

Distortions to Global Agricultural and Food Markets

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Based on a rich global data set covering a half-century of evidence on commodities, countries, and policy instruments, this article outlines hypotheses that have been explored on the extent of global agricultural and food market distortions and the conditions under which welfare-increasing reforms may be feasible.

Market distortions in global trade occur when a government creates policies that increase or lower prices of imported and/or exported goods. When prices are distorted, consumers pay either less or more than they would have if the price-altering policies were not in place. In agricultural and food markets, governments tend to create price-altering trade policies especially when global agricultural and food prices rise dramatically. The latter happens most often when the supply of the crop or food product is disrupted, whether by governmental “food-security” measures, weather, or new policies, such as incentives that motivate farmers (and downstream operators) to allocate crops for biofuels rather than for food.

When politicians seek to shield consumers from the effects of price increases by increasing export taxes, global price volatility often worsens. Other countries may respond with similar measures, so that market distortions in individual countries combine to generate sudden global price spikes that alter patterns of food production and consumption and create political turmoil. In particular, rapid increases in the prices of staple commodities (such as wheat, corn, and

rice) have a disproportionately severe effect on the world’s poorest people.

The “disarray in world agriculture” that market distortions create has manifested itself in overproduction of agricultural products in high-income countries and underproduction in low-income countries. This also means that there has been less international trade in such products than would occur under the counterfactual scenario of free trade. In 2004, country-specific agricultural policies accounted for an estimated 70% of the global welfare cost of all merchandise trade distortions, even though the upstream farm production contributed only 6% of global trade and 3% of global GDP.

Although many countries have recently begun to adjust their agricultural and trade policies in order to minimize their adverse global impact, these reforms have not kept up with the pace of globalization in the non-agricultural sectors of the world economy. Economic development is typically associated with some sectors within a country growing and some declining faster than others.

Historically, such changes have often led governments to intervene via a broad array of policy instruments: distortions to input markets (largely subsidies, plus controls on land use), production quotas, marketing quotas, target prices, price subsidies or taxes in output markets, and border measures that directly tax, subsidize, or quantitatively restrict international trade. Such measures, along with multiple exchange rates, account for at least three-fifths of governmental agricultural assistance globally. Because trade measures also tax consumers (and welfare costs are proportional to the square of a trade tax), these measures are responsible for an even larger

share of global welfare cost and agricultural welfare-reduction indexes.

New Data from the World Bank

A new global five-decade database of evidence compiled by the World Bank dramatically expands our understanding of the distortions to market incentives across the globe. Economists have recently been exploring hypotheses concerning the extent of price distortions and the potential for adopting sustainable unilateral and multilateral policy reforms. They have also examined the extent to which more recent agricultural-policy reforms have succeeded in reversing the prior era’s policy distortions.

These new analyses make it possible to test hypotheses about market and trade patterns across countries, commodities, and policy instruments. Understanding the historical forces that drive agricultural-policy choices can contribute to structuring policy options that address food-security, energy-security, and climate-change concerns.

Measures of Price Distortion

The Nominal Rate of Assistance (NRA) measures distortions imposed by governments that create a gap between current domestic prices and the prices that would exist under free markets. In the World Bank database, such rates have been computed for each commodity product as the percentage by which government policies have raised gross returns to farmers above what they would have been had the government not intervened (or the percentage by which government policies have lowered gross returns, if $NRA < 0$). NRAs are computed for 75 different farm products, with an average of almost eleven per country. Of the

world's 30 most valuable agricultural products, the World Bank's NRA estimates cover 77% of global output and 85% of global agricultural exports.

It is also now possible to compute a production-weighted average NRA for non-agricultural tradables and compare it to the NRA for agricultural tradables via a computed Relative Rates of Assistance (RRA). The RRA for each country is the percentage by which the government assists agricultural versus non-agricultural sectors. If a country's government assists both of these sectors equally, the RRA is zero. The RRA recognizes that farmers are affected not just by prices of their own products but also by the incentives faced by non-agricultural producers who are bidding for the same mobile resources. Calculating the RRA for each country provides an internationally comparable indication of which country's policy regimes have anti- (or pro-) agricultural biases.

