

PART IV

DOHA REFORM SCENARIOS

HOLOGRAMS AND GHOSTS: NEW AND OLD IDEAS FOR AGRICULTURAL POLICY

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As the Doha Round of the World Trade Organization (WTO) negotiations progresses, achieving substantial liberalization of agricultural trade looks as problematic as always. One reason is that just a few years after the Uruguay Round agreements put the first full set of multilateral trade and subsidy rules in place for agriculture, world prices of agricultural commodities plummeted. Despite the new rules, the levels of subsidies rose sharply among developed countries and, simultaneously, some countries with fewer fiscal resources responded by increasing border protection to shield their domestic farmers from the price decline. Continuation of a prisoner's dilemma—with high subsidies in developed countries matched by high bindings on tariffs in developing countries—remains a possible Doha result. If so, the Doha Round may be lauded for what it accomplishes, but it will not have accomplished very much in agriculture. A more desirable outcome would be the globally efficient and welfare-enhancing one of low subsidies and low protection. The negotiations as of mid-2005 have demonstrated the difficulty of achieving this goal in this round. They have demonstrated equally that an unbalanced outcome of high subsidies in developed countries but low protection in developing countries, or of low developed-country subsidies with high developing-country protection, will not happen either.

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One problem that has made progress difficult is “dirty decoupling,” which has discredited the constructive reform strategy of reducing the production- and trade-distorting effects of farm support programs, just as “dirty tariffication” marred the Uruguay Round elimination of quantitative trade restrictions and left high levels of protection in place. Decoupling of payments is supposed to eliminate distorting policy effects. But governments of developing countries, and others that provide few subsidies, are skeptical that the payments implemented as “decoupled” are isolated from production decisions. In any case, when prices are low, these payments extend help from governments to farm producers. The countries with less budgetary latitude are loath to give up their tools to extend such aid, even tools that are economically inefficient, as long as the subsidizers keep subsidizing.

In this chapter we explore the policy instruments that developed and developing countries might adopt to facilitate a substantial liberalization of agricultural trade. The various rules and derogations in place and being negotiated under different colored boxes or pillars inherited from the Uruguay Round Agreement on Agriculture (URAA) are far from being a template for optimal agricultural policies worldwide or a road map for how to get there.¹ We keep these pillars and assessments in mind but step back from the negotiation specifics to look at the broad outlines of policy.

For the developed countries, we focus first on whether decoupling can be made more convincing. One approach would be a commitment to end farm programs by buying out program beneficiaries so that subsidies are terminated. In the past, bringing an end to farm support programs has proven to be a hologram: the image sometimes appears but can never be grasped and made real. We also consider a very different way to end current subsidy payments through strengthened supply management to prop up farm commodity prices. This is a ghost of farm policies past, being revived in the guise of such programs as bioenergy production. By restricting output in the implementing country, such programs are trade distorting, but they are unlikely to draw objections from competitors in world markets.

For developing countries, the agrarian problem involving both rural growth and poverty issues has been the subject of many grand strategies, while the nuts-and-bolts policies have usually consisted of a complex mix of price interventions with public enterprises and parastatals operating in output and input markets and high protection. The ghosts of complex distorting interventions and of increased protection haunt the policy landscape. For developing countries, an integrated, efficient, and equitable set of macro, meso, and micro policies and investments, backed by sufficient resources, has been the intangible hologram that always seems to fade away.

Reforming Agricultural Policies in Developed Countries

Several types of policy measures have been used over time to reform support for developed-country farmers to lessen their reliance on trade measures affecting prices. The most common policy has been a “cash-out” but “buyouts,” or an uncompensated “squeeze-out” or “cutout” are alternatives. Each is discussed in turn, then buyouts are examined in depth.

The Cash-Out Shift away from Market Interventions

Farm policies within the developed countries have undergone substantial reform since price supports and supply control measures were introduced in the United States during the 1930s New Deal and since the Common Agricultural Policy (CAP) was inaugurated in Europe in the 1950s to provide a unified price support regime there. Orden, Paarlberg, and Roe (1999) call the U.S. farm policy reforms that have proven feasible over the past half century largely a cash-out, in which direct payments to farmers from taxpayers have replaced the support programs that earlier propped up commodity market prices. The price support programs required various interventions in markets to be operational, including tariff or quota protection, government stock accumulations, domestic supply controls, use of export subsidies, or some combination of these interventions. As the cash-out reforms have proceeded, the New Deal programs have remained in effect only for a group of specialty crops, particularly peanuts, tobacco, and sugar—and they too are now coming under reform.

The cash-out reform of U.S. farm policy, which began in the 1960s, took a substantial step forward in the 1985 farm bill, which lowered minimum price support guarantees (loan rates) while providing cash (“deficiency”) payments for a large portion (fixed yields on 85 percent of “base” acreage) of the output of supported crops whenever market prices fell below legislated “target price” levels. Eligibility for the cash payments required production of specific crops. To control fiscal costs, a voluntary conservation reserve program (CRP) was initiated and annual land idling was required. The cashed-out support program of payments on limited output combined with annual land-idling authority was exempted from WTO expenditure disciplines under the Uruguay Round’s Blue Box; the CRP is a Green Box policy.

The 1996 U.S. farm bill went further in the cash-out direction. Key new reforms suspended the authority for annual land set-asides and production of specific crops as conditions for payment eligibility and replaced the deficiency payments, at a time of high market prices, with fixed annual payments based on past production. Even the minimum loan rate prices were guaranteed with payments

(“loan deficiency payments”) instead of by government stock-holding interventions. Thus, the 1996 policies were more decoupled from production and caused less market distortion than previously. The 1996 regime ostensibly paved the way for the United States to abandon the Blue Box in the WTO. But when market prices of farm commodities fell after 1996, support to farmers was supplemented with additional payments. Initially these “emergency” payments were reported to the WTO as non-product-specific *de minimis*. The 2002 farm bill then legislated new countercyclical payments tied directly to the levels of market prices but again not to current crop production.² With this added support enacted, the United States began to argue in the Doha Round for relaxation of the Blue Box criteria to include the countercyclical payments instead of seeking its elimination.³

In the European Union, a similar cash-out of price support interventions has occurred, from higher initial levels and starting later chronologically than in the United States.⁴ Through the 1980s, intervention prices above world market levels made the EU dependent on direct export subsidies. The 1991 MacSharry reforms began a cash-out, with direct payments offered as compensation for lower intervention prices and acreage idling required to limit costs. It was this reform, followed by the Agenda 2000 and 2003 CAP reforms, that allowed the EU to reduce sharply its use of export subsidies and paved the way for the Doha Round framework agreement calling for their elimination by a certain date. The 2003 reforms took the decoupling step of introducing whole-farm payments for which production of specific crops would not be required. Although there are messy implementation rules allowing some support payments still tied to production, to an extent the EU with its whole-farm payments has moved decoupling beyond the U.S. policy, which retains its price-linked countercyclical payments.

Alternatives to Cash-Out Programs

A cash-out is a gradual and partial reform process that reduces the market intrusiveness of farm programs over the long run by offering their beneficiaries a continuous stream of cash compensation payments. The gains for those countries pursuing a cash-out are fewer market distortions, fewer production restraints, and more competitive export pricing. The extent to which cash-out measures have decoupled farm support from production decisions and trade effects remains under scrutiny. Even when decoupled, a cash-out entails an open-ended commitment to support payments. Thus, cash-outs have drawbacks. Dirty decoupling under a cash-out and the ongoing character of the subsidization remain obstacles to trade liberalization.

Alternatives to the cash-out approach for ending intrusive farm program interventions, or even for ending a cash-out itself, can be distinguished based on the

TABLE 11.1 Alternative Reform Strategies

Compensation	Speed of implementation	
	Slow	Fast
Yes	Cash-out	Buyout
No	Squeeze-out	Cutout

Source: Orden, Paarlberg, and Roe (1999).

speed of reform implementation and whether compensation is provided to beneficiaries of the programs (table 11.1). A buyout is a quick termination of support entitlements, made politically palatable through significant but temporary compensation up-front, in the form of a large cash windfall. A squeeze-out is an incremental reduction in the market intrusiveness and generosity of farm programs, managed slowly enough to avoid triggering a defensive backlash from lobby groups representing subsidy-dependent farmers, yet significant enough over time to reduce distortions and costs, and to inspire voluntary nonparticipation by market-oriented commercial farmers. A cutout is a quick termination of all program support entitlements without compensation. None of these alternatives to a slow compensated cash-out has proven feasible on a large scale in the United States or Europe. But could a buyout bring an end to domestic farm support programs in developed countries, thus advancing the prospects for a liberalized agricultural trade regime?

Recent Small-Scale Buyouts: Divergence among U.S. Peanut, Tobacco, and Sugar Reforms

A number of recent policy reforms have been cited as buyouts. Interestingly, in the United States these have occurred around the specialty crops that had until recently avoided cash-out reforms. Here, we briefly examine the recent and divergent policy outcomes for peanuts, tobacco, and sugar.

2002 U.S. Peanut Reform. Under the traditional peanut program, holders of location-specific domestic quotas received preferential prices for peanuts supplied to the domestic market for edible uses compared with prices received for peanuts (known as “additional”) that went into processing (crushing into oil and meal) or were exported.⁵ Access to the domestic edible market by foreign competitors has been restricted by import quotas.

The 2002 farm bill made fundamental changes to the U.S. peanut program. The quota-based dual market structure was replaced with direct payments similar to most other supported crops: loan rates and related payments, fixed direct payments, and countercyclical payments. The 2002 reform was a substantial cash-out but in most respects not a buyout. The only buyout dimension was that for a limited time peanut quota holders were compensated for their loss of quota rights.

