

### **1.2.4 Agricultural risk, insurance markets and government role**

The role of the public sector in reducing agricultural risk could take many forms including supporting market-based insurance schemes. For insurance, the government role can range from simply providing the underlying regulatory framework for private insurance to subsidizing premiums or co-insurance to private schemes in cases of catastrophic losses.

The type of government role and its scope is determined by the type of risk, its frequency, and the scope of resulting losses. The World Bank (2005) offers a useful framework, termed risk layering, to categorize risks in terms of their insurability. Three layers are distinguished: (i) retention layer, (ii) insurance market layer, and (iii) tail risks layer. Layers are determined by the specific risks of each environment but their size also depends upon the market for agricultural services, and government's policies which affect decision making (Conforti, 2009).

The first layer (retention layer) implies expected types of risks that are frequent and losses that are small or manageable and are born by producers or operators. Here additional insurance normally is not required. The ability of farmers to retain small and frequent losses - that is, the size of the retention layer - depends upon access to agricultural services, and the functioning of the relative markets, such as those for credit, finance, transport, storage, or extension. Where such markets are incomplete or uncompetitive, farmers' ability to retain risks is hindered. In these cases, small scale farmers are forced to rely on other mitigation or informal ways to smooth consumption, which may perpetuate subsistence, hinder farm capital formation, and limit agricultural productivity growth (Carter, 2008). Farm support policies, such as those listed in table 1.1 can play a role in alleviating these constraints.

There are other types of unexpected events that cause larger farm losses, but which can be mitigated by risk pooling via insurances. However, the agricultural insurance market remains largely underdeveloped in most developing countries, and for multiple reasons. In most cases, farmers are simply not aware of insurance programs or cannot properly understand how their work. Premiums may be out of reach for poor farmers and high transaction and delivery costs in remote rural areas may undermine incentives for insurance companies to operate. Lack of information (on risk exposure) and high transactions costs are main causes behind market failures in insurance. In those small cases where agricultural insurance does exist, the record has been mixed, and its sustainability outside government support is often questioned (Conforti, 2009).

One approach to insurance termed index-based insurance has been promoted as a solution to the problems facing conventional insurance programs in developing countries context (World Bank, 2005). The index-based (or parametric) insurance relies on using pre-determined indemnities that can be triggered by changes

in an index whose values are expected to affect individual subscribers to a pre-determined extent. Indexes replace costly *ex-post* damage assessments by insurers, and help reduce information asymmetries (required to calculate risk exposure). However, the approach implies that the subscriber assumes the so called basis risk, that is no compensation is paid for damages which exceed – or are short of - what is predicted by the correlation between the occurrence of an event (such as annual rainfall below a given amount) with the expected damage (Berg and Schmitz, 2006). Parametric insurances have been developed mainly on weather parameters, based on the notion that climatic variability is the first most important reason for vulnerability (OECD, 2008). But there may be other index types to use such as area-based yield insurances.

We have seen that governments can play a variety of roles in correcting for market failures blocking the development of insurance markets and/or helping farmers better cope with non-insurable risks via strengthening basic agricultural service markets (credit, extension, storage, market information and price policies). To overcome the market failures (lack of or asymmetric information resulting in high start up and transaction costs) that prevent the growth of private insurance markets (including index-based programs), government can provide support through a variety of channels including investments in market information systems and related infrastructure required for proper functioning of private or market based insurances. For those infrequent but high (catastrophic) loss events (tail risks layer), governments can also help with co-insurance since these types of risks cannot normally be handled by private insurance without running insurance firms out of business.

However the record of government interventions in formal insurances schemes has not been very successful. Conforti (2009) surveyed several developing country experiences with agricultural insurance schemes and found that there are cases where informal mechanisms as well as micro-insurances have been crowded out by public intervention. Conforti divided country cases studies into three categories: those cases where government assume minimum role providing no more than contract regulation and information disclosure; those cases involving government contribution to re-insure against covariate risks and extreme events; and those cases where government directly contribute to premium subsidization. In country cases where farm insurance is privately supplied as in Argentina, Ukraine and India, their coverage has been extremely small (no more than 1% of all farms) and typically covering larger farms and high value products only. Examples of government premium subsidization from Mauritius, India, Morocco and the Philippines, were found to be plagued with inefficiency and misuse. Even in schemes using index-based insurances, only few successes could be found, as in the case of Mongolia's livestock index based insurance where the government cover extreme events with assistance from World Bank loans. For other cases of government support to index-based insurance schemes such as in India (through microfinance) or in

Malawi (through farmers organizations), the verdict is rather negative on their performance.