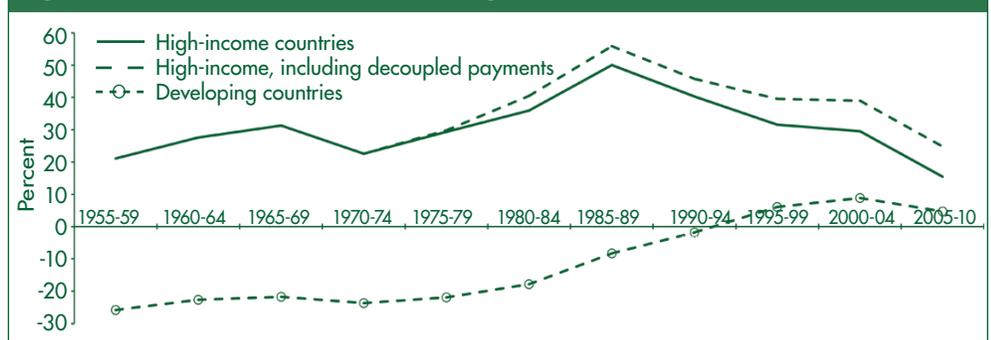
The database also allows us to compute a Welfare Reduction Index (WRI) and a Trade Reduction Index (TRI). The WRI recognizes that price distortions imposed by a government create an overall welfare cost, regardless of whether the government's policies favor or hurt producers in a particular sector. The TRI measures the extent to which import protection or export taxation reduces the volume of trade.

Analysis of Market Distortion

Historically, the higher a country's per capita income, the higher have tended to be its nominal—and especially relative—rates of assistance to agriculture (NRAs and RRAs). More generally, policy regimes in high-income countries have typically exhibited a pro-agricultural bias, while regimes in developing countries have typically exhibited an anti-agricultural bias. But since the 1980s, both biases have generally diminished (Figure 1).

In the case of developing countries, the rise in average RRA is due

Figure 1. Nominal Rate of Assistance to Agriculture, 1955–2010



as much to a decline in assistance to nonfarm sectors (especially cuts to manufacturing protection) as it is to declines in agricultural disincentives (especially cuts to export taxes). However, the extent and speed of convergence vary across regions.

As Figure 2a shows, among developing countries, RRAs to agricultural vs. non-agricultural tradable goods have been greatest for Asia and least for Africa. Among high-income countries (Figure 2b), until about 1985, RRAs to agriculture were greatest for the European Union, Japan, and South Korea. However, since 1985, the RRA

for EU countries has declined steadily. Meanwhile, the RRA for most non-EU Western European countries has risen sharply and then fallen. In contrast, Japan and South Korea have continued to increase RRAs. The only period during which RRA's for most countries fell rather than increased occurred in 2005–10, when international food prices rose steeply. The welfare- and trade-reduction indexes of the two main country groups have thus generally traced an inverted-U shape, rising until the mid-1980s and subsequently falling by half (Figures 3a and 3b).

Figure 2a. Developing Countries' Relative Rates of Assistance to Agriculture, 1965–2009

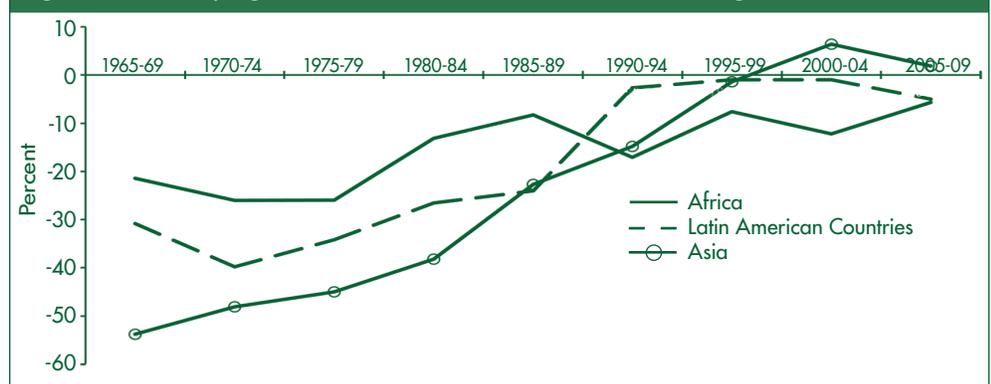


Figure 2b. High-Income Countries' Relative Rates of Assistance to Agriculture, 1955–2010

