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The World Bank's approach to increasing the vulnerability of small coffee producers

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Abstract

This essay critically engages the World Bank's recent experiments in providing market-based price risk management for coffee farmers. Using the case of Mexico and the recent 1998–2002 coffee crisis, I argue that such advocacy of farm-level use of derivatives markets entails large direct and indirect costs for coffee farmer wellbeing. This is especially so for smallholders. Not only might hedging with derivatives further destabilise and reduce producer incomes, but the opportunity cost of the Bank's advocacy, in terms of foregone risk management alternatives, is also problematic. I conclude with a discussion of several risk management alternatives that may better support small coffee producers facing volatile commodity prices.

Keywords: coffee, agriculture, World Bank, development, derivatives, risk management

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Introduction

Coffee prices are falling. Again. Coffee farmers in over 50 developing countries are currently faced with the prospect of financial ruin in what may be the third coffee price crisis in 20 years. Coffee future prices are down by almost 30 percent from their March 2008 highs. The International Coffee Organization (ICO) reports that cash prices in June 2009 were down almost 15 percent over the previous month as the prospect of a Brazilian frost appeared more remote. There are continued worries that the ongoing financial crisis will stymie coffee demand in the rich countries, putting further downward pressure on prices.

In the meantime, the World Bank continues to offer up its ill-conceived set of recommendations regarding 'market-based price risk management'. This euphemistic phrase refers to the Bank's efforts to link developing country farmers to derivatives markets, so that they might hedge their output and secure their incomes in the face of commodity price volatility and decline. By hedging with futures and options, coffee farmers can procure some much-needed price insurance, all the while avoiding the pitfalls of government intervention in commodity markets, or so the Bank has argued.

In fact, the Bank's recommendations risk further destabilising the incomes and livelihoods of coffee producers, especially small ones, and increasing their vulnerability to market shocks. Futures hedging can make coffee farmer incomes wildly unstable, undermining the purported stabilising benefits of such strategies. Potentially greater financial insecurity is thus one of the direct costs to farmers of the Bank's orientation to the commodity price problem. Other direct costs may include those created via the perpetuation of chronic oversupply in coffee markets. Conditions of market oversupply contribute to low and volatile coffee prices and may be aggravated by incentives generated in the hedging process. Small producers, least able to manage such fluctuations given their meagre resources, are usually those most negatively affected by them.

Perhaps outweighing such direct costs are the opportunity costs of the Bank's work in this area. Continued, misguided recommendations of derivatives-based schemes have directed donor time, energy and resources away from alternative schemes and policies that actually work. What opportunities has the Bank foreclosed in its pursuit of market-based price risk management? One of the more important consequences of this pursuit is that today, with coffee prices in decline, there is no working system of social support in place that can help producers successfully weather this shock. Here again, it tends to be small producers that suffer disproportionately in the absence of effective social protection policies.

In this paper I present empirical evidence regarding both the direct and opportunity costs of this World Bank's experimentation with the wellbeing of small coffee farmers. I begin in the first section with a discussion of the World Bank's commodity price risk

management work to the present. In the second section, I discuss price risk and small farmer vulnerability thereto. In the third section, I present evidence on the destabilising impact of futures hedging on farmer incomes. In the fourth section, I present data that suggest several alternative arrangements that have not been pursued by the Bank but that may effectively offer real support to coffee farmers facing market shocks. In the final section, I conclude with a few summary remarks. Given space constraints, I use the example of Mexico and the 1998–2002 coffee crisis to make various empirical and policy points throughout.

World Bank derivatives market advocacy

Liberalisation of the global coffee market began with the collapse of the International Coffee Agreement (ICA). The ICA, with its import and export quotas, had managed global coffee supplies and prices between 1962 and 1989. From 1989 onward, and for a variety of reasons, coffee-producing counties began to dismantle the domestic institutions that had come to be legitimised on the basis of the Agreement. In Brazil, El Salvador and Mexico, governments recognised in 1989 that 'the suspension of international quotas effectively ended the need to control the coffee market' (Akiyama, in Akiyama *et al*., 2001: 87). Marketing boards began to be eyed with suspicion by producers in India, with the Coffee Board's complete dismantlement achieved by 1996 as a result of this domestic opposition (Akiyama, in Akiyama *et al.*, 2001). In Uganda, Cameroon, Cote D'Ivoire and Madagascar, the price slump that followed the ICA's collapse made domestic commodity price stabilisation arrangements fiscally untenable.

As prices fell, demand for more stabilisation funding rose at the same time that governments were collecting less revenue from coffee taxes. The early 1980s debt crisis in the developing world, resulting in the so-called 'lost decade', had further cast shadows upon such financially unsustainable programmes. Making matters worse, corruption among marketing board officials was rampant. By the 1980s and early 1990s, producers in some countries, like India, had begun to respond, demanding the dismantlement of stabilisation arrangements. Snyder notes that in Mexico, 'a powerful grassroots movement of small coffee producers …mobilized against' the state-owned Mexican Coffee Institute (INMECAFE), hastening neoliberal reform (Snyder, 2001: 21).