Experiences learned from the above case studies indicate that governments tend to intervene mostly via premium subsidization and that these experiences have shown more failures than successes, due to widespread inefficiencies and sometimes misuse. Clearly, new and innovative approaches are needed. It is not enough to say we need to promote market-based insurance and other risk mitigation schemes. What is needed is to remove or correct for the underlying market failures preventing risk management solutions from becoming a normal component of farmers choice (and decision making) set. This begins with improving the critical agricultural service markets (credit, information, and other production and marketing smoothing options). Next, encouraging the emergence of fully private insurance system in poor rural areas, by involving pre-existing organizations (such as farm organizations, micro-finance institutions) and government, donor or NGO temporary support with “start-up” costs and help them develop building trust and consolidate relations. Where subsidized premiums to private insurance can be justified, this must clearly be carried out in a context of a clear exit strategy when benchmarks for transaction costs, market thickening, and coverage for small holders and producers of staple crops (not just high value crops) are attained.

### **1.2.5 Climate change, carbon offsets and developing country agriculture**

Another emerging area with potential implication for agricultural growth and development in developing countries is the possibility of the use of carbon offsets in developed countries to promote carbon reducing but at the same time productivity enhancing agricultural technologies and investments in developing countries. Currently many developing countries governments are not willing to tackle agriculture–climate change linkage for fear that commitments to GHG reductions may undermine agricultural growth and food security. However, there may be considerable opportunities for investments in new GHG abatement technologies that may also offer new sources of investments with positive spill over effects for agriculture in terms of enhanced capacity and greater productivity. Such investments could well be financed by carbon offsets in developed countries and could provide a win-win type of carbon offset. However, to reverse the negative attitude of developing countries towards adding agriculture in carbon offsets, there is a need for technical work to specify the carbon emitting patterns of various agricultural production systems.

The market for carbon offsets is still at its infancy and there are a lot of unknowns as to its implication and its ramifications. In the US, as there is a push to create a separate source of carbon allowances for farmers, who can opt for eco-friendly farming techniques or plant trees and would earn so-called offsets to sell alongside government permits on carbon markets. Such market is potentially huge given the

scale of pollution coming from agriculture. Currently, the carbon-offsets market is at a pilot stage. At the Chicago Climate Exchange, a pilot program lets farmers supply credits for sale to companies, such as Ford Motor Co. and American Electric Power Co., which have agreed to voluntary emissions limits. Its sibling Chicago Climate Futures Exchange, in November 2008, began trading futures that can be used if a mandatory cap-and-trade law is enacted. Currently, U.S. legislation under proposals seek to subsidize emerging markets for environmental services, such as carbon sequestration, renewable energy production, and providing clean air, clean water, and wildlife habitat. If passed, such legislation will herald over time the emergence over time of a whole new industry based on carbon-offset system.

The implications for developing countries of these GHG reduction type programs whether incentivised by targeted subsidies or carbon offsets are not documented or understood. De Gorter (2009) argues that most of the mitigation potential in developing country agriculture will come from emission abatement activities resulting in changes in production practices and not in reducing fossil fuel consumption and output. Such changes can be facilitated with carbon offsets in the form of targeted subsidies for abatement activities. However, private agents cannot do it alone, and public investments in R&D, extension services and technology transfer packages are required. De Gorter also argues for new financing mechanisms outside the current CDMs which, as currently designed, have not proved of limited use in developing country agriculture. Moreover, this may also call for rethinking domestic agricultural policy in developing countries, such as input subsidies by rechanneling public interventions into production practices that also lead to reduced emissions. Still large financial aid to developing countries may be required given the large investment required to finance R&D and new institutions to deliver the altered production practices.