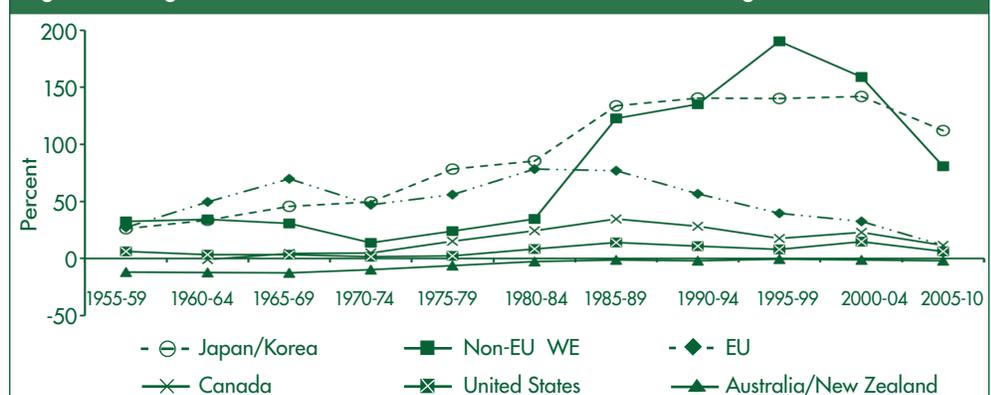


Figure 3a. Welfare-Reduction Index for Tradable Farm Products, 1960–2010

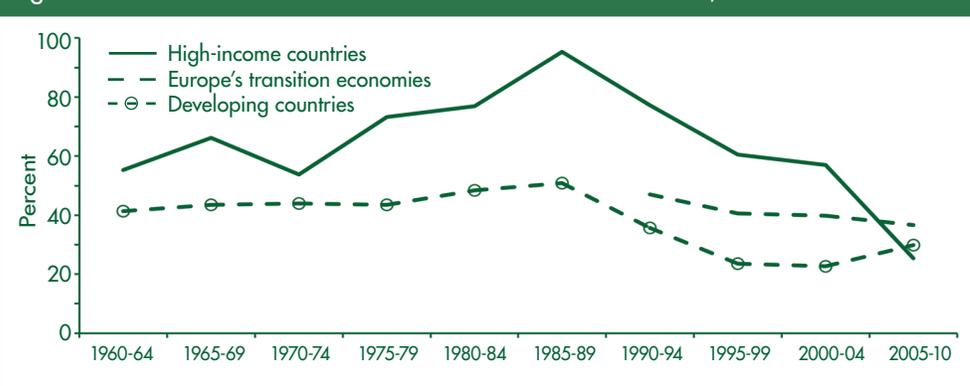
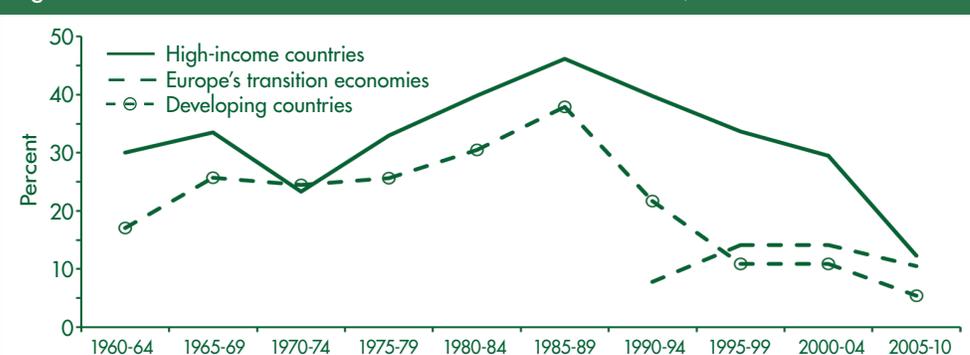


