Trade protection and firm selection: The US protectionist trade policy

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Abstract

In 2018, the US started trade war against China, imposing high tariffs against Chinese exports. COVID-19 exposes the weakness of US supply chain and its dependence on China, which tends to intensify US trade protectionism against China. Foreign invested firms in China have a high engagement in foreign trade. How will these firms react to US trade protectionism? Will firms select other locations to produce? This paper develops a firm heterogeneity CGE model to simulate the choices of foreign invested firms in terms of location by incorporating relation cost into model. Results show that trade protection would drive foreign invested firms to relocate from China to other regions. However, when considering relocation cost, the drop of foreign firm numbers is reduced. When China continuously improves business environment to reduce the cost of foreign firms in adapting to China's market, even more firms will stay in China.

In addition, we simulate without trade war, leaving China to grow. In long run, the growth of GDP and the slow growth of population would accompany with increases of labor cost. China will gradually lose its advantage in being the "world factory". The world supply chain would relocate to other countries along with the selection of multinational enterprises by then. China's export to the US would drop and the dependence of US to China's supply chain would decline simultaneously. Our simulation results suggest that trade war is not an efficient way to deal with the supply chain problem, but free trade is.

Keywords: protectionism, foreign invested firm, relocation, CGE

Introduction

In 2018, the US started trade war against China, imposing high tariffs against Chinese exports. Later, COVID-19 exposes the high dependence of US supply chain on China and other countries of the world, which intensifies US protectionism against China. The trade protection not only deters Chinese firms to export, but also blocks foreign invested firms in China to export. In China, foreign invested firms contribute 40% of exports. Trade protection from such an important market as US would force foreign firms in China to think about relocation. For instance, Taiwanese firms, a main source of FDI in China mainland, set up new plants in the US, Mexico, India, East Europe and ASEAN, and at the meantime, reduce Chinese business. In 2020, Foxconn, a Taiwanese firm, has moved 30% of business out of China.

However, relocation consumes money. The sunk cost invested in the original host market cannot be get back and to move to a new host country, firms need to invest new sunk cost again. Therefore, the relocation cost needs to be taken into account in analyzing the effects of trade protection on firm's location choice.

When taking relocation cost into consideration, how many foreign firms will be forced to move out of China by heavy tariffs of the US? Will trade protectionism is an efficiency policy tool to move

supply chain of US out of China? If not, then what is a better way for US?

In this paper, we develop a firm heterogeneous Computable General Equilibrium (CGE) model to simulate with the US-China trade relationship. The model is based on the FHFDI (firm heterogeneous foreign direct investment) model of Q. Li, Scollay, and Gilbert (2017). The FHFDI model can simulate the behavior of foreign invested firms because the model separates foreign firms from domestic firms. This paper extends the model by further splitting foreign invested firms into first-relocation firms and second-relocation firms.

Simulation results show that trade protection would drive foreign invested firms to relocate from China to other regions. However, when considering relocation cost, the drop of foreign firm numbers is reduced. When China continuously improves business environment to reduce the cost of foreign firms in adapting to China's market, even more firms will stay in China.

In addition, we simulate without trade war, leaving China to grow. In long run, the growth of GDP and the slow growth of population would accompany with increases of labor cost. China will gradually lose its advantage in being the "world factory". The world supply chain would relocate to other countries along with the selection of multinational enterprises by then. China's export to the US would drop and the dependence of US to China's supply chain would decline simultaneously. Our simulation results suggest that trade war is not an efficient way to deal with the supply chain problem, but free trade is.

Model

We extend the FHFDI (firm heterogeneity foreign direct investment) model of Q. Li, Scollay, and Gilbert (2017) to simulate US trade protectionism against China. The FHFDI model is able to simulate the behavior of foreign invested firms by separating domestic firms and foreign owned firms. In this paper, we further split foreign firms into first-relocation firms and second-relocation firms. The first-relocation firms refer to those subsidies that are set up by parent firms in the host country, while the second-relocation firms refer to those subsidies that are moved by parent firms from other host regions to a new host country.

Within the firm heterogeneity framework, the parent firms pay sunk cost to enter an industry, and then pay fixed trading cost to enter a foreign market via foreign direct investment (FDI). In our extension, for the second relocation from the original host country to a new host country, multinational enterprises (MNEs) pay fixed trading costs again to enter the new host market. Thus, the second-relocation firms pay entry cost once and fixed trading cost twice. Accordingly, the productivity threshold for second-relocation firms is:

$$\varphi F_{gioj}^{s^*} = \frac{\tau_{oj}^s CF_{gioj}^s}{(\sigma^s - 1)} \left(\frac{P_j^s}{\sigma^s \left(1 + t_{oj}^s\right)\left(1 + v_j^s\right)} \right)^{\frac{\sigma^s}{1-\sigma^s}} \left(\frac{FF_{gij}^s + FF_{goj}^s}{Q_j^s \left(1 + v_j^s \sigma^s\right) \theta_{oj}^s \theta FS_{oj}^s \theta F_{goj}^s \theta FR_{gioj}^s} \right)^{\frac{1}{\sigma^s - 1}} \quad (1)$$

$\varphi F_{gioj}^{s^*}$ is the productivity threshold of foreign invested firms.g is the home region, i is the first host region, o is the second host region, j is market, and s is sector. FF_{gij}^s is the fixed trading cost paid when MNEs relocate production plant from home region g to host region i, and FF_{goj}^s is the fixed trading cost paid when MNEs relocate production plant from home region g to host region o.

$FF_{gij}^{s} + FF_{goj}^{s}$ is the fixed trading costs paid when MNEs first relocate plant to region i and then move to region o. In competition with first-relocation firms in region o, second-relocation firms have an extra fixed cost of FF_{gij}^{s}, which is sunk cost occurred in the first host country. Therefore, second-relocation firms have higher productivity requirement than first-relocation firms due to the higher fixed trading cost. The high productivity requirement indicates that there are few firms can move from one host to another host. This can explain the slow movement of Foxconn, a Taiwan company invested in the mainland China, from China to other countries. In 2020, Foxconn moved 5% of its business out of China. Seventy percent of its business still stay in China.