World Bank structural adjustment programmes, particularly in Sub-Saharan African countries (e.g. Uganda and Togo), also demanded the liberalisation of agricultural markets. Structural adjustment places conditions on development loans from the World Bank. 'Conditions commonly applied to agricultural commodity subsectors included eliminating or significantly reducing government intervention in determining prices, dissolving parastatals [e.g. marketing boards] or stripping them of some powers, and eliminating some agricultural import subsidies' (Akiyama *et al*., 2001: 12). The World Bank, as well as other international financial institutions like the International Monetary Fund (IMF), during the 1980s and 1990s was abandoning its prior focus on public interventionist economics, turning instead to policy that emphasised the central role of

unfettered markets. The incredible growth of the 'Asian Tiger' developing economies (like South Korea, Taiwan, and Singapore) – growth allegedly based on a market-oriented set of reforms – legitimised this policy shift at the Bank and the IMF.

While commodity market liberalisation was ongoing, researchers, particularly at the World Bank, began to recommend commodity price risk management policies that were consistent with it. Identifying the types of price risk management arrangements that were compatible with commodity market liberalisation began to occupy significant amounts of research time. The World Bank's International Task Force on Commodity Price Risk Management (ITF), frequently working in conjunction with the Bank's Commodity Risk Management Group (CRMG), is now devoted to supporting the development of market-based price and weather risk management arrangements and focuses largely on commodity and weather derivatives markets. The ITF explains its mission: 'With the liberalization of many developing country economies, farmers are not insulated from price risks…Markets that can enable producers and organizations to reduce price risk exist…The ITF aims to increase the capacity of local organizations to access commodity risk management markets' (ITF, 2006b: 1–2). In this manner, the ITF recognises the absence of effective price risk management for farmers in the liberalisation era, and recommends that derivatives markets fill this outstanding gap.

To further their goals, the ITF and CRMG have been financing, administering and monitoring pilot programmes to deliver market-based price risk management to small farmers. From cooperative intermediation in Mexico and Uganda to local banking products in El Salvador and Tanzania, the ITF has been steadily tinkering for about a decade with the mechanisms for hooking small producers up to futures and options markets. I have no figures regarding the expense on these efforts over the past ten years.

In the winter of 2008, the World Bank offered its 'introductory course to the Market based Risk Management for Development Distance Learning Program (MRMD)' that sought to 'introduce participants to a market-based risk management approach for correlated risks affecting the agricultural sector, such as weather risk and commodity price risk'. Designed for policymakers (and looking an awful lot like a sales pitch),

> The course [sought] to address a number of questions. Why are traditional coping mechanisms inadequate in addressing the costs and consequences of extreme weather events and price shocks in lower income countries? What are the advantages of market-based risk transfer mechanisms in comparison of traditional shock mitigation measures? What are the appropriate market-based risk management instruments and how do they work? How should these market

> instruments be utilized? What is the appropriate division of public and private roles in a country's proactive risk management agenda? [1]

It is not only the World Bank, however, that is actively recommending that policymakers focus their efforts on derivatives as a means of managing farm-level risks. UNCTAD recently noted that, 'As early as the 1970s, UNCTAD studies recognized the potential for market-based price risk management instruments in delivering welfare gains to commodity sector participants' (UNCTAD, 2006: ix). The FAO's Committee on Commodity Problems writes,

> As a proactive approach for minimizing uncertainty, risk management tools are increasingly replacing government support programs as an alternative for raising price predictability and enhancing producer income stability…On a national front, institutional development and legislative measures permitting derivatives trading have paved the way for striking success in managing risks and reducing volatility in many developing countries (FAO, 2007: 1).

The Common Fund for Commodities, an organisation within the framework of the UN, has been funding projects in Eastern and Southern Africa to develop market-based commodity price risk management arrangements.

Further, in the developing countries themselves, market-based price risk management has also received growing attention. Brazil and India have established their own commodity derivatives exchanges that offer coffee contracts. The governments of Mexico, El Salvador and Brazil all operate programmes to provide futures and/or put option contracts to farmers. In Uganda, Union Export Services, Ltd. (an umbrella cooperative) has been negotiating over-the-counter (OTC) put options with international dealers on behalf of their member cooperatives. And, in Tanzania, there is hope that futures contracts might be provided to farmers via popular rural savings and credit networks.

To reiterate, the aim of this paper is to question this policy gamble that is being made by larger and larger segments of the development community, and to explain how it is that such policies and programmes actually make more vulnerable those they purport to help.

