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Potential Implications of Agricultural Special Products for Poverty in Low-Income Countries

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Abstract

Proposals for special products in the Doha negotiations on agricultural tariffs seek to achieve vitally important goals of food security, livelihood security and rural development. They use an instrument—exceptions to tariff binding reductions on staple foods—that can only have an effect if it allows applied tariff rates on imported goods to be higher than their level in the absence of this exception, and if this causes prices for producers and/or consumers to be higher than they would otherwise be. A key concern with this approach is that staple foods are frequently important cost items to poor consumers, and the marketable surplus of producers in poor countries is frequently small or negative, resulting in small benefits (or even costs) to poor producers. Results using household data for four poor countries show that—if these flexibilities were used— the impacts of higher-than-otherwise staple food prices on poverty differ substantially by commodity and by country, but that poverty increases would be more frequent, and larger, than poverty reductions. The results highlight the need for caution in using the flexibility provided by this instrument and the need for other measures, such as improvements in technology, rural infrastructure and education, if poverty is to be successfully reduced.

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Implications of Agricultural Special Products for Poverty in Low-Income Countries

One of the most controversial issues in the Doha Agenda negotiations on agriculture has been the special product exceptions sought by a number of developing countries. Unlike the sensitive products sought by some industrial countries, special products were not pursued primarily to reduce the political pain associated with liberalization. Rather they have been justified on the basis of undeniably vital social and development goals, in particular: food security, livelihood security and rural development.

There is agreement in the Doha negotiations that developing countries will be allowed to treat some tariff lines as special products and to make smaller reductions in tariff bindings on these products than would be required by the agricultural tariff reduction formula being negotiated under the agreement (WTO 2004). Proposals for special products do not involve increases in current bound rates, but rather that these products be subject to smaller, or zero, reductions in bound tariffs than would otherwise be the case. The G-33 (2005) proposes that at least 20 percent of agricultural tariff lines should be treated as special, with tariff bindings on half of these lines subject to no cuts, one quarter to cuts of 5 percent and the remainder to cuts of 10 percent. There remains considerable controversy about issues such as the number of products to be covered, the approach to their selection, and the depth of cuts in these products.

Given that the key goals of food security and livelihood security are critically linked to outcomes at the household or individual level, this paper focuses on impacts of potential policy changes on poor households in poor countries—the people potentially most vulnerable to adverse developments. It is certainly possible that raising prices of some agricultural products above levels that would otherwise prevail would help raise incomes and increase the food and livelihood security of poor people. Whether this is the case depends on the products involved, the price changes, and the structure of household income and expenditure of the

poor. Only with careful examination of outcomes at the household level will it be possible to tell whether such a policy will help or hurt poor people. Policy makers need information on the impacts of decisions about special products if they are to make informed decisions about the extent and use of these exceptions, and to consider the potential impact of additional policy measures for achieving these vital policy goals.

Disagreement about these exceptions has pitted developing country proponents against the major industrial countries, and against other developing countries, such as Thailand (2006) and Malaysia (2006). These tensions appear to have contributed to the collapse of the World Trade Organization (WTO) Ministerial meeting held in June 2006 in an attempt to complete the modalities for these negotiations. Anything that can contribute to reaching a good agreement on special products may have broader benefits, by helping reach agreement on an overall package of reforms under the Doha Development Agenda.

The goals of special products have been stated as… "to provide targeted protection for products which are deemed important from a food security, livelihood security and rural development perspective, but would not survive under so-called competitive conditions. These products are mostly cultivated by small-scale subsistence farmers, who represent a large share of developing countries' rural populations, but are unlikely to be competitive in the short run" (ICTSD, 2005, p. 4). According to the G-33 coalition of developing countries that seeks the introduction of these measures, special products are to be selected (G-33, 2005) according to a range of criteria including[2]:

1. The product is identified as a staple food,

2. A significant proportion of total household income is spent on the product, and

3. A significant proportion of its producers are low income, subsistence farmers

[2]

A number of other illustrative criteria are proposed, including that: a significant proportion of output is produced by farms of less than average size; that a large number of people are dependent on the product; that a significant proportion of gross arable land is under cultivation for this product; that the product accounts for a substantial share of total calorie intake;. a significant proportion of farms engaged in producing the good is of less-than-average size; and that productivity in the country is low relative to the country with the highest productivity in the world.. The first four of these criteria are captured in an analytical framework that takes into account the sources of household income and the expenditure shares of poor households. The last two criteria listed would allow developing countries to choose essentially any product.

It is difficult to fully evaluate the consequences of a proposal for policy flexibility such as special products because of uncertainty about the way that any provisions for flexibility will be used by individual WTO members. Some advocates propose that they be used to provide sustained protection, with a related Special Safeguard Mechanism (SSM) used to provide short-duration protection in the event of world price declines, or increases in imports (ICTSD 2005, p10). Other advocates, however, suggest that special product exceptions, as well as the SSM, would also be used to provide short-term protection. One thing that is clear, however, is that such provisions will have no impact if they do not result in applied tariff rates that are higher, in at least some periods, than would be the case in the absence of special product flexibility. Where higher tariffs raise domestic prices, their effects on households' incomes, and hence on poverty, can be evaluated in similar ways whether the increases are due to SPs; the SSM; or the use of the right to raise applied tariffs that are currently below WTO tariff bindings.

There are at least two circumstances in which exceptions allowing for reduced or zero reductions can bring about higher applied tariffs than would apply in their absence: (i) when a tariff reduction formula would have required reductions in applied tariff rates, but these reductions are unnecessary in the presence of the exception; and (ii) when changes in market conditions or in policymakers' preferences cause applied tariffs to rise to levels that would have been constrained by tariff bindings resulting from the formula, but are permitted by the exception.

The changes in applied tariffs under (ii) may be determined by relatively short-run influences such as shocks to world prices or seasonal conditions, or by long-run changes in the strength of interest groups that lead to sustained changes in applied tariffs. Francois and Martin (2004) examine the case where applied tariffs vary over time, and find that reduced tariff bindings may have very substantial economic benefits by ruling out the highest, and most economically costly, incidents of tariff protection. Secular changes in protection were examined by Anderson and Hayami (1986), whose work on Korea and other East Asian economies showed that changes in the strength of different interest groups can—in the absence of tariff bindings—result in dramatic increases in applied agricultural protection over time. Anderson and Hayami (1986, p22) estimate that nominal protection to rice in Korea rose from negative 14 percent in 1955-59 to 154 percent in 1980-82 and OECD (2005, p276) estimates that it had risen to 298 percent by 2004. Anderson and Hayami estimated protection to soybeans at -23 percent in 1955-59, while the OECD (p276) estimated that protection to oilseeds (including soybeans) had risen to 728 percent by 2004. Where the political economy pressures for protection are so strong, there is considerable pressure to fully utilize any initial gaps between applied and bound rates. In turn, this means that any increase in tariff bindings above the formula outcome would translate one-for-one into an increase in applied tariff rates.

In the longer term, one also needs to consider the Doha agricultural negotiations as part of a process. Article 20 of the Uruguay Round Agreement on Agriculture posits a long-term objective of substantial, progressive reduction in support. If this followed the experience of GATT negotiations on manufactures, tariffs might, eventually, after much experimentation and confidence-building, come down to relatively low levels except in areas that were carved out as exceptions the way textiles and clothing were carved out in the GATT (to the great cost of developing countries). It seems likely that special product exceptions made in the Doha Agenda negotiations would be carried forward in future negotiations where reductions in applied rates would be required. If this were the case, the long-run impact of exceptions would be bounded by the gap between today's applied rates and bindings.