In summary, this chapter argues that while OECD farm support subsidies can be further reformed to return their negative distortionary effects on developing country agriculture, the latter can also be much more stimulated from actions developing countries can do themselves. This begins with a serious strategy for robust and sustained investments strategy for agriculture with for role for public, private and foreign direct investment. Also, improving agricultural productive capacity necessitates developing the infrastructure for input (seeds, fertilizer) supply and accessibility, and when necessary, promote effectively targeted input subsidies. Such investment strategy should also include the promotion of risk reduction and risk coping policies for poor producers. This includes market based safety nets designed as a supplement to other relevant domestic support measures.

Another area pregnant with potentially large flows of investments to developing countries (under largely unknown modalities) arises from the global efforts to tackle climate change and reduce GHG emissions. Such influx of investments could transform swats of developing country agriculture is they bring along new and

improved technologies, more input use efficient and more productive. However, this is still largely a new area that requires further research and investigation. More work is needed at technical and institutional levels to understand how best to include developing countries in emerging carbon offset markets, and this could form a significant part of FAO technical work.

Finally, a new Doha Agreement would be highly desirable from developing countries perspective if it places significant ceilings on commodity-based distortionary domestic farm support and include major reductions in market access restrictions. Also, such an Agreement must allow developing countries sufficient flexibility, including a Special Safeguard and Special Products. These measures are necessary for many developing countries to successfully complete their agricultural transformation.

### **1.3 Summary: Options for non-distorting farm support**

In the chapter the following types of policies have been identified as possibly non-distorting while at the same time meeting some of the policy objectives that are prevalent in today's world.

#### **Encourage the further decoupling of farm policies in developed countries.**

There is an overall tendency within OECD to move gradually to more decoupled forms of support and this should be encouraged. Overall, OECD commodity specific farm support has declined from over 80% in 1986 to about 50% in 2007. This reduces distortions and makes future reductions in support more politically feasible. It can also be justified as an exit strategy from farming for many developed country farmers.

#### **OECD countries could offer compensatory financing for developing country producers.**

Given the continued support to OECD farmers, fairer trade can be achieved by compensating developing country producers for distorting (amber and blue box type) support accorded developed country farmers. One option is to agree that a certain percentage of farm subsidies in OECD countries be put into a global development fund to be distributed to eligible developing country (especially LDC) farmers along established criteria for eligibility, such as the estimated distorting effect on them from developed country policies. The funds could be used for projects to raise production, ensure sustainability of productive resources, agricultural research, and improvement of local human capital that is tied to agriculture.

**Promote decoupled policies to maintain agricultural production “reserve” in high income countries.**

Such policies, which could include support for land set asides, support for technology and farm human capital skills, incentives to maintain set-aside land in production ready and environmentally sustainable condition, and other similar policies, could be a powerful alternative to physical and very expensive “commodity reserves” which are not only hard to organize, but also very questionable in their effectiveness.

**Use carbon offsets in developed countries to promote carbon reducing but at the same time productivity enhancing agricultural technologies and investments in developing countries.**

Currently in most developing countries governments are not willing to face up to the issue of including agriculture in the environmental debate, for fear that only the negative GHG contributing part of their agriculture will be emphasized. However, there is considerable room for promoting investments and technologies in developing country agriculture that will both increase productivity as well as reduce GHGs. Such investments could well be financed by carbon offsets in developed countries, and could provide a win-win type of carbon offset. However, to reverse the negative attitude of developing countries towards including agriculture in carbon offsets, there is a need for technical work to specify the carbon emitting patterns of various agricultural production systems.

**Agricultural insurance in OECD should deal only with extreme and unpredictable agricultural risks that cause market failures.**

As OECD farm support shifts from commodity based to decoupled measures, farm incomes have become more variable, and safety nets in the form of risk mitigation measures, such as revenue or weather insurance are being increasingly relied upon to provide protection from unpredictable low farm incomes. Existing publicly supported agricultural insurance schemes are inefficient, expensive, and distortive, as they entail high transaction costs and as they tend to increase the expected returns of covered products. In addition they crowd out private insurance companies. For insurance schemes to be non-distortive, they need to be more market based. Publicly supported agricultural insurance must concentrate on dealing with the so-called “market failure” part of agricultural risks, while leaving the other risks to be handled by the private market and farmers themselves. Hence more market-based agricultural crop insurance, that deals with market failures, must be encouraged as a way to providing non-distortive safety nets to OECD farmers.