The 2002 peanut program is quite lucrative for both former quota holders and for producers of peanuts once sold as additional. The cash-out had an initial estimated cost of \$4 billion over 10 years, essentially equal to the expected value of peanut production at world prices. Under the 2002 bill, any producer of peanuts is eligible for a loan rate of \$355 a short ton on all current production. Those who qualify as “historical producers” of quota or additional peanuts are also guaranteed a direct fixed payment (\$36 a short ton) and a target price (\$495 a short ton) with countercyclical payments for the output from 85 percent of historical peanut acres and recent yields. The traditional producers also gain planting flexibility—they can receive the fixed and countercyclical payments without growing peanuts. If peanuts are grown, the new guaranteed revenue is higher than received in the past by producers of additional, who had been eligible only for a loan rate of less than \$200 a short ton. The quota owners receive a buyout payment of \$220 a short ton for five years, which can also be taken as a one-time lump sum. Thus, for the next five years the total guaranteed revenue is essentially \$694 a short ton for a quota owner, compared with a domestic price of \$610 under the traditional program in the 1996 farm bill.⁶ After five years, guaranteed revenue for a quota holder falls below the previous level. But the quota buyout of \$220 a short ton for five years compared favorably with market prices for sales of quota rights before the 2002 farm bill was passed.⁷

There are several other political economy aspects to the reforms adopted for peanuts in 2002. The price support had been lowered by 10 percent in the 1996 farm bill and the annual quota had fallen to an average of 1.24 million short tons during 1996–2000, only 82 percent of its average in the preceding three years. Despite the reduced quota, domestic peanut production remained nearly constant, so domestic peanut producers were selling a relatively smaller proportion of their output at a lower quota support price than earlier and a relatively higher proportion of their peanuts at much lower prices in the additional market.

One reason for the declining quota for the domestic edible market was the international trade agreements to which the United States committed in the 1990s. Foreign producer access to the U.S. domestic market for peanuts increased from less than 1 percent of consumption before the 1993/4 marketing year to nearly 10 percent by the 1999/2000 marketing year due to market-access provisions of the WTO’s URAA and of NAFTA (North American Free Trade Agreement). The increased imports and potential future trade liberalization that would expand

foreign access to the domestic edible market were used as arguments to motivate the 2002 peanut policy change as necessary to “preserve the domestic industry.” Foreign producers who had attained market access under the tariff rate quota (TRQ) for peanuts were disadvantaged by the change. Unlike domestic producers, the foreign producers did not receive any payments as compensation for the lower U.S. peanut prices. With the new program in place, U.S. peanut imports dropped from an average of 105,000 short tons in 2000 and 2001 to 32,500 short tons in 2002 and 2003.⁸

2004 U.S. Tobacco Reform. Like peanuts, tobacco has been subject to location-specific production quotas to support market prices. Tobacco production is concentrated in the southern states (with Kentucky and North Carolina accounting for two-thirds of the output). Domestic tobaccos are imperfect substitutes for foreign tobaccos and historically have commanded higher prices for higher quality. The United States both imports and exports leaf tobacco and primarily exports tobacco in the form of cigarettes. Domestic cigarette consumption in the United States has declined by one-third since the early 1980s, including by 18 percent since 1996. Tobacco imports have not been nearly as restricted as imports of peanuts, allowing domestic cigarette producers to blend tobaccos from different sources. Foreign tobacco had comprised 45 percent of the content of U.S. manufactured cigarettes by 1994, when domestic content legislation was passed to restrict the imported share to 25 percent. A less restrictive TRQ was adopted in 1995, and by 2002 imported tobacco accounted for 55 percent of the content of U.S. cigarettes (Womach 2004b).

In addition to quota restrictions, tobacco has been subject to loan rates that set annual price floors, with cooperatives holding stock when necessary to maintain the floor price. The tobacco program was legislated to operate at no net cost to taxpayers, with a unique industry-financed fund designed to cover any losses incurred in operation of the loan rate program.⁹ With declining domestic consumption associated with the negative health effects from smoking, and growing competition both for domestic usage and in export markets, the levels of quota production and tobacco producer revenues were in decline. The value of U.S. tobacco production averaged \$2.8 billion during the 1990s but fell to under \$2 billion in 2003 and 2004. From 1998 to 2004, quotas declined by nearly 50 percent.

The sharp drop in quotas and revenue, along with changes in marketing channels toward increased contracting by cigarette manufacturers, consolidated support among producers for a new tobacco program. A tobacco program buyout was enacted in October 2004.¹⁰ Earlier buyout efforts had begun in conjunction with a national tobacco settlement that emerged after numerous states sued the tobacco companies for health care cost recovery.¹¹ These early buyout efforts fell

short, but the idea survived. Subsequent discussion of a buyout centered on four dimensions: the compensation level to be provided, the structure of tobacco support policy after the buyout, the source of funding for the buyout, and whether additional health-related regulatory authority over tobacco would be granted to the Food and Drug Administration (FDA) (Brown and Snell 2003).

The tobacco reform of October 2004 provides a clean buyout to eliminate the tobacco quotas and price support loan rates. Owners of quota for the 2004 marketing year are to receive \$7 a pound in equal payments over 10 years. Growers of tobacco during 2001–3 are to receive an additional payment of \$1 a pound for each year they had acreage (\$3 a pound if they produced in all three years). Estimated cost of the buyout of owners and growers is \$9.6 billion, more than twice the cost of the peanut reform. This cost is to be financed by tax assessments on tobacco product manufacturers and importers, not by general tax revenue. The tobacco buyout ended authority for any price support or price stabilization programs. Production can take place anywhere in the country with no limit on volume. In short, with the legislation as enacted there will cease to be a tobacco farm program, but elimination of the support program is not accompanied by authority for health-related FDA regulation.

The tobacco buyout raises questions about its effects on U.S. production and trade and how lucrative the payments are to past tobacco producers. With removal of the tobacco quotas, domestic prices can be expected to drop by somewhat less than the past quota rental rates, and total national production is likely to increase. Brown and Thurman (2004), for example, project flue-cured tobacco prices will fall by one-fifth (from \$1.85 a pound to \$1.46 a pound), with production rising 180–280 million pounds from its 2004 level of 520 million pounds. Shifts among regions and types of tobacco produced are also anticipated, together with consolidation of production onto larger farms (Snell 2002).

In terms of the compensation level of the buyouts, table 11.2 compares a seven-year (1995–2001) average of poundage quota rental rates for peanuts and flue-cured and burley tobacco with the quota buyout payments for peanuts and the quota and total (quota owner and operator) buyout payments for tobacco. For peanuts, the lump-sum payment of \$0.55 a pound is equivalent to an infinite stream of payments of \$0.026 a pound at a 5 percent discount rate. This is about 70 percent of the average of past rental rates. Alternatively, the quota buyout payment is equivalent to average rental payments discounted at 5 percent for a period of 24 years. The buyout payment per pound exceeds this potential future payment stream to the extent that domestic peanut prices might fall had the earlier program continued. Likewise, the total buyout payment would exceed the total rental revenue stream under the old program if the quantity eligible for sale in the domestic market continued to decline under its continuation. With the peanut

TABLE 11.2 Value of the U.S. Peanut and Tobacco Buyouts (US\$ per pound)

Measure	Peanuts	Flue-cured tobacco	Burley tobacco
Seven-year simple average quota rent (1995–2001)	0.037	0.471	0.411
Quota buyout present value Equivalent infinite annuity Years for average rent	0.550 0.026 24	\$7.00 tobacco buyout	
		5.675	5.675
		0.270	0.270
Quota buyout present value Equivalent infinite annuity Years for average rent	n.a. n.a. n.a.	\$10.00 tobacco buyout	
		8.108	8.108
		0.386	0.386
		34	56

Source: Womach (2003) and authors' calculations. Present value and years of average rent are based on a 5 percent discount rate.

Note: n.a. = not applicable.

program reform, producers are also expected to receive (as of July 2004) nearly \$2 billion of new fixed and countercyclical support payments in just the six years of the 2002 farm bill.

For tobacco, the 10-year stream of owner buyout payments is first discounted at a 5 percent rate to an equivalent initial lump sum. This reduces the payment from the nominal \$7.00 a pound to \$5.68, as shown in table 11.2. The lump-sum payment is equivalent to an infinite stream of payments of \$0.27 a pound, about 57 percent of the average of past quota rentals for flue-cured tobacco and about 66 percent for burley tobacco. The lump-sum payment is more than double the private market prices that had prevailed for sales of quota rights before the reform. It is equivalent to discounted average rental payments for 16 and 21 years for flue-cured and burley tobacco, respectively. Inclusion of the \$3 payments to growers (also discounted to an up-front lump sum) raises the equivalent infinite payments and number of years of past rentals covered.¹² Again, the buyout is more lucrative for producers to the extent that tobacco prices or quota allocations were likely to have continued to fall under continuation of the old program.

No Reform for Sugar. In contrast to the reforms that took place for peanuts in 2002 and tobacco in 2004, there has been an absence of reform in the support

program for sugar. The United States is a sugar importer, with the domestic industry protected by quantitative import restrictions (TRQs) and high overquota tariffs. Sugar demand fell markedly in the 1980s with the development of corn sweeteners, but most of the adjustment was channeled into reduced imports rather than reduced domestic production. Still, the support policies authorize domestic marketing allotments to restrict supply in order to keep prices above loan rates, and the sugar program is designed to operate at no net cost to the government. Thus the sugar program is similar in design to the traditional peanut and tobacco programs, and its support program faces similar pressures from limited demand and increased imports under the URAA, NAFTA, and other trade agreements that might require tighter domestic marketing allotments or support price reductions.