Food security is typically recognized in the literature on special products as a complex goal whose attainment depends on whether individuals and households have access to food, rather than by aggregate supply-demand balances at the national level. Despite this acknowledgement, some advocates have fallen back on the traditional, and discredited (see Sen 1982), food self-sufficiency approach to food security in claiming that trade protection plays a positive role by reducing the gap between demand and supply in importing countries (see ICTSD, 2005). Following Sen's logic, the impact of a food-price policy on poor people's access to food is much more important than its impact on national self-sufficiency, and the impact of a policy change on absolute poverty rates is an important indicator of its impact on poor people's access to food.

It is certainly possible that higher-than-otherwise prices of some agricultural products would lower poverty. Poverty rates in poor countries are almost always considerably higher in rural areas, and farmers benefit from increases in the prices of goods for which they are net sellers. However, the focus on subsistence farmers in much of the discussion of special products reduces the likelihood that this will be the case. Pure subsistence farmers are

completely isolated from markets for food, and hence would receive no benefit from an increase in the prices of goods that they produce for their own consumption. In reality, the situation may be even worse when we focus on staple foods, and particularly grains. With some exceptions, such as Vietnam (Izik-Dikmelik 2006), it appears that the majority, and the poorest, of farm households in poor countries are net buyers of staple foods (Byerlee, Myers and Jayne 2005, p14; Christaensen and Demery 2006; Klytchnikova and Diop 2006; Weber et al 1988; Jaramillo and Lederman 2006, p171; Warr 2005)—and hence tend to lose from increases in prices of these staples.

Somewhat surprisingly, little connection appears to have been made between the literature on special products and the literature on the implications of food price policies for poverty that was a major focus of trade and development debates between the 1970s and the early 1990s (Mellor, 1978; Besley and Kanbur, 1988). This literature focused on the strong tendency for low-income developing countries at that time to have artificially depressed prices for agricultural products. Nor has the policy discussion on special products referred to the literature on the political economy of agricultural protection in poor countries (see Anderson and Hayami, 1986; Lindert, 1991) where a key explanation for the historical use of cheap-food policies in poor countries is that poor consumers spend a large share of their incomes on food, and producers (who are typically subsistence-oriented) sell only a small share of their output and hence are not greatly harmed by lower food prices. In the current debate on special products, large budget shares spent on staple foods and subsistence production are being used as arguments for higher food prices.

Another surprising feature of this literature is the widespread claim that low-income, low productivity producers are inherently uncompetitive (see Polaski, 2006; ICTSD, 2005, p. ix). This insistence appears to ignore the fundamental Ricardian insight that what matters for comparative advantage is not absolute, but rather comparative, advantage. Producers such as

rice farmers in Vietnam use much more labor intensive technology than rich-country farmers, and are subsistence-oriented, but have still been highly successful exporters since the beginning of Vietnam's economic reforms.

Low productivity in developing-country agriculture is a serious problem, and increasing this productivity is an important goal, which frequently has very high payoffs, both in aggregate and in terms of reducing poverty. As in other sectors, however, protection creates costs through stimulating inefficient production, without addressing the underlying problem of low productivity or providing effective incentives for learning (Baldwin 1969). Poverty is a complex, multi-dimensional phenomenon, with many causes, and for which a wide range of development-focused policies involving measures such as improved infrastructure, education, technology and improved property rights are likely to be much more effective than trade protection. The limitations of more restrictive trade policy alone are very evident in the case of special product exceptions. Raising prices is more likely to reduce poverty in the case of exportable products, since more households are likely to be net sellers of these products in a country that is, overall, a net seller (exporter) of the product. However, these products are the ones for which import tariffs are, by their nature, ineffective in raising prices.

Several studies have highlighted key features of the context in which special products would be implemented. The work by Jales (2005) demonstrates the frequently very large gaps between bound and applied tariffs (binding overhang) in developing countries, which imply that reductions in bound tariffs would frequently not require reductions in applied tariff rates. Papers by Bernal (2005) and by Hoda (2005) identify the importance of relating food security and livelihood security to the shares of particular foods in individuals' and households' expenditure and incomes, and to measurable indicators such as the number of people in poverty using the World Bank's $1 per day poverty line. However, we are concerned about

the focus of the ICTSD's methodology for identification of special products (2005, p50-1) on the levels of these variables. What seems to be needed is an approach that focuses on the impact of changes in policy on changes in outcomes such as the incomes of the poor and the number of people in poverty. As we will see, shares of income and expenditure from particular crops and the initial poverty incidence and distribution of income do play a key role in determining the impact of changes in the prices of special products on the incomes of individual households, and on poverty outcomes.

As well as the distributional effects, we need to consider the efficiency impacts of sensitive and special products, which determine whether the benefits from a reform allow the gainers to compensate the losers. These have been examined for a more general set of flexibilities, including sensitive and special products, in the global analysis of Anderson, Martin and van der Mensbrugghe (2006), who concluded that the impact of even a very small number of products being allowed much smaller-than-formula reductions could greatly reduce the global gains from agricultural trade reform, and entirely eliminate the gains to developing countries. The losses examined in this study result from the loss of efficiency-improving liberalization of countries' own policies, and from reductions in their market access. A key objective of this study is to complement the Anderson, Martin and van der Mensbrugghe study by focusing directly on the household impacts of some of the products identified as potential special products.

In deciding whether and how to use special product provisions, policy makers in small, poor countries need to be aware of the potential direct impacts on households and on poverty in their own countries, and on the total impacts, taking into account the consequences of their trading partners using these flexibilities, and hence reducing their market access opportunities. The direct impacts are especially important, since only these are under the immediate control of national policy makers, and since other countries' decisions about use

of special products will depend upon the direct impacts in their own economies. Decisions taken at the national level will, in turn, influence the market access outcomes that have been the focus of debate on this issue between developing country members of the WTO.

Higher applied protection resulting from use of special product exceptions on bound rates potentially affect poverty through four broad channels. The first is the effects of commodity prices and wages on incomes in the short run. The second is through the efficiency of resource allocation, and hence aggregate real national income—as resources are diverted away from the activities that yield the highest social returns into those that generate the highest market returns at distorted prices. The third is through changes in productivity—as resources are diverted away from export-oriented activities towards import replacement, productivity tends to fall (see Melitz 2003; Blalock and Gertler 2005; Fernandes and Isgut 2006). A fourth potential linkage comes through the negotiating process. Negotiating capital expended on defensive interests cannot be used to secure greater reforms in the industrial countries—obtaining more in terms of special products is likely to mean accepting smaller reductions in industrial-country protection, and hence smaller welfare gains to developing countries. In this article, we focus on the simplest and most transparent of these linkages—effects on commodity prices and wages—to obtain some indications of potential impacts on poverty.

The book by Hertel and Winters (2006) provides important insights into the effects of trade reform on poverty under the Doha Development Agenda, but does not focus specifically on the policy issue of special products. The recent article by Warr (2005) concludes that Indonesia's current protection to one single special product, rice, is sufficient to raise the poverty rate by one percentage point, while providing significant benefits only to the largest farmers. This article broadens the analysis to a number of the commodities identified as meeting the criteria for special product status, and examines the implications for countries in

different regions, with different agricultural trade patterns, and with different relationships between poverty and the agricultural sector.

Methodology

The G-33's specific proposal for special products in the WTO seeks to allow developing countries to make zero or small cuts in the tariff bindings on up to 20 percent of their agricultural tariffs,[3] in addition to any products classified as sensitive under provisions applying to all WTO members and subject to smaller reduction commitments than other products (G-33, 2005). While countries could choose to exclude any products, the detailed study by ICTSD (2005, page 40) suggests that the products most commonly meeting the stated criteria for special products would include: rice, wheat, maize, sugar, chicken, beef, milk, dairy products, tomatoes, onions and potatoes. We focus on the seven of these commodities that are readily identifiable both in the household data and in the GTAP model of global trade: rice, wheat, sugar, chicken, beef, milk, and dairy products.

