



Agricultural labour productivity, food prices and sustainable development impacts and indicators

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ABSTRACT

In the last few years high and unstable food and agricultural commodity prices and concerns about population growth, increasing per capita food demands and environmental constraints have pushed agriculture and food production up national and international political, policy and research agendas. Drawing on both theory and empirical evidence, this paper argues that fundamental impacts of links between agricultural productivity sustainability and real food price changes are often overlooked in current policy analysis. This is exacerbated by a lack of relevant and accessible indicators for monitoring agricultural productivity sustainability and real food prices. Two relatively simple and widely applicable sets of indicators are proposed for use in policy development and monitoring. Historical series of these indices are estimated for selected countries, regions and the world. Their strengths, weaknesses and potential value are then discussed in the context of the need for better sustainable agricultural development and food security indicators in any post 2015 successors to the current MDGs.

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Introduction

Recent years have seen increasing average food prices, severe food price shocks (in 2008 and 2010/2011), and increasing concerns about the impacts of food prices shocks, high food prices and food price volatility on poor and food insecure people. This paper reviews historical changes in staple food prices (in terms of international grain prices) and then uses basic microeconomic development theory to consider agricultural productivity and food price impacts on and roles in development and poverty reduction. This provides a foundation for subsequent design of indicators for monitoring agricultural productivity change and food price changes relative to the real incomes of poor people. Historical series of two sets of indicators are estimated for selected countries, regions and the world, and their strengths, weaknesses and potential value discussed. The paper concludes with a discussion of the challenges posed by this analysis in the context of growing threats to global food availability and the relevance of the proposed indicators to debates on new international development goals to follow the Millennium Development Goals after 2015.

Long term changes in staple food prices

Changes in staple food prices involve changes in the opportunity cost of food consumption and production in terms of real income and substitution effects for consumers and cost, substitution and income effects for producers (Dorward, 2012). Monetary food prices should therefore be compared with other price series when looking at price changes: they should be deflated by consumer price indices and income comparators when examining food price changes for consumers, and deflated by other agricultural product prices and by input prices when examining food price changes for producers, as shown in Fig. 1.¹

Fig. 1a contrasts changes in nominal grain prices and prices deflated by the US CPI. The former demonstrates more about the effects of inflation on the value of money than about food prices faced by consumers, the latter is a more conventional indicator for showing real price changes. The common analysis of changes in real prices relative to US CPI, however, ignores differences between rich and poor consumers in the importance of food in their expenditures and in the composition of their non-food expenditures. It also ignores changes in expenditure composition as populations grow richer. The apparent price fall is in fact an inevitable

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¹ International grain prices are summarised using the World Bank Development Prospects Group 'cereals' price index. This hides considerable diversity in shorter term price fluctuations between maize, wheat and rice, but shows well the broad patterns which are common to all the main grains.

