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Food price spikes and poor, small economies: What role for trade policies?

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Abstract

Upward spikes in international food prices lead some food-surplus countries to raise export barriers and some food-deficit countries to lower their import restrictions on staple foods – and conversely when prices slump. When many countries so respond, their actions in aggregate exacerbate the international price spike, making adjustment even more difficult for other countries. This paper reviews conceptually, and then empirically for a sample of small and poor economies, the role of trade measures for achieving the social objective of assisting those hurt by sharp changes in food prices. The data are monthly for the period of 2006 to 2012, and annually since 1990. The paper concludes by exploring the efficacy of using trade policy instruments versus domestic measures to reduce the risk of welfare losses for vulnerable households, and stresses the importance for small and poor economies of supporting multilateral efforts to outlaw beggar-thy-neighbour policy responses to food price spikes.

Key words: domestic market insulation; distorted incentives; commodity price stabilization; trade policy interventions

1. Introduction

Three international food price spikes since 2007, and government responses to them, have brought food and agricultural price and trade policies back into the global spotlight. Food-importing developing countries have accused some agriculture-exporting countries of exacerbating food security concerns by restricting exports, while other exporters fear such restrictions will lead to a retreat from reliance on international markets as food-deficit countries seek greater self-sufficiency when prices return to trend. Meanwhile, some food-importing countries have reduced their import restrictions and a few have even subsidised imports of their staple food. Recent studies (e.g. Martin & Anderson 2012; Anderson *et al*. 2014; Jensen & Anderson 2014) show that the actions of both sets of countries have added considerably to the spike in international grain prices.

The volatility of international food prices may be the new norm, thanks to the increased frequency of extreme weather events associated with climate change, the reduced tendency of governments to hold grain stocks (Wright 2011), and the emergence of biofuel subsidies and mandates that have caused food and fuel prices to be more closely linked (see Figure 1).

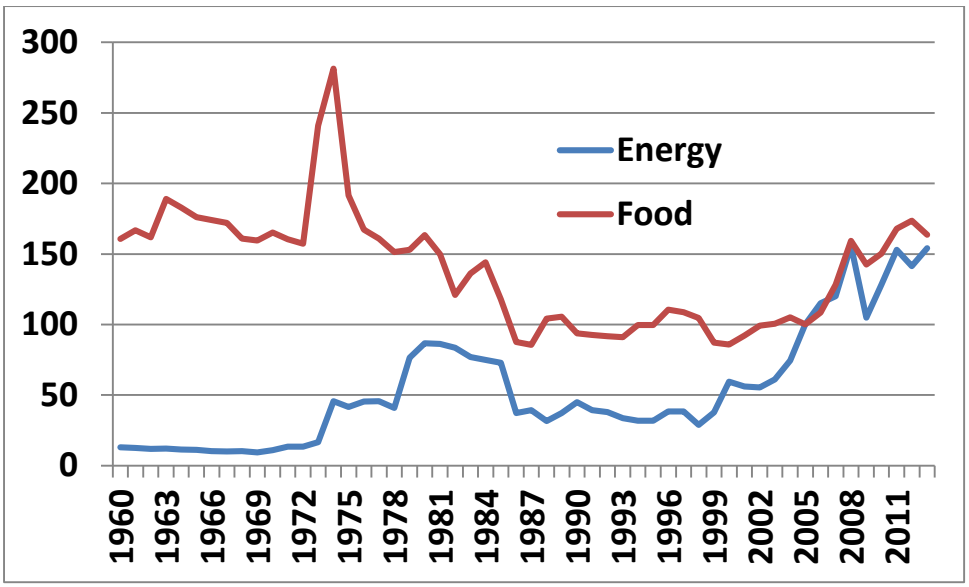


Figure 1: Indexes of real international food and fossil fuel prices, 1960 to 2013 (annual, 2005 = 100)
Source: World Bank (2014a)

In the light of this new reality, the purpose of this paper is to address the question: How should the governments of small, low-income economies respond so as to ease the hardship that a spike in food prices would impose on their most vulnerable households, and how did they respond in recent years? It begins in Section 2 by looking conceptually at the economic welfare and distributional (including poverty) effects of food trade policies so as to illustrate how openness to trade can make a positive contribution to food security.[1] The paper then looks at the extent to which domestic prices of food staples have moved relative to international prices, first for the major countries of the world (Section 3), and then for a sample of small and poor economies (Section 4). The former reveals that international grain prices did indeed rise considerably more than they would have if governments had not altered their trade restrictions. The main focus of the additional empirical exercise for small and poor economies is to analyse monthly domestic staple food price movements compared with those in the international marketplace over the period since 2006, and then their annual price movements since 1990. From that analysis it is possible to infer the extent to which national trade restrictions were altered by the governments of those countries, particularly in the price spike period from 2006 to 2012. In Section 5 we summarise a new set of results based on household survey data for both large and small developing countries. The results show that, while the actions of the largest economies reduced the impact of the spike from 2006 to 2008 on their countries' poor, they added to poverty in numerous small and poorer countries. The paper concludes in Section 6 by exploring the efficacy of using trade policy instruments versus domestic measures to reduce the risk of welfare losses for vulnerable households. It stresses the importance for small and poor economies of supporting multilateral efforts to outlaw beggar-thy-neighbour policy responses to food price spikes.