Small coffee farmer vulnerability to price risk

Even if they have not always been the focus of the World Bank's commodity price risk work, small developing country farmers are increasingly taking centre stage in discussions of market-based price risk management. As they should: small, poor farmers are among those most vulnerable to market shocks and they tend to suffer disproportionately when a shock occurs. Indeed, the International Labour Organization (ILO) notes that, 'In general, a poor person cannot insure to anything like the extent that

[1] http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21894488~menuPK:34482~pagePK:2524753~piPK:51421526~theSitePK:4607,00.html Accessed 5 August 2009.

a rich person can, and yet is almost certainly exposed to more risks, more uncertainty and more adverse outcomes' (ILO, 2004: 11).

With few or no alternatives available, poor farmers (who tend to be small) and their families often resort to reducing consumption of basic goods and expenditures on health and education in order to cope with shocks. Holzmann and Jorgenson (2000: 7) note that:

> The absence of efficient market-based or government provided consumption-smoothing instruments often results in the use of costly informal coping mechanisms once the adverse income shock hits, such as pulling children out of school, reducing nutritional intake, selling productive assets, or neglecting human capital accumulation.

Sayer (2002: 10) relates the situation of many Ugandan coffee farmers during the 1998–2002 coffee crisis who struggled 'to buy essentials like sugar, soap, salt, kerosene, tools and clothes … Secondary school enrollment has declined as tens of thousands of children are sent home for lack of fees'. (Sayer. Such income shocks can also undermine the ability to repay debts.

Expectation of a market shock, in addition to its actual occurrence, can lead to similar welfare reductions. Morduch (1999: 187) explains: 'Fear of risk can lead poor households to forgo potentially valuable new technologies and profitable production choices'. A study by Rosenzweig and Binswanger (in Morduch, 1999: 187–88) revealed that the farm profits of poor Indian households exposed to the risk of monsoon dropped by roughly 35 percent, but that wealthier farmers' profits were not affected at all. UNCTAD (2002: 6) agrees: 'Uncertainty about future incomes makes it difficult for farmers to make commitments with respect to future payment obligations (e.g. debt repayment, investments in land, machines, equipment and school fees for children).' Such 'capital rationing' involves a trade-off between lower, certain and more stable short-term incomes on the one hand, and potentially higher but more uncertain incomes in the long term on the other. The World Bank (2005: 2) puts it as follows: '[T]he poor are forced to make production decisions using the objective of minimizing risk, rather than maximizing profits, and thus they must forego more remunerative activities that could provide means of escape from their poverty.'

Among other factors, farmers with alternative income sources, savings, sufficient productive assets (especially land and livestock) and access to credit are not negatively impacted to the same extent as are lower-income, undiversified and asset-poor farmers with bad or no credit. This is why, UNCTAD (2002: 6) notes, 'Smaller, poorer farmers are more risk-averse than larger, richer ones'. The greater welfare costs of instability and uncertainty for the poor resulted in the World Bank (2001) citing 'vulnerability to risk' as one of the four dimensions of poverty in the 2000–01 *World Development Report.*

Looking specifically to Mexico, Davis' study of *ejido* producers in Mexico since liberalisation began in the 1980s reveals that wealthier producers were able to respond to increased risk and uncertainty more effectively than poorer producers. Specifically, producers with larger plots of land, greater levels of assets (like livestock) and more 'human capital assets' have been better able to adjust to the risks associated with economic liberalisation than producers with less land, less human capital and few to no assets. While the former group has invested in more cattle, as well as fruit and vegetable production (which is less prone to low prices than corn, which was farmed almost exclusively before liberalisation), poorer producers continue to struggle:

> These households, with less land, livestock, migration and human capital assets, have significantly lower household incomes than the households referred to above that have been able to adjust successfully. Without access to adequate levels of assets, these households will continue to struggle in the current austere macroeconomic environment (Davis, 2000: 103).

Ninety percent of Mexico's coffee is grown in four southern states of Veracruz, Chiapas, Oaxaca and Puebla by small producers, many of whom are indigenous peoples. The ITF (2002) reports that some 180,000 of Mexico's 282,000 producers are indigenous, with coffee being their main or only source of cash income. And, the small producers that dominate the south tend to be very poor relative to the rest of the country's inhabitants:

> In 1996, the four main coffee producing states Chiapas, Oaxaca, Puebla and Veracruz had a per capita gross internal product that was around 43 percent of Mexico's average for Chiapas and Oaxaca, and around 64 and 67 percent for Veracruz and Puebla, respectively. (ITF, 2002: 6).

It should come as no surprise that it was Mexico's smaller and poorer coffee farmers that experienced severe hardship during the recent coffee crisis, while wealthier, larger farmers fared much better. A recent study by Eakin and colleagues of small coffee producers in Veracruz found that during the crisis almost 72 percent of producers reduced their harvest, 62 percent 'reduced use of purchased inputs', almost 97 percent were 'negatively affected' in their 'ability to acquire basic goods', and 80 percent were less able to pay medical expenses (2006: 164). The study crucially finds that households with 'access to market and technical information, finance and having sufficient land with which to diversify into alternative crops' were better able to deal with the crisis (Eakin *et al*., 2006: 168–89).