The 1996 farm bill kept sugar loan rates fixed nominally at previous rates (\$0.18 a pound for raw cane sugar and \$0.23 a pound for refined beet sugar). Small changes in the provisions of the program made it potentially less beneficial for producers. The requirement that the sugar program operate to the extent possible at no net cost was eliminated. This was a change in legal status that technically created room for intrusive stock-holding expenditures or even for direct cash-out payments, but neither was imminent with high agricultural prices in 1996.

A policy crunch arose for sugar in 2000 when domestic production plus minimum U.S. import commitments exceeded domestic consumption and private stock-building demand at the supported domestic prices. To sustain those prices, the U.S. Department of Agriculture (USDA) accumulated stocks and offered a "plow-down" under which it exchanged stockpiled sugar for destruction of some of the planted sugar beet crop. A similar payment-in-kind (PIK) program was initiated to reduce future beet planting and avoid having to plow down another growing crop. Supply pressure on the sugar market eased in 2001, lessening political pressure for reform.

Sugar producers failed to endorse a cash-out reform along the lines of peanuts in the 2002 farm bill. Instead, they opted to tighten restrictions under their traditional program to defend the existing support prices. The 2002 bill stipulated again that the sugar program operate at no net cost to the government. The PIK program was continued, and authority was restored to control domestic supply through marketing allotments but only when annual sugar imports remained below 1.5 million short tons. The combination of the no-net-cost provision and the constraint on the use of domestic marketing allotments was designed, in the words of the U.S. producers, to ensure that the USDA and U.S. trade representative stood "shoulder to shoulder" with the domestic industry to oppose loosening of import restrictions. Together these provisions tie the hands of trade policy negotiators. Imports above 1.5 million short tons cannot be offset by restrictive

domestic marketing allotments to sustain the supported price under the 2002 farm bill, while allowing imports to exceed this level would induce violation of the no-net-cost provision if USDA stockpiling were the result. Thus, the sugar program has to continue to be administered with tight import restraints, which sets it firmly against trade liberalization and makes U.S. sugar an obstacle to a liberalizing outcome within the Doha Round.

Synopsis from the Three Recent U.S. Policies. The contrasting recent policy outcomes among the historically similar U.S. peanut, tobacco, and sugar support programs provide some evidence about the conditions conducive to a buyout and its consequences. Narrowly defined benefits, specifically quota rights, may be easier to buy out than broader support policies: binding quota rights were bought out for both peanuts and tobacco, whereas sugar marketing allotments that are only intermittently binding have not been bought out.

The onset of reform aligns closely with a sharp shrinkage of the benefits obtained by participants in the old program. The pressure from reduced quotas and revenue was most severe for tobacco, and the tobacco buyout is the most complete. Unique dimensions with respect to tobacco also explain the more complete buyout of tobacco support compared to peanuts. Domestic tobacco producers were the least successful of the three sectors in securing restrictions on imports to protect their quota rents. The emergence of substantial health-cost-related transfers financed by manufacturers, importers, and consumers is also unique to the tobacco industry and set the precedent for financing the tobacco buyout with specific assessments instead of general tax revenue.¹³ Had the sectoral tax precedent not existed, the higher cost of the tobacco buyout compared with peanuts might have blocked its enactment. The health issues associated with tobacco consumption also contributed to the outcome of full elimination of the support programs for producers. In contrast, peanut producers were able to align ongoing support with the cashed-out programs for other crops.

Consumers influence the buyout outcomes to the extent that their demand behavior contributes to declining benefits under a quota program. But the political economy condition necessary for a buyout still appears to be the emergence of substantial support for a reform among producers. Emergence of such opinion is obviously related to the shrinkage of benefits. Producers excluded from the quota program also align to favor reform. That was especially evident in the case of producers of additional peanuts, who gained from becoming eligible for a stronger support program. The opinion in favor of reform among producers does not have to be unanimous. In both the peanut and tobacco cases, minorities of producers in high-cost production regions opposed elimination of the location-specific quotas.

In terms of compensation, the evidence suggests that for reform to occur, the buyout payments have to be quite lucrative, especially given the circumstances of declining benefits to quota owners that provide the reform trigger. The buyout payments for peanuts and tobacco are equivalent to continuation of total prereform quota rental revenue for a period of 15 years or more.

It is also the case that while a buyout may be conducive to liberalization of trade policy, the peanuts and tobacco buyouts were designed to benefit domestic, not foreign, producers. The United States was already a net peanut exporter of additional—imports were artificially drawn in only because of the market discrimination under the quota program. In the case of tobacco, total U.S. output is likely to rise with the buyout, displacing imports.

The Debate over Larger Buyouts

As the cash-out of farm support policies for most crops has been pursued, buyouts have on occasion been proposed, either as a means to facilitate adjustment out of agriculture or as compensation for elimination of a support program. These buyouts have not been adopted because the main thrust of farm support programs in developed countries has been to dampen pressure for adjustment, not to facilitate it or speed it up.¹⁴ The time has largely passed when farm poverty or large migrations out of agriculture provided a rationale for adjustment-dampening policies, and in any case the effectiveness of those policies can be questioned. Yet the argument that farm policy should facilitate adjustment out of the sector is still not widely held. Nor has reform gone so far as to eliminate the main support programs and offer buyout compensation.

Bond Schemes in the EU. A “bond scheme” for transforming EU CAP policies was proposed in 1991 by Stefan Tangermann, then of the University of Gottingen (Swinbank and Tranter 2004; Daugbjerg and Swinbank 2004). The initial bond proposal was made before the EU adopted the 1992 MacSharry reforms. As characterized recently by Swinbank and Tangermann (2004), the proposal incorporates six steps: decouple crop payments from current land use; extend this principle to livestock; decouple payments from land and attach the entitlements to individuals; limit the duration of payments to, say, 10 or 20 years, and (possibly) make payments degressive over time; definitively fix the future level of payments; and transform payment entitlements into bonds.

Swinbank and Tangermann (2004) recognized that by 2003, the EU cash-out reforms had largely accomplished their first two proposed steps. The last four steps, they argue, would add two advantages. First, these steps would facilitate structural adjustments in production by allowing land prices to fall. Second, they

would create certainty about future payments, while at the same time bringing the payments to an eventual end.¹⁵

The Tangermann bond scheme was an innovative proposal when it was first presented. Whether the bond scheme proposal would be a buyout or a delayed cutout depends on the level of associated payments. Swinbank and Tangermann (2004) center their discussion on payments starting at the level of the existing EU farm programs, a level that they argue would avoid putting additional pressure on the EU budget. But guaranteed payments at existing levels for 10 or even 15 years is not very lucrative for producers by the standard of the quota buyouts for U.S. peanuts or tobacco. There remains ambiguity in the 2003 CAP reforms, so the benefits being bought out by the bonds are not yet narrowly defined. A sharp diminution of benefits under the existing programs is not evident. There is no groundswell of calls for a buyout from producers, although producers are not opposed to the scheme, according to survey analysis undertaken by bond researchers (Tranter and others 2004). For these reasons, the prospects may be low for adoption of a bond scheme in the near term. Yet introduction of such bonds, especially with declining annual payments over an agreed implementation period, could provide a convincing domestic subsidy counterpart to phasing in substantial tariff reductions through the WTO.

How Might a Buyout Look in the United States? There has never been a convincing buyout proposal for the main farm support programs in the United States. The fixed payments adopted in the 1996 farm bill provided a windfall to farmers in a year of high market prices, but it failed to ensure a buyout in three respects: a budget baseline remained in place for future farm program spending, the permanent farm program legislation from 1949 and related acts was retained, and the 1996 farm bill took no other steps to bind the actions of a future Congress. As discussed above, when farm prices fell, the next Congress quickly stepped in with additional payments.

A buyout of the 2002 U.S. farm programs could focus on the fixed direct payments, the countercyclical payments, or the loan rate price guarantees. The fixed payments are a narrowly defined benefit, which increases the feasibility of a buyout. Bringing about their eventual elimination might ease concerns about continued subsidization, but it would accomplish the least economically or institutionally: either the fixed payments or a buyout replacement (perhaps through a bond) are WTO Green Box measures and are relatively decoupled.

A buyout of the countercyclical payments would accomplish more, since these payments are a particularly contentious form of decoupling more likely to have production-stimulating effects. A buyout of countercyclical payments would allow the United States to abandon the Blue Box, potentially allowing simplification

and improved transparency of the WTO rules. The value of countercyclical payments is not as certain as the fixed payments under the 2002 farm bill, but there is an upper bound because the payments are made on fixed quantities and at per-unit levels no greater than the difference between the target price and the sum of the loan rate and per-unit fixed payment for each commodity. The farm lobby succeeded in building the countercyclical payments into the 2002 farm bill to address what it viewed as an inadequate safety net in the 1996 legislation, so there is no clamor from producers to eliminate these payments. But government fiscal deficits that had eased as the 2002 farm bill was enacted have tightened again. So farm program spending will be under scrutiny and may require some adjustment. And the question remains: with widespread opposition among nonsubsidizing countries, is the Blue Box doomed in the future even if it survives in the Doha Round?

Table 11.3 provides some information on the potential costs of several buyout options. Results are shown separately for a buyout (for all commodities aggregated) of the annual fixed payments, the maximum possible countercyclical payments, and the expected countercyclical payments as projected in the president's 2006 budget.