2. How do trade policy measures affect food security?

Food security is defined by the Food and Agriculture Organization as the ideal in which all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Improving food security

[1] There also is much scope through trade facilitation initiatives to boost economic welfare by lowering the costs of intra- and inter-national trade (Venables 2004). New evidence reveals that trade costs have fallen much less for farm products than for manufactures since the mid-1990s, and are higher in sub-Saharan Africa than in any other region (Arvis *et al*. 2012). However, the present paper leaves this important issue aside and focuses only on government barriers to trade.

requires improving the three interrelated elements of food availability, access and utilisation. By definition, subsistence farm households avail themselves of food via self-production, but, for most people, food is most cheaply available in markets. Access to food depends heavily on people's income or assets or other entitlements, while the utilisation depends on their knowledge and willingness to ensure a healthy and nutritious diet for all household members.

Thus food insecurity is a consumption issue that is closely related to poverty and the price of food. From this perspective, policy initiatives that raise the real incomes of the poor could be food-security enhancing. The issue could be thought of at the macro-level of faster economic growth in low-income countries, or at the micro-level of raising the real incomes or asset values of the poorest households within a country (Anderson *et al*. 2010; 2011). In both respects it is helpful to look separately at the impacts of own-country trade policies and those of the rest of the world.

2.1 Own-country trade policies

For a small country, any subsidy or tax on its exports or imports would lower national economic welfare by foregoing some of the gains from the production specialisation and exchange that trade openness provides. The gains from production specialisation can be especially large for the poorest and least-developed economies. Moreover, there are numerous channels through which trade openness boosts economic growth: by creating a more attractive investment climate, by bringing in new ideas and ways of producing, marketing and financing products, and by speeding technological catch-up. Both the static and dynamic gains from trade openness raise real national income. Even if they do not also benefit the poorest households *directly*, the gain in national income provides more wherewithal for the government to assist them *indirectly* via social protection instruments and public goods.

In seeking to clarify which types of households would be most likely to gain or lose if a country altered its trade barriers, it is necessary to distinguish between measures aimed at altering the *trend* level of a domestic price away from that in international markets, and those aimed at reducing short-term *fluctuations* in that domestic price around its trend value.

In terms of altering the long-run trend level of domestic food prices, developing countries have tended to confine themselves to export restrictions if they are net food exporters, and to import restrictions if they are food import dependent. The former measures lower the domestic prices of food, the latter raise them. Thus, over the longer term, net buyers of food have tended to benefit at the expense of net sellers of food in food-surplus developing countries, and conversely in food-deficit countries.

As for the use of trade measures as short-run domestic food price stabilisers, the most common interventions in developing countries have been to introduce or increase export restrictions and to lower or suspend import restrictions when international food prices spike up, and conversely when international prices slump (Martin & Anderson 2012). These interventions tend to benefit net buyers at the expense of net sellers of food in both food-surplus and food-deficit countries during upward price-spike periods, and conversely during low-price periods.

A further consideration has to do with an indirect impact of a price-distorting policy on the incomes of net buyers of food in developing countries. If the trade measure lowers the producer price and discourages farming, the demand for labour on farms falls. If the farm sector uses unskilled labour relatively intensively and that is the country's most abundant factor, that trade measure will lower the nominal wages of unskilled workers not only in farm jobs, but also in non-farm jobs – and more so the more agrarian the economy is. According to Stolper and Samuelson (1941), that policy will also raise the return to relatively scarce human and non-farm capital and so increase income and

wealth inequality. Thus, while poor households may benefit from lower prices, they could be harmed by lower earnings, thereby making the net effect on their welfare uncertain. Since around 70% of the $1/day poor in the world are rural (Ravallion *et al*. 2007), a significant proportion of households that are net buyers of food may still be made worse off by policies that lower rural wages via lowering the domestic price of farm outputs.