### **Lower market access restrictions imposed by OECD countries on agricultural imports from developing countries, especially LDCs.**

Such restrictions in the form of tariff barriers, standards, phytosanitary restrictions, etc. have an important negative impact on developing countries. Exports from developing countries still face high import barriers, except for countries that benefit from preferential tariff access such as those benefiting from GSP (Plus), AGOA or EBA. Recent analyses show that the beneficial effects for third countries of a complete removal of the CAP and other OECD trade restrictions stem mainly from the tariff dismantling. Everything But Arms (EBA) type of trade policies of developed countries versus LDCs seem appropriate.

### **Promote a Food Import Financing Facility (FIFF) to insure LIFDCs from sudden and adverse movements in their food import bills.**

During last year's global food shock, many low income food deficit countries (LIFDCs) were unable to import enough food to maintain domestic consumption levels because of trade finance restrictions imposed by export financing institutions in developed countries. This problem is a recurring one and was supposed to be dealt with under the Marrakesh Decision of the Uruguay Round but was never tackled. The purpose of such a FIFF would be to provide additional trade financing to the agents of LIFDCs for the cost of excess food import bills, so as to maintain normal levels of quantities of imports in the face of price shocks, or to make it possible to import extra quantities in excess of normal commercial import requirements.

### **Promote a market based and more automatic compensation scheme for negative agricultural export earnings variations for commodity dependent low income countries.**

The problems of the earlier EU STABEX scheme as well as its successor the FLEX scheme are well known, and they are due to the ex-post nature of their compensatory structure. The same is true of the IMF CFF facility. In the meantime, the underlying problem facing low income commodity dependent economies has not diminished. The idea behind the new type of policy is to link commodity related compensatory payments to index based financial products, so that compensation can be made automatically and objectively.

### **Promote public and private sector investment strategies.**

This involves emphasis on public investments in various infrastructure and technology related areas of relevance to agriculture, as well as the promotion of public-private partnerships for the development of commodity value chains. Increased overall public investment must be combined with appropriate composition of such

investments to promote growth. There is a need for appropriate guidelines for public sector investments in different groups of developing countries.

**Promote the use of effective market enhancing subsidies.**

These may include policies to create input and output markets where none exist, policies to promote fertiliser and other input use as part of a wider growth strategy, policies to promote competition in input supply, policies to promote pro-poor growth and food security, etc. Such policies are considered domestic support policies, and flexibility in their use could be allowed for developing countries and LDCs in the WTO agreements.

**Use trade policies selectively to support and complement domestic investment programs.**

The best policies to promote domestic agricultural investments are direct ones, targeted to the relevant sectors. Trade policies, however, should not undo or counter what domestic investment policies and strategies do. Hence policy space, perhaps in the form of tariff flexibility to allow for “development gaps”, could be envisioned to allow developing countries to support domestic investments. In this context WTO may need to recognize and differentiate the developmental orientation of trade instruments in low income countries compared to the pure farm support nature of policies in developed countries.

**Promote risk reduction and risk coping policies in developing countries.**

DC agriculture is much more exposed to various natural and market risks. For lack of other instruments and safety nets, much of DC producers’ savings capacity is spent in self insurance. In addition they often become trapped in low return but low risk production activities. Policies to reduce the risks faced by low income farmers and to help such producers cope with negative shocks could be instrumental in unleashing their own savings potential and moving them out of their poverty trap. Market based or publicly supported safety nets could be a useful supplement to other relevant domestic support measures, and must be allowed under the WTO agreement.



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# OECD policy and distortionary effects: A review of the evidence

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## Introduction

This chapter contributes to the analysis of non-distortionary agricultural support by examining the distortionary effects of agricultural support policies in OECD member countries.

There are different forms of agricultural support and they are not equally distorting. Tariffs and domestic price supports that increase prices for both producers and consumers are generally the most trade-distorting form of support. This form of support has accounted for most of the producer support in the OECD. Removal of such policies accounts for almost all of the welfare gains from agricultural liberalization.