To undertake the analysis, we need information on households' production, purchases, own-consumption and sales of these agricultural products, limiting us to countries with household surveys containing this information. This need also precludes using many of the models and data prepared for the Hertel and Winters (2006) volume, since many of these studies focused on changes in factor returns to households, rather than the impacts of commodity price changes on those households.

We represent the impact of price changes on an individual household, *i*, using an expenditure function to characterize household consumption and factor supply behavior and a

[3] In fact, allowing exceptions for 20 percent of tariff lines, in addition to those covered by sensitive product provisions, is enough to exempt virtually all agricultural imports in virtually all cases, a fact highlighted in WTO (2006). Jean, Laborde and Martin (2006) point out the effects of this type of exclusion on average tariff rates, and hence on market access, is likely to be even larger. This reflects the fact that only a relatively small number of tariff lines account for most of the effects of protection. Martin and Anderson (2006) show that exempting five percent of tariff lines in the European Union would mean virtually no liberalization.

profit function to represent household production activities through unincorporated enterprises such as family farms. The expenditure function, $e(p,w,u)$ is defined over a vector of prices of consumed goods, p, a vector w of the prices of supplied factors, and the utility level of the household. The profit function, $\pi(p,w,v)$ is defined over the prices, p, of goods produced or purchased as inputs, w of prices of variable factors purchased; and v of fixed factors such as land, management skills and any quasi-fixed inputs provided by the household to its own firm.

By the envelope theorem, the first derivatives of the expenditure function with respect to prices, e_p, indicate the quantities of goods demanded by the household, while its derivatives with respect to factor prices, e_w, indicate the negative of the quantities of factors supplied. Similarly, the derivatives of the profit function with respect to p, represent the net output supply functions, its derivatives with respect to w, π_w, indicate the negative of the quantities of variable factor inputs demanded; and its derivatives with respect to v represent rates of return to fixed factors.

The vector of outputs of the family firm is given by π_p and the impact of a change in prices, dp, of these goods on firm net revenue is given by $\pi_p dp$. Similarly, the impact of a change in prices of variable factor inputs on the net income of the firm is given by $\pi_w dw$. The impact of a change in prices on the cost of living of the household is given by $e_p dp$ and the impact of a change in factor prices on household returns is given by $e_w dw$. Under constant returns to scale, net profits are given by $\pi_p.p + \pi_w.w$ and are exactly exhausted by returns to factors $\pi_v.v$. The effects of a change in p on profits can e evaluated directly using $\pi_p.dp$ or indirectly by evaluating the derivative of π_v with respect to commodity prices, π_{vp}, and evaluating $\pi_{vp}.dp.v$. Given our focus on changes in the prices of a relatively small number of staple food items, we chose to use the direct impacts $\pi_p.dp$, rather than the more computationally-demanding approach through impacts on returns to quasi-fixed factors.

If utility is held constant, a compensation measure of the impact on the welfare of household *i* resulting from changes in the prices of consumer goods or factors is given by changes in B^i:

$$B^i = e(p,w,u^i) - \pi(p,w,v^i) - \tau^i \quad (1)$$

where τ^i is the transfer to household *i* from the government. This formulation takes into account the fact that increases in the prices of consumption goods raise the cost of attaining a given level of utility, but also raise the profits available to the household from its production activities[4]. Assuming no changes in the transfers made by government, a first-order approximation to the welfare impact of changes in the prices of tradable goods, *dp*, is given by

$$dB^i = z_p{}^i\, dp + z_w{}^i\, (dw/dp)\, dp \quad (2)$$

where $z_p{}^i = e_p{}^i - \pi_p{}^i$ and $z_w{}^i = e_w{}^i - \pi_w{}^i$ represent household *i*'s net purchases of consumer goods and net sales of factors respectively . The matrix (*dw/dp*) is the Stolper-Samuelson matrix relating factor prices to changes in the domestic prices of traded goods.

Equation (2) is converted into percentage change form and used to estimate the compensated change in achievable household expenditure resulting from the policy changes considered. This yields an estimating equation like that used by Deaton (1997):

$$dB^i/e^i = S_i\, dp/p + S_w{}^i\, (dw^i/dp^i)\, dp \quad (3)$$

where dB^i/e^i is the proportional change in the real attainable expenditure of household i; S_i is the vector of shares of net sales in the total net expenditure of the household; and $S_w{}^i$ is the shares of the relevant net factor incomes in total household expenditure. This analysis uses the income and expenditure shares, and information on the distribution of incomes

[4] Because of the absence of distortions at the household level in our framework, the compensation approach used in this paper is identical with the money metric approach used in Chen and Ravallion (2004b).

around the poverty line, identified by ICTSD (2005,p50-1) not as levels, but to assess the impacts of changes in policies on poverty. Equation (3) provides a first-order approximation to the effect of the price changes on real incomes[5].

We calculate the real income level after introduction of the policy by adding the equivalent variation, represented by dB^i, to the current level of observed expenditure B^i for each household to find its achievable level of expenditure after the price changes take effect. By comparing the new achievable level of expenditure with the established poverty-line level of expenditure for each country, we are able to use individual survey records to identify and count the number of households in poverty and the gap between their income level and the poverty line after the change in policy. We then cumulate these shocks to see the impact on poverty, and compare these impacts with those prevailing when wages are also able to adjust. Finally, we use these data to calculate two of the Atkinson poverty measures (Atkinson 1985; Ravallion and van der Walle 1991)—the poverty headcount and the poverty gap. The first measures the percentage of people falling below the poverty line and the second the average percentage of the poverty line by which the incomes of the poor fall below the poverty line.

Before conducting any policy experiments, we consider the impact of hypothetical increases in the prices of individual products on both the poverty headcount and the poverty gap—the gap between the incomes of the poor and their poverty-line income. We do this because we are unsure which commodities will be chosen by individual countries. To assess the impact of product choices on poverty, we first use the same price shock for each commodity to assess the "leverage" of each commodity price change on poverty, abstracting

[5] This first-order approximation has been widely used to assess the implications of trade reform on poverty (see, for example, Chen and Ravallion 2004b). Additional terms reflecting changes in welfare resulting from induced reductions in demand and/or increases in supply could be added, but these are second-order, and hence unlikely to greatly affect the magnitude of the income effects. Adding quantity adjustments would introduce social costs of resource misallocation that are ignored in the current, simpler approach, and which could further increase poverty. We do not model implications of changes in tariff revenues—which may be reductions—on households because of uncertainty about how these changes will be passed to households. Implicitly, we assume that transfers to households or public spending for poor households are unaffected by changes in tariff revenues resulting from tariff changes on this small set of products.

from the large observed differences in the tariff levels and tariff bindings of each commodity (Jales 2005), and the extent to which countries choose to use the flexibility created by these gaps. We complement this with an assessment of the impacts of a uniform increase in the prices of all of these products for poverty. We then consider the impact of allowing for the impact of changes in wage rates resulting from these commodity price changes. Finally, we consider the impact of increases in prices only on the products that are currently net imports, and for which a tariff therefore has the potential to raise prices.

We present key results both with and without impacts of commodity price changes on wage rates for unskilled labor because of the possibility that wages do not change, or that such changes are not passed through to workers, perhaps because of real wage rigidity of the type specified by Polaski (2006). Ravallion (1990) points out that the short-run effect on wages is likely to be considerably smaller than the long run impact, so that effects without wage impacts may be more relevant in the short term. Given the number of commodities involved, we were unable to follow Ravallion's (1990) approach of estimating the impacts on wage rates econometrically. We estimated the impact of changes in unskilled wage rates using a linearized version of the GTAP model (Hertel, 1997, www.gtap.org) to allow decomposition of the total effect on wage rates into components arising from each commodity price.