To sum up, it seems that the last thing that small, poor Mexican coffee producers may want is to participate in yet another market that wreaks havoc on their lives and livelihoods.

Direct costs of the World Bank approach

The World Bank's advocacy of market-based price risk management risks further destabilising the incomes and livelihoods of small coffee producers, for at least two reasons. First, in the short run, futures hedging can generate wild fluctuations in producer incomes for those who are not sufficiently well capitalised to meet margin calls with reserves. Second, in the medium to long run, futures hedging could in aggregate put downward pressure on coffee prices if hedging provides incentives for increasing individual production. Both of these costs are potentially more devastating for small, poor producers, for reasons discussed above. Below, I elaborate on these direct costs.

It should be noted that there are many more direct costs to farmers that could be mentioned, many of which I have discussed elsewhere.[2] What I intend here is to briefly discuss a couple of direct costs, so that it becomes clear that the World Bank's approach to commodity price risk management may very well undermine the wellbeing of those it purports to help.

Margin calls and future price volatility

Prior to commencing trading, every investor in exchange-traded futures markets must post an 'initial margin' that serves as a good faith deposit to cover any trading losses sustained. After trading begins, all investors must maintain a minimum balance in their trading accounts, called the 'maintenance margin'. Market gains and losses are tallied daily, i.e. 'marked-to-market', meaning that farmers will be required to post additional margins daily if the market moves against them. Investors must maintain their margins in order to keep their positions open.

Anderson and Danthine (1983: 249) remark upon the relationship between margin calls and future price volatility:

> the day to day fluctuations of the futures price will generate a series of random cash flows over the period during which a futures position is held. This is due to the requirement that futures accounts 'mark to market' daily.

Indeed, even if the general trend in future prices is downward (as would be the case during a crisis), short hedgers (like coffee farmers) could still face serious, temporary income losses, due to the day-to-day volatility of future prices. Put differently, a hedge that is profitable over a period of a year or two may be very unprofitable from day to day or month to month depending on market behaviour.

[2] Breger-Bush (2009) considers many additional economic, political and social costs associated with futures hedging and World Bank advocacy thereof for farmers, such as basis risk and other contributors to farmer income insecurity, risks of political backlash to policy endeavours that fail to help those most in need, and the poor track record of derivatives market intermediaries in the developing world.

Margin requirements represent an important mechanism for the pass-through of future price volatility to farmer incomes, consumption and wellbeing. Margin calls can be devastating, even for large traders. A US farmer recently interviewed in *The New York Times* stated:

> The nightmare scenario is when you have to make margin and you're looking out your back door and seeing, maybe, a crop problem. Everybody has a story about a guy they know getting blown out of his hedge by unmet margin calls (Henriques, 2008).

Small producers are more likely to be 'blown out of a hedge' even without crop failure, given their low income levels and few to no cash reserves or assets. For small farmers, margin calls may eat away at income previously designated for consumption, education, medical expenses and other necessary items. They may also result in the accumulation of significant debts if producers can access credit markets.

Figure 1 presents a graph of daily settlement prices for Arabica coffee on the New York Board of Trade (NYBOT, now merged with the Intercontinental Exchange, ICE) during the first crop season of the 1998–2002 coffee crisis (that is, the 1998–99 crop season). As is clear from the graph, there is significant inter-day price volatility on this exchange, despite the general, downward trend.

