

Structural Change in an Open Economy

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We study the impact of international trade on structural change. The central fact of structural change is that, over time, the employment share of agriculture declines, the employment share of services increases, and the employment share of manufacturing follows a "hump" pattern. Recently, several closed-economy models have been developed to explain these facts including Kongsamut *et al* (ReStud, 2001), Ngai and Pissarides (AER, 2008), and Acemoglu and Guerrieri (JPE, 2008). All of these models link sectoral employment tightly to sectoral expenditure because supply equals demand in each sector, and thus the preferences (elasticities of substitution and income) drive the patterns of structural change.¹ This tight linkage, however, breaks down with trade because production can exceed spending via exports, and spending can exceed production via imports. Trade allows the sector with increasing comparative advantage over time to export a greater fraction of output and to increase its employment share over time.

Considering the impact of trade on structural change is empirically relevant, especially for the East Asian and other countries that became more open in recent decades and now have high trade shares. In many of these countries, manufacturing has the highest productivity growth. The Ngai and Pissarides model would imply that the manufacturing employment share declines over time, which is counterfactual for these and other countries. Indeed, a regression with a sample of emerging market countries shows that the manufacturing employment share experiences more of a hump in the high trade countries than in the low trade countries.

In this paper we develop an open economy model of structural change. In the model, agriculture and manufacturing goods are tradable, while services are non-traded. The motive for trade in manufactured goods is Ricardian; that is, productivity differences are the source of comparative advantage. We demonstrate that even if manufacturing has the highest productivity growth, a hump shape is possible. For example, under trade, a country could run a net export surplus in manufactured goods, and a corresponding deficit in agricultural goods. The surplus in manufactured goods could have a sufficiently large effect that the manufacturing employment share increases, at least for a while. Our finding extends and generalizes a result by Matsuyama (JEEA, 2009). In addition, we show that the more open a country, the quicker it experiences structural change.

We calibrate the model to several East Asian countries and quantify the impact of opening up to trade on structural change. We parameterize the model to be consistent with the key initial conditions, as well as the behavior of relative prices over time, in these countries. We then subject the model to sectoral productivity growth rates consistent with what was observed in the data and examine the implications.

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¹In Kongsamut *et al*, all sectors grow at the same rate and relative prices are constant; the sector with the lowest income elasticity has declining expenditure and employment shares. In the other two papers, all sectors have the same income elasticity; the sector with the highest real growth has declining expenditure and employment shares because its relative prices fall and the elasticity of substitution is less than one. In Ngai and Pissarides, the sector with the highest real growth is the sector with the highest TFP growth. In Acemoglu and Guerrieri, the sector with the highest real growth is the sector that uses intensively the factor with the highest growth.