2.2 Rest of the world's food trade policies

The trade policies of the rest of the world can also impact on a developing country's poor insofar as they alter the price of food at that country's border. Anderson *et al*. (2010) find that the net effect of trade distortions globally as of 2004 was to lower the international price of food, including for the key grains. Even so, it is an empirical question whether this helps or hurts the poor, who are net buyers of food. Again, this is because (a) the poor may derive a large share of income from farm labour, and (b) more households would have been net sellers had food prices not been depressed.

The combined effect of many countries tending to restrict their imports and exports is to 'thin' international food markets, thereby making them more volatile. Tyers and Anderson (1992) found that high-income country policies lowered the volume of international food trade by 25%, and that developing countries' policies did so even more, such that the combined effect was to halve global food trade in 1990. Such 'thinning' ensures the global food market is more susceptible to exogenous shocks. This, in turn, discourages other countries to fully engage in international food trade.

Turning to trade measures used as domestic food price stabilisers, the most common are increased export restrictions and a lowering of import restrictions when international food prices spike up, and conversely when prices slump. Both country groups thereby exacerbate the international price change and thus amplify the price shock for countries choosing not to alter their border measures. However, as Martin and Anderson (2012) make clear, if a similar proportion of the world's exporting and importing countries so alter their border barriers, the net impact on the domestic price is no different than if neither country group altered their trade restrictions.

2.3 Why trade measures are n^{th}-best food security instruments

Whether concerned with long-term or short-term food security, trade restrictions are far from first-best policy instruments for a number of reasons. First, they are like explicit trade taxes. If they lower the domestic food price, that may help *some* net food buyers (but not *all* of those whose incomes are closely linked to the demand for farm labour), but at the expense of net sellers and possibly of many farm labourers. Second, they help net food buyers in proportion to their expenditure on food. That makes them very inefficient transfer instruments: only a fraction of that transfer helps the poor, food-insecure households that are net buyers, and it does so at the expense of those poor households that are net sellers of food. Conversely, trade restrictions that raise the domestic food price will help net food sellers, but at the expense of net buyers of food.

3. Trade policy responses to fluctuating food prices: Global evidence

In the light of the above conceptual background, this section reviews annual prices for foods compiled for a recent World Bank research project covering a large sample of the world's economies, while Section 4 focuses on monthly grain (and chicken meat) prices for a new sample of small and poor countries for which only more limited data are available.

To gauge how farmer and consumer prices in high-income and developing countries have evolved relative to international prices, it is possible to draw on time series evidence from a recent World Bank study compiled by Anderson and Valenzuela (2008), summarised in Anderson (2009), and

updated to 2010/2011 by Anderson and Nelgen (2013). These estimates cover 82 countries, which together account for more than 90% of the world's population, employment, GDP, agricultural output and poverty.

The key indicator of price distortions in that dataset is the nominal rate of assistance (NRA), defined as the percentage by which national government policies raise gross returns to farmers above what they would be without the government's intervention – or lowered them, if NRA < 0. If a trade measure is the sole source of government intervention for a particular product, then the measured NRA also will be the consumer tax equivalent (CTE) rate at that same point in the value chain for that product.

Fluctuations around trend levels of international food prices always have tended to be transmitted less than fully to national markets. This tendency means the estimated NRA for each product also fluctuates from year to year around its long-run trend, and in the opposite direction to the international price. To estimate the proportion of any international price fluctuation that is transmitted to domestic markets within twelve months, Anderson and Nelgen (2012) follow Nerlove (1972) and Tyers and Anderson (1992:65-75) in estimating short-run transmission elasticities for each of nine key traded food products for all focus countries for the period 1985 to 2010. Those elasticity estimates range from 0.73 for soybean down to just 0.43 for sugar. The unweighted average across those nine products is 0.56, suggesting that, within one year, barely half the movement in international prices is transmitted to domestic markets on average.

