

Delay and dynamics in labor market adjustment: Simulation results [☆]

Erhan Artuç ^a, Shubham Chaudhuri ^b, John McLaren ^{c,*}

^a *Koç University, Rumelifeneri Yolu, 34450 Sariyer, Istanbul, Turkey*

^b *East Asia and Pacific Poverty Reduction and Economic Management Department, The World Bank, 1818 H Street, NW Washington, DC 20433, United States*

^c *Department of Economics, University of Virginia, 2015 Ivy Road, Room: 312, Charlottesville, VA, 22903 United States*

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Abstract

We simulate numerically a trade model with labor mobility costs added, modeled in such a way as to generate gross flows in excess of net flows. Adjustment to a trade shock can be slow with plausible parameter values. In our base case, the economy moves 95% of the distance to the new steady state in approximately eight years. Gross flows have a large effect on this rate of adjustment and on the normative effects of trade. Announcing and delaying the liberalization can build – or destroy – a constituency for free trade. We study the conditions under which these contrasting outcomes occur.

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Despite its importance, the imperfect mobility of workers within their economy has usually been ignored in research on international trade. Familiar workhorse models assume either perfect mobility or (less often) perfect immobility of workers across sectors.

This paper studies a recent theoretical model that has been designed to address this gap, by simulating the model numerically to generate answers to questions that are difficult to resolve analytically. Cameron, Chaudhuri and McLaren (2007) present a model of a small open economy with workers who face moving costs to switch sectors or to move geographically within the country. These costs have a common component and a time-varying idiosyncratic component. Workers must choose their location at each date, which amounts to a problem of investment under uncertainty with rational expectations. The presence of the idiosyncratic shocks means that the model produces gross flows in excess of net flows, gradual adjustment of the economy to a trade shock, anticipatory adjustment to an expected future shock, and long-run wage differentials across sectors and locations, all of which are important

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* Corresponding author.

E-mail addresses: eartuc@ku.edu.tr (E. Artuç), jmclaren@virginia.edu (J. McLaren).

empirically. Chaudhuri and McLaren (2007) (henceforth CM) studies a simple special case of this model in which there are two sectors, each in one geographic location, essentially a dynamic version of the familiar Ricardo–Viner model (see Mussa (1974)). It is that model that is studied in this paper.

Specifically, we consider an economy initially in a steady state with a tariff that is then opened to free trade, in two possible ways: first, sudden, unannounced liberalization, and then delayed, pre-announced liberalization. We study the time-path of the economy's adjustment, the evolution of wages, and the welfare of workers in exporting and import-competing sectors. We find that both the positive and the normative effects of trade can be very different for an anticipated and an unanticipated liberalization, and also for different parameter values that yield different levels of gross flows.

Various approaches have been used to incorporate imperfect labor mobility into trade models. One approach has been to adapt the convex adjustment cost assumed for capital in Mussa (1978) to labor, reinterpreting it perhaps as a retraining cost. Examples of this are Karp and Thierry (1994) and Dehejia (2003). Another is to assume that each worker must pay a fixed cost to switch sectors. Examples include Dixit (1993) and Dixit and Rob (1994) in a dynamic model with stochastic shocks to labor demand across sectors, and Feenstra and Lewis (1994) in a static model. These all have in common the property that if labor moves across sectors, it all moves in the same direction at any one time, or in other words, gross flows are equal to net flows.

An approach that allows for gross flows in excess of net flows is explored in Davidson et al. (1999) and Davidson and Matusz (2001). This approach is based on search theory; workers may leave one sector to find a job in another, but at the cost of temporary unemployment while looking for a vacancy. The approach pursued in the current paper differs from that series in a variety of ways, but most crucially it has been designed to be as close as possible to familiar trade models. For example, Davidson et al. (1999) show that in a model with the usual sources of comparative advantage shut down, a country can still have gains from trade due to differences in search technology across countries. In our model, by contrast, the gains from trade stem from the same sources as in a Ricardo–Viner model.

A major focus of this paper is the effect of delay in trade liberalization, or the practice of government announcing a future elimination of trade barriers in order to allow private agents time to adjust. This is a special case of 'gradualism,' or liberalization through scheduled progressive stages, which is an extremely common practice in real-world trade reform. Mussa (1978) showed that in a neoclassical model there is no strictly economic argument for gradualism. Staiger (1995) and Bond and Park (2002) examine different reasons that gradualism can be useful in loosening incentive-compatibility constraints in bilateral liberalization without commitment. Dehejia (2003) shows that, in a labor-rich Heckscher–Ohlin economy with convex moving costs for labor, gradualism can make the import-competing workers net beneficiaries from trade reform, instead of net losers. This can make the liberalization politically feasible, while a 'shock therapy' liberalization would have been infeasible. In this paper, we will explore the Dehejia argument with a different model, one featuring gross flows, and arrive at quite different results.

The next section lays out the model, the following one reports some baseline simulations showing how changes in the moving cost parameters change the economy's dynamic adjustment, and the subsequent section studies in detail the possible attractiveness of delayed liberalization as a way of spreading the benefits of trade more widely.

1. The model

Consider a small open economy that can produce two goods, X and Y . Good Y is the numeraire, and the price of X is denoted by p . Both goods are produced under competitive conditions with constant-returns-to-scale technology $q^i = Q^i(L^i, K^i)$, where q^i denotes output in sector i , L^i and K^i denote labor and capital employed in sector i respectively. Capital in each sector is inelastically supplied, and is specific to its sector. The total supply of labor in the economy is exogenously given at a value L^- , so at all points the adding-up condition for labor must hold:

$$L^X + L^Y = L^-.$$

Workers can move from one sector to another over time, but at each date the supply of labor to each sector is fixed by location decisions in previous periods. Wages in each sector adjust to clear the spot market for labor at each date:

$$\begin{aligned} \tilde{w}_t^X &= p \partial Q^X(L_t^X, K_t^X) / \partial L^X, \\ \tilde{w}_t^Y &= \partial Q^Y(L_t^Y, K_t^Y) / \partial L^Y, \end{aligned} \quad (1)$$

where a subscript indicates time and \tilde{w}_t^i is the wage in sector i in period t , denominated in terms of the numeraire.

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