

# Research Digest



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## Wealth among nations

*Understanding the subtle relationships between economic growth and international efficiency*

Explaining the wealth of nations is a difficult problem, pioneered by Adam Smith over two centuries ago and still debated. The distribution of wealth among nations is quite another issue, less studied and perhaps less understood. In “Assessing International Efficiency,” a staff report (SR 480, online at [minneapolisfed.org](http://minneapolisfed.org)) prepared as a chapter in the *Handbook of International Economics*, Minneapolis Fed economists Jonathan Heathcote and Fabrizio Perri reduce this imbalance with an examination of whether resources are allocated efficiently among nations.

Their question is not one of equality: It’s quite obvious that not all countries have the same quantity of resources, either per capita or in total national wealth. Rather, they ask an arguably more important question: Might a different allocation of global resources improve the overall well-being of the world’s population? That is, would a hypothetical redistribution among nations increase the economic welfare of people in one country (or countries) without reducing welfare elsewhere—a Pareto improvement, in the vernacular of economists? And, if so, how large are those potential welfare gains?

Thus far, economists have examined this question from two distinct angles: consumption and production. One stream of literature has tried to measure whether consumption levels are globally efficient; the other has investigated productive efficiency: Would a different international allocation of labor, capital and technology increase world output and economic well-being?

The goal of the Heathcote-Perri paper is to develop a methodology that allows assessment on both dimensions and to then apply it to gauge efficiency first broadly and then narrowly. Specifically, they assess international efficiency across

- *A broad spectrum* of the world’s countries over the *long run*.
- *Advanced economies* only, over a shorter time span: the booms and busts of *business cycles*.

They caution readers that regardless of their success in developing useful assessments on either dimension, their research is limited insofar as it doesn’t consider allocative efficiency within each of the world’s nations, only among them.

### Developing a method

The economists begin by making what they admit is a strong assumption, that people’s preferences about consumption and saving are essentially the same in all countries. If not, gauging economic welfare is an impossible task, since people in

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Argentina or Algeria might measure their well-being differently than those in Malta or Zambia.

They then develop, step-by-step, a methodology for assessing international efficiency, starting with a model economy.

### *Step 1: Build a model*

Their model economy consists of three standard elements:

- *Preferences*—for example, risk tolerance; if one nation is more risk tolerant than others, it is efficient to shift more risk toward that nation.
- *Technologies*—such as existing quantities, or “endowments,” of labor, capital, factor productivity and production opportunities.
- *Frictions*—constraints caused by physical or technological features, such as difficulties importing and exporting because of a mountain range or an inability to enforce international contracts.

### *Step 2: Define “efficient”*

Evaluating whether actual international allocations are efficient requires clarity about “efficiency” itself. The economists determine “efficient” by solving a planning problem—finding the optimal mathematical solution(s) to the set of equations that constitute the model. This baseline is essential, but the economists refine it by

comparing it to the efficiency of a selection of financial market structures, such as financial autarky, limited asset trading, and complete national and international markets. By doing so, they discover which features of the data can best be used to test international efficiency and whether trading a limited set of assets can help attain efficient allocations.

### *Step 3: Compare model against data*

With the model’s structure and components in hand and a benchmark for an efficient allocation established, the economists’ next step is to compare different model allocations to actual world data to see which allocation is a good fit with reality. This data comparison might involve examining GDP correlations among nations, for example, or co-movements of consumption and exchange rates, or prices or portfolios of assets in different countries.

### *Step 4: Assess possible gains; design policy accordingly*

If given resource allocations are found not to be efficient, a central question becomes: How much could be gained by allocating resources in a more efficient way? A related question: *Why* isn’t efficiency achieved? And, therefore, how could policies be designed to improve international welfare?

### **Applying the method to assess long-run efficiency**

The methodology thus outlined by Heathcote and Perri is useful in a variety of contexts, and they demonstrate its utility with two specific applications: a long-run global assessment and a short-term, advanced-nation calculation.

The first assessment uses a well-known international database, the Penn World Tables. They look at 112 countries with continuous data over half a century, from 1960 to 2010. A glimpse at these data suggests three things: First, faster output growth doesn’t translate one-for-one into faster consumption growth. Second, it does, however, translate *more* than one-for-one into faster growth in investment. Third, there seems to be little relationship between output growth and net foreign asset position (a reflection of a nation’s global indebtedness).

They proceed with their multistep methodology: model, a definition of efficiency, comparisons of different model structures with data and assessment of evidence. Their overall conclusion: “The long-run allocations of consumption across countries are inefficient. ... On the other hand, productive efficiency is harder to reject.” Reconciling this seeming discrepancy calls for “more satisfactory positive theories of

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global imbalances,” they write. “We expect the question of long-run efficiency to be revisited.”

A return to the question is of more than theoretical interest. The economists run a number of scenarios of gains from improved long-term international efficiency. The benefits found in their closest approximation to the actual global economy over the past 50 years: “An expected welfare gain worth 4.8% of consumption would be an upper bound” for countries moving from autarky to a globally integrated bond market. Given that gains from eliminating business cycles are estimated at mere 0.008 percent, the gains to improved long-term efficiency are thus potentially enormous.

### Efficiency over business cycles

The next application is to examine international efficiency among developed economies only, over the peaks and troughs of business cycles, a shorter time frame than viewed in their global analysis. In so doing, they use a slightly different model than earlier because they want to employ the framework to understand prior business cycle research on advanced economies; in this model, the key difference is that nations produce goods that aren’t perfect substitutes for one another—certainly a plausible assumption in the short term.

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Again, they define their model with preferences, technologies and frictions, compute efficient allocations, explore allocative efficiency under alternative market structures and then compare the efficient allocations and market allocations using data on four “observables”: standard macroeconomic quantities, exchange rates, international diversification and asset prices.

In the context of advanced economies over the short term, they conclude, macro quantities and portfolio diversification seem quite possibly efficient—in contrast to some previous research and to their conclusions about long-term global allocations. But evidence on asset prices is more difficult to understand with standard models, they say. The comparison of alternative market structures indicates

that “the welfare costs associated with an inefficient allocation can be significant over the business cycle,” when countries experience persistent income shocks. A surprising finding in such cases is that “partial financial liberalization can lower welfare.”

### In sum

What to make of it all? The economists state two simple conclusions, among others:

- “First, over the long run, allocations appear inefficient. ... This is important, because the potential welfare gains from achieving more efficient allocations in the long run are large.”
- “In contrast, it is difficult to reject the hypothesis that allocations respond efficiently to business cycle frequency fluctuations.”

The economists don’t delve deeply into policy interventions to improve efficiency, but they do note that working to remove frictions in international financial markets might help provide insurance against country-specific shocks.

—Douglas Clement