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Market size in globalization[☆]

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ABSTRACT

A salient feature of the current globalization is a loss of manufacturing in developed countries and rapid industrialization in middle-sized developing countries. This paper aims to construct a simple three-country trade and geography model with different market sizes and non-constant wage rates. The large country fosters industrial agglomeration (geographical concentration) in the early stage of globalization, but loses manufacturing in the later stage of globalization. When losing manufacturing, the large country might be worse off. Thus, the large country might have an incentive to implement welfare-maintaining policies to prevent a loss of manufacturing. All of these results can be explained by market sizes.

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1. Introduction

In the early nineteenth century, the development of manufacturing caused a sudden shift in hegemony towards the today's wealthy countries such as those in Western Europe, and away from the empires of China, India and the Middle East, which had to that point dominated the world economy for thousands of years. Pomeranz (2000) called this the "Great Divergence" and discussed the growth acceleration in Europe and the U.S., where manufacturing had been developed. These countries created industrial clusters/cities that lead to high economic growth, and dominated economics, politics, military power and culture all over the world. The economies of developed countries such as the U.S., Japan and those in Europe have grown substantially during the twentieth century, particularly in terms of per-capita income and GDP. However, according to Baldwin (2016), the Great Divergence ended in the 1990s, at which point the global shares of income and manufacturing of the developed countries began to decline. By contrast, some middle-income countries have developed industries rapidly, resulting in strong economic growth. He called this the "Great Convergence" as his book title suggests.

The current trends in globalization are characterized by large international trade flows and high capital mobility, facilitated by a substantial decline in transport costs and tariff barriers and the revolution in information and communication technology. Firms are mobile between countries, and the cites where production takes place are geographically concentrated. Some middle-income countries such as the Newly Industrialized Economies (NIEs) and the Association of Southeast Asian Nations (ASEAN) attract productive industries and create a high degree of industrial agglomeration. Amid the Great Convergence in the current globalization, growth paths across middle-income countries have diverged; some middle-income countries have experienced the convergence process and joined the group of developed countries, while other countries have become caught in the middle income trap with low economic growth (Jones, 1997; Bairoch and Kozul-Wright, 1998; Baldwin and Martin, 1999).

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Behind the drastic shift as mentioned above, a serious concern of globalization in developed countries is the loss of manufacturing to developing countries, known as offshoring in North America, delocation in Europe and hollowing-out in Japan. Many firms have ceased operations in developed countries and moved their manufacturing to developing countries in search of large workforces with lower wages. In the U.S., manufacturing industries facing severe competition by increased imports from low-wage countries saw higher exit rates of plants from the late 1970s to the 1990s (Bernard et al., 2006). Furthermore, the rise of China in the last few decades has negatively impacted the U.S. manufacturing employment and wages (Autor et al., 2013; Autor et al., 2014; Ebenstein et al., 2014; Acemoglu et al., 2016).[1] Autor et al. (2013) find that, of the decline in manufacturing employment between 1990 and 2007, one-quarter could be due to a surge in imports from China. Autor et al. (2014) report that workers in manufacturing industries facing import competition from China earn lower income over the period of 1992 to 2007 than those in other sectors. Political debate on anti-globalism addresses the issue of how to stop firm relocation and keep jobs in developed countries.

To illustrate the rise and fall of manufacturing across countries, we construct a simple three-country trade and geography model with different market sizes. We show that in the early stages of globalization (i.e., high or intermediate levels of trade costs), manufacturing firms are concentrated in the large country, but further progression of globalization (i.e., low trade costs) causes offshoring from the large to the smaller countries. Offshoring might worsen welfare in the large country, which might justify policy intervention. On the other hand, the outcome for the middle country is mixed and depends on its market size.

1.1. Relation to the literature

The literature on trade and economic geography has addressed the question of how trade liberalization affects firm locations across countries. The common finding using a variety of standard trade and geography models (Fujita et al., 1999; Baldwin et al., 2003; Fujita and Thisse, 2013) is that lowering trade costs results in geographical concentration of all firms in one region, which is the so-called core-periphery structure. Once all firms are concentrated at the core by agglomeration forces, which always dominates dispersion forces, all firms remain at the core even in the case of extremely low trade costs. This standard outcome cannot perfectly explain the above-mentioned consequences of recent globalization; globalization triggers the collapse of industrial clusters in developed countries and facilitates industrial development in middle-sized countries. One reason why the standard trade and geography model fails to explain these phenomena comes from its basic theoretical structure: the two-country setting and constant wage rates. To characterize the recent globalization, we relax these assumptions and extend our analysis to a three-country model with wage rates varying in market size and firm share.

