The Effect of Globalization in an Endogenous Growth Model with Firm Heterogeneity, International Spillover, and Trade

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Abstract

This paper shows that increased trade liberalization elevates the growth rate if and only if the beachhead cost for the foreign market is strictly lower than that for the domestic market in an endogenous growth model with firm heterogeneity, international trade, and endogenous international spillover. Moreover, this condition is a sufficient condition for welfare gain through further exposure to trade.

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1. Introduction

According to the World Bank (1995), maritime transportation cost decreased from 1920 to 1990, albeit not monotonically, while air transportation cost decreased monotonically. Hummels (2007) shows that, *ad valorem*, except in the mid-1980s and for the initial period in the 2000s, air shipping and ocean shipping costs decreased between 1974 and 2004. Jacks et al. (2011) show that trade costs for the U.S. fluctuated between 1950 and 1960, declined between 1960 and 1980, and have increased since then. Except around the 1960s, trade costs for the U.S. declined consistently, especially in the 1980s and the mid-1990s. How does trade liberalization affect economic growth? According to empirical analyses, trade liberalization affects growth positively or negatively. For example, Edwards (1998) finds that greater trade openness led to higher growth rates for 93 countries between 1960 and 1990.[2] Yanikkaya (2003) finds that trade volume, including import and export, positively affects growtt, but trade restrictions like tariff and export tax led to lower growth for 100 developed and developing countries between 1970 and 1997. Dejong and Ripoll (2006) show that trade liberalization has a positive (negative) growth effect among rich (poor) countries. Minier and Unel (2013) show that trade restriction represented by tariff affected growth ambiguously for 86 countries between 1985 and 2007.

[2] See Frankel and Romer (1999) and Sachs and Warner (1995).

Recent research has demonstrated that firm heterogeneity plays an important role in international trade. For example, different firms have different productivities within an industry. Moreover, each firm exclusively chooses domestic or exporting firm who serve domestic as well as foreign markets according to the levels of productivities. Following trade liberalization, trade reallocates resources from the less productive to the more productive exporting or non-exporting firms by shutting down the less productive firms and increasing exports; thus, industrial productivity rises.[3] Based on these empirical findings, Melitz (2003) provides a monopolistically competitive model of trade with firm heterogeneity. Furthermore, based on Melitz (2003), some economists focus on the effects of firm heterogeneity on economic growth following trade liberalization. More recently, the effect of trade liberalization on growth rate and welfare is examined in a trade model with firm heterogeneity. Baldwin and Robert-Nicoud (2008) show that trade liberalization has an adverse effect on economic growth under exogenous international spillover. This is because it causes productive non-exporting firms to start exporting, and less productive domestic firms exit due to fierce competition between domestic and foreign firms. This lowers the ex-ante probability of a firm becoming a production firm, which in turn increases R&D costs. Coe and Helpman (1995) observe that imports convey international knowledge spillover among trade partners

[3] See Bernard et al. (2006).

in the R&D sector. Put differently, the amount of international spillover is endogenous, not exogenous. Based on Coe and Helpman (1995), they too consider the endogenous international spillover case. They assume that the fraction of the value of imported goods of the values of goods produced in the trading country. More specifically, knowledge spillover from the trading country depends on the export cutoff relative to the zero profit cutoff. Even in the case of endogenous international spillover, trade liberalization decreases economic growth. As we explain above, trade liberalization increases R&D costs and increased international spillover decreases R&D costs. The first negative channel unambiguously dominates the second one, and thus, growth rate decreases through trade liberalization. Moreover, there is an ambiguous effect on welfare because of the negative channel of decrease in the growth rate and higher R&D costs, and while there is a positive effect through increase in the weighted average of productivity among production firms, they do not derive a parameter condition for gains from trade.

This result seems to be the general result, but their analyses are limited to only one of the parameters consistent with the real world. They focus on the parameter case that the sunk cost for exports is greater than that for the domestic market. The results of the numerical analysis based on Davis and Harrigan (2011) show that the opposite case also appears plausible. When the trade cost is at the current level and there are fewer (more) inefficient

firms, the sunk cost for the domestic market is higher (lower) than that for the foreign market. Accordingly, this paper shows that globalization increases (decreases) economic growth when the sunk beachhead cost for the domestic market is higher (lower) than that for the foreign market in a model with firm heterogeneity and endogenous international spillover. Moreover, we show that further exposure to trade leads to higher welfare under the exact same condition.[4] While it leads to lower expenditure, we see a lower price index through higher growth rate and lower expected marginal costs, which in turn dominate the negative effect of lower expenditure.

This paper shows that endogenous international spillover plays an important role in economic growth, because Baldwin and Robert-Nicoud (2008) and Unel (2010) show that further exposure to international trade necessarily decreases economic growth in the exogenous international spillover model and may increase economic growth in all other endogenous international spillover models.

The rest of the paper is organized as follows. In section 2, we describe and explain the model. In section 3, we offer our concluding remarks.

[4] This condition is a sufficient condition for increased welfare through trade liberalization.