In our first policy experiment, we take a very conservative view of the impact of a tiered formula based on that proposed by the G-20 group of developing countries in the negotiations. In this case, we estimate price increases from the outcome of the formula back to the original applied rate as our price shocks, assuming that the current applied tariff will continue to apply unless the tariff binding requires a change in its value. In this simulation, we assume that each country is a small economy facing given world prices for these products. For consistency with this assumption, we make domestic and foreign goods near-perfect

substitutes when using the GTAP model to calculate the impact of commodity price changes on wages. Initially, we assume that products are homogenous, and that changes in the prices of imported goods are directly transmitted into the domestic market. Because of the assumption of homogeneous products, changes in tariffs affect only the prices of goods that were imported in the base year.

We repeat this first policy experiment, moving away from the assumptions of perfect substitution between imported and domestic goods. Instead, we apply the tariff changes in a more complex general equilibrium model (GTAP), which incorporates many phenomena that were excluded in the partial equilibrium analyses. For our purposes, the most important of these is the differentiation between imported and domestic goods which has the effect of reducing the impact of trade liberalization on domestic prices, or acting as a proxy for imperfect price transmission of the type identified by Nicita (2005) as a potentially important influence on poverty impacts of trade reform. We apply the estimated changes in domestic prices to the net trade position of each household in order to calculate the effects on income levels of each household, and hence on poverty outcomes.

As ICTSD (2005, p28) notes, there is some doubt whether the assumption that applied tariff rates will stay the same in the future is appropriate—with a special-product exception, national policy makers would have the right to raise their tariffs to higher binding levels. To assess the consequences of full utilization of this policy flexibility after a Doha agreement, we repeat our first experiment under the alternative assumption that applied tariffs rise to their bound levels. This corresponds to the previously-discussed case of Korea, where political pressures to raise tariffs lead to generally very high applied tariff rates. It provides an indication of the maximum extent to which the exceptions for special products in the current round of negotiations might allow increases in applied tariff rates, and then assesses the impact on poverty. Finally, we repeated this full-utilization experiment using the GTAP

model to assess the consequences of these special-product exceptions where domestic and imported goods are imperfect substitutes.

For this work, we needed household survey information on supply, demand and net sales of special products—a constraint that, together with the need to work carefully with these data and with the computational requirements, narrowed the range of countries we could consider. We sought relatively poor countries from different regions, with different relationships between poverty and location, and between poverty and sources of income household; and with different net trade positions in agriculture so that we would include both net exporters and net importers in this article.

The four countries for which we were able to obtain and analyze suitable, high-quality data were Nicaragua (Nicaragua, 2001), Pakistan (Pakistan, 1999), Vietnam (Vietnam, 1998) and Zambia (Zambia, 1998). These sample countries span a wide range of types of low income countries. Nicaragua and Pakistan are WTO members eligible for special products, while Zambia is a least-developed country not required to undertake any liberalization from its current tariff bindings; and Vietnam's application for accession to the WTO has just been accepted. For each household, we used three broad sets of information—its total initial expenditure; its expenditures and sales of special products; and its net supply of unskilled labor outside the household firm. Because of the generally higher poverty rates in rural than in urban areas, and the focus of this study on agricultural products, we categorized each household as either rural or urban based on the classification used in the survey.

Figure 1 shows the net sales position as a share of total expenditures for major special products by households in different income quintiles, with commodities shown on the left hand axis and unskilled labor on the right hand axis. Fortunately, most of the products considered are consumed in relatively raw form, and we added consumption of identifiable products such as bread to the consumption data for raw products such as wheat. These figures

can provide useful insights into the effects of price changes on the real incomes of individuals at each income level. However, they are not definitive in their effects on poverty, since the poor are very diverse and those on the threshold of poverty may have quite different characteristics from others in their overall income quintile.

The first two panels of Figure 1 show some interesting patterns. For instance, they show that both the urban and rural poor in Nicaragua are substantial net buyers of sugar, rice, dairy products and other meats. In Pakistan, the situation is quite different, with the rural poor being net sellers of dairy products, rice and wheat, and relying heavily on their wage incomes, while the poorest urban households are net consumers of special products. On average, rural households tend to be smaller net consumers of special products than urban households, although in Nicaragua and in Zambia both urban and rural households are, on average, net buyers of these commodities. Another striking feature of these graphs is that the poorest households in Nicaragua are much more dependent than households in other countries on purchasing these basic foods from the market.

For our initial assessment of the poverty impacts, we obtained the standard "dollar-a-day"[6] measures of poverty from the World Development Indicators (WDI) database of the World Bank for each of our countries. We used these numbers to identify the households that initially lay below the poverty line and also to determine the level of poverty-line expenditure for further calculations.

The initial poverty headcount and poverty gap numbers are presented in the first column of Table 5. The initial poverty headcounts varied considerably between countries, from 63.7 percent in Zambia to 2.0 percent in Vietnam, with Pakistan and Nicaragua in between at 13.4 percent and 45.1 percent. In all countries, the headcount was higher in rural

[6] According to this definition, a person is poor if he/she consumes less that 1.08 USD in 1993 Purchasing Power Parity terms

areas, with 80 percent of rural people poor in Zambia, 61 percent in Nicaragua; 16.4 percent in Pakistan and 2.4 percent in Vietnam. The poverty gap numbers show that the incomes of those classified as poor fell substantially below the poverty line on average. For Pakistan and Vietnam the average shortfalls were roughly 22 and 25 percent of the poverty line. For Nicaragua, the gap averaged almost 39 percent. In Zambia, the incomes of the urban poor were more than 40 percent below the poverty line, while those of the rural poor were 62 percent below, with an average poverty gap of 54.3 percent.

General equilibrium Analysis

We used the GTAP model (Hertel 1997) to estimate the impacts of changes in commodity prices on wage rates in all of our policy simulations, and to assess the impact of changes in tariffs on domestic prices in our 'imperfect substitutes" experiments. The commodity and country aggregation used in the model-based analysis is shown in Table 3. We estimated the impacts on wage rates in our perfect-substitutes experiments using a linearized version of the model that allowed us to express the impacts on wages of unskilled labor as a function of exogenous changes in domestic prices p^* and a matrix of data and parameters M that yields percentage changes in the endogenous wage, w^*. The matrix M was developed from the standard GTAP database of trade, production, consumption and behavioral parameters, with the exception of the Armington import-substitution parameters that we raised from an average of around six to a uniform 50 for consistency with the small, open economy approach used in these simulations. No labor market distortions were included, so the model yields estimates of the change in the long-run equilibrium wage rate for unskilled labor under competitive market conditions.

From the relationship, $w^* = Mp^*$, we estimated changes in unskilled wages in a way that allowed us to decompose the total impacts into contributions from changes in the price of each commodity. Our choice of model closure was long-run, with capital completely mobile

across sectors, while natural resources and labor were immobile and agricultural land partly mobile between agricultural sectors. Table 2 shows the effect of a one percent change in the domestic price of each special product on the wage rate for unskilled labor. Most of these are 0.05 or below, with exceptions for chicken in Vietnam (0.09) and Zambia (0.07), and dairy products (0.2) in Pakistan. The total effect on wage rates of 0.36 in Pakistan is in the same order of magnitude as the long-run elasticity of 0.47 used by Ravallion (1990) for Bangladesh, while the estimated total impacts are smaller in the other sample countries.

Because of concerns that our perfect-substitutes assumption overstated the impact of changes in tariffs on domestic prices, we also undertook our policy experiments under the assumption that domestic and imported goods are imperfect substitutes. Implementing this assumption on a consistent basis means making each country's exports imperfect substitutes for foreign products, and therefore requires the use of a global model. For this analysis, we used a version of the GTAP model linearized in percentage changes to assess impacts on the domestic prices under this set of assumptions. Because the standard elasticities of substitution between domestic and imported goods produced implausibly small impacts on domestic prices, we set these parameters at twice their levels in the standard GTAP database.