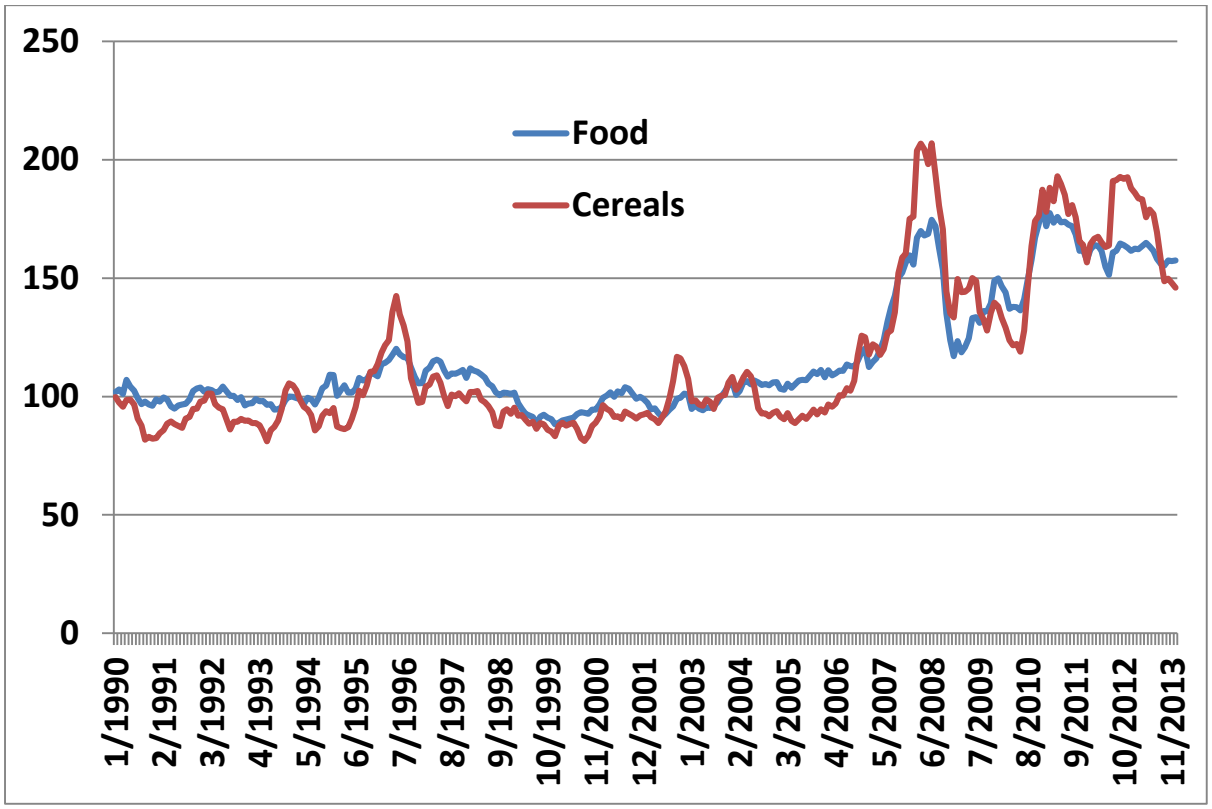
When some governments alter their trade measures, the volatility faced by other countries is amplified. That reaction therefore prompts more countries to follow suit. The irony is, however, that when both food-exporting and food-importing countries so respond, each country group undermines the other's attempts to stabilise its domestic markets. To see this more clearly, Martin and Anderson (2012) consider the situation in which a severe weather shock causes the international food price to rise. If national governments wish to avert losses for domestic food consumers by altering their food trade restrictions (e.g. raising export taxes or lowering import tariffs), then only a fraction of that price rise is transmitted to their domestic market. That response raises the consumer subsidy equivalent/lowers the consumer tax equivalent of any such trade measure, and does the opposite to producer incentives. However, if such domestic market insulation is practised by similar proportions of the world's food-exporting and -importing countries, it turns out to be ineffective in stabilising domestic prices.

Martin and Anderson (2012) also point out that it is possible to get an estimate of the proportional contribution of government trade policy reactions to an international price spike such as in 2006 to 2008. Updated estimates for the key grains are 0.40 for rice, 0.19 for wheat and 0.10 for maize, implying that 40%, 19% and 10% of the increases in the prices of rice, wheat and maize respectively were due to the price-insulating behaviour of governments. As reported by Anderson *et al*. (2013), in 2006 to 2008, developing countries were responsible for the majority of the policy contribution to all three grains' price spikes, and exporters' policies had the majority of the influence, but importers made a very sizeable contribution as well. The proportional rise in the international price that would have occurred without changes in trade restrictions, when compared with the proportional rises in the domestic price in the sample countries, reveals that, on average for all countries in the sample, domestic prices rose slightly more than the adjusted international price change for wheat, and only slightly less for maize and just one-sixth less for rice. These results suggest that the combined responses by governments of all countries were sufficiently offsetting as to do very little to insulate domestic markets in the intervening countries after the 2008 international food price spike.