Figure 3b. Trade-Reduction Index for Tradable Farm Products, 1960–2010



As noted earlier, governments often seek to prevent domestic prices from being affected by spikes in international prices. In both agricultural-exporting and agricultural-importing countries, and in high-income as well as developing countries, large changes in nominal assistance occur during periods of international price spikes (whether up, as in 1973–74 and 2008, or down, as in 1986).

Variations in Market Distortions

The averages reported in Figures 1–3 do not reveal the substantial variability across countries in the level and rate of change in distortion indicators. National RRA estimates for 2005–09 varied from around -40% for several African countries to around 100% for a few high-income countries. Clearly, much could be gained worldwide from international relocation of production and consumption to remove these cross-country differences. Of particular note is that the average RRA for some developing countries, which converged toward zero from the 1980s,

did not stop at zero but “overshot” after the early 1990s (Figure 2a).

Within any single country’s agricultural sector, product-NRAs also vary widely. Some commodity-product NRAs are positive and high in almost all countries (sugar, rice, and milk). Others are positive and high in developed economies but highly negative in developing countries (most noticeably, cotton). Still other product NRAs are relatively low in all countries (feed grains and soybeans as inputs into intensive livestock, especially pork and poultry industrial activities).

Another crucial component of the variation in NRAs is that anti-agricultural trade bias has declined within the developing-country group. But for the high-income group, this bias is sourced with agricultural export subsidies and import protection. These factors explain the continued higher levels of TRI for high-income versus developing countries (Figure 3b).

The relative importance of policy instruments has changed greatly over time. Note that the contribution of

export taxes and import subsidies to the overall TRI rises and falls with international prices. While the opposite is true of import taxes and export subsidies, most developing countries have sharply slashed their export taxes. In sharp contrast, as these countries have bolstered their assistance to agricultural subsectors facing import competition, the relative importance of import taxes has increased dramatically (Figure 4).

Input subsidies are a relatively minor component of most countries’ assistance to farmers. But they lingered on in Australia and New Zealand when most other forms of assistance were being phased out, and such subsidies have also remained about one-fifth of the total NRA in the United States. With two notable exceptions (India and Indonesia), input subsidies are even less common in developing countries, where funds for such direct subsidies are scarcer.

Another form of market intervention, altering foreign exchange rates, was quite common for developing-country governments until the 1980s (and in some cases, the early 1990s). Such interventions added to the anti-trade biases that were targeted at tradable sectors, including agriculture. However, these interventions largely disappeared by the mid-1990s, as initiatives to reform overall macroeconomic policy took hold.

Summary of Market Distortions

Major differences in public-policy distortions in food and agricultural markets clearly exist among countries, among agricultural subsectors within countries, among policy-instrument choices, and over time within a particular country. Typically, developing countries are phasing out anti-agricultural policies; some are increasingly protecting farmers who face import competition.