Results

Because we do not know which prices will be changed as a result of special products, it is important to understand the impacts of changes in individual products. With information of this type policy makers have some guidance about the likely impacts of choosing particular products, and analysts some basis for assessing the impacts of policy makers' choices. The results presented in Table 5, show the impacts of choosing particular products. The second set of results, presented in Table 6, shows the impacts of particular combinations of price changes that might be consistent with use of special product exceptions in the context of formulas of the type currently under negotiation.

The illustrative results presented in Table 5 are for a uniform 50 percent increase in each product price relative to its level in the absence of flexibilities.[7] These results show that the sensitivity of the poverty rate to prices differs greatly between products and countries. In Pakistan, for instance, increases in the price of rice have very little impact, while increases in the price of wheat and sugar have a marked impact, with a 50 percent increase in the price of wheat alone raising the poverty rate by 1.2 percent. In Nicaragua, by contrast, increases in the prices of dairy products and of rice appear to have the largest adverse impact on the poverty rate. In Vietnam, the impacts on the poverty rate are generally small, reflecting the fact that very few people are near the one-dollar a day poverty line, and that most households have much smaller net sale/purchase positions in these products. However, an important feature of the table is the fact that for almost all individual products, and for the full set of products, the effects of price increases are almost always to increase poverty. Only for rice in Pakistan and other meat in Vietnam do increases in prices reduce the national poverty headcount.

The results for changes in the poverty gap in the lower part of Table 5 show the impacts on the incomes of the initially poor of changes in commodity prices. As for the poverty headcount, there are substantial differences in the effects by commodity. Increases in the price of wheat have the most marked adverse impact on the poverty gap in Pakistan, with a 50 percent increase in the price of wheat reducing the incomes of the poor by 2.6 percent of the $1 per day poverty line. Sugar would have the next largest adverse impacts, reducing the incomes of the poor by 1.8 percent. Although the poverty headcount was little affected by price changes in Vietnam, the poverty gap—which is much less sensitive to whether many poor people are initially very close to the poverty line-- rises substantially in a number of cases. A 50 percent increase in the price of wheat alone would raise the poverty gap for urban

[7] The scale of this price increase is quite large relative to those likely to be made feasible by proposed tariff-cutting formulas in the Doha Round but small relative to the flexibility available for many countries to raise rates from current applied rates. Other estimates prepared for smaller tariff cuts, and available on request from the authors, show a broadly similar pattern.

people by 6.4 percent. In Nicaragua, the products for which price increases would have the most strongly adverse impacts are dairy products, rice and other meats.

Increases in the poverty gap resulting from particular commodity price increases are generally largest for the urban poor. In Pakistan, for instance, the poverty gap for the urban poor would rise by 3.7 percent, while the poverty gap for the rural poor would rise by 2.3 percent. In Vietnam, an increase in the price of rice would raise the poverty gap for the urban poor by 6.4 percent, while reducing it by 0.2 percent for the rural poor.

If policy flexibilities allowed prices of all of the potential special products to rise 50 percent above their levels in the absence of flexibility, and policy makers chose to use this flexibility, it appears that poverty could rise substantially in three of the four countries in our sample. In Nicaragua, the increase in poverty would be much larger than in the other countries, with the poverty rate rising by 10 percentage points—more than three times the reduction reported between 1993 and 2001 (see Chen and Ravallion 2004a). The increase of 3.5 percentage points in Pakistan would increase the proportion of people below the poverty line by more than a quarter of its original level. Urban poverty in Pakistan would increase by 4.6 percentage points, more than half its initial level. The increase in poverty of 3.3 percentage points in Zambia would throw ten percent of the people initially classified as non-poor into poverty.

The poverty gap results show the potential for sharp deteriorations in the incomes of those who were initially poor in three of the four countries if the prices of all of these products rose simultaneously. In Pakistan and Nicaragua, the incomes of the poor fall by 8 and 12 percent of the poverty line respectively. Even though the poverty headcount does not rise substantially in Vietnam, the incomes of those in poverty fall significantly, by 12 percent of the poverty line in urban areas. In Zambia, the poverty gap rises by 3.7 percent.

From a methodological viewpoint, the poverty headcount and poverty gap results in the column for All Products Without Wages indicate that many households below or near the poverty line are net buyers of special products, and hence lose from increases in their prices. This provides a valuable basis for comparison with a number of countries not included in our study. Christiaensen and Demery (2006) find that net buyers of staple crops in the bottom income quintile vastly outnumber net sellers in Madagascar, Kenya, Ethiopia and Tanzania. Jaramillo and Lederman find the same preponderance of net buyers over net sellers in Nicaragua, Guatemala and El Salvador, while McMillan, Zwane and Ashraf (2005) find the same for Mexico. Warr's (2005) results for rice are consistent with the poor being net consumers in Indonesia.

The second-last column of Table 5 takes into account not only the direct impact of commodity price changes on poverty, but also indirect impacts through unskilled wage rates. Because wages are an important source of income for many households, especially urban ones, the inclusion of wage changes results in somewhat less adverse impact on poverty than when only commodity price impacts are considered. However, the estimated increase in poverty in Pakistan, at 2.4 percentage points, is still sufficient to raise poverty by one-sixth of the initial rate. The increase in the poverty rate of 7.5 percentage points in Nicaragua is still large, and the increase of 1.5 percentage points in Zambia would be sufficient to impoverish one in twenty of the initially non-poor.

In the final column of Table 5, we compared the results in the preceding column with one where prices are higher only on products that were net imports in the survey year. This takes into account the fact that a tariff can increase domestic prices of homogenous goods only if these goods are being imported. If higher prices for the staple foods were a poverty-reducing policy, then removing those goods that are exported might be expected to reduce the poverty-reduction benefits. With the country as a whole having an exportable surplus, more

than the usual number of poor households might also be expected to have a marketable surplus. In fact, as we have seen, higher prices for these products generally appear to be a poverty-increasing policy. It turns out that the inability to bring about higher prices for those products that currently happen to be exportables reduces the adverse impact of price increases on poverty.

The poverty increases reported in the final column of Table 5 are generally smaller than those for all products. Nonetheless, they are still unfavorable or neutral (in the case of Vietnam) for the poor with the exception of Pakistan. In all other cases we observe an increase in poverty, with the increase in poverty in Nicaragua remaining very substantial at 3.8 percentage points overall, and 4.1 percentage points in rural areas.

In the first pair of policy simulations presented in Table 6, we assume that tariffs will be higher as a result of a special product exception only in those cases where reductions in the bound tariffs would have required reductions in applied rate, and this reduction is not required because of the special product exception. If the formula cut does not bring about a large enough reduction in the bound tariff to require a reduction in the applied rate, then exclusion of this commodity via a special product exception has no impact on applied tariff rates, and hence no economic impact. If the formula cut does require a reduction in the applied rate, the effect of a special product exception is to allow the applied tariff to rise from its post-formula level back to its original level.

To implement this concept, we first used data on bound and applied tariff rates (see Bchir, Jean and Laborde 2005) to calculate the impact of cuts in bound tariffs on applied rates. We initially undertook this analysis using the G-20 formula for developing countries proposed in October 2005, but found no almost no reductions in applied rates in our sample countries. Since this formula was only a proposal and a final agreement might involve larger cuts, we increased the cuts by roughly twenty percent in each category to bring them more in

line with the traditional WTO pattern under which developing-country cuts are two-thirds of those required of industrial countries under the G-20 proposal[8] (see Table 4 for the cuts actually implemented).

Table 8 shows the percentage-point cuts in applied tariffs for all of the G-33 countries, which are zero in the vast majority of cases. Only in seven percent of cases, would the resulting cut exceed 10 percentage points. To examine the effects of such actual cuts, we calculated the prospective cuts in the applied agricultural tariffs of our focus countries using our modified G-20 formula (shown in Table 4) and found that only in one case, rice in Nicaragua, would exemption from formula cuts result in a 5.5 percentage point increase in the applied tariff rate, or a 4.3 percent increase in the market price.

