

Structural Transformation

Background

The baseline models we're working with have all assumed that there is a single type of homogenous output. Obviously, this ignores the fact that economies produce a variety of goods. At a gross level, we often divide the economy into three main sectors: agriculture, manufacturing, and services. And the share of economic activity attributed to each of these sectors varies as countries grow richer, a process known as structural transformation.

Herrendorf, Rogerson, and Valentinyi (2012) use data from across countries to identify several strong trends in the share of *nominal* expenditure of each major sector as countries get richer overall.

As countries get richer (in terms of aggregate GDP per capita), their expenditure share on agriculture falls, while their expenditure share on services rises. The expenditure share of manufacturing rises and then falls. Note that these are shares, not totals. In each case, countries consume *more* of the output of each sector as they get richer.

To enhance our baseline models, we'd like to see how they incorporate multiple sectors. In particular, how aggregate productivity depends on the productivity of individual sectors.

Project

Write a model in which there are an arbitrary number of sectors, each producing different goods or services.

1. A production technology for each sector
2. An adding-up condition combining the value of output across sectors into the total value of aggregate output
3. An assumption about how firms within each sector compete
4. An assumption about how markets for capital and labor
5. An assumption about demand for the output of each sector

With your model, you should be able to provide explanations for

- The share of labor and capital employed in each sector
- The relative price of the output of each sector
- The level of aggregate total factor productivity and the growth rate of aggregate total factor productivity
- Why a sector like manufacturing could rise and then fall as a share of nominal expenditures as countries get richer

Rules

You can (and probably should) work on this project in groups of 2 or 3, and I will assist and evaluate you as a group.

Figure 6: Sectoral Shares of Nominal Value Added – Cross Sections from UN National Accounts 1975–2005

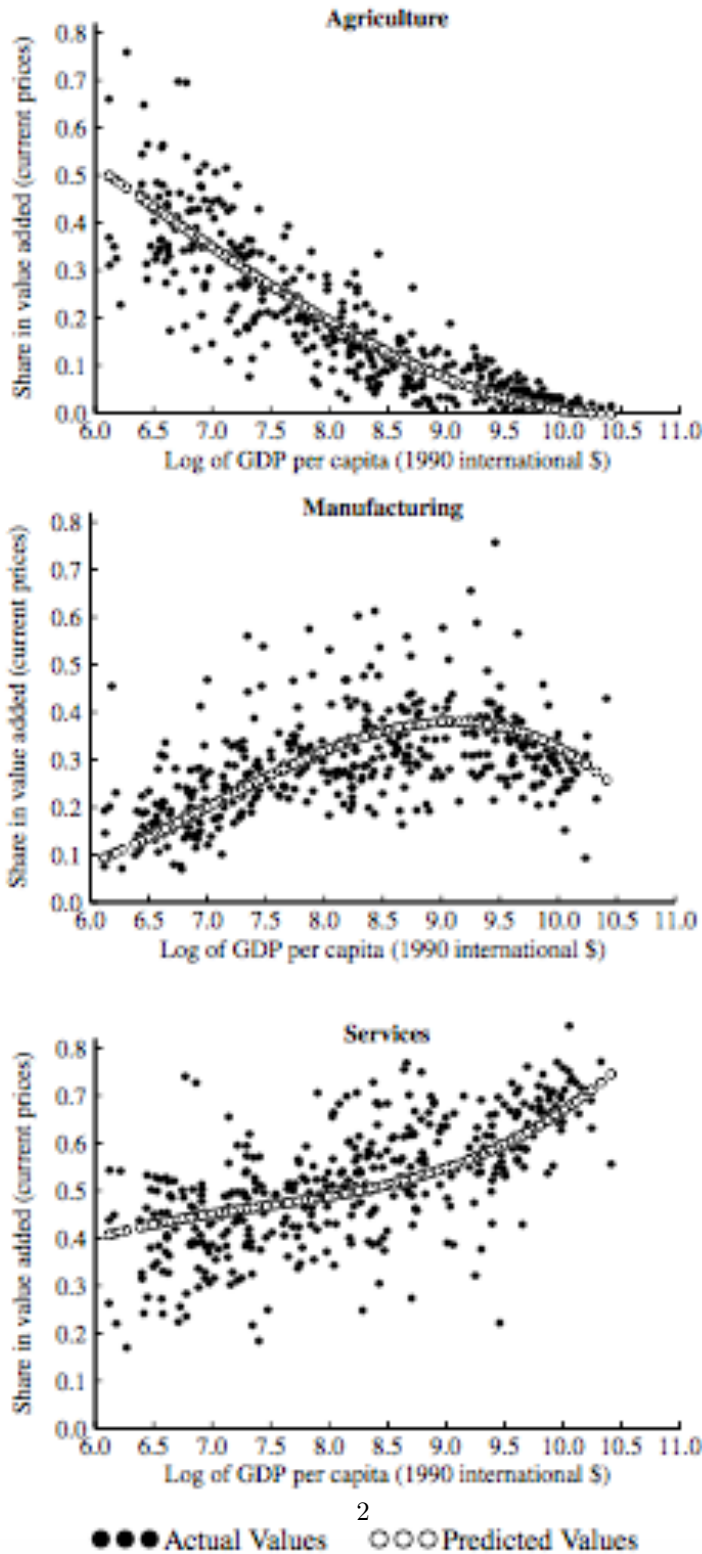


Figure 1: Sector Shares of Nominal Expenditure