

Endogenous Labor Supply and the Gains from International Trade

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Recent empirical evidence documents that international trade shocks have substantial effects on employment across regional labor markets – see e.g., Autor, Dorn and Hanson (2013), and Dix-Carneiro and Kovak (2016). Despite this evidence, general equilibrium trade models have hitherto overlooked the welfare consequences of endogenous response of labor supply following a trade liberalization. In this paper, we propose a novel framework to investigate the local and aggregate impacts of trade cost shocks on employment and real wages.

We consider a standard gravity model featuring endogenous local labor supply and local agglomeration forces. In this environment, we show that the interaction between these two ingredients amplifies the welfare effects of international trade shocks, with the amplification channel magnitude given by the elasticity of local employment to the local domestic trade share. Starting from any initial equilibrium, we establish that the response in local and aggregate employment to international trade shock can be computed with knowledge of this elasticity and usual measures of the trade elasticity and the labor supply elasticity. Intuitively, as in standard gravity models, the domestic trade share is a sufficient statistic for the world demand for labor in a local market, but its effect on welfare is no longer determined solely by the response of bilateral trade flows to bilateral trade cost shocks. Instead, the initial local impact of an international trade shock on the real wage induces

a local response in employment that further affects real wages through local agglomeration forces arising, for example, from endogenous firm entry or productivity spillovers.

We then propose a novel methodology to estimate the central elasticity in our model using a sample of local labor markets. We construct moment conditions that combine regional data on employment and domestic trade share with changes in regional domestic trade share predicted by our general equilibrium model following observable trade cost shocks in foreign countries. Specifically, we obtain regional shifters of the domestic trade shares using the methodology in Dekle et al. (2008) to compute counterfactual changes in the world trade equilibrium implied by bilateral trade cost shocks. Our methodology has several advantages. First, the model-implied instrument relies on standard forces in gravity models: the region's direct and indirect exposure to trade cost shocks through the world trade network. Second, the moment conditions clearly delineate the main exogeneity assumption required for identification: regional labor supply and productivity shocks are mean-independent from foreign trade cost shocks and the initial trade network. Third, our approach yields a new over-identification test for the validity of the general equilibrium channels in the model that uses moment conditions constructed from shocks in different foreign countries. The intuition behind the empirical strategy is more general than our benchmark framework, and it can be applied in a wide classes of models.

Finally, we apply our methodology to evaluate the impact of the recent integration of China to the world equilibrium on employment across US states. To this end, we create a trade matrix including US states and foreign countries between 1997 and 2012. Using actual changes in Chinese trade costs, our preliminary results indicate that, across US states, the changes in the domestic trade share predicted by our general equilibrium model are (i) positively correlated with actual changes in the domestic trade share, and (ii) negatively correlated with total employment, labor force participation, and total population. Our structural estimates suggest the importance of agglomeration forces in the response of local employment to international trade shocks.