The first Doha Round experiment reported in Table 6 – for minimal utilization with homogeneous products—takes into account only the reduction of 5.5 percentage points in the tariff on Nicaraguan rice discussed above. Raising the market price of rice by 4.3 percent to restore the tariff to its original level turns out to increase the poverty rate in Nicaragua by 0.2 percent, and to increase the poverty gap by 0.2 percent. When we allow for imperfect substitution between imported and domestic goods, the price rise falls to 0.9 percent, and the consequent impacts on poverty are barely evident in our table, with the poverty rate rising by only 0.1 percent in rural Nicaragua.

The final two columns of Table 6 refer to a situation in which the effect of a special product exception is fully utlised by an increase in the applied rate. This might arise because a country has no binding overhang, perhaps because its bindings were set close to its applied

[8] The resulting cuts in tariff bindings are still less than two-thirds of those in industrial countries because of the much wider bands used in developing countries—the highest cuts, for example, do not begin until 130 percent in developing countries, rather than 90 percent in the industrial countries. The cuts in applied rates are reduced even further because of the greater gaps between bound and applied rates in developing countries (Jean, Laborde and Martin 2006).

rates—as is the case for China—or perhaps because political-economy pressures for protection have resulted in applied rates rising to bound levels on key products.

In the perfect-substitutes, full-utilization case, the price rises are quite substantial in many cases, with sugar, beef and dairy prices rising by 43, 28 and 28 percent in Pakistan, and beef, dairy products and rice rising by almost 32 percent in Zambia. Under the homogeneous-products assumption, the prices of many products do not rise because they were exportables in the survey year. Wages for unskilled workers rise by 9.4 percent in Pakistan, sharply reducing the adverse poverty impacts in that country. In Pakistan, the overall impacts on poverty are quite small, with a reduction in rural poverty offset by an increase in urban poverty, for an overall increase in poverty of 0.3 percent. The increase in the poverty rate in Nicaragua is estimated at 1.6 percent in rural areas and 1.5 percent overall. In Zambia, poverty increases by 0.8 percent in urban areas and 0.5 percent overall.

When potential imperfect substitution is taken into account, the increases in poverty are smaller than in the perfect substitutes case. The increase in poverty in Pakistan falls close to zero. In Nicaragua, the rise in the poverty headcount falls to 0.7 percent overall and in Zambia to 0.3 percent. The poverty gap results decline in absolute value, with the decline in the income of the poor falling to 0.5 percent of the poverty line in Nicaragua, 0.3 percent in Zambia, and 0.1 percent in Pakistan. One interpretation of the policy results in Table 6 might be that they are relatively small. However, they are, in all cases except Full-Utilization, Perfect-Substitutes in rural Pakistan adverse for poverty.

There are also long run considerations. The greatest achievement of the multilateral trading system was the progressive reduction in tariffs on non-industrial products through eight successive rounds of negotiations. Arguably, the greatest failing of that process was the frequent resort to exceptions that left behind tariff peaks for products such as clothing and footwear that have done enormous damage to developing country exports. The costs of those

widespread and deep exceptions, cumulated through multiple rounds of negotiations, were much larger than the costs of foregone liberalization in the first round. The costs of widespread and deep use of special product exceptions in developing countries both in terms of efficiency and in terms of poverty reduction could likewise cumulate from the losses in the Doha round.

Alternative Policy Approaches—to be completed

This section will briefly examine the impacts of alternative approaches to increasing food and livelihood security, particularly an increase in productivity for these staple foods. It will draw on simple estimates of the impacts of improvements in agricultural technology to be undertaken in our sample countries, and more detailed estimates in Christiaensen and Demery (2006), Porto (2006) and other sources.

Summary and Conclusions

In this paper, we first examined the key arguments advanced for special product exceptions in the current WTO agricultural negotiations. The stated objectives of this policy are to improve food security, livelihood security and rural development. The key instrument proposed is smaller, or zero, reductions in the tariff bindings on products identified according to a set of criteria that include the importance of the good as a staple food, its shares in income and expenditures, and in nutrition, and that it is produced by subsistence farmers. A detailed study by ICTSD (2005) identified a set of staple foods that it believed would most frequently meet these criteria.

While it is difficult to predict exactly what use will be made of flexibilities of this type, it is clear that such exceptions will have an effect only if they allow applied tariffs to be higher than they would be in the absence of this exception, and if these higher tariffs result in

higher domestic prices than would otherwise be the case. A key concern with the ICTSD's proposed approach to product selection is that poor consumers are likely to spend large shares of their incomes on these products and near-subsistence producers in poor countries are likely to receive little benefit if their marketable surplus is small relative to their total income. This concern is intensified by the accumulated evidence that poor people in rural areas are most commonly net buyers of staple foods.

Evaluation of the effects of these proposals on poverty requires analysis using detailed, high-quality household data. We undertook this analysis using over 40,000 households in four very different low-income countries: Pakistan, Vietnam, Nicaragua and Zambia. Preliminary analysis using uniform changes in prices found that the poverty impacts or higher staple food prices depended heavily upon the country and the particular food price chosen, but that higher prices for virtually all of these products resulted in increased poverty. The poverty-increasing effects of higher prices of the staple foods targeted under special product proposals are reduced somewhat, but remain adverse, if wages for unskilled labor are able to increase to rise to reduce the adverse impacts on households that depend heavily on wage labor.

Two policy experiments were used to assess the direct impacts of special products in the Doha agenda. The first assumed that applied tariffs would increase as a consequence of special product exceptions only when reductions in tariff bindings require reductions in applied tariffs. In this case, it was assumed that the exceptions would be used to restore applied tariffs to their original levels. Under this scenario, the special product exceptions are likely to lead to extremely small increases in poverty simply because the gaps between bound and applied tariffs are so large in most G-33 countries, and particularly in our sample countries.

A second policy scenario assumes that special product exceptions are used to raise applied rates by the full extent permitted by the increase in the bound rate following application of the formula. This maximal-utilization scenario resulted in increases in poverty between zero and 1.5 percent in the three countries for which it could be undertaken. In no case did use of the flexibilities for the staple products considered result in a reduction in poverty.

The broad findings of this paper seem likely to be replicated in many other countries, given the evidence that poor rural households are net buyers of staple foods in many poor developing countries. However, much more analysis is clearly needed if the effects of key policy choices for special products on poverty are to be fully understood.

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Table 1: Overview of the household survey data

	Rural	Urban	Total
Pakistan (1998-99)	10,254	5,909	16,163
Vietnam (1997-98)	4,269	1,730	5,999
Nicaragua (2001)	1,790	2,211	4,001
Zambia (1998)	8,385	8,161	16,546

Table 2: Relationship between percentage changes in selected commodity prices and unskilled wages

	Rice	Wheat	Sugar	Bovine Meat	Chicken	Dairy	Total
Nicaragua	0.01	0.00	0.03	0.04	0.05	0.03	0.16
Pakistan	0.03	0.00	0.05	0.03	0.05	0.20	0.36
Vietnam	0.02	-0.01	0.00	0.00	0.09	0.01	0.11
Zambia	0.02	-0.01	0.04	0.02	0.07	0.01	0.15

Table 3: GTAP aggregation used in this article

Commodities	**Regions**
Rice	Oceania
Wheat	Asia
Other cereal grains	Vietnam
Fruits and vegetables	Pakistan
Oil seeds	North America
Sugar	Latin America
Plant-based fibers	Central America
Other crops	Europe
Bovine meat	Zambia
Other meat	Africa
Wool	
Raw materials	**Factors**
Vegetable oils	Land (immobile)
Dairy	Natural resources (immobile)
Other food	Skilled labor (immobile)
Beverages and tobacco	Unskilled labor (immobile)
Manufactures	Capital (mobile)
Services	

