

## Taking Account...

### **New BEA paper on vertical specialization trade**

Manufacturing trade and vertical specialization trade, which can be defined as trade in goods that incorporate imported inputs, have both grown rapidly since the 1960s. In a recent working paper, Benjamin Bridgman, an economist at the Bureau of Economic Analysis (BEA), examined historical patterns of such trade and found that in both cases, declining trade costs were important explanations of growth.

Bridgman also suggests that the rise of manufacturing and vertical specialization trade were related. Both were driven by falling costs of trading manufactured parts.

The 1960s coincided with the implementation of the Kennedy Round of the General Agreement on Trade and Tariffs (GATT) and other trade deals, such as the U.S.-Canada Auto Pact. Before these agreements, tariffs were low on raw materials and high on manufactured goods. These agreements, however, helped shift trade policy away from protecting manufacturers. The Kennedy Round in particular was notable both for the size of the tariff reductions and the fact that it widely covered manufactured goods.

Bridgman's paper presents a three-stage vertical specialization trade model, which posits two countries with three layers of production: raw materials, which are inputs to intermediate

goods, which in turn are inputs to final consumption goods. All three types of goods may be traded but face transportation costs and tariffs. Specifically, the simulations were run using data on freight costs and tariffs.

In Bridgman's model, falling trade costs, mainly tariffs, explain much of the observed growth in overall trade and vertical specialization trade. Manufacturing trade grew twice as fast as overall trade. Trade costs have fallen more for manufactured goods over the last 40 years leading to a rapid expansion of manufactured parts trade relative to materials. The paper suggests that the rise of offshoring of manufactured parts was due in large part to reduced tariffs.

Vertical specialization trade also grew rapidly, doubling from 1972 to 1997. The share of trade of intermediate goods, however, did not increase. Rather, the composition changed. Intermediate goods trade shifted from being dominated by raw materials to being dominated by manufactured parts.

While trade costs clearly played a role in the expansion of vertical specialization trade, the paper did not consider alternative causes of trade growth.

Improvements in technology, both in the production process (fostering better standardization) and in the communication process (fostering better coordination across locations), may have played a role. Financial liberalization encouraged foreign

direct investment, allowing firms to offshore while keeping production within the firms. Trade among affiliated firms within multinationals has also been an important source of trade growth. However, the strength of the paper's results suggests that trade costs would remain a significant source of the rise in vertical specialization and manufacturing trade even if other sources were considered.

Accounting for the increase in vertical specialization trade is important because there have been concerns that offshoring has led to overestimation of productivity growth by undercounting imports.

Determining the degree to which imports and output are mismeasured is important in this regard. In vertical specialization trade, a portion of exports consists of imported inputs. If these imported inputs are not properly accounted for, net exports (and national output) will be mismeasured since the value of exports will in part incorporate the value of imported inputs. A similar effect holds for imports incorporating exported inputs. Properly accounting for offshoring may lead to improvements in the measurement of exports by removing the impact of traded inputs from international trade levels.

Bridgman's working paper "The Rise of Vertical Specialization Trade" is accessible from the BEA home page under Papers and Working Papers.