Since in the mid-1980s, when multilateral agricultural trade negotiations began, many OECD countries have reduced their reliance on market price supports and replaced them with direct payments to producers. Direct payments are less trade-distorting than price supports. Direct payments that are fixed and do not require recipients to produce agricultural commodities – commonly called decoupled payments – provide little or no incentive for production and consequently have almost no output- or trade-distorting effect.

Most of this chapter is concerned with decoupled payments. Decoupled payments differ fundamentally from conventional agricultural support policies. Because they do not directly influence incentives in commodity or factor markets the standard methods of agricultural policy analysis, which analyze markets, do not

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adequately represent how decoupled payments influence incentives facing recipient households. Thus decoupling presents an analytical and conceptual challenge: the research program is ascending a learning curve.

The chapter also provides a brief overview of the biofuel policies. These are not agricultural policies but they have an impact on agricultural output and trade; an impact that is likely to increase as biofuel production expands. Biofuel policies have the opposite effect of traditional market-price support policies: they effectively subsidize the consumption of biofuel feedstocks – maize for ethanol and oilseeds for biodiesel – this increases commodity prices and reduces net commodity exports. Thus biofuel policies tend to benefit net exporters of cereals and oilseeds and to reduce the real incomes of net importers. The latter effect has raised concerns about global food security.

The chapter is organized as follows. Section 2.1 reviews the evidence on the aggregate impact of OECD agricultural support on global welfare. Section 2.2 examines how OECD agricultural support has transformed in form and magnitude in the last two decades. Section 2.3, examines the distortionary impact of the major forms of agricultural support. This is the longest section; its primary concern is the analysis of decoupled support. Section 2.4 examines biofuel policy and Section 2.5 concludes.

## **2.1 OECD agricultural support and global welfare**

Agricultural support has gained a bad reputation in popular media, particularly in the context of the Doha Development Agenda. Agricultural support in OECD countries is costly; it distorts international commodity markets; it disproportionately benefits wealthier households that own large amounts of agricultural land and, in many countries, it raises food costs, which disproportionately reduce the real incomes of lower-income households. Thus its image in popular media is not undeserved. However, agricultural support is not uniformly distorting: some forms of agricultural support are less trade-distorting than others. This distinction is often ignored in non-technical generalizations about agricultural support; indeed, many commentators appear unaware of the distinction. This section highlights three recent studies that examine the trade and welfare impacts of the different general forms of agricultural support. The objective is to provide a global perspective on OECD agricultural support before examining specific kinds of support policies in greater depth.

The WTO Agreement on Agriculture defines three pillars of agricultural support: market access, export subsidies, and domestic support. Market access includes policies that limit imports, in particular tariffs and quotas. Domestic support includes payments to producers (whether or not they are coupled to production) but that do

not directly inhibit imports. Anderson, Martin and Valenzuela (2006) calculate the global welfare benefits (and costs) of full agricultural liberalization and decompose the proportion of total impact attributable to each of the three pillars of the Agreement on Agriculture – the values in each row sum to 100%. The three pillars have been combined for non-OECD countries because import market access is the source of almost all of non-OECD-generated agricultural trade distortion.

**TABLE 2.1**  
**Full agricultural liberalization and reform by WTO Agreement on Agriculture pillar**

Contribution to economic welfare in:	OECD Market Access	OECD Export Subsidies	OECD Domestic Support	Non-OECD All pillars
	<i>percent</i>			
OECD countries	78	5	6	11
Non-OECD countries	84	-10	2	24
World	79	2	5	14

Of the three pillars, liberalization of market access is by far the greatest source of welfare gains. Abolishing OECD export subsidies reduces non-OECD country welfare; some agricultural exporters gain from the abolition, but many importing countries face higher import prices because of subsidy removal. Finally liberalizing OECD domestic support makes a small positive contribution to Non-OECD welfare.

This table does not provide absolute magnitudes of the welfare changes in OECD and non-OECD countries: the rows are comparable only in the distribution of benefits across columns. OECD countries benefit much more than non-OECD countries from OECD liberalization: this is to be expected, the welfare losses and tax burden of agricultural support is borne mostly by OECD consumers and taxpayers; therefore they stand to benefit the most.