Table 4: G-20 proposal and our simulated cuts

Band	Original	Simulated
%	%	%
0–30	25	30
30–80	30	37
80–130	35	43
> 130	40	50
cap of 150%		

Table 5: Poverty impacts of 50 percent increases in prices of the listed commodities, $1 per day poverty line

			Change from original in percentage points								
Poverty headcount	Rural	Poverty Headcount	Rice	Wheat	Sugar	Bovine meat	Other meat	Dairy	All w/o wages	All With Wages	Imports With Wages
Pakistan	Rural	16.4	-0.2	1.0	1.0	0.2	0.1	0.0	2.8	1.3	-0.4
	Urban	8.0	0.1	1.4	0.4	0.4	0.2	1.2	4.6	4.0	1.9
	Total	13.4	-0.1	1.2	0.8	0.3	0.1	0.4	3.5	2.3	0.4
Vietnam	Rural	2.4	-0.1	0.0	0.0	0.0	-0.2	0.0	-0.3	-0.3	0.0
	Urban	0.9	0.2	0.0	0.1	0.0	0.2	0.1	0.3	0.3	0.1
	Total	2.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.0
Nicaragua	Rural	61.1	2.9	0.0	1.8	-0.5	2.8	4.2	10.1	7.9	4.1
	Urban	32.1	2.4	0.0	1.2	1.3	2.3	3.0	10.2	7.1	3.7
	Total	45.1	2.6	0.0	1.5	0.5	2.5	3.6	10.2	7.4	3.8
Zambia	Rural	80.0	0.1	0.2	0.4	0.1	1.5	0.1	2.5	2.0	0.5
	Urban	46.9	0.4	0.0	0.8	0.8	1.3	0.7	4.1	0.9	1.3
	Total	63.7	0.2	0.1	0.6	0.5	1.4	0.4	3.3	1.5	0.9
			Change from original in percentage points								
Poverty gap	Rural	Poverty Gap	Rice	Wheat	Sugar	Bovine meat	Other meat	Dairy	All w/o wages	All With Wages	Imports With Wages
Pakistan	Rural	22.2	-0.1	2.3	1.8	0.2	0.1	0.4	6.8	4.3	0.3
	Urban	23.0	0.4	3.7	1.5	1.0	0.4	3.3	13.4	11.0	4.8
	Total	22.4	0.0	2.6	1.8	0.4	0.2	1.0	8.3	5.8	1.3
Vietnam	Rural	25.7	-0.2	0.2	0.2	-0.2	0.2	0.0	0.6	0.1	0.3
	Urban	18.5	6.4	0.3	0.5	0.0	3.4	0.6	12.5	11.0	1.4
	Total	24.7	0.7	0.3	0.3	-0.2	0.7	0.1	2.2	1.6	0.4
Nicaragua	Rural	42.2	2.7	0.0	1.8	-0.3	2.0	3.5	10.6	7.8	3.9
	Urban	33.3	3.0	0.0	1.8	1.0	2.7	3.2	14.0	9.2	4.5
	Total	38.7	2.8	0.0	1.8	0.2	2.3	3.4	11.9	8.4	4.1
Zambia	Rural	61.2	0.2	0.5	0.6	0.1	1.7	0.2	3.3	2.8	0.9
	Urban	42.3	0.4	0.1	1.1	0.8	1.3	0.5	4.3	1.0	1.1
	Total	54.3	0.2	0.3	0.8	0.4	1.5	0.3	3.7	2.1	1.0

Table 6: Original Poverty Headcount and Gap, and Percentage point changes from changes in bindings, $1 per day Poverty Line

			Change from original in percentage points			
Poverty Headcount		Original rate	Minimal Utilization		Full Utilization	
			Perfect Substitutes	Imperfect Substitutes	Perfect Substitutes	Imperfect Substitutes
		%	%	%	%	%
Pakistan	Rural	16.4	0.0	0.0	-0.2	0.0
	Urban	8.0	0.0	0.0	1.1	0.1
	Total	13.4	0.0	0.0	0.3	0.0
Vietnam	Rural	2.4	na	na	na	na
	Urban	0.9	na	na	na	na
	Total	2.0	na	na	na	na
Nicaragua	Rural	61.1	0.3	0.1	1.6	0.9
	Urban	32.1	0.2	0.0	1.4	0.5
	Total	45.1	0.2	0.0	1.5	0.7
Zambia	Rural	80.0	0.0	0.0	0.2	0.1
	Urban	46.9	0.0	0.0	0.8	0.4
	Total	63.7	0.0	0.0	0.5	0.3
Poverty Gap						
Pakistan	Rural	22.2	0.0	0.0	0.1	0.0
	Urban	23.0	0.0	0.0	2.6	0.3
	Total	22.4	0.0	0.0	0.6	0.1
Vietnam	Rural	25.7	na	na	na	na
	Urban	18.5	na	na	na	na
	Total	24.7	na	na	na	na
Nicaragua	Rural	42.2	0.2	0.0	1.1	0.5
	Urban	33.3	0.2	0.0	1.2	0.5
	Total	38.7	0.2	0.0	1.1	0.5
Zambia	Rural	61.2	0.0	0.0	0.4	0.3
	Urban	42.2	0.0	0.0	0.6	0.3
	Total	54.3	0.0	0.0	0.4	0.3

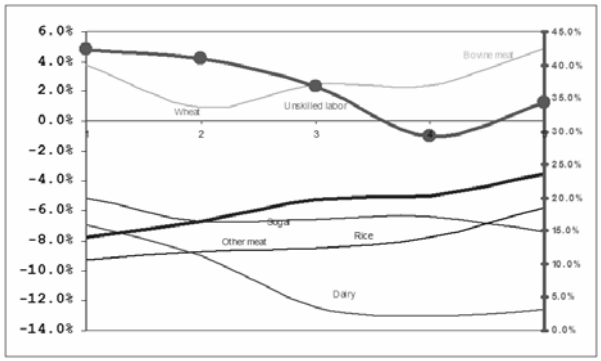
Table 7: Changes in the prices of special products and induced changes in wages

	50 percent rise (perfect substitution)	50 percent rise (imperfect substitution)	Minimal scenario (perfect substitution)	Minimal scenario (imperfect substitution)	Maximal scenario (perfect substitution)	Maximal scenario (imperfect substitution)
Pakistan	%					
Bovine meat	50.0	2.2	0.0	0.0	27.6	1.1
Dairy	50.0	1.2	0.0	0.0	27.5	0.7
Other meat	50.0	5.7	0.0	0.0	0.0	2.9
Rice	50.0	0.9	0.0	0.0	0.0	0.5
Sugar	50.0	6.7	0.0	0.0	42.8	5.6
Unskilled labor	17.2	0.9	0.0	0.0	9.4	0.6
Wheat	50.0	1.7	0.0	0.0	0.0	1.3
Vietnam						
Bovine meat	50.0	14.6	0.0	0.0	0.0	0.0
Dairy	50.0	35.8	0.0	0.0	0.0	0.0
Other meat	50.0	6.4	0.0	0.0	0.0	0.0
Rice	50.0	1.5	0.0	0.0	0.0	0.0
Sugar	50.0	19.3	0.0	0.0	0.0	0.0
Unskilled labor	1.1	0.8	0.0	0.0	0.0	0.0
Wheat	50.0	19.3	0.0	0.0	0.0	0.0
Nicaragua						
Bovine meat	50.0	5.9	0.0	0.0	0.0	1.6
Dairy	50.0	13.2	0.0	0.0	0.0	4.9
Other meat	50.0	9.4	0.0	0.0	15.9	3.1
Rice	50.0	11.0	4.4	0.9	14.5	3.2
Sugar	50.0	1.7	0.0	0.0	0.0	0.5
Unskilled labor	10.3	1.5	0.1	0.0	1.2	0.5
Wheat	50.0	39.6	0.0	0.0	11.7	9.4
Zambia						
Bovine meat	50.0	10.2	0.0	0.0	31.7	6.5
Dairy	50.0	30.3	0.0	0.0	31.7	19.3
Other meat	50.0	3.0	0.0	0.0	0.0	2.1
Rice	50.0	20.8	0.0	0.0	31.7	12.6
Sugar	50.0	0.8	0.0	0.0	0.0	0.6
Unskilled labor	10.9	0.5	0.0	0.0	1.4	0.5
Wheat	50.0	39.4	0.0	0.0	12.8	10.5