TABLE 11.3 Cost of Possible Buyouts of the Main U.S. 2002 Farm Bill Support Payments (US\$ billions)

Buyout cost	Fixed direct payments	Countercyclical payments	
		Maximum possible	Projected level
2002 farm bill payments (crop years 2002–2007)	5.292 (average) 28.198 (lump sum)	7.302 (average) 38.787 (lump sum)	3.505 (average) 18.303 (lump sum)
Buyout payments over 10 years equivalent to annual payments at 2002 farm bill level for 25 years	9.659 (annual) 78.311 (lump sum)	13.328 (annual) 108.065 (lump sum)	6.398 (annual) 51.870 (lump sum)
Infinite annuity equivalent of buyout payments	3.729 (annual)	5.146 (annual)	2.470 (annual)

Source: Fixed direct payments and projected countercyclical payments are based on the president's 2006 budget. Estimate of maximum countercyclical payments is from calculations provided by the U.S. Department of Agriculture's Economic Research Service. Buyout payments are assumed to be made in equal installments over 10 years. Present values and infinite annuities are based on a 5 percent discount rate.

The 2002 farm bill payments are assumed to occur for six consecutive years (crop years 2002–7). The nominal average annual payment and the present value of the payments (at a 5 percent discount rate) are shown as a benchmark in the first row of table 11.3. The buyout payments are assumed to be made in equal nominal installments over 10 years, as in the tobacco case. The costs shown in the second row are those required to compensate for discounted farm bill payments for 25 years—roughly consistent with the buyouts provided for peanuts and tobacco. The nominal value of an infinite annuity equivalent of the annual payments are shown in the third row.

A buyout of the fixed direct payments along these lines nearly doubles the annual expenditure that would have to be made for 10 years compared to expenditures each year under the 2002 farm bill, and almost triples the present value of the payments. This buyout raises short-term costs, but the value of equivalent annual payments in perpetuity is less than the 2002 farm bill delivers during crop years 2002–7. A buyout of the maximum countercyclical payments that could be made is the most costly, while a buyout of their projected value has a lower cost than for the fixed direct payments. Still, with the 2002 farm bill put into place, and these projected and potential costs of the countercyclical payments, it is not surprising that the United States has invested so much negotiating effort to ensure their inclusion in a continuation of the Blue Box, despite the merit of abandoning these payments as a step toward facilitating trade liberalization. The expected cost of the price-linked countercyclical payments underscores that use of the Blue Box for these subsidies will remain contentious.¹⁶

If farm subsidy payments were to be bought out, there is also a time-consistency problem of whether any buyout could be enforced. Based on the increase in support enacted after 1996, the record is not encouraging. The 1996 farm bill included “production flexibility contracts” designed to assure farmers of the stream of legislated payments regardless of future federal budget constraints. These contracts proved one-sided, as taxpayers were not assured that farmers would receive only the contracted level of support.

Several steps can be envisioned that would improve the prospects for adherence to a buyout. The first would be to eliminate the permanent legislation for farm support programs. Stronger steps could also be taken. Contracts for buyout payments could require that the acreage for which the payments were being bought out (and the output from that acreage) be ineligible for future support legislated by Congress. Such contracts could be structured similarly to those by which some farmers sell their “development rights” to state and local governments so that their land must remain in rural condition or agricultural use.¹⁷ The state governments have devised binding legal criteria to ensure compliance from the contract beneficiaries who have sold their development rights.

A WTO agreement built around a buyout of U.S. countercyclical payments would also provide an enforcement mechanism. If the Blue Box were eliminated, and Amber Box constraints were made sufficiently tight, countercyclical payments could become infeasible. Even tighter Amber Box constraints could bind the loan rate program too. Constraints through the WTO are less likely to reinforce a buyout of fixed payments. Countercyclical and loan-rate-based payments are never going to fit into the WTO Green Box. But there are many loopholes through which farm support programs, including trade-distorting programs, can be renewed within the Green Box.

Revived Supply Management: A Ghost of Policies Past

There are other policy options that might end current subsidy programs of developed countries by moving in quite different directions from a buyout of the existing payments. One option would be to replace the commodity-based payments with expanded “green-payment” subsidies tied to environmental criteria and made in a way that keeps land in agricultural production. If the new subsidies stimulated production, this approach would constitute “dirty environmentalism” and would leave ample room for conflict in the WTO (as have dirty tariffication and dirty decoupling). Yet for the United States, for example, as domestic policy it would build upon a conservation working lands program introduced in the 2002 farm bill. Interventions along such lines fit under the broad rubric of dampening adjustment pressures, a feature that has characterized past farm support programs.

A second alternative to a buyout would be a revival of supply management. Sufficient revival of this ghost of past policies would also allow existing subsidy payments to be eliminated, but only by exacerbating the market-distorting effects that have been moderated with past cash-outs and that would be further avoided with a buyout.¹⁸

Control of supplies and diversion of crop outputs to shore up prices have never faded far from the policy mix under the cash-out reforms that have occurred. In the EU, acreage set-asides are still in use with the program of Single Farm Payments. One-tenth of the cropland in the United States is idled under the CRP, even though annual acreage controls have been eliminated. Ethanol production now absorbs more than 10 percent of the U.S. corn crop. This use of corn has been stimulated by tax breaks on blended fuels, but regulations that require blending could supplant the tax-break stimulus.

While there are proponents of a simple revival of annual acreage idling to push up prices, the more innovative recent supply management proposals focus on diverting additional acreage into bioenergy production, with the implicit effect that crop supplies would tighten and prices rise. A range of proponents has

emerged, who tie their arguments to the conflict over subsidies in the WTO. The former CIA director James Woolsey, for example, argues that a shift from current subsidies to subsidized bioenergy crop production could “help resolve global trade deadlocks that center on whether our support for agriculture undermines the rural poor in the rest of the world” (EFC 2004). Proponents describe this as a “farmer-oriented” policy and have offered only corresponding partial assessments of its economic impacts.¹⁹

The point of briefly calling attention to these alternatives to a buyout of farm support programs is not to assert their merit but rather to demonstrate that the evolution of farm policies in the developed countries toward efficient and trade-facilitating outcomes is not assured. War in Iraq and high oil prices in 2004 have not yet given a noticeable boost to the bioenergy subsidy proposals. Neither has any clear momentum yet arisen for ending the current farm programs with a large buyout.

Efficient Policies toward Agriculture in Developing Countries

We turn next to the agricultural policy challenges in developing countries. These diverse countries have always confronted a double policy dichotomy. First is the issue of the balance between the agricultural sector vis-à-vis other productive sectors (especially industry) in their general economic strategies. This issue has been manifest in the dilemma of trying to maintain prices at high levels for agricultural producers while keeping them affordable for consumers, and in the debate about the balance between rural areas and urban centers (Lipton 1977). Second is the policy issue of growth versus equity. Should the agricultural sector pursue growth and production, usually concentrating support on “modern” and larger agricultural units, or emphasize poverty reduction and food security with a focus on small farmers, landless rural workers, and other vulnerable groups? This dilemma has many facets, including the possibility of complex two-way influences, such as whether more equal societies have higher and more stable rates of growth than their more unequal counterparts (Alessina and Perotti 1996; Deininger and Squire 1997). Others note the positive impacts of an agrarian structure based on family farms on the emergence of democratic governance (Moore 1967) and on the formation of larger domestic markets that allow the development of industry and other activities. The environmental sustainability of a strategy based on large commercial farms, versus another focused on small-scale agriculture, has also been amply debated.

Agricultural trade policies historically have been just a component of the broader policy debates relating to agricultural development and the “agrarian question” in general. Those trade policies (and related price schemes) often taxed export goods,

while import-competing goods, mainly food products, were more likely than not supported through direct border protection and a variety of price mechanisms. The nature of such agricultural trade policies has changed over time, as has the general matrix of macroeconomic policies and trade policies for other sectors, which together determine the net effect on the agricultural sector of developing countries. The possibility of achieving welfare-enhancing results in the agricultural negotiations of the Doha Round requires placing the debate about agricultural trade policies within this broader context.

Evolution of Agricultural Policies toward Less State Intervention

Just as agricultural policy in developed countries has evolved through partial reform toward less-intrusive interventions in markets, so too policies toward agriculture in developing countries have seen a substantial evolution away from state management since the 1950s—but with significant differences that shape the approach that developing countries have taken in the WTO agricultural negotiations. In the discussion that follows, we highlight key dimensions of this reform. The review frames the policy options that could facilitate trade liberalization in the WTO while promoting, in particular, rural and agricultural development, poverty alleviation, food security, and environmental sustainability within developing countries without resorting to distorting-trade measures.

The 1950s and 1960s: Industrial Focus, Community Development, and Land Reform. According to the post–World War II development strategy, the role of agriculture was to be subordinated to the needs of industrialization, within what has been called Import Substitution Industrialization (ISI). Different arguments were used to support this view. Quantitative historical analysis (for instance, Kuznets 1966) showed that agriculture declined in importance with the advance of economic development. Also it was argued, especially in Latin America, that inelastic supply and demand for agricultural goods and deteriorating terms of trade suggested the need to diversify the economic structure out of agriculture and into industry (CEPAL 1969). Other arguments were based on the structure of national and international power. Many developing countries were economically dependent on the former colonial powers and, from this perspective, deemphasizing the role of the agricultural sector in development was part of a double process of economic independence and political sovereignty, combined with a more equitable internal distribution of income.