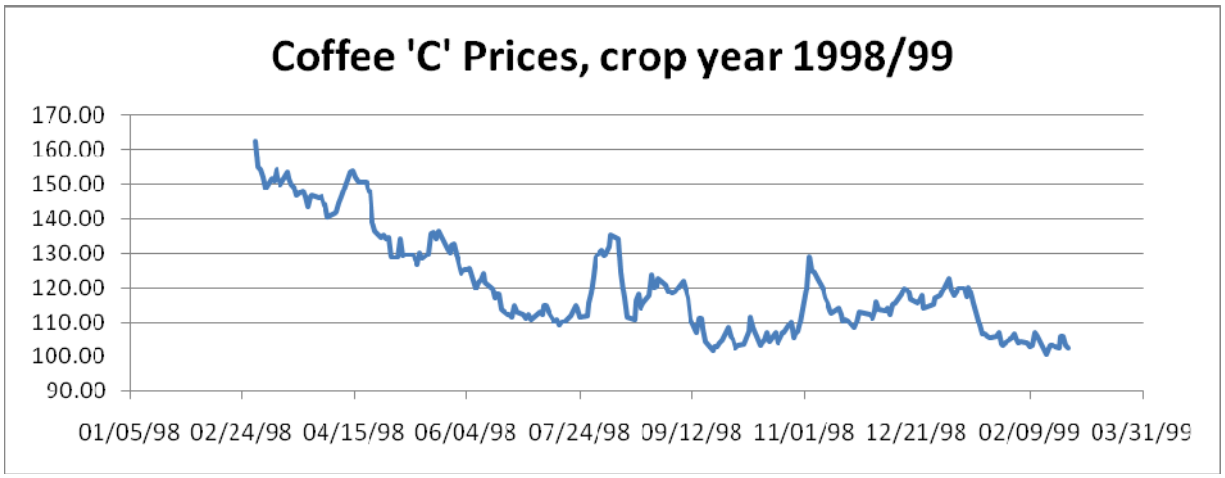

Figure 1. Daily settlement prices for Arabica coffee, New York Board of Trade, 1998–99 crop season.

A short hedge maintained over the course of this crop season would have been profitable. But it is unlikely that a small, poorly capitalised farmer could have lasted long enough to realise these profits. The volatility of future prices over this period means that

a short hedger would have had to make frequent margin calls, with often substantial sums of cash.[3]

To illustrate, Figure 2 presents a chart that details daily gains and losses for a one year-long hedge. As Mexico is being used as an example throughout, the data presented are based upon future prices from NYBOT, that exchange on which a Mexican coffee farmer would most likely trade.[4]

Let us assume a hypothetical Mexican coffee farmer who grows enough coffee to sell one futures contract on the New York Board of Trade (37,500 lbs; in reality, a Mexican coffee farm of average size and average yields would produce only roughly seven percent of the coffee required to sell one contract), has certain output levels, can afford the initial margin and other trading fees, and has sufficient information and knowledge to hedge effectively. Let us also assume that this farmer decided to begin hedging in 1998, as coffee prices began their precipitous fall to their lowest real levels in over 100 years. Last, let us assume that the farmer undertakes the most simple of hedging strategies – what I call the plain annual hedge. The plain annual hedge involves the farmer selling her crop forward one season, using only one contract, i.e. in April 1998 the farmer sells one March 1999 Arabica coffee futures contract. In theory, a short sale such as this effectively locks in prices for the season for a crop that has yet to be harvested. The daily gains and losses for this strategy for the 1998–99 crop season appear in Figure 2.

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[3] 'Now, wait just one moment!', the reader may object. 'Is it not possible for the farmer to save some hedging profits from the earlier part of the hedge to use to post margins in later segments?' Of course this is possible, if sufficient profits are made early on to cover later losses. This is sometimes, but not always the case. Even if there were sufficient early profits to make saving for later margin calls workable, I think it is unlikely in practice for two reasons.

First, predicting the path of future prices is close to impossible and, therefore, deciding how much of the gains from the hedge to save, is fraught with difficulty. As will be seen in the data presented below, the daily gains and losses from a hedge over this crop season are highly irregular. Teweles and Jones (1999: 107) note that future prices move very erratically, if not randomly, making prediction a rather futile effort.

Second, it strikes me as unreasonable to entertain at much length the idea that small, poor producers would save such substantial portions of their hedging profits in order to post future margins. I do not mean to imply that the poor cannot save. The poor can and do save and invest. What I do mean to say is that few small coffee farmers could be reasonably expected by policymakers to save *enough* of these gains to cover future margins (which are substantial). By my calculations, a Mexican coffee farmer of average size, realising average yields, with the average number of family members for rural communities in Mexico, would have earned $1.31 (2007 international dollars) per family member per day over the course of the 1998–2002 coffee crisis.

It stands to reason that farmers in such a position would probably spend a large portion of the gains from hedging immediately upon receipt or close thereto.

[4] There is a domestic derivatives exchange in Mexico; however, it does not offer coffee contracts.

