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Estimating the Macroeconomic Effects of Each Totalization Agreement

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Beginning in the late 1970s, the United States established a network of Social Security agreements that coordinate the U.S. Social Security program with other countries' comparable programs. These international social security agreements, often called the "totalization agreements," have three main purposes. First, they eliminate dual social security taxation, the situation that occurs when a worker from one country works in another country and is required to pay social security taxes to both countries on the same earnings. Second, the agreements help fill gaps in benefit protection for workers who have divided their careers between the U.S. and another country. Finally, totalization agreements permit unrestricted benefit payments to residents of the two countries.

Conceptually, by reducing the tax and increasing benefit protection for U.S. citizens working in other countries and vice versa, the totalization agreements should have a positive effect on U.S. citizens working in countries that have signed such an agreement with the U.S., as well as the citizens from those countries working in the U.S. By promoting international labor mobility, the totalization agreements could also affect other macroeconomic outcomes such as bilateral trade and foreign direct investment (FDI).

Empirically, Seshadri (2019) finds that, on average, the totalization agreements reduce U.S. exports and increase U.S. imports and FDI, with the effects on exports being more significant economically and statistically. Moreover, the effects are estimated to be quite heterogeneous across countries/agreements. For example, although most of the totalization agreements are estimated to reduce U.S. exports, the estimates suggest an increase in U.S. exports due to the totalization agreements with countries such as Finland, Ireland, and the Czech Republic. Similarly, contrary to the average effect that sees an increase in U.S. imports, the estimates suggest a decrease in U.S. imports due to the totalization agreements with countries such as Italy, Germany, Norway, Sweden, Portugal, South Korea, and Australia.

The goal of this paper is to provide a better understanding of the macroeconomic effects of each totalization agreement. Motivated by Seshadri (2019), we focus on

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the totalization agreements' heterogenous effects on bilateral trade and proceed in three steps. First, we use the synthetic control method to estimate the impact of each totalization agreement. In addition to the impacts on total exports and total imports as in Seshadri (2019), we also estimate the impacts on exports and imports by sector (two-digit Standard International Trade Classification code). Moreover, we measure the credibility of each synthetic control estimate using the associated root mean squared prediction error. Less credible estimates are ignored. Overall, the results from this step are similar to those in Seshadri (2019): The impact is estimated to be heterogeneous across agreements; on average the agreements decreased total exports by more than they increased total imports; the impact is also heterogeneous across sectors.

Second, we investigate the patterns underlying the heterogeneity across the estimated impacts on total exports and total imports. We find agreements that entered into force more recently tend to increase total imports and decrease total exports by more than earlier agreements. We find no significant relationship between totalization agreements' estimated impacts on bilateral trade and economic indicators such as the trade complementarity index between the U.S. and the agreement countries.

Finally, we move beyond the heterogeneity across agreements/countries and explore the patterns underlying the heterogeneous impacts across sectors within an agreement/country. We find sectors where the U.S. has a larger revealed comparative advantage relative to the agreement country tend to experience a larger increase in exports following the totalization agreement. However, there is no significant relationship between revealed comparative advantage and the estimated impact on imports across sectors.

In short, this paper makes two key findings: (1) more recent totalization agreements tend to increase total imports and decrease total exports by more than earlier agreements; and (2) within an agreement and regardless of the implementation date, sectors where the U.S. has a larger revealed comparative advantage tend to experience a larger increase in exports following the totalization agreements. ❖

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