Therefore the prevalent approach during the 1950s and 1960s was to support the process of industrialization by making the agricultural sector perform four

main functions: a transfer of labor surpluses would occur as workers supposedly underemployed in agriculture shifted to industry; agriculture would provide food (“wage goods”) and raw materials to the industrial sector; savings in the agricultural sector would be taxed away to sustain the process of investment in the industrial sector and for the development of public infrastructure; and the agricultural sector had to generate surpluses of foreign currency to pay for the importation of capital goods and industrial inputs (Johnston and Mellor 1961). Within the ISI approach, the nuts and bolts of agricultural policies were based mostly on the use of administered prices at different stages of the market chain; the existence of public and parastatal enterprises operating in product and input markets, in good measure to enforce the administered prices but also with the avowed objective of ensuring the supply of some inputs; and the establishment of public agricultural banks and the supply of subsidized credit. In many cases those policies tried to help “modern,” more productive units. The issue of poverty in rural areas was addressed mainly through community development and land reform.

Community development that spread during the late 1950s and 1960s was a political rather than economic approach. The idea was to stimulate the population to organize, so the people could exert initiative and improve their communities through cooperative efforts based on self-help and mutual help, leading to increases in welfare and reductions in poverty. The expectation was that a successful program would result not only in improved economic conditions but also in more stable and democratic communities (Holdcroft 1977; Uphoff and others 1979). Community development, however, was not exempt from criticisms. In particular, the focus on the use of the community’s own resources was considered by some a subterfuge of the governments to avoid investing the additional resources that were required to effectively develop those communities, while at the same time concentrating resources in the urban sector.²⁰ Furthermore, in some cases mobilization began to exceed what some governments considered controllable limits, and many other countries had serious difficulties showing quantifiable results in aspects such as “participation,” “institutional capacity,” and “democratic organization.”

Another important approach to agricultural development during the 1950s and 1960s was land reform. After the Second World War successful land reforms were carried out in Japan, Taiwan (China), and the Republic of Korea under U.S. influence. In Latin America and the Caribbean (LAC), there were several important land reforms before 1960 (Mexico in the 1920s, Bolivia and Guatemala in the early 1950s, and Cuba in the late 1950s), but it was the Alliance for Progress in 1961 that launched a widespread program. Africa also saw different attempts at land reform in the Arab Republic of Egypt, Ethiopia, Kenya, and several of the other countries emerging from colonial rule and acquiring their independence.

The results in many countries in Latin America (and Asian countries such as the Philippines with similar land structures) were less favorable than in Japan, Korea, and Taiwan (China), mostly because their more unequal and dualistic initial structures proved more difficult to reform (due to political resistance) than in Asia with its more equal initial distribution and a larger number of family farms. The problems in most of Sub-Saharan Africa (SSA), where land also tended to be more equally distributed than in LAC, were mainly related to the tension between traditional communal land tenure systems and the attempts at creating commercial land tenure structures. In any case, by the mid-1970s and early 1980s the priority of land reform, which, in many cases, was linked to the fear of peasant revolutions in developing countries, began to fade along with the prospects of the spread of communism in Latin America and the Caribbean or Asia.

The 1970s: New Technology and Outward-Oriented Development Strategies. Both the overall development strategy and agriculture's role within it, as well as sectoral policies, began to be reviewed in the mid-1960s and early 1970s, when different concerns arose about the adequacy of a development strategy that concentrated savings and investment in industrial development and discriminated against the agricultural sector. Schultz (1964), in an influential book, argued that the farmers in developing countries were "poor but efficient," reacting with economic rationality to changes in prices and incentives. Debates over the operation of "dual economies" (Fei and Ranis 1966 versus Jorgenson 1967), specifically on whether efficiency gains could be made by moving labor from agriculture to industry, suggested the importance of supporting agriculture through technological development and human capital formation in rural areas. The idea that there could be a technological solution to the rural problem infused the Green Revolution of the 1970s, replacing community development and land reform as the main rural development strategy.

This approach led to the creation of the system of international agricultural research centers (the Consultative Group on International Agricultural Research, or CGIAR) and of national agricultural research institutes and extension services in many developing countries during the 1970s. Complementary irrigation investments expanded in several countries, particularly in Asia. The Green Revolution was criticized for concentrating on better-off areas and farmers (which, it was argued, worsened income distribution and poverty). However, the increases in productivity since the mid-1970s, especially in food crops, allowed the world to increase the level of available calories per capita even though population doubled, using about the same land and with real prices half the levels of the 1960s, all of which helped to alleviate poverty and malnutrition.²¹

Another argument emphasizing the importance of agriculture in the development process was provided by the realization that the poor in developing countries

were concentrated mainly in rural areas. If poverty alleviation was to be an important objective of economic policy, this argument went, then greater attention should be given to agricultural and rural development. Chenery and others (1974), in another influential book entitled, suggestively, *Redistribution with Growth*, presented the case for an investment program centered especially on accumulation of human and physical capital by the rural poor.²² Under the auspices of the World Bank, international organizations began to increase investment in agriculture, mainly through integrated programs in rural areas targeted to reach low-income groups, including productive and social investments in what was called Integrated Rural Development.

While highlighting the importance of agriculture, both the Green Revolution and the Integrated Rural Development approaches were undertaken within the framework of development and macroeconomic policies still shaped by ISI. Other analyses were appraising that overall approach critically. Little, Scitovsky, and Scott (1970) and Balassa and Associates (1971) called for a modification of the import-substitution approach that protected industry and the elimination of policy biases against agriculture. They highlighted the negative impacts on growth and poverty alleviation of the structure of “macro prices” enforced through governmental policies. Poverty alleviation appeared impaired by policies that protected capital-intensive industrialization and limited the development of agriculture. The slow employment growth in industry and the stagnation of agriculture had adverse effects on income distribution, limited participation of the population in productive employment, and contributed to persistent poverty (Johnston 1977). Thus, poverty problems could not be resolved simply by restructuring micropolicies or by reallocating investments to the poor. The development strategy had to be refocused to take advantage of opportunities in international trade, eliminate distortions created by extreme government intervention, allow prices to operate more freely, and make sure that technology and investment reflected the endowment of human and other resources by positively reappraising the role of agriculture in the economy (Balassa 1984; Little, Scitovsky, and Scott 1970; Krueger 1978).

Through the 1970s, while many countries in LAC and Africa continued within the ISI approach, several countries in Asia as well as some in LAC began to move to an export-oriented strategy. In the agricultural sector, the nuts-and-bolts approach continued to be administered prices, public sector interventions and institutions, and directed credit, combined with the Green Revolution (cum irrigation) and Integrated Rural Development. A “basic-needs” approach to poverty also emerged in the late 1970s. It was argued that objectives such as growth, or even employment and income redistribution, were means to the more concrete objective of attending to the specific basic needs of the population (defined primarily by nonfinancial

indicators, and including both “material” and “immaterial” components), especially for the poor and vulnerable.²³

The 1980s: Fiscal Retrenchment and Structural Adjustment. The two oil shocks of the 1970s and the change in macroeconomic policies in developed countries in the early 1980s (with sharp increases in real interest rates and the subsequent recession) severely affected many developing countries and led to the debt crisis of the 1980s, mostly in LAC and Africa. Agricultural prices collapsed in the mid-1980s, primarily as a result of those macroeconomic changes and expanded public support of agricultural production in developed countries, particularly as the EU increased subsidization of exports and the cash-out reforms in the United States reduced price-supporting loan rates. The agricultural transformation in China, the expansion of the Green Revolution in many developing countries, and the break-up of the Soviet Union were developments that added to global agricultural supplies or weakened demand within agricultural markets, exacerbating the collapse in prices (Díaz-Bonilla 1991; Borensztein and others 1994). The possibility of financing import substitution industrialization with the rents extracted from agriculture basically disappeared, leading to the progressive reduction of taxes (and of price schemes with similar effects) on agricultural export goods.

What prompted the change in overall development strategies in the 1980s, much more than the analytical studies showing the economic limitations of ISI, was this sequence of macroeconomic shocks and the ensuing debt problem. The success of export-oriented strategies, mostly in Asia, also contributed to the reevaluation of ISI. At the agricultural level, the nuts-and-bolts approach of government intervention and Integrated Rural Development underwent a thorough revision that substantially changed them, while the technological-development approach continued as a crucial strategy (although with less funding, because of the fiscal retrenchment).

Additional analyses, mostly covering the period from the 1960s to mid-1980s and focusing on macroeconomic policies and the direct and indirect effects of trade, also argued that price incentives were tilted against agriculture and impaired growth (Krueger, Schiff, and Valdés 1988; Bautista and Valdés 1993). The price bias resulting from these factors was different from the more general urban bias discussed by Lipton (1977), which included an emphasis on urban areas in public investment and expenditures. From the perspective of the macroeconomic approach to incentives, investments in the agricultural sector were considered far less effective within a framework of distorting macroeconomic and trade policies.

At the sectoral level, one of the characteristics of the interventions of the 1960s and 1970s was the granting of preferential loans in many developing countries through sectorally specialized institutions (industrial as well as agricultural and

rural banks).²⁴ The expansion of credit was commonly financed through rediscounts from the central bank or similar institutions, which expanded money supply, basically in the context of closed capital accounts. Different studies had warned about the inefficiencies and waste in the complex maze of price policies and market interventions by public enterprises in developing countries (see, for example, Bates 1981 for Africa). Studies of “financial repression” (McKinnon 1973) argued that administered interest rates, which tended to become negative either because of delayed adjustment to inflation or because subsidized interest rates were considered necessary to accelerate investment, ended up discouraging savings (at least in the formal financial system) and generating excess demand for credit, with negative effects on growth and efficiency. Focusing on rural financial markets, Adams, Graham, and von Pischke (1984) argued that subsidized agricultural credit generated a misallocation of resources in the rural sector (excessive capital intensity and land speculation), did not reach the poorest sectors because preferential credit was absorbed by the largest farms, and discouraged rural savings and the development of rural financial institutions and markets.