Tokarick (2005) provides monetary values for these welfare changes: he considers developed country (effectively OECD) policies as either tariff-based or subsidy-based. Tariffs include market-price support policies. Everything else is classified as subsidy. Subsidy removal results in a welfare loss to developing countries; the gains to developing countries derive from removing tariffs. The bulk of the gains from developed country liberalization accrue to developed countries. See Table 2.2.

Bouët (2008) simulates a full liberalization of tariffs (agricultural and non-agricultural) and removal of domestic agricultural support and export subsidies. The results are reported as percentage changes from a baseline scenario for world trade in 2015. The indicators are the change in value of world agricultural trade,

the change in value of world trade, and the change in world welfare – measured as real income. See Table 2.3.

**TABLE 2.2**

**Welfare gains from developed-country agricultural liberalization, \$US Billion 1997**

	Tariffs	Subsidies
Developed Countries	78.6	14.1
Developing Countries	12.5	-4.7

**TABLE 2.3**

**Decomposition of full liberalization by instrument, 2015**

	Market Access	Export Subsidies	Domestic Support	Total
	<i>percent</i>			
World Agricultural Trade	39.5	-5.6	-8.2	33.7
World Trade	9.0	-1.0	-6.1	5.3
World Welfare	0.23	-0.10	-0.04	0.33

Aggregated at the global level, the only source of welfare gains or positive stimulus to trade is the liberalization of import market access. Removal of export subsidies and domestic support reduces world welfare and trade volumes. Recall that this simulation is for the liberalization of tariffs on all products, not just agricultural products. Even so, the percentage change in agricultural trade is several times that of total world trade (which includes agricultural trade): this follows from the higher rates of protection on agricultural products than on non-agricultural products. Removal of domestic support reduces agricultural trade because domestic support tends to increase production, reduce prices and encourage exports; unlike tariffs, it usually does not discourage consumption or increase prices.

That market access matters greatly and that domestic support, decoupled or not, is relatively unimportant is the consensus. Diao, Somwaru and Roe (2001), Francois, van Meijl and van Tongeren (2003), Hoekman, Ng and Olarreaga (2002), and Hertel and Keeney (2006), among others, report similar findings. Charlton and Stiglitz (2005) provide a comparative overview of this literature and place agriculture in a larger WTO context. The implications of these findings for developing countries are forcefully summarized by Dimaranan et al. (2003:17):

[W]e conclude that developing countries will be well advised to focus their efforts on improved market access to the OECD economies, while permitting these wealthy economies to continue – indeed even increase – domestic support payments. Provided these increased domestic support payments are not linked to output or



variable inputs, the trade-distorting effects are likely to be small, and they can be a rather effective way of offsetting the potential losses that would otherwise be sustained by OECD farmers.

The welfare calculus is that if OECD expansions in import market access necessitate full or partial payment of decoupled compensation to OECD producers, it still remains a welfare improving outcome globally, and for OECD and non-OECD countries.

Before moving on to examine OECD agricultural support in greater detail, it is important to note some issues not taken into account by the modeling efforts reviewed above. Liberalization scenarios are limited to the subset of policies under negotiation, and to those policies that can be quantified and modeled. Several kinds of policy relevant to agriculture are beyond the scope of agricultural trade negotiations; among them biofuel policies – which are energy policies – as well as most non-tariff barriers.

Traditionally, non-tariff barriers referred primarily to quotas and quantitative restrictions. As a result of the Uruguay Round most quotas for agricultural products were converted to tariffs or to tariff-rate quotas and then subjected to liberalization. Such policies can be plausibly represented in simulation models. Liberalization of conventional agricultural trade barriers has revealed (and may have stimulated) other non-tariff barriers. These include customs and administrative procedures; sanitary and phytosanitary measures; technical barriers to trade (e.g. technical standards, testing and certification, labeling and packaging requirements); as well as anti-dumping duties and other so-called “trade remedies.” Such barriers are often difficult to identify, and are challenging, once identified, to quantify or represent in a trade model. Thus, the model results reviewed in this section tell most of the story, but not all of it: non-tariff barriers are increasingly important<sup>2</sup>.