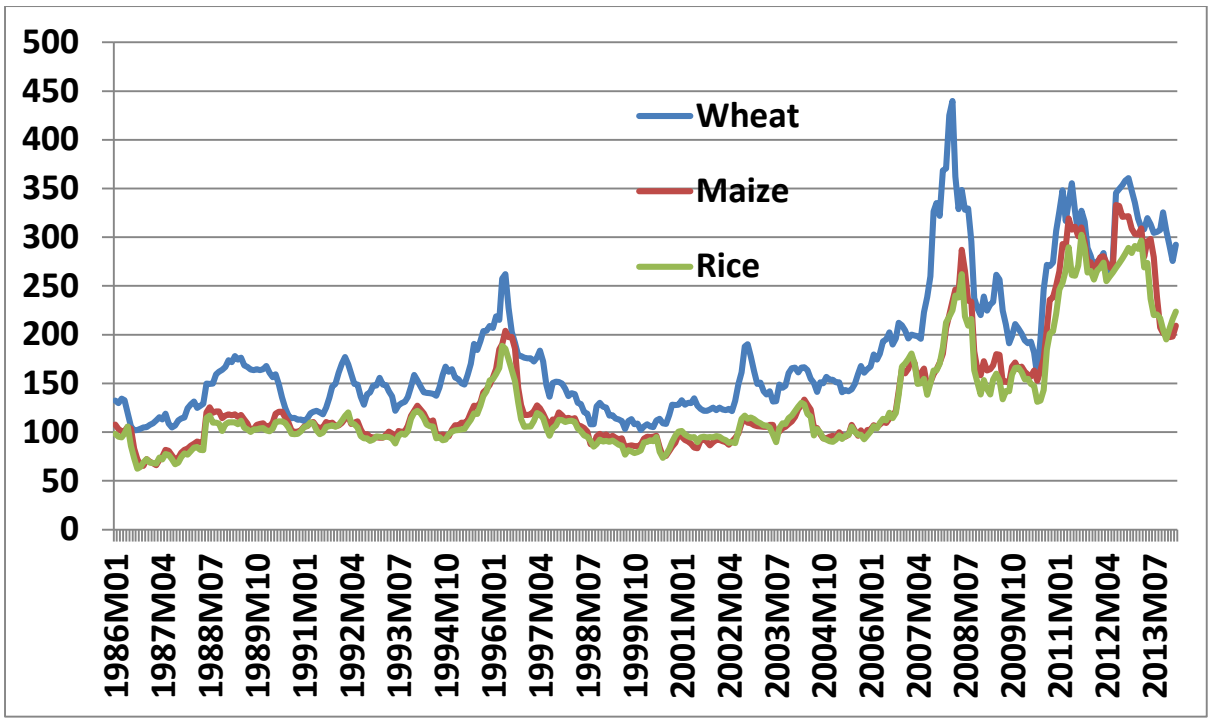
4. Trade policy responses to fluctuating food prices: Small and poor countries

The above empirical evidence suggests that any small economy that did not insulate its domestic grain markets to at least that extent suffered a larger domestic price rise than it would have if no country had altered their food trade restrictions.

Retail price data since 2006 are available from GIEWS (2013) and FEWS (2013) for a sample of 27 small, poor countries for grains and chicken meat, which are the most important foods in that group of countries. When compared with an international reference price for each of those products (available from the World Bank 2014a), it is evident that both have fluctuated considerably since 2006 (see Figure 2). The correlation between the domestic and border price is nearly always positive, but the correlation coefficients are below one in most cases (Tables 1 and 2). The simple average of the positive coefficients is lower for the monthly data from 2006 (0.49) than for annual data from 1990 (0.60).



(a) Real price indexes (monthly data, 2002 to 2004 = 100)



(b) Nominal US dollar prices ($/tonne)

Figure 2: International food and cereal price indexes, 1990 to 2013

Source: FAOSTAT (2014) for part (a), and World Bank (2014a) for part (b)

Table 1: Coefficients of correlation between nominal monthly retail prices and international prices in US dollars, 2006 to 2012

(a) rice		
	Bangladesh	-0.01
	Lesotho	-0.45
	Malawi	0.46
	Mozambique	0.73
	Rwanda	0.75
	Samoa	0.51
	Sri Lanka	0.79
	Zambia	0.52
(b) maize		
	Lesotho	0.59
	Malawi	0.08
	Mozambique	0.52
	Namibia	0.38
	Rwanda	0.36
	Uganda	0.41
	Zambia	-0.15
(c) wheat		
	Bangladesh	0.51
	Lesotho	0.44
	Rwanda	0.28
	Sri Lanka	0.64
	Zambia	0.14
(d) chicken meat		
	Samoa	0.63

Source: Authors' estimates based on GIEWS (2013) and FEWS (2013) data

Table 2: Coefficients of correlation between annual nominal producer prices and international prices in US dollars, 1990 to 2010