The World Bank's *World Development Report* for 1986, which focused on agriculture, codified these lines of analysis into several policy recommendations: developing countries should eliminate inefficient industrial protectionism; correct the overvaluation of the exchange rate; eliminate export taxes on agriculture; reduce the government's involvement in agricultural markets; and phase out administered prices, public sector enterprises operating in output and input markets, and state-owned agricultural banks and directed agricultural credit schemes. Budgetary savings from the elimination of public interventions, which were considered inefficient, contradictory, and open to waste and corruption, could be reassigned to investments in technology, extension and training, and infrastructure. General and sectoral “structural adjustment programs,” by the World Bank and other international banks and donors, financed the implementation of those policy changes in many developing countries.

Within the new general framework, the poor, particularly in rural areas, were supposed to benefit from more sustainable growth once the capital-intensive and antiagricultural development strategy was corrected. The remaining poor could then be aided through focused policies. The basic-needs approach that had emerged in the late 1970s provided a possible rationale for this reorientation and focalization of social services in the 1980s.

International organizations and donors basically reoriented their activities to cover both the more macroeconomic level of policies for productive purposes and the more narrowly focused social interventions for poverty alleviation, mostly abandoning the midlevel of sectoral productive interventions. In particular, World Bank agricultural lending, including for Integrated Rural Development,

was sharply curtailed as the decade of the 1980s progressed (Lipton and Paarlberg 1990). It declined (in constant 2001 U.S. dollars) from about \$5 billion and some 30 percent of total World Bank lending in the late 1970s and the first half of the 1980s to \$3 billion and 10–15 percent of total lending in the second half of the 1980s. By the early 2000s, agricultural lending had declined further to about \$1.5 billion, or 7 percent, of total World Bank loans. Similar trends occurred in other multilateral institutions and individual donors.

The 1990s and Beyond: Further Adjustment and Targeted Poverty Alleviation. Changes in macroeconomic and trade policy in developing countries during the 1980s and 1990s led to depreciated real exchange rates and reduced overall trade protection. Wood (1988) calculated that the real exchange rates of most developing countries (except oil-exporters) had been declining from the 1960s to the 1980s. More recent data from Cashin, Céspedes, and Sahay (2002) on real, effective exchange rates for different countries during the period 1980 to 2002 also show further devaluations: real, effective exchange rates in LAC were on average below the early 1980s' values by 15–20 percent, in Asia by about 40 percent, and in Africa by 45–55 percent.²⁵

With respect to trade policy, except for the Middle East and North Africa where the levels of protection have increased, average total tariffs in the early 2000s are 40 percent to 70 percent lower than during the 1980s. Looking at tariffs by sectors, the conventional wisdom around the mid-1980s (World Bank 1986; Krueger, Schiff, and Valdés 1988; Bautista and Valdés 1993) that industrial protection in developing countries was higher than for agricultural products, imparting an antiagricultural bias to overall incentives, can be questioned. Cernat, Laird, and Turrini (2002) suggest that tariff protection of agriculture is at least as high as for manufacturing now (table 11.4), while Jensen, Robinson, and Tarp (2002) calculate that whatever antiagriculture bias existed as a result of trade and macroeconomic policies in the 1960s and 1970s was largely eliminated during the 1990s, at least for the 15 countries they examine.

At the same time that price distortions were reduced or eliminated, other developments, however, were moving against the agricultural sector. At least in LAC and SSA, economic growth declined significantly during the 1980s and 1990s, affecting demand for agricultural goods. Overall fiscal positions of developing countries deteriorated during the 1980s (for SSA fiscal problems began in the 1970s). Deteriorating public sector finances, both in developing and developed countries, along with the decline in world agricultural prices in the mid-1980s, led to fiscal adjustments and pressures to reduce support for agriculture in many countries.²⁶

Credit conditions also changed. During the 1980s, and then more markedly in the 1990s, many developing countries began to open up their capital accounts,

expecting beneficial impacts on growth, efficiency, and smoothing of volatility (Prasad and others 2003). This changed the context for monetary policies. The limits of the impossible trinity began to be recognized: a country could not have a fixed exchange rate, an open capital account, and an independent monetary policy at the same time, but could pick only two out of those three policy instruments. Considering the tendency in developing countries to try to maintain stable exchange rates (what Calvo and Reinhart 2002 have called “fear of floating”), and with a capital account open, a consequence appears to have been more constrained monetary policies. At the same time the International Monetary Fund, World Bank, and other international organizations, as part of the structural adjustment and stabilization programs of the mid-1980s and 1990s, supported financial sector reforms including changes in public agricultural agencies such as agricultural banks and parastatal companies that, among other things, provided credit to farmers (FAO/GTZ 1998; Kherallah and others 2003). Some of the reforms, while eliminating many of the inefficient and contradictory public sector interventions, have at the same time dismantled the institutional infrastructure that provided technical assistance and some key inputs to agricultural production (including credit, seeds, and fertilizers) and marketing services, without ensuring the creation of private sector institutions that could provide similar services and inputs (Kherallah and others 2003).

Several developing countries, particularly in Africa but not only there, have been affected further by armed conflicts that have reduced agricultural production and increased poverty and hunger. According to FAO (2004), conflict in Africa resulted in lost agricultural production of more than US\$120 billion during the last three decades of the 20th century. Conflict there has sometimes been the result of competition over scarce natural resources, including land and water.

In addition to the changes in growth, fiscal and monetary policies, institutional arrangements, and internal conflict, there were also two important changes in external conditions. First, particularly since the 1980s, the extensive support and protection of agriculture in developed countries led to surpluses that were sold with subsidies in international markets, depressing prices there. Those policies discouraged investments in the rural sector of many developing countries that came to depend on cheap and subsidized food from abroad, and contributed to turning many of them, including a number of countries in Sub-Saharan Africa, from net exporters to net importers of food. Cuts in loans to agricultural and rural development projects by the World Bank and other development banks appear to have been influenced, at least in part, by low international food prices that reduced the expected returns of future projects and depressed the ex post results of evaluated projects (Lipton and Paarlberg 1990).

TABLE 11.4 Average Tariff Protection Applied, by Economy or Region, early 2000s (percent)

Sector	Average applied MFN tariff rate			
	Asian NIEs	China	South Asia	Transition economies
Primary agriculture	38	16	21	13
Processed agriculture	20	15	29	20
Other primary sectors	2	2	14	1
Textiles and apparel	8	13	28	14
Other manufactures	5	6	24	9

Second, expanded capital flows seem to have led to a more volatile economic environment for developing countries, with the sequence of crises in Mexico in 1995, East Asia in 1997, Russia in 1998, Brazil in 1999, and Argentina in 2001. The impacts of these financial crises on world agricultural prices and markets, as well as domestic conditions in the countries affected, appear to have been substantial (IMF 1999; USDA 2000).²⁷

In summary, the policy changes linked to structural adjustment during the second half of the 1980s and 1990s appear to have reduced the incentive bias against agriculture, but gaps in private sector development, tighter fiscal and monetary conditions, lower growth in some regions, and external events such as depressed agricultural prices and volatility in financial markets, have influenced negatively the performance of the agricultural sectors of developing countries.

In terms of poverty alleviation, in the second half of the 1990s a new type of program began to be implemented in some of the more advanced developing countries (such as the case of Mexico's "Progresa" and now "Oportunidades" program, Brazil's "Bolsa Scola," and Argentina's "Jefes y Jefas de Hogar"). Although the details vary, they basically consist of income transfers given mostly to female heads of households but with specific commitments required related to attendance at school and health care for their children. These programs are trying to break the intergenerational transfer of poverty across members of the family. They have been complemented by other institutional and policy changes related to education, health, and labor markets, trying to improve the existing supply of services that cover the target population. The programs appear to have positive impacts on local activity and short-term growth, and on accumulation

TABLE 11.4 (Continued)

Sub-Saharan Africa	Middle East and North Africa	Latin America	Western Europe	North America	Japan	Rest of the world
16	49	12	12	9	30	6
27	58	17	21	10	46	13
5	4	5	0	0	0	5
21	13	15	5	10	6	14
11	8	11	2	1	0	9

Source: Cernat, Laird and Turrini (2002).

Note: NIEs are the newly industrialized economies of Hong Kong (China), Republic of Korea, Singapore, and Taiwan (China).

of physical capital and formation of human capital, so as to boost long-term growth prospects.²⁸

Developing Country Views of the Doha Trade Negotiations

By the time the Doha Round was launched, trade policies taxing agricultural exports had largely disappeared in developing countries, and their price supports and subsidies had been deeply curtailed by the crises (and related policy adjustments) of the 1980s and 1990s, leaving agricultural protection as the main available policy instrument to support agriculture. Those facts have shaped the views of many developing countries, which as members of the WTO have become more active participants in the negotiations. Although they have presented a large variety of proposals, developing countries can be divided into two main groups, depending on their emphasis on two different approaches. One approach is to “play offense,” by trying to limit the ample legal room developed countries have under current WTO rules to protect and subsidize their own agriculture (for which they also have large financial resources). The other is to “play defense,” asking for special and differential treatment (SDT) to be able to protect (and potentially subsidize) agriculture in developing countries.