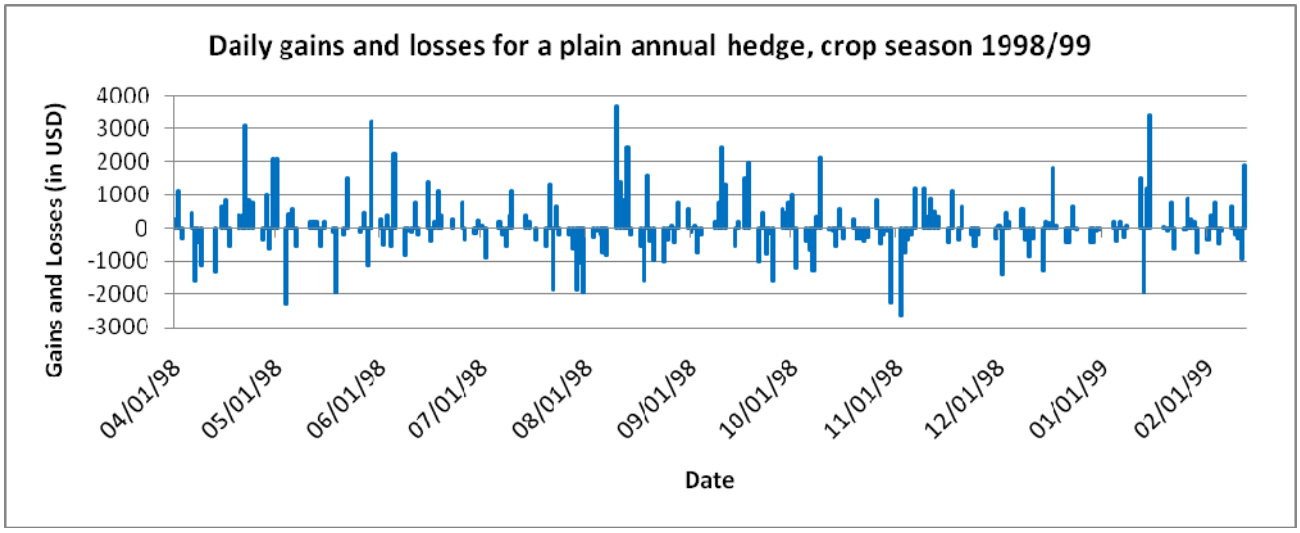

Figure 2. Daily gains and losses for a plain annual hedge, crop season 1998–99.

Looking at Figure 2, the gains from the hedge peak at US$3656 on 11 August 1998 (following a fall in prices of almost 10 US cents from the previous day) and the losses reach a trough at US$2,625 on 3 November 1998 (following a price rise of seven US cents from the previous day), with this range a reflection of the volatility of future prices. Further, in this case the farmer could not have realistically saved her profits earlier on to pay later margin calls. Between 9 and 16 April 1998 (early in the hedge), losses amounting to over US$2,900 would have been accumulated, with no hedging profits remaining to cover any portion of this amount, even if all previously earned profits had been saved and dedicated to making margin calls (i.e. this is a net loss).

The losses sustained periodically over the course of the hedge are of such a magnitude, relative to the incomes of small producers, that it seems unreasonable to think that margin calls could be met without serious hardship. Even if we scale down the losses to the size of the average Mexican coffee farm,[5] the accumulated losses in the second and third weeks of April 1998 (see above) amount to over US$200. This remains a very large sum to produce in a few hours' time for a family whose members live at the extreme poverty line.[6]

To sum up, margin requirements are an important mechanism for the transmission of future price volatility to farmer and family wellbeing. Future prices are sufficiently volatile so as to generate hedging losses of a magnitude that is likely to be seriously disruptive of the farmer's financial position. Not only are the losses large, but they are also

[5] Recall that the hedging calculations assumed the sale of one contract, specifying 37, 500lbs of coffee. The average Mexican coffee farm is 2.67 acres in size, which, holding average yields constant, is about seven percent of the size of the farm that would be required to grow 37,500 lbs of coffee. In other words, I am proceeding for the moment as if a small coffee farmer sold a *share* of a futures contract proportional to her output.

[6] See footnote 3.

frequent. In this context, hedging appears to be a destabilising economic force at the farm level.

It is important to note that margin calls are more destabilising for small producers than for other actors in the global coffee economy. While large coffee conglomerates, like Kraft and Nestlé, have substantial cash reserves (or other liquid assets) to finance margin calls that can be drawn upon without impacting day-to-day operations (see Newman, 2009; Ponte, 2002), small producers do not. To be fair, the World Bank has to some extent recognised that futures trading requires significant capitalisation at the individual level, in order for it not to be disruptive. Recent efforts to hook farmers up to futures markets via intermediary institutions are motivated in part by the desire to overcome such obstacles to individual trading.

However, some concern is warranted here, even though intermediation efforts have been largely unsuccessful at this juncture (Breger-Bush, 2009). The intermediary solution that the Bank has most favoured is a model that portends even more vulnerability for small producers. In various documents, World Bank researchers note the benefits of using local banks to pass on or otherwise sell price insurance to farmers, so that farmers avoid having to trade directly (CRMG, 2005a and b; ITF, 2006b; Tiffen and Fernandez, 2005). Local banks, it is argued, have a vested interest in passing on price insurance, in order to avoid farmer loan defaults during price crises. Yet, these are for-profit models in which farmers would have to pay a hefty fee to obtain this service. In a similar vein, Tiffen and Fernandez (2005) speak favourably about a programme in El Salvador, where local banks have extended 'dedicated lines of credit' to producers in order to help them finance margin calls. I tend to be sceptical of recommendations that small farmers take on more debt. Indeed, the World Bank has not been sufficiently wary of the fact that various models of futures market intermediation may also serve to increase farmer vulnerability to price shocks.