(a) rice		
	Bangladesh	0.63
	Gambia	0.79
	Jamaica	-0.51
	Malawi	0.42
	Mozambique	0.86
	Rwanda	0.27
	Sri Lanka	0.92
	Trinidad and Tobago	-0.19
(b) maize		
	Gambia	0.59
	Jamaica	0.65
	Malawi	0.42
	Mauritius	0.51
	Mozambique	0.73
	Namibia	0.17
	Rwanda	0.52
	Sri Lanka	0.79
	Trinidad and Tobago	0.78
(c) wheat		
	Bangladesh	0.59
	Namibia	0.65
	Rwanda	0.42
(d) chicken meat		
	Bangladesh	-0.63
	Mozambique	0.68
	Sri Lanka	-0.30

Source: Authors' estimates based on FAOSTAT (2013) data

For this sample of small, poor countries it is not obvious that the domestic retail prices are more stable than the comparable international prices. To see whether/how much the insulating policy action reduced instability in domestic relative to international markets, we provide two statistical indicators suggested by Schiff and Valdés (1992): the standard deviation around the sample mean of the domestic price relative to that of the border price, and the coefficient of variation (the standard deviation divided by the sample mean) of the domestic price relative to that of the border price. Domestic prices are more stable than international prices according to these two statistical indicators in less than 40% of the cases reported in columns 5 and 6 of Table 3. That is, more often than not the interventions for this sample of small, poor countries appear to have *de-stabilised* domestic markets for their key food staples (perhaps for reasons of poor policy timing). If one then takes into account the fact that international price fluctuations would have been smaller had governments not insulated their domestic markets by altering their trade barriers, the degree of success in stabilising domestic prices in these and other countries is even less real than apparent.

Table 3: Standard deviation (SD) and coefficient of variation (CV) of monthly nominal domestic and international US dollar prices around their linear trend regression lines, 2006 to 2012

Country	Domestic price		International price		SDd/SDi	CVd/CVi
	SD around trend	CV around trend	SD around trend	CV around trend	(1)/(3)	(2)/(4)
	(1)	(2)	(3)	(4)	(5)	(6)
Rice						
Bangladesh	61.0	15.4	58.5	10.7	1.0	1.4
Lesotho	111.5	6.8	36.9	7.0	3.0	1.0
Malawi	260.9	22.1	126.4	24.2	2.1	0.9
Mozambique	66.6	9.3	114.0	23.3	0.6	0.4
Rwanda	150.3	16.6	120.2	25.1	1.3	0.7
Samoa	212.8	15.8	116.8	23.2	1.8	0.7
Sri Lanka	89.1	19.1	116.5	23.1	0.8	0.8
Zambia	129.9	9.4	133.8	26.5	1.0	0.4
Maize						
Lesotho	21.9	4.5	33.8	13.2	0.7	0.3
Malawi	96.6	35.4	42.0	20.2	2.3	1.7
Mozambique	69.5	18.5	40.3	19.5	1.7	0.9
Namibia	73.8	22.4	39.2	20.7	1.9	1.1
Rwanda	67.4	22.4	41.4	21.3	1.6	1.0
Uganda	102.5	28.8	42.5	22.2	2.4	1.3
Zambia	56.2	21.8	40.6	20.6	1.4	1.1
Wheat						
Bangladesh	57.0	17.5	47.0	17.9	1.2	1.0
Lesotho	50.4	7.3	43.0	15.5	1.2	0.5
Rwanda	34.6	6.1	44.6	15.9	0.8	0.4
Sri Lanka	80.3	13.0	62.0	23.0	1.3	0.6
Zambia	184.3	13.1	69.1	28.0	2.7	0.5
Chicken meat						
Samoa	16.0	8.9	7.6	4.1	2.1	2.1

Source: Authors' estimates based on data in GIEWS (2013) and FEWS (2013)

Another way of summarising the data is to calculate the domestic-to-border price ratio. Even though this is not as careful a measure as the nominal rate of assistance described in the previous section, movements in this ratio give at least a crude indication of changes in government restrictions on trade. More specifically, if the governments of these countries are attempting to insulate their domestic market from international price fluctuations, one should expect those ratios to be negatively correlated with the international price. Indeed, that is confirmed by the results. The unweighted average of the correlation coefficients for our available sample of small and poor countries is -0.64 for the monthly data since 2006, and -0.40 for the annual data since 1990 (bottom row of Tables 4 and 5). That is, these countries' governments would appear to have been altering their trade measures to shield their consumers somewhat from the recent upward spikes in international food prices.