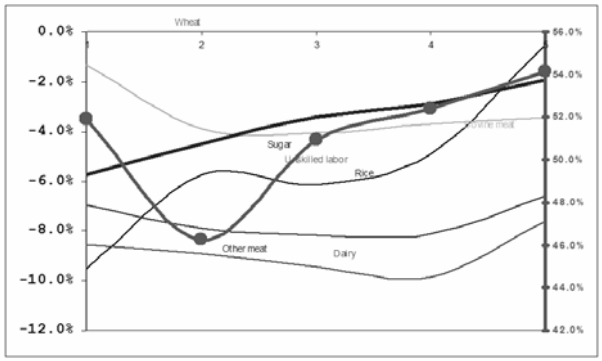
Table 8: Percentage-point cuts in applied tariffs on special products in G-33 countries as implied by the G-20 formula

	Bovine meat	Dairy	Other meat	Rice	Sugar	Wheat
Benin		3				
Botswana		7			10	19
China	8	14	3			
Congo		1	2		9	
Cote d'Ivoire	9	7	12		9	
Dominican republic			1			
El Salvador		1	4	4		
Guatemala	1	1				
Guyana						
Honduras		1		1	8	
India	1	11		27		43
Indonesia						
Jamaica						
Kenya					11	
Korea	14	17	3			
Madagascar						
Mauritius						
Mozambique						
Nicaragua				6		
Nigeria		1	3			
Pakistan						
Panama	2	20	3	49	31	
Peru	2	1	4			
Philippines			12		5	
Senegal						
Sri Lanka				3		
Suriname	2	1	2	3		
Tanzania						
Trinidad & Tobago						
Turkey	1	13	1	3	21	
Uganda						
Venezuela						
Zambia						
Zimbabwe						

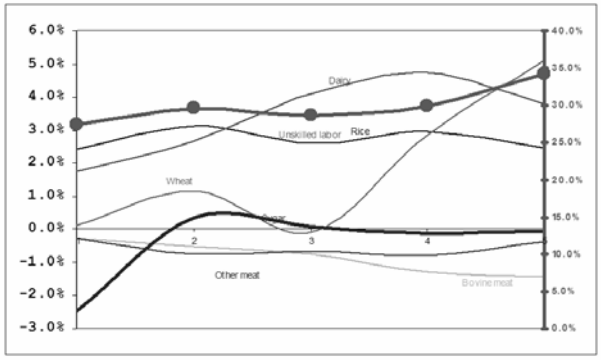
Figure 1: Share of net income/expenditure from selling/consuming specified commodities by quintiles[9]



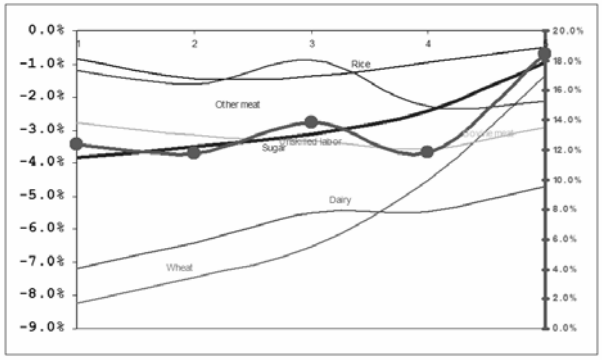
Nicaragua—Rural



Nicaragua—Urban



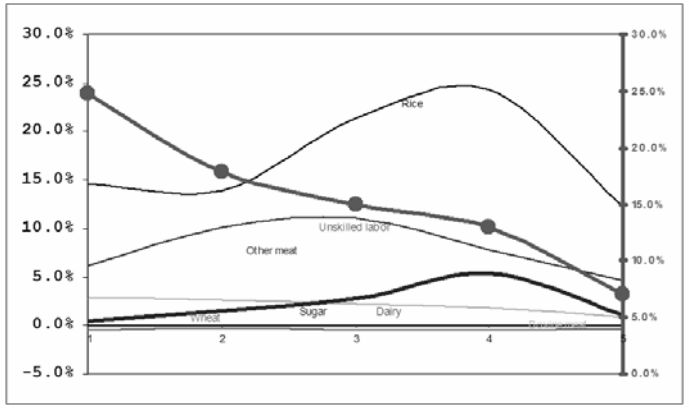
Pakistan—Rural



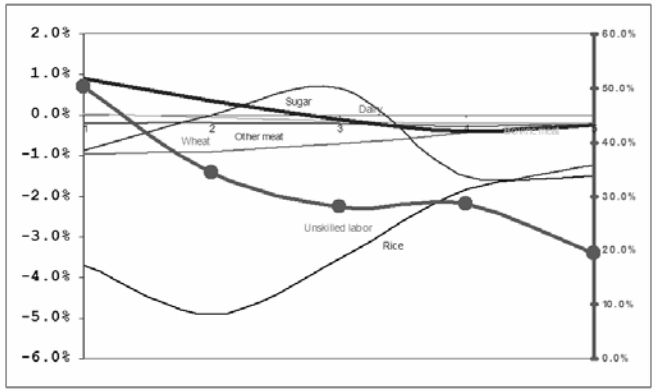
Pakistan—Urban

[9] Commodity shares are shown on the left axis, and the share of unskilled labor on the right hand axis.

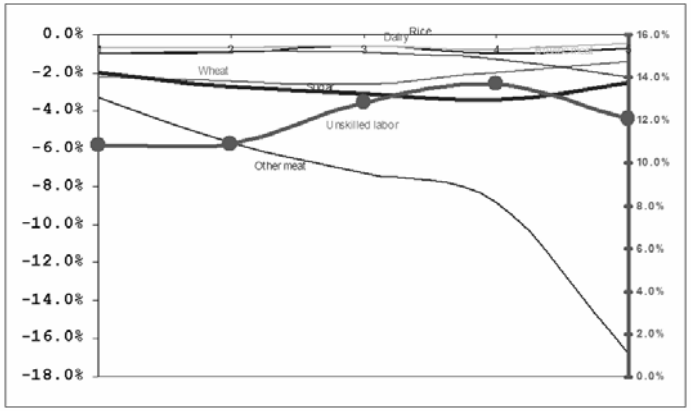
Figure 1: Share of net income/expenditure from selling/consuming specified commodities by quintiles[10]
(contd)



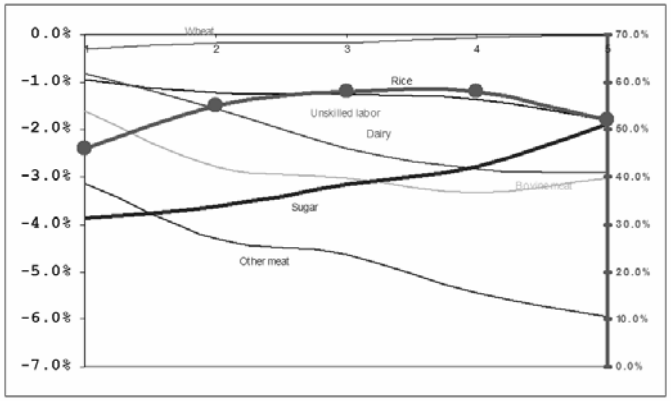
Vietnam—Rural



Vietnam—Urban



Zambia—Rural



Zambia—Urban

[10] Commodity shares are shown on the left axis, and the share of unskilled labor on the right hand axis.