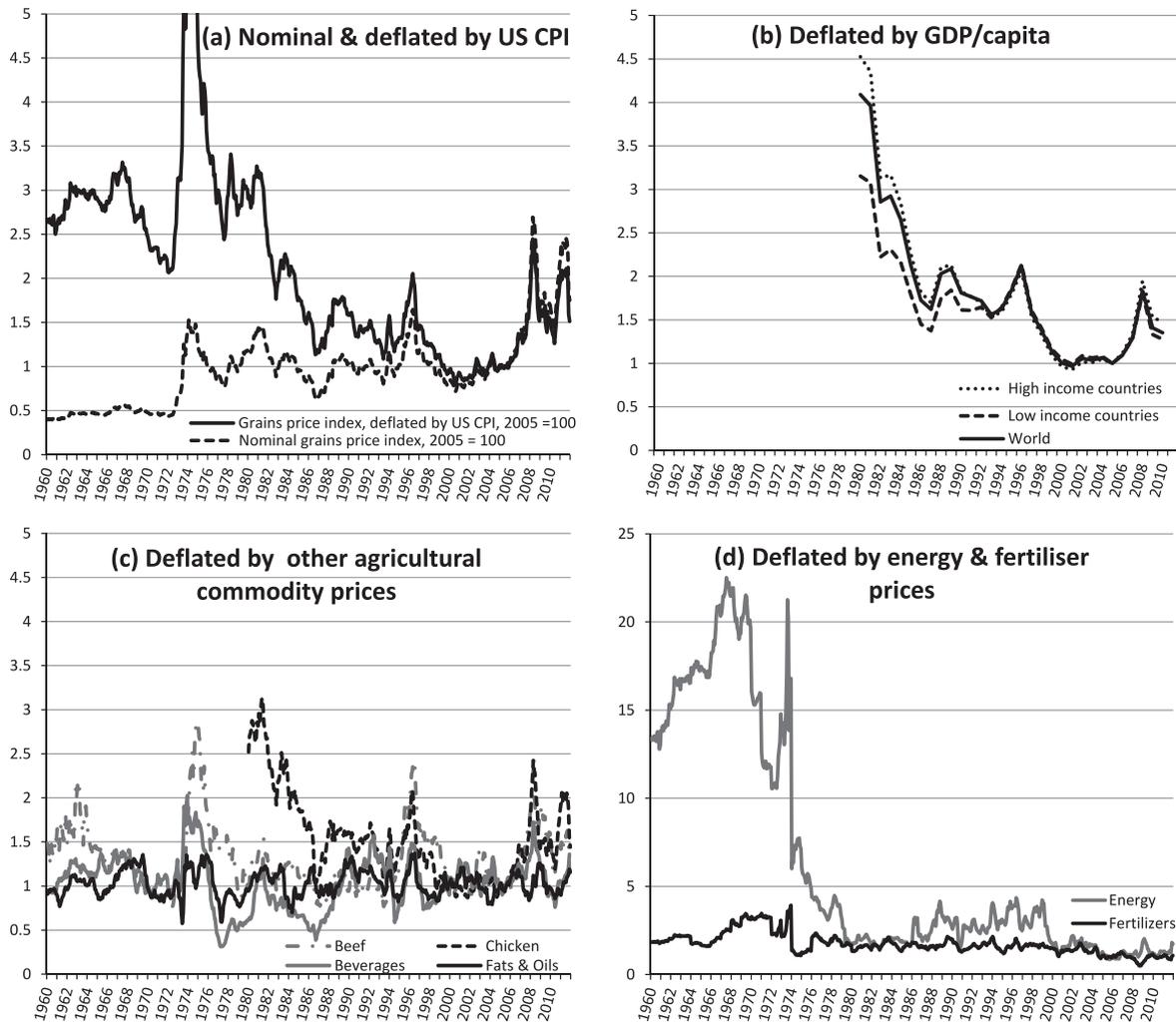


Fig. 1. Indexed grain prices 1960–2011 (2005 = 100). Sources: (World Bank, 2012), (Bureau of Labor Statistics, 2012).

consequence of the use of a price index in a world dominated by expenditure patterns of people achieving and enjoying economic and real income growth (Dorward, 2011). It may therefore provide a reasonable assessment of price changes for less poor populations for whom the CPI used is appropriate, with a low proportion of expenditure on food. It is, however, misleading when used to examine long term food prices changes for poor people whose expenditure patterns are not reflected by the US CPI.

Changes in grain prices deflated by GDP/capita for high income countries, low income countries and the world (Fig. 1b) show a similar pattern as the deflation of grain prices using the US CPI, but only show the 2008 spike, not the 2010/2011 spike. This is because 2011 GDP per capita data were not available at the time of writing, and the annual average for 2010 masks the increases in grain prices in late 2010. However it does show that prices deflated by high income country GDP per capita have fallen more than prices deflated by low income country GDP per capita. This suggests that falls in real food prices have been greater for richer people than for poorer people (Dorward, 2011). However skewed income patterns within countries mean that Fig. 1b does not provide much information about the scale of differences in food price changes between rich and poor consumers.

For measures of price changes more relevant to grain producers' decisions (though not necessarily to their relative incomes), Fig. 1c shows international grain prices deflated by the prices of other agricultural commodities that farmers might produce (although

this does not allow for the effects of tariffs, subsidies and technical change on different commodities' relative profitability). This analysis shows no clear secular change in grain prices relative to other agricultural commodities. Fig. 1d, however, shows a dramatic fall in the price of grains relative to energy during and following the 1970s oil crisis and from 2002. A similar pattern, but considerably dampened, is observed for the price of grains prices relative to fertilisers.

In summary then, nominal grain prices have risen dramatically since the 1960s, but in real terms

- They have fallen substantially relative to the prices of other goods and services consumed by richer people.
- They have fallen substantially relative to the incomes of rich people.
- There are no readily available indicators of changes more relevant to poor consumers in poor countries, but price falls are less than for rich consumers (see below and Dorward, 2011).
- There are no clear changes against prices of other agricultural commodities.
- They have fallen dramatically against oil prices and less dramatically against the prices of fertilisers.

These observations raise two questions: why do we observe these patterns, and what is their significance for understanding the long term developmental impacts of food price changes?

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