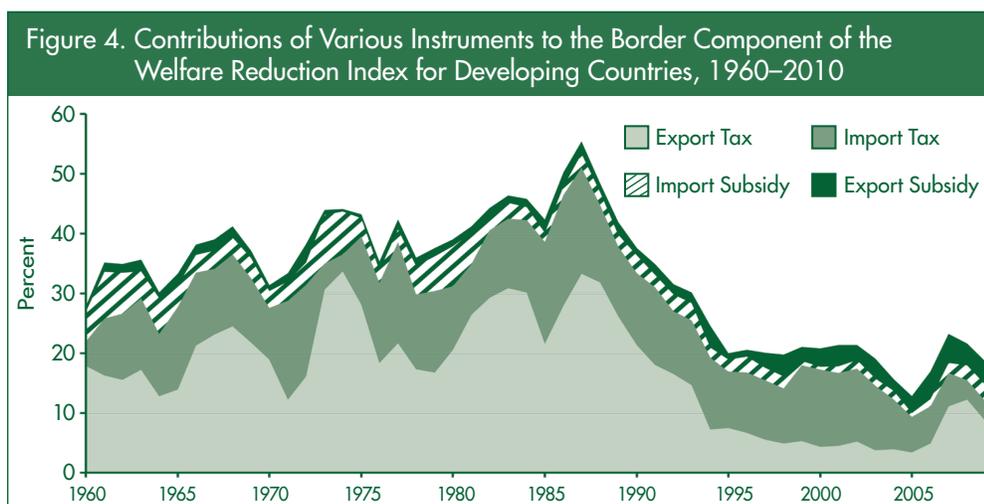
Some high-income countries are reducing assistance to farmers, and a few have also greatly reduced manufacturing

protections that previously had indirectly harmed agricultural producers. But in all high-income countries, the relative importance of various farm-policy instruments has changed significantly, and the contribution of price-distorting measures has declined.

Some important common patterns hold over time, as well as across both high-income and developing countries. One is the propensity to insulate domestic markets from international price fluctuations despite globalization tendencies elsewhere in the economy. The second pattern is the continuing anti-trade bias for agricultural industries, even though significant market-opening policy reforms have been instituted over the past few decades. The third pattern is the persistence of the individual dispersion in commodity assistance within the agricultural sectors of most countries. Overall, the observed correlations between RRAs and economic development can be explained largely by fundamental economic forces, including growth, structural adjustments, information costs, and changes in governance structures.

Implications for the Future

Cautious optimism is evident about the prospects for future agricultural-policy reform. Admittedly, it is troubling that some developing countries have moved from negative to positive RRAs and that agricultural protection and market distortion have recently increased in two of the most important developing countries, China and India. In high-income countries, too, although the World Bank data reveals declining trends for NRAs, these trends do not necessarily reflect actual changes in their distorting policy instruments. Instead, higher world food prices largely explain these outcomes. But many other countries' RRAs do appear to have converged at zero (that is, where their subsidies to agricultural and non-agricultural tradables are about equal), and other high-income countries have been lowering their RRAs



non-trivially since the late 1980s.

Global and regional institutions appear to have played an important role in contributing to those reforms. Of particular importance to the decline in the RRA for the European Union has been the institution of the General Agreement on Tariffs and Trade (and now the World Trade Organization).

However, the recent shift in agricultural policies focusing on renewable energy (particularly in the United States, European Union, and Brazil) has major implications for world food prices and security. Ongoing research should make as transparent as possible the continued pursuit of protectionist measures by various countries in the form of biofuels policies, which tend to raise world food prices, in contrast to traditional agriculture policies, which historically depressed those prices.

Prospects for policy reform will be influenced by the changing landscape of organized economic interests. Interactions between farmers and landowners, agribusiness, food and retail companies, and other groups clearly influence agricultural-policy negotiations and debates in all countries. The vertical relationships between farmers and agribusinesses are often critical in sustaining policy reforms. Capturing opportunities to form new coalitions among the interests of farmers, downstream agribusiness, food consumers, and environmental groups will largely

dictate sustainable policy reforms that promote the provision of local public goods, agricultural productivity, and markets for environmental services.

In the final analysis, the many complex factors that contribute to distortion of agricultural and food markets can impede as well as promote progress. But the hope is that continued reform of entrenched policies and practices, along with heightened scrutiny of new developments, will promote greater transparency and cooperation.

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For additional information, the author recommends:

Anderson, K., G. Rausser, and J. Swinnen. "Political Economy of Public Policies: Insights from Distortions to Agricultural and Food Markets." *Journal of Economic Literature* (forthcoming).

Rausser, G.J. Swinnen, and P. Zusman. *Political Power and Economic Policy: Theory, Analysis, and Empirical Applications*. Cambridge University Press (2011).