importance of firm heterogeneity and intra-industry reallocation patterns. Concerning the former, Bernard et al. (2010) show that when allowing firms to be multi-product the choice of the optimal product portfolio contributes to a reallocation of resources toward their most efficient use. The specialization of multi-product firms into more sophisticated skill-intensive products is another complementary explanation for skill upgrading.

The rapid growth of a country like China provides a good opportunity to study its role in these events. In this paper, we set out to test for a causal relationship between imports and the skill structure of Belgian firms. Our data allows us to single out the differential impact of import competition and offshoring as well as to measure workers' skill by their education level, which enables us to go beyond the crude distinction between production and non-production workers used in the literature (Feenstra and Hanson, 1996; Machin and Van Reenen, 1998). Our main findings show that China is different from other low-wage countries but also different from OECD countries and its separate inclusion in the analysis brings out new results. Industry-level import competition from China reduces firm employment growth and induces skill upgrading. In contrast, industry-level imports have no effect on Belgian firm survival, while firm-level offshoring of finished goods to China even enhanced firms' probability of survival. The effect of Chinese imports is large in terms of skill upgrading. Import competition from China accounts for 27% (48%) of the total observed increase – within and between firms – in the share of non-production (highly-educated) workers in low-tech Belgian manufacturing over our period of analysis. Firm-level offshoring to China of both finished and intermediate goods further accounts for a small but significant increase in the share of non-production workers.

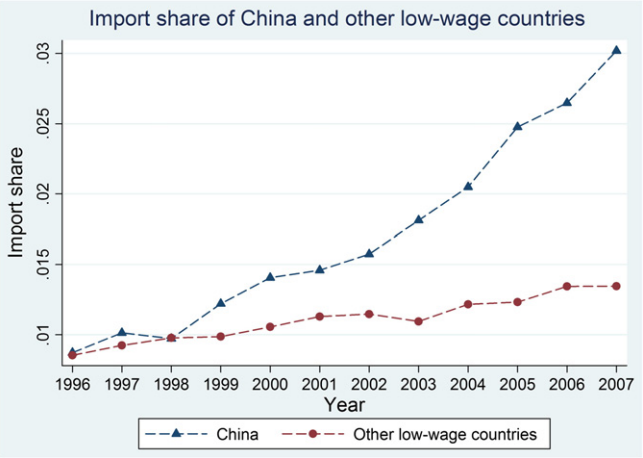

Fig. 1. Import share of China and other low-wage countries over the period 1996–2007.

The remainder of this paper is organized as follows. In Section 2, we provide some background information on Belgium and briefly review the theoretical literature relating to trade and skill upgrading. Section 3 describes the data and the instrumental variables. In Section 4, we present the econometric model and discuss estimations results. Section 5 offers some conclusions.

2. Some background on Belgium and the theoretical literature on skill upgrading

2.1. The rise of import competition and offshoring to China in Belgian manufacturing

In this Section, we provide some aggregate descriptive information on the key variables we analyze while relegating further details on, for example, the amount of identifying variation in the data to the Online Appendix.

Fig. 1 shows that China's import share for manufacturing as a whole increased substantially in Belgium over the period 1996–2007. Starting from the same level as other low-wage countries in 1996,[5] China's import share tripled during the period under review while the import share of other low-wage countries has only increased slightly. This remarkable difference is one of the empirical facts leading us to believe that China needs to be treated separately.

[2] Feenstra and Hanson (1999) for the US, Hijzen et al. (2005) for the UK, Falk and Koebel (2002) for Germany, etc.

[3] See, for example, Levy and Murnane (1996), Doms et al. (1997), and Bresnahan et al. (2002).

[4] There are some firm-level studies relating skill upgrading within multi-national firms, such as Head and Ries (2002) for Japanese multinationals, Hansson (2005) for Swedish multinationals, and Castellani et al. (2008) for Italian multinationals. However, such contributions focus on a specific group of firms (multinationals) only and it is thus questionable how to extend results to a larger spectrum of firms. Our paper also relates to some firm-level analysis about developing countries and trade, such as Bustos (2011) for Argentina and Verhoogen (2008) for Mexico.

[5] Countries having a per capita GDP lower than 5 percent of the U.S. per capita GDP in the year 1992 have been classified as low wage.