## 2.2 Typology and trends in OECD agricultural support

We employ the typology of agricultural support developed by the OECD. (OECD 2008b) Policies are distinguished and categorized by the “transfer basis” of support. The primary transfer bases are output, input use, area planted, animal numbers, receipts, income and non-commodity criteria. The table below reports the major categories of agricultural producer support and OECD estimates of support in \$ billion (OECD 2008a: 19, Table 1.1)

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<sup>2</sup> OECD (2005) provides an excellent survey of non-tariff barriers; it includes Fliess and Lejarraga (2005) which is especially relevant for developing countries. Linkins and Arce (2002) is an accessible discussion of the challenges of quantifying non-tariff barriers; while Deardorff and Stern (1998) is the standard reference. Kee, Nicita, and Olarreaga (2009) is an important quantitative and comparative assessment of the trade restrictiveness of non-tariff barriers in 78 countries.

There is not an exact concordance between the three pillars of the WTO Agreement on Agriculture and the OECD typology. In general, market price support policies belong under Market Access as well as under Export Subsidies because export subsidies are usually a by-product of market price support programs. Other forms of support belong under Domestic Support because they are not reliant on border measures; they are financed by domestic taxes.

Table 2.4 contrasts the value of production and level and distribution of support in 1986-88, at the start of the Uruguay Round, with the most recent values available, 2005-07. In these two decades, the nominal, dollar value of agricultural production increased 53 percent; while total producer support increased 10 percent. There has been a substantial decline in the ratio of producer support to the value of production: from 40 to 29 percent. This decline merits keeping in mind when considering the general disappointment about the Uruguay Round and the supposed lack progress in agricultural trade liberalization and reform. One must consider the counterfactual: what would producer support have been in 2005-07 without an Agreement on Agriculture? We cannot observe this alternative world, but it is unlikely that there would have been such a significant decline in the support ratio in the absence of the Uruguay Round Agreement on Agriculture. [See Cunha and Swinbank (2009)] Budgetary pressures in the United States and the European Union curbed increases in domestic support, but the Agreement on Agriculture facilitated larger mutual reductions in support.

**TABLE 2.4**  
**OECD agricultural support, \$ Billions**

Form of Support	1986-88	2005-07	Change
Total value of agricultural production	592	903	+53%
Total (all forms of Producer Support)	239	263	+10%
Support based on commodity output	197	145	-26%
Market Price Support	184	135	-27%
Payments based on output	12	10	-17%
Payments based on input use	20	30	+50%
Payments based on current A/An/RI*	19	32	+68%
Payments based on non-current A/An/RI*			
Production required	<	1	-
Production non-required, fixed ( <i>decoupled</i> )	2	48	+2400%
Production non-required, variable	<	3	-
Payments based on non-commodity criteria	1	4	+400%

\*A/An/RI = area, animal numbers, receipts, income

The distribution of support across kinds of support has also changed significantly. Market price support and payments based on output have decreased. Combined, support based on commodity output accounted for 82% of total support in 1986-88; in 2005-07 it accounted for slightly more than half of total support, 55%. The shift from output-based payments to payments based on area, animal numbers, revenue, or income preceded the Uruguay Round; but the disciplines of the Agreement on Agriculture further induced this shift. The greatest increase has been in payments based on non-current farm attributes and that do not require agricultural production – also known as decoupled payments. These payments are based on past, non-current, characteristics of the recipient or the recipient's farm operation. Decoupled payments are not contingent on producing agricultural output or employing factors in agricultural production; nor are they contingent on receipts, income, or current prices. From less than \$2 billion in 1986-88 this form of producer support reached \$48 billion in 2005-07. Decoupled payments are now the second most important means of support to agricultural producers in OECD countries.