Table 4: Coefficients of correlation between monthly nominal price ratios and US dollar international prices in US dollars, 2006 to 2012

(a) rice		
	Bangladesh	-0.59
	Lesotho	-0.89
	Malawi	-0.38
	Mozambique	-0.66
	Rwanda	-0.81
	Samoa	-0.49
	Sri Lanka	-0.58
	Zambia	-0.67
(b) maize		
	Lesotho	-0.97
	Malawi	-0.46
	Mozambique	-0.59
	Namibia	-0.46
	Rwanda	-0.67
	Uganda	-0.53
	Zambia	-0.73
(c) wheat		
	Bangladesh	-0.63
	Lesotho	-0.93
	Rwanda	-0.93
	Sri Lanka	-0.47
	Zambia	-0.79
(d) chicken meat		
	Samoa	-0.32
Unweighted average		**-0.64**

Source: Authors' estimates based on data in GIEWS (2013) and FEWS (2013)

Table 5: Coefficients of correlation between annual nominal price ratios and US dollar international prices, 1990 to 2010

(a) rice		
	Bangladesh	-0.70
	Gambia	-0.83
	Jamaica	-0.76
	Malawi	-0.27
	Mozambique	0.19
	Rwanda	-0.54
	Sri Lanka	-0.68
	Trinidad and Tobago	-0.61
(b) maize		
	Gambia	0.12
	Jamaica	0.02
	Malawi	-0.22
	Mauritius	-0.14
	Mozambique	-0.13
	Namibia	-0.17
	Rwanda	-0.38
	Sri Lanka	-0.45
	Trinidad and Tobago	0.19
(c) wheat		
	Bangladesh	-0.65
	Namibia	-0.59
	Rwanda	-0.48
(d) chicken meat		
	Antigua and Barbuda	-1.00
	Bangladesh	-0.86
	Mozambique	0.46
	Sri Lanka	-0.88
	Unweighted average	**-0.40**

Source: Authors' estimates based on data in FAOSTAT (2013)

To test this further, Table 6 shows the increase in domestic prices for the subset of these countries between 2006 and 2008, compared with the increase in international grain prices. Except in Sri Lanka and Mozambique, domestic prices did not rise as much as those observed in the international markets during that extreme price-spike period (shown in row 1 of Table 6) – and nor even as much as international prices would have risen had governments around the world not altered their trade restrictions in response to the food price spike in that period (shown in row 2 of Table 6). That is, in all but two of these nine small and poor countries it appears the government intervened to reduce the transmission of the price spike in that period. There is plenty of room to improve the above analysis in future by expanding the sample size, especially to include more of the smallest and poorest countries once adequate data are available.

Table 6: Comparison of domestic price rise with rise in international grain price gross and net of contribution of changed trade restrictions by all countries, 2006 to 2008 (percent by which unweighted annual average price in 2008 exceeds 2006)

International price changes	**Rice**	**Wheat**	**Maize**
– including contribution of changed trade restrictions	113	70	83
– net of contribution of changed trade restrictions	68	56	75
Domestic retail price changes			
Mozambique	49		48
Rwanda	53		31
Samoa	50		
Sri Lanka	98	90	
Uganda			55
Zambia		10	19
Domestic producer price changes			
Bangladesh	16	37	
Jamaica			53
Malawi	42		65
Mozambique	91		100
Rwanda	53	22	31
Sri Lanka	121		75

Source: Authors' estimates based on international and producer prices from Anderson and Nelgen (2012) and FAOSTAT (2013), and on domestic retail prices from GIEWS (2013) and FEWS (2013)

5. Consequences of poverty

It is clear from the above that trade policies contribute non-trivially to the instability of international food prices. A global, economy-wide modelling study shows that further trade policy reform as of 2004 would have reduced the variance in international food prices by 'thickening' international food markets: according to results reported in Valenzuela *et al*. (2009), the liberalisation of the remaining trade barriers as of 2004 would raise the share of farm production exported globally from 8% to 13%. Furthermore, a related study shows that such reform as of 2004 also would have reduced global income inequality and poverty (Anderson *et al*. 2010; 2011). In both ways, multilateral farm trade liberalisation could contribute to global food security. But, pending such multilateral action, individual countries take unilateral action to reduce the risk of significant domestic groups suffering a loss and falling into poverty.

Altering trade restrictions has been one of the key policy initiatives taken to help achieve this social objective. A new study by Anderson *et al*. (2014), making use of household income and expenditure survey data for a sample of 30 developing countries, examines how much international prices for grains and oilseeds rose from 2006 to 2008, how much domestic prices rose, and how much international prices would have risen had no countries insulated. The results suggest that insulation behaviour by developing country governments would have prevented an extra 81.6 million people temporarily falling below the $1.25 a day poverty line, *had those government responses had no impact on international food prices*. But, because those actions exacerbated the international price spike, the number of people saved from falling into poverty by that insulating behaviour is estimated to be less than the number of those pushed into poverty, by 7.5 million. For the subset of our sample of seven small, poor countries for which household data were available to allow their inclusion in the study by Anderson *et al*. (2014), only Zambia is estimated to have intervened enough in its grain markets to prevent more people going into poverty. For the rest, an estimated extra 2.4 million people were pushed into poverty (Table 7). That is, small, poor countries would probably see less of their people fall into poverty when international food prices spike if they and all other countries agreed to abstain from altering trade restrictions.

