

## Taking Account...

### The effects of terms of trade on the economy

Over the past half century, tariffs have declined, advances in technology have lowered trading costs, and advances in logistics have made complex, transnational supply chains more manageable. The result has been a long-running expansion in trade. Export and import prices have thus taken on increased importance in determining the real purchasing power of the income that nations receive from production of goods and services.

In a recent working paper, Marshall B. Reinsdorf, an economist at the Bureau of Economic Analysis (BEA), developed a framework for measuring the effects of changes in export and import prices on real income, developed techniques for the analysis of those effects, and estimated the amount and sources of changes in trading gains for the United States from 1973 to 2008.

This research was the basis for the changes in the calculation of “command-basis” gross national product and the addition of a command-basis gross domestic product (GDP) series as part of the 2010 annual revision of the national income and product accounts (NIPAs).

The NIPA concept of command-basis GDP is called “real gross domestic income” in the United Nations *System of National Accounts* (SNA 2008). Reinsdorf’s paper adopts the terminology of the SNA, so it

uses “real gross domestic income (GDI)” to refer to the NIPA concept of command-basis GDP. Because nominal domestic production, as measured by GDP, is conceptually identical to the nominal gross income arising from production, as measured by nominal GDI, one might suppose that real GDI must equal real GDP. Yet, because trade allows a nation to consume a different mix of commodities than it produces, expanding the frontier of consumption possibilities, the price index for GDP is not the appropriate deflator to calculate real GDI.

To determine the purchasing power of the income arising from gross domestic production, Reinsdorf proposes a price index that reflects the composition of the uses of income, not the composition of output. Thus, a suitable deflator to calculate real GDI is the price index for gross domestic purchases. This is different from the price index for GDP, which includes an export component and a negatively weighted import component. Differences in the behavior of export and import prices are measured by the trading gains index, so real GDI depends both on real GDP and on trading gains.

Reinsdorf applies this concept to estimate the effect of export and import price changes on the U.S. economy from 1973 to 2008. In some years, the effects are significant. Trading gains subtract at least 0.21 percentage

point from real GDI in a quarter of the years, and they add at least 0.18 percentage point in a quarter of the years.

Occasionally, the shocks are larger. The petroleum price shocks that occurred at the end of 1973 and in 1980 subtracted more than a percentage point from real GDI. The shock in the first half of 2008 in combination with rising prices of other imports subtracted almost 2 percentage points from the annualized growth rate of real GDI. The rising price of petroleum imports has also resulted in a slightly negative long-run trend in trading gains for the United States.

When petroleum prices are excluded, however, large effects of falling prices for imports from newly industrialized countries, such as China, are revealed. Excluding petroleum, U.S. terms of trade improved steadily from 1996 to 2007. Combined with the contribution from a falling relative price of tradables, this improvement added an average of 0.15 percentage point to the annual growth rate of real GDI, or a cumulative 1.8 percent over 12 years.

Reinsdorf’s working paper, titled “Terms of Trade Effects: Theory and Measurement,” can be found on the BEA Web site under [“Papers and Working Papers.”](#)

A version of this paper was also published in a June 2010 special issue of the *Review of Income and Wealth*.