The change in the composition of support has reduced the average level of trade distortion caused by OECD agricultural support. An OECD (2001) study [also see Dewbre, Anton and Thompson (2001)] uses an equilibrium displacement model to simulate the production-distorting and trade-distorting effects of different forms of OECD agricultural support. The distortion caused by a change in the level of market price support is the standard of measure. The trade-distorting effects of other support policies are measured relative to market price support. The impact of a policy instrument is contextual and dependent on too many varying factors to have a fixed value. The simulations are designed to capture such variations; a distribution of trade-distortion coefficients is generated for each kind of support. Table 2.5 reports the approximate median values for each kind of support. These are called “illustrative coefficients” to underscore that these values should be viewed as rough or approximate relative indicators rather than concrete point estimates. These coefficients are used to construct an aggregate trade-distortion coefficient for all OECD agricultural support. This aggregate indicator is a weighted average: each trade-distortion coefficient is multiplied by the corresponding value share of total support<sup>3</sup>.

Figure 2.1 plots three indicators of OECD agricultural support 1986-2007. The bold black line plots the aggregate trade-distortion coefficient of OECD agricultural support. It declines from 0.96 in the 1986 to 0.74 in 2007. This reduction in OECD trade distortion is one reason why the simulated global welfare gains from OECD agricultural reform and liberalization have diminished since the Uruguay Round period. The grey line plots an index of the total (nominal dollar) value of OECD

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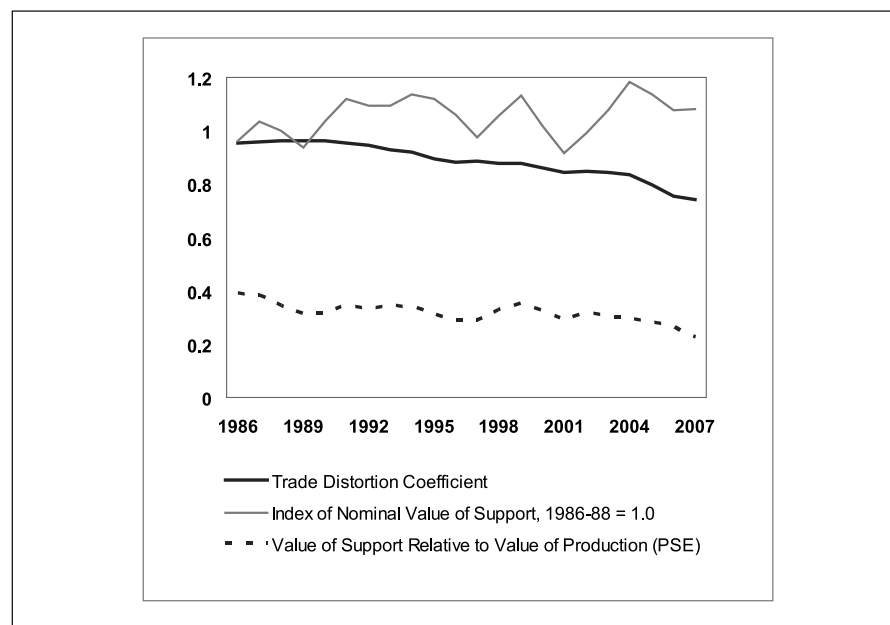
<sup>3</sup> Formula:  $\text{Index} = \sum w_i t_i$ , where  $w_i$  = value of support<sub>i</sub> / total value of support and  $t_i$  is the trade-distortion coefficient for support of type  $i$ .

agricultural support<sup>4</sup>. The dashed line plots the OECD's calculation of the Producer Subsidy Equivalent (PSE) for all OECD agricultural support: it declines from 0.39 in 1986 to 0.23 in 2007.

**TABLE 2.5**  
**Illustrative trade-distortion coefficients**

Support Policy	Illustrative Trade-Distortion Coefficient
Market price support	1.00
Output-based payments	0.90
Input-based payments	1.30
Current A/An/R/I	0.40
Non-current A/An/R/I, fixed payment	0.10
Other, non-commodity based	0.05

**FIGURE 2.1:**  
**OECD agricultural support, 1986-2007**



<sup>4</sup> Using the U.S. GDP deflator, a 2007 dollar is worth \$0.70 1986 dollars; using the consumer price index it is worth \$0.53 1986 dollars. Similarly, the trade-weighted U.S. dollar exchange index (major currencies) declined from a 1986 base of 100 to 59 in 2007.