Table 7: Estimates of partial impact of grain and oilseed price insulation behaviour from 2006 to 2008 on poverty (< $1.25/day) in selected Commonwealth and other developing countries

	Change in number of poor ignoring int'l price effects (thousands)	Change in number of poor including int'l price effects (thousands)
Bangladesh	-842	1 235
Malawi	105	362
Rwanda	1	66
Sri Lanka	-55	467
Tanzania	-433	292
Uganda	-38	-2
Zambia	-197	-250
Sub-total, above	**-1 459**	**2 170**
China	-5 710	3 620
India	-59 043	4 380
Indonesia	1 579	104
Nigeria	-4 377	-1 158
Pakistan	-9 936	-5 898
Rest of world	-1 254	1 966
World	**-81 600**	**7 500**

Source: Authors' compilation from Anderson *et al*. (2014)

6. Conclusions and policy implications

In the absence of a multilateral agreement to desist, both high-income and developing country governments continue to alter their food trade restrictions in order to insulate their domestic markets somewhat from international food price volatility. This behaviour will continue to amplify price fluctuations in the international market and, if both exporting and importing countries continue to respond similarly, such interventions will continue being rather ineffective in preventing fluctuations in domestic food prices. How severe such volatility might be will depend on the size of the exogenous shocks and the availability of global stocks (Wright 2011).

The empirical evidence referred to above supports the view that national trade restrictions add non-trivially to international food price volatility in at least two ways: through 'thinning' international food markets, and through 'insulating' domestic food markets against international price fluctuations. Both policies magnify the effect on international prices.

The solution to the first ('thinning') problem is for countries to open their markets further to food trade. The political difficulty and the adjustment costs of doing this are minimised if countries can agree to liberalise their food and agricultural markets multilaterally, and to do so at the same time as non-agricultural markets are liberalised. Meanwhile, various plurilateral negotiations for regional integration and free-trade areas are under discussion. While the benefits from them are smaller than those from a multilateral agreement, there may be circumstances in which a small, poor country could benefit from such a bilateral or plurilateral agreement with larger economies.

The optimal solution to the second ('insulating') problem also involves the WTO. In a many-country world, the trade policy actions of individual countries can be offset by those of other countries making domestic policies ineffective. This is a classic international public good problem that could be solved by a multilateral agreement to restrain the variability of trade restrictions.

Without relying on trade-distorting measures, national governments can use alternative instruments, such as social safety net measures, to avert losses for significant (especially poor) groups in their societies more efficiently. This might take the form of targeted income supplements to only the

most vulnerable households, and only while the price spike lasts. The information and communication technology (ICT) revolution has made the implementation of such programmes easier, more affordable and more approachable. Evidence of the practical workability of such social safety net programmes in developing countries is growing rapidly (World Bank 2014b). Examples include safety net programmes in Indonesia (Skoufias *et al*. 2010), in Mexico, in Honduras and in Nicaragua (Hoddinott & Wiesman 2010). The benefits of such programmes could be even greater with complementary activities such as nutrition counselling and micro-nutrient supplements (Adado & Bassett 2012). Moreover, following a survey of results on consumption from a wide range of Latin American countries plus Cambodia, Fiszbein and Schady (2009) conclude that conditional cash transfers have had substantial positive impacts on consumption and on poverty alleviation. Prospective offsetting effects do not appear to have been sufficiently large so as to offset the benefits of the transfer (see also Edmonds & Schady 2012). Some programmes also increase productive investment boosting and sustain the impact on poverty (Gertler *et al*. 2012).[2] While the political challenge of switching from trade to domestic instruments is evidently non-trivial, the emergence of new, lower-cost social protection mechanisms allows governments to take one more step away from the use of beggar-thy-neighbour trade measures.

Finally, it would be wise for governments to undertake more investments in things such as rural infrastructure, agricultural research, and rural education and health. In many developing countries the social rate of return on these investments is very high (World Bank 2007; FAO 2012; Rao *et al*. 2012) – in contrast to the returns from subsidies to farmers (see López & Galinato 2006). At this time of historically high food prices, now is an especially profitable time to expand these investments.

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[2] A caveat of importance in countries suffering from high inflation is to ensure that cash transfers are indexed appropriately to prevent undermining their purchasing power. This was a lesson learnt during Ethiopia's high-inflation period of 2008 (Sabates-Wheeler & Devereux 2010).

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