Countries following a defensive approach see their agricultural sector as vulnerable and consider agriculture as special, requiring separate treatment in the WTO. Although these opinions may appear to put them close to the “multifunctional” arguments of some developed WTO members, the developing countries do not want their special problems of agriculture to be confused with the multifunctionality claims by rich countries. While they want tighter disciplines on developed

countries' agricultural policies, these countries do not agree with the view that agriculture should be treated similarly to industry under WTO rules. In particular, because they believe that developed countries will not reduce their levels of protection and subsidies, or because, even if that happens, they think that their agriculture would still not be competitive, they have asked for special and differential treatment to have ways to promote their agricultural sectors.

One argument used to support this line of reasoning is that the legal exemptions allowed for developing countries under the Green Box and Article 6.2 of the Uruguay Round Agreement on Agriculture are of little use to developing countries because the financial, technical, and human resources required by the permitted policies make them very difficult to implement (UNCTAD 2000). The conclusion reached is that the developing countries need flexibility on the levels of protection allowed and possible subsidies under the label of development or food-security boxes.²⁹

A subset of these developing countries, particularly in Africa, is concerned about maintaining the perceived value of their preferential access to the markets of developed countries that may decline if protection in those markets is reduced (Bouët, Fontagné, and Jean 2006). Also, those developing countries in this subset that are net food importers emphasize the problem of possible increases in the cost of food imports in a liberalized world.³⁰

Another (smaller) block of developing countries is part of the Cairns Group (whose 17 members include 14 developing countries).³¹ The Cairns Group's offensive approach has focused on including agriculture in the disciplines of the WTO, asking for lower levels of protection and domestic subsidies and a prohibition on export subsidies. Although Cairns Group members are often thought of as large and competitive exporters, some of the developing countries in this group (such as Bolivia, Guatemala, and the Philippines) have the profile of food-insecure countries (Díaz-Bonilla and others 2000). The Cairns Group developing countries share with many other developing countries their criticism of export subsidies as unfair and disruptive of international trade. These two groups agree on the need to drastically reduce domestic support in rich countries, including the Blue Box and several of the payments to farmers allowed in the Green Box. The main difference has been that the Cairns Group has not considered appropriate the ample SDT provisions favored by the first group of developing countries that, it is feared, would reinforce the protection of developed countries while also reducing trading opportunities in other markets.

Some developing countries have tried to apply both approaches (offense and defense), reflecting in part the nature of their agriculture. India is an interesting case. Playing offense seems reasonable for a country that in the past few years has emerged as a net exporter of agricultural products.³² At the same time,

a large share of India's poor population lives in rural areas, and concerns about possible negative impacts on that group have underpinned the strong defensive components in India's WTO proposal (embedded in the notion of a food-security box).³³

The balance between defensive and offensive approaches in several developing countries was changed by the joint U.S.-EU framework of August 2003, which was perceived as moving the United States toward the EU's more protectionist stance in exchange for maintaining American subsidies. This perception generated a parallel realignment within developing countries leading to the creation of the G-20 that brought together many Cairns Group's members (Argentina, Brazil, Costa Rica, Indonesia, South Africa, and Thailand) and several of the development-box countries (Dominican Republic, Arab Republic of Egypt, Pakistan, and Sri Lanka) along with countries such as China, India, and Mexico. The Cairns Group's developing countries accepted a larger component of defensive policies, while other developing countries moderated somewhat their aspirations for stronger SDT.

The heterogeneity of developing-country interests nonetheless increases the risk of "lose-lose" scenarios in which developed countries retain their high levels of protection and subsidization while developing countries reinforce their levels of farm protection. This type of outcome is not at all precluded under the WTO's July 2004 Framework agreement of the Doha Development Agenda. It is basically the option offered by the EU, Japan, and countries with comparable agricultural policies. The United States, for its part, has pushed developing countries toward a similar defensive approach by asking for wide liberalization while trying to retain policy instruments (basically domestic subsidies) that enhance its competitiveness in world markets. In such a nonliberalizing bargaining equilibrium, developing countries would lose export opportunities that generate employment and incomes, while paying the cost of higher food items in their own markets, likely impairing food security. In developed countries, taxpayers and consumers would still be burdened with the costs of subsidizing inefficient producers in ways that do not necessarily protect the environment or achieve a more equitable income distribution in their societies, while agricultural development in poorer countries would continue to be stifled, leaving in place the negative effects of those policies on poverty, hunger, and malnourishment.

If developing countries want to avoid such a Doha Round outcome and benefit from the negotiations, they should maintain their focus on playing offense. Limiting the possibilities for subsidization and protection in developed countries would stimulate opportunities for production in developing countries, both for export markets and for their domestic markets, where they have to compete with subsidized products from the developed countries. The separate issue of the erosion of preferences of low-income countries with access to protected markets in developed

countries must be quantified, and losses could be compensated directly to those countries through some form of buyout payments. Food-insecure and vulnerable developing countries will need some SDT, including simplified and streamlined instruments to confront unfair trade practices and import surges that may irreparably damage the livelihoods of small farmers, and longer transition times for adjustments to be undertaken. But to be constructive, SDT must avoid a strong protectionist component and instead focus on Green Box and other investment-centered approaches to agriculture, that being the best strategy for rural development and poverty alleviation.³⁴

Avoiding Distortionary Protection and Agricultural Subsidies in Developing Countries

Our review has highlighted different ghosts that still haunt agricultural policies in developing countries and that could be revived. One possibility is to go back to the multiple, contradictory, and inefficient policies of public sector intervention in agricultural and related markets. Although many low-income countries lack the fiscal resources to implement those policies, this option is becoming increasingly open to middle-income countries as agriculture's share of their economies becomes smaller. Another possibility is to increase agricultural protection in developing countries. In the context of the WTO Doha Round, some negotiators and civil society groups have argued that increased agricultural trade protection in developing countries would ease poverty and promote food security. But this would be equivalent to a regressive tax on food consumption, which would harm poor consumers, and its benefit to farmers would go mostly to large producers.

A better approach than increasing distortionary farm subsidies and protection in developing countries is ensuring a neutral trade and macroeconomic framework, coupled with significant nondistortionary interventions and investments. The so-far intangible hologram for developing-country policy is precisely an integrated program, backed by enough resources, to address the multiple issues that require consideration: the macroeconomic and trade framework, specific policies and investments at the household and individual levels, and meso-level sectoral and regional policies and investments. Remaining price policy biases against agriculture, where they still exist, should be eliminated—but not by changing the sign of that policy bias in favor of agriculture. Price bias is different from the more general urban bias that still affects agriculture and rural areas in many developing countries. Increased rural investments in health, education, and human capital are needed, along with strengthening networks of small urban centers and villages; improving management of land and water resources; facilitating land ownership by small producers and landless workers; promoting

improved agricultural technology; investing more in rural infrastructure (including rural roads, communications, and energy) and nonagricultural rural enterprises; encouraging organizations to expand the social capital and political participation for small producers and the poor; and providing adequate safety nets, including conditional income transfers that are now expanding in some middle-income countries.

These latter policies and interventions are basically allowed under the Green Box of the URAA and do not need special dispensations within the WTO. What developing countries require, however, are additional financial resources to support agricultural and rural development policies and investments, part of which must come from the international community. Such support is not, institutionally, within the purview of the WTO. However, a credible and binding commitment by developed countries and international organizations to provide additional funding for rural development, poverty alleviation, and food security in developing countries might well be included as a side agreement in the new WTO texts, reducing the possibility of a Doha Round outcome that allows continued subsidies and protection worldwide.

Notes

1. T. N. Srinivassan points out that were trade liberalization accepted as the goal, the agricultural agreement could simply state a future date for low tariff levels and let each country decide for itself on a path to meet the requirements. In our formulation, simple rules for subsidy elimination would also have to be included.

2. Farmers were also allowed to update their base of eligible output, and direct payments were extended to oilseeds. Westcott, Young, and Price (2002) provide a summary of the provisions of the 2002 farm bill. Orden (2003) provides a political economy assessment of its enactment.

3. The change proposed was that payments otherwise eligible for the Blue Box be extended from those made "under production limiting programs" to also include those that "do not require production."

4. Swinbank (2004) provides a concise appraisal of the EU reform process since the late 1980s.

5. From the 1930s until 1996, quota peanuts had to be grown in the county and state in which the quota had originally been assigned. Under the 1996 farm bill, up to 40 percent of quota could be transferred (leased or permanently sold) across county lines within a state. The largest shift of production occurred in Texas, where nearly all of the allowed quota transfer moved from the high-cost central production area to the lower-cost western region.

6. For a traditional producer who continues to grow peanuts, the minimum average revenue is \$474 a short ton on a level of production equal to recent output $[(0.85)*(\$495) + (0.15)*(\$355) = \$474]$ plus the \$220 quota buyout payment.

7. Alston and Sumner (2004) conclude that agricultural quota-right purchase prices are usually heavily discounted.

8. Potentially the exporters could pursue a dispute under the WTO for impairment and nullification of concessions, but that has not occurred. Domestic peanut production also dropped in 2003 but recovered in 2004 to a level above the prereform average. Abolishing location-specific quotas has had substantial effects on the regional distribution of domestic production, with a shift from high-cost to low-cost areas. For example, planted acreage fell more than 50 percent in Oklahoma and Virginia

between 2001 and 2003 while rising in Georgia and Florida. Quota rents were lower in the high-cost production areas, so the uniform national quota buyout payments provided somewhat more compensation in those areas.

9. Exceptions are recent tobacco quota-loss payments in fiscal years 2000, 2001, and 2003, totaling \$860 million, and the Commodity Credit Corporation's takeover of 1999 loan stocks, amounting to about \$625 million (Womach 2004a).