Hedging and incentives for overproduction

Moving away from short-run fluctuations, the World Bank's policy agenda also risks making small farmers more vulnerable in the long term. Ironically, the more headway the Bank makes in promoting derivatives, the greater is the likelihood of this particular brand of long-run vulnerability. Put simply, if lots of producers start hedging, and if the price protection afforded by hedging boosts farmer incentives to increase output, global supplies will rise and prices will fall. Articulated back in the 1930s by Keynes in the commodity price context, this idea has been recently reworked into a theoretical model of the costs of aggregate futures hedging of agricultural commodity price risk. I explain in more detail below.

Writing in the wake of the Great Depression, Keynes recognised that falling demand for agricultural commodities (like that which had occurred earlier in the decade) spelled trouble for commodity prices. He argued that world commodity markets were like a 'Tragedy of the Commons', in which rational individuals pursuing their own self-interest

collectively effaced or destroyed something valuable to the collective. Keynes noted that under such conditions, individually, there was a disincentive for primary commodity producers to withhold any of their stocks from the world market. Prices were falling, storage was costly, and so was postponing repayment of agricultural loans. But, as each individual producer released stocks onto the market, the price of a given commodity would decline, generating a suboptimal outcome for producers as a whole. He writes: 'If demand fluctuates, a divergence immediately ensues between the general interest and the course of action in respect of stocks which is most advantageous for each competitive enterprise acting independently' (Keynes, 1938: 449).

The idea of prices as some kind of collective good (a 'common resource' in economics textbooks) also informs Lence's recent (2009) study of the costs of futures hedging. Taking on economic theories of hedging that offer models based on a single representative agent, Lence instead assumes two such agents, one who hedges and one who does not, in order to get at the effects on welfare of futures hedging in aggregate. The results of his simulation, which uses data on rubber production, indicates that 'nonadopters' (those who do not hedge) sustain welfare losses, irrespective of how large the portion of 'adopters' (those who do hedge) is among all farmers. Even the adopters sustain welfare losses when they represent a large enough share of total producers:

> Overall, our findings suggest that there is no basis for advocating the use of futures as a means to improve commodity producers' well-being. The reasons for this assertion are that producers as a whole lose from making futures available, and more important, that futures availability reduces welfare even for adopters, provided the market share of the latter is sufficiently large (Lence, 2009: 167).

In fact, the only group in the model that systematically gains from hedging in aggregate is consumers. In the coffee context this is very disturbing. Wholesale coffee consumers are largely big multinational firms from the global North and retail consumers are generally located in the rich countries (Ponte, 2002). Lence (2009, 167) ultimately concludes as follows about this distributive issue:

> the push by international organizations (e.g. ITF) to improve the availability of futures among producers may ultimately enhance the lot of consumers in developed countries, while reducing the welfare of producers in developing countries. To many, this regressive redistributional outcome is likely to be both surprising and undesirable.

Opportunity costs of the World Bank approach

Moving on to what may be the saddest part of this story, the World Bank's continued advocacy and administration of derivatives-based price risk management schemes means that limited time, energy and resources are being directed away from solutions

that may actually help small coffee farmers. (This particular opportunity cost seems especially noteworthy today, as coffee prices continue to slide.) Using Mexico as an example, below I outline and provide empirical support for two particular alternatives that in this case offer substantive alternatives to futures hedging: supply management and Fairtrade. The point I wish to make with this example is that there are probably many viable alternatives to futures in each country case, substantive alternatives that provide real support for farmers.

Beginning with supply management, I note, firstly, that in no way do I intend here to overly romanticise the International Coffee Agreement or those marketing boards that complemented it. The ICA was fraught with problems and there is a large literature that has examined its various provisions, successes and failings (e.g. Bates, 1997; Talbot, 2004; Bohman, Jarvis and Barichello, 1996; Gilbert, 2005). Marketing boards were often instruments of political oppression and corruption, and a means of taxing agriculture to feed industry or pet political projects (e.g. the Ugandan marketing board under Idi Amin).

But, there is evidence that supports the conclusion that supply management, of some kind, would probably serve to raise coffee prices and support and insulate farmer incomes in the face of market shocks. While a new ICA-like quota system seems politically unlikely in today's political climate,[7] new programmes that perhaps combine initiatives to reduce global coffee supplies with funding and technical support for on- and off-farm diversification may be viable. Part of the reason that supply management and/or reduction may have some merit in the coffee context is that coffee has consistently been marked by 'chronic oversupply', with global production well outpacing global demand over time. And, like most commodities, the long-term trend in coffee prices is downward, suggesting that global supply reductions could have beneficial short- and long-run effects.