The three-country setting in our model can highlight the role of intermediate-sized countries in the agglomeration process. The trade and economic geography literature to date ignores asymmetric country size in a three-country framework, apart from a few studies. A limited number of three country/region models (e.g., Krugman and Livas Elizondo, 1996; Takahashi, 2003; Ago et al., 2006; Saito et al., 2011; Forslid, 2011; Brülhart et al., 2012; Gaspar et al., 2017) have provided numerous interesting results not found in two-country models. Krugman and Livas Elizondo (1996) develop a model with two domestic regions and one foreign country, and find that lower trade costs against the foreign country lead industries to spread across the two domestic regions.[2] The closest paper to ours is Forslid (2011).[3] He extends the footloose capital (FC) model of Martin and Rogers (1995) to a three-country setting in which the three countries have different market sizes, and firms are mobile across countries. He studies the impact of market size difference on the agglomeration process. As trade costs fall, firms in the small country first relocate to the large country. After all firms in the small country have relocated to the large country, firms in the middle country start relocating. Finally, all firms end up relocating to the large country. In his model, wage rates are normalized and thus agglomeration is simply caused by the interaction of market size difference and trade costs. An implication of Forslid (2011) is how substantial reductions in trade costs and development of infrastructure affect firm location patterns within Europe.

Another important aspect of our paper is non-constant wage rates, i.e., wage rates varying in market size and firm share. The standard economic geography models use the model of Helpman and Krugman (1985), i.e., two-country and two-sector model with the Dixit-Stiglitz monopolistic competition. The model has one monopolistic competitive sector with trade costs (manufacturing sector) and one perfectly competitive sector without trade costs (agricultural or numéraire sector). A crucial mechanism is that the presence of an agricultural good can normalize wage rates between the two countries. The wage equalization can simplify the analysis, but it ignores wage disparities in the globalization process. Thus, to characterize wage rates varying in market size and firm share, we relax the standard assumption by assuming away the tradable numéraire good with no trade costs. Instead, our model introduces a non-tradable numéraire good (infinite trade costs for the agricultural good). In other words, this is an extreme case of Davis (1998), who imposes trade costs on the agricultural sector, thus allowing for non-constant wage rates.[4] The labor market clearing process determines wage rates. As firms geographically concentrate in one country, a rise of labor demand boosts wage rates, which moderates the agglomeration process. In short, non-constant wages operate as a dispersion force.

Non-constant wages in the Dixit-Stiglitz monopolistic competition model have been studied mainly in the literature on the home market effect (Davis, 1998; Head and Ries, 2001; Brülhart et al., 2004; Davis and Weinstein, 1999, 2002; Crozet and Trionfetti, 2008; Takatsuka and Zeng, 2012). The definition of the home market effect

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[1] Section 7.4 links our theoretical results with these empirical findings. The negative impact of increased Chinese import competition on firm performance and labor-market outcome is found in other Western countries; Belgium (Mion and Zhu, 2013), Norway (Balsvik et al., 2015), and 12 European countries (Bloom et al., 2016). See Haskel et al. (2012) and Autor et al. (2016) for comprehensive surveys.

[2] Extensions to three-country models often provide richer insights than two-country models. Takahashi (2003) finds the possibility of inefficient locations driven by factor mobility. Using a model with a linear demand function, Ago et al. (2006) find that the hub country with good transport access from the other countries could lose manufacturing because of severe competition. Saito et al. (2011) incorporate firm heterogeneity into the model of Krugman and Livas Elizondo (1996). They discuss how a fall in trade costs affects firm locations as well as regional average productivities in the two domestic regions. Brülhart et al. (2012) empirically examine how regional employment and wages in Austria were affected by the opening of Central and Eastern European markets after the end of the cold war. Then they show that their empirical findings can be supported by a three-region economic geography model. Gaspar et al. (2017) investigate the bifurcation of equilibrium in a symmetric multi-region footloose entrepreneur model.

[3] See also Matsuyama (1999, 2017)'s multi-region model with constant wages and a more general spatial structure.

[4] To our knowledge, there are three standard approaches to non-constant wage rates in the literature. One is using a one-sector model: monopolistic competition sector à la Krugman (1980). Recent applications include Takahashi et al. (2013), Zeng and Uchikawa (2014) and Mossay and Tabuchi (2015). Under this approach, the trade balance endogenously determines wage rates between countries. The second method is to allow for trade costs in the numéraire sector (agriculture) à la Davis (1998) and Takatsuka and Zeng (2012). This drops the assumption of costless trade in the numéraire sector. The third method is to introduce differentiated products in a constant-returns-to-scale perfect competition sector (Head and Ries, 2001). Our model adopts the second approach.

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