10. The buyout was added to tax legislation (the American Jobs Creation Act of 2004) prompted by the successful EU case in the WTO against export subsidies embedded in U.S. tax laws. In the indirect sense of providing this legislative vehicle, WTO disciplines (but not on agriculture) played a role in the U.S. tobacco reform.

11. Unlike other crops, tobacco is not included in the general farm bills. Senator Richard Lugar of Indiana had proposed a buyout early in the debate over a health-costs settlement. As an offshoot of the 1998 national settlement (the Master Settlement Agreement), the National Tobacco Growers Settlement Trust (or the Phase II payments) provided a distribution of \$5.15 billion to tobacco quota owners and producers over a 12-year period (Womach 2004a).

12. This is not to say that either the quota owner or total payment is comparable, in terms of owner plus producer welfare, to the past rental payments. With removal of the quotas and an increase in production, the growers are better off even without any compensation since producer surplus increases (as represented in a single-region, static partial equilibrium model). The intense political battles over compensation of quota owners versus growers are a bit curious in this context. Similar debates took place over the rights to decoupled payments in the 1996 farm bill between owners and producers under various rental and share-cropping arrangements. In the quota removal case, growers capture some of the former quota rents, so quota owners could be partly compensated, in principle, directly by producers. All rents are captured by growers and consumers when the quotas are eliminated.

13. Buyout experiences in other countries provide additional insights. For example, in July 2000 Australia implemented a buyout in its dairy sector paid over eight years, financed by a consumer tax during that period. Again, shrinking quotas and other marketing restrictions led to support for reform among producers. The compensation package of Australian \$1.8 billion was equivalent only to two or three years of previous transfers to farmers (Edwards 2003). The rate of exit from the sector tripled during the three subsequent years (8.2 percent of dairy farmers exited in 2000/1), but total milk production remained stable (Harris and Rae 2004).

14. Orden, Paarlberg, and Roe (1999) and de Gorter and Baffes (2004) review several past buyout proposals. Blandford and Boisvert (2004) call for a buyout of land asset values to facilitate an end to existing U.S. farm support programs, a proposal that they characterize as being to "think the unthinkable."

15. Swinbank and Tangermann (2004, 65) argue that the issuing of tradable bonds to a finite-length stream of fixed payments would create a flexible asset for the beneficiaries and "lock in" the policy reform since payments "could not be altered without impacting on the wealth of bondholders who are no longer the original farm recipients."

16. The actual and projected costs of countercyclical payments vary with commodity prices and forecasts. Relatively high prices in 2002–3 fleetingly created the prospect that market conditions would make the countercyclical payments less controversial, but they ultimately demonstrated their contentious subsidy dimension when prices were low. USDA projected in July 2004 that average costs of countercyclical payments would be only \$1 billion for fiscal 2003–8. When prices dropped sharply based on good harvests later in 2004, the July projection proved too optimistic, and USDA revised its estimate of countercyclical payments upward again. For the July 2004 projected cost of countercyclical payments, annual expenditures for a buyout as described above would be just \$1.83 billion.

17. The intent of a buyout of farm support payments is quite different from the rationale for purchase of development rights. The latter is to temper local adjustment pressure to exit agriculture, not facilitate it.

18. Even the well-known international economist William Cline has apparently mixed up decoupling and supply management. Cline (2004, 290) highlights the importance of agriculture in a comprehensive assessment of the effects of multilateral trade liberalization in reducing global poverty.

He recommends that developed countries “decouple forcefully any domestic subsidies from exports and production.” But he then goes on to write: “The prime example of a decoupled subsidy is one that rewards the farmer for removing land from production, rather than for producing. Such ‘set-aside’ conservation-oriented subsidies featured prominently in earlier periods of U.S. farm support, and they could easily once again become the centerpiece of farm programs.”

19. Among other prominent proponents of bioenergy, Wirth, Gray, and Podesta (2004) argue likewise that “farmers in this country [the United States] and elsewhere in the Americas could be big winners.” Ugarte and Hellwinckel (2004) estimate that a subsidized price of \$40 a dry ton for switchgrass would induce a shift of 12 million acres into its production and push other crop prices up 10 percent or more, reducing projected costs of loan rate and countercyclical payments. They provide no analysis of net welfare effects.

20. Related criticisms of community development were that despite an emphasis on participation, in many cases governments imposed the schemes, using them as more or less disguised mechanisms of social control. Another problematic issue was that the communities were not socially homogeneous and that the emphasis of working with the leaders of each community ended up aligning social promoters with the elite of local power, reinforcing the possibilities of elite domination over the rest. Focusing on communities also ignored the broader national and even international structures of which they were part and that defined their political, social, and economic functioning.

21. In terms of direct poverty effects in rural areas, studies of the Green Revolution also tend to paint a positive view, usually showing advances for the poor, attributable to production, employment, and food price effects, although recognizing that uniform attainment of benign outcomes is by no means guaranteed (Hazell and Ramaswamy 1991, IFAD 2001).

22. Redistributing investment was considered better than the alternatives of redistributing incomes to the poor for consumption (which was considered unsustainable fiscally) or redistributing fixed assets such as land (which faced strong political resistance).

23. The basic-needs approach implied an important role for the public sector in the provision of certain public services and required improvements in both the provision and access, so as to effectively reach the poorest sectors. It would also require promoting organization of the population that was to receive the services and their participation in the decisions and actions to be implemented (Streeten and Burki 1978).

24. For example, in Brazil during the second half of the 1970s, agricultural credit represented about 100 percent of agricultural gross domestic product (GDP), with interest subsidies that in some years amounted to some 5 percent of GDP (World Bank 1986).

25. The real exchange rate is defined as the ratio of nontraded to traded goods’ prices, while the real, effective exchange rates are trade-weighted currency exchange rates adjusted for inflation measured by the Consumer Price Index. For both measures a higher value of the index indicates an appreciation of the domestic currency relative to foreign currencies.

26. For instance, at the beginning of the 1980s, several countries in South America (among them, Brazil and Chile) embarked on accelerated programs to expand wheat and other cereal production, due to concerns about shortages that were heightened by the high prices in the mid-1970s. When prices collapsed in the mid-1980s, those programs represented a high cost for the government, and support for those crops was substantially diminished (Díaz-Bonilla 1999). In Asia, estimates of public sector agricultural expenditures (measured in purchasing power parity values) by Fan and Pardey (1998) show that they grew at 9.5 percent during the 1970s, slowed down to 3.5 percent during the 1980s, and had a negligible increase of less than 0.5 percent during 1990–93.

27. Domestically, increases in capital flows may have led to positive growth and investment effects on those products such as livestock and dairy that are more closely linked to the evolution of income and demand in the domestic market, but it also led to overvaluation of domestic currencies (mostly in LAC), which hurt tradable sectors. Then a reversal of capital flows also contributed to growth declines (affecting those products that depend on domestic market incomes) and to banking and fiscal crises (negatively impacting the supply of government services for a variety of products).

28. The programs generate focused inflows of liquidity that appear to lead to local growth multiplier effects in poor communities. Those transfers have smaller or no leakages in terms of import content and savings at the more macro level.

29. The development box idea, presented by Sri Lanka, Dominican Republic, Pakistan, Cuba, and others, or the food-security box, advocated by India, for example, combines a series of existing exceptions and additional proposals for special and differential treatment for developing countries in the areas of market access, domestic support, and export subsidies.

30. Within a mostly defensive approach, the main topic on which African countries are challenging developed countries' policies (i.e. "playing offense") relates to cotton subsidies, mostly in the United States. Benin, Burkina Faso, Chad, and Mali (all of them least developed countries) are seeking compensation for past subsidies and elimination of future subsidies (Sumner 2006). This is one of the few issues in which these countries can oppose developed countries' agricultural policies without fearing negative impacts on either the perceived rents gained by developing countries from protection in developed countries' markets or the price of food items in world markets.

31. The members of the Cairns Group are Argentina, Australia, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, New Zealand, Paraguay, the Philippines, South Africa, Thailand, and Uruguay.

32. In the 1995–2000 period, corresponding to the implementation of the Uruguay Round, India has exported about \$2 of agricultural products for every \$1 of agricultural imports, a ratio comparable to that in Latin America and far higher than in South Asia as a whole.

33. In terms of external vulnerability, it is interesting to note that India has a low percentage of food imports (a mere 6 percent) compared with total exports (an indicator of how vulnerable the country is to changes in international food markets). This percentage is much lower than India's average for the four decades since the 1960s as a whole (almost 20 percent), and it is below the average for other developing regions such as Latin America (9.5 percent), the whole South Asian region (11 percent), and least developed countries (28 percent) (Díaz-Bonilla 2003).

34. For instance Díaz-Bonilla, Diao, and Robinson (2004) simulate those two alternatives in a world model. In the first scenario there is an arbitrary increase in protection on food-security crops (assumed to be grains in the simulations) only in those countries that supported the concept of a development or food-security box. In the second scenario, the governments in those countries collect, through an explicit tax, the equivalent of the implicit consumption tax privately collected through protection and invest that amount in agricultural research and development (R&D). The increase in agricultural protection results in a negative effect on GDP and employment for those countries, where there is less consumption of food products, suggesting that food-security declines with increased protection. An increase in investment in agricultural R&D financed by an equivalent tax calculated from the first scenario shows increases in GDP, employment, agricultural production, and consumption including food items. Also, in the first simulation, agricultural trade among developing countries, including those applying the higher levels of protection, also declines by about \$300 million, suggesting that the development and food-security boxes hurt South-South agricultural trade.

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