Indeed, there is little disagreement on the relative success of the ICA in stabilising and augmenting world prices. Akiyama, Tamassa and Varangis find that, 'Overall, the quota system had a stabilizing effect on world coffee prices' (1990 in Bates, 1997: 18). Jorge Cardenas, Chairman of the World Coffee Conference, states in a 2001 speech: 'International coffee prices have shown a fluctuation of than 50 percent annually in recent years whereas during periods when the market was regulated prices fluctuated between 10-15 percent around their medium-term trend' (Cardenas, 2001: 2). Gilbert, a notable exception in this context, contends that price volatility did not increase following

[7] Especially because the original ICA had the support of big coffee consumers like the US and Western Europe, with these countries opposing quotas since 1989. Indeed, every new ICA since 1989 has been stripped of its economic management clauses and has set forth an agenda of mere promotion and research. As a side note, it seems that the US is the real obstacle here, as it was the US who spoke out most adamantly against the quotas as the 1989 Agreement was being negotiated (Wild, 2004; Talbot, 2004).

the collapse of the ICA. However, he does note that while, by his measure, world price volatility stayed more or less constant, the elimination of state stabilisation arrangements has meant that volatility is passed through to producers, rather than being absorbed by the state (Gilbert, 2005: 6). From the perspective of the farmer, then, price volatility has increased since the fall of the ICA.

Likewise, studies by Hermann *et al.* (1990) and Franz and Vogelvang (1991) (in Bates, 1997: 18–19) found that prices during the pre-1989 ICA period were higher than they would have been without quotas. A 1993 study by Herman, Burger and Smit argues that coffee prices under the ICA regime were 24–30 percent higher than the estimated market-clearing price without the ICA (in Gibbon, 2005: 19). Gilbert calculates average coffee prices during the interventionist and post-ICA eras, excluding the 'anomalous' years of high prices between 1976 and 1979 when ICA quotas were suspended (2005: 3). He finds that the average price of coffee, in terms of 2000 prices, between 1960 and 1988 was 178.3 cents per pound (in USD); the average price between 1990 and 2005, again in terms of 2000 prices, was a mere 87.5 cents per pound (USD), about 49 percent of prices in the prior period.

Crucially, none of these studies looked at the prices that growers actually received during the ICA era, instead opting to study world coffee prices. This is an important oversight, especially considering that farmgate prices tended to be lower than world prices under the ICA. Marketing boards and like institutions that managed exports, production and prices domestically often drove a wedge between export and farmgate prices, diverting these revenues into government coffers (Thiele *et al*., 2006). In order to understand precisely the conditions facing farmers under the ICA, I have performed a few calculations that allow for a comparison of the income of farmers under the ICA to that obtained via futures hedging. I present my methods and results below.

To figure the real annual income earned by Mexican coffee farmers under the ICA, I used historical 'prices paid to growers' data from the International Coffee Organization (ICO) from 1976 to 1989 (these are the years for which data is available), and then converted the figures into 2007 Mexican pesos. I then devised six different hedging strategies to see how each would have performed for a Mexican coffee farmer during the recent 1998–2002 coffee crisis, and converted my results into 2007 Mexican pesos.[8] Future price data was obtained from NYBOT. The hedging strategy that resulted in the largest gains was a multi-year rollover strategy that was ongoing for four crop seasons, 1998–99 to 2001–02.[9] I then compared the real 2007 income earned via this hedge to the real 2007 income earned under the ICA.

[8] Please note that this only serves to bias my results in favour of futures hedging. Indeed, hedging can be wildly profitable during periods of falling prices.

[9] Rollover hedging involves the simultaneous purchase and sale of futures contracts such that investors are always trading in the nearby contract (the market for which is the most liquid). A multi-year rollover involves hedging multiple years of output all at once. For a four-year multiyear

By my estimation, real income for a Mexican Arabica producer with a farm of average size would have seen his income range from a peak of just over $115,000 pesos in 1977 to a trough of just over $53,500 pesos in 1989. The average, real annual income over the 1976–89 ICA period is $75,420 pesos.

Relative to the income earned from hedging and coffee sales during the 1998–2002 coffee crisis by a Mexican Arabica farmer of average size, the ICA performed rather well.[10] The average, real annual income for the average sized Mexican farmer who used the most profitable strategy above was only $51,757 pesos – this is over $23,000 pesos *less* than the average, real annual income of this same sized farmer during the 1976–89 period. The ICA managed to maintain an average income over 45 percent higher than did coffee sales combined with the most profitable hedging strategy that I devised during the coffee crisis.

Fairtrade too seems a vibrant alternative to futures hedging in Mexico, with the country already producing a large share of global Fairtrade coffee supplies. Fairtrade[11] is an independent, private, non-profit certification and labelling initiative that incorporates principles of economic, social and environmental justice. As such, scholars have noted that Fairtrade networks are 'counter-hegemonic' and represent 'globalization from below' (Raynolds *et al*., 2006: 180). The Fairtrade Labelling Organizations International (FLO) notes that Fairtrade allows farmers 'to escape from poverty and provide themselves and their families with a decent standard of living'.

Fairtrade organisations link farmers directly with roasters and other consumers, who pay a fixed price per pound of coffee. The reduction in the number of middlemen along the path from field to cup is one way in which Fairtrade coffee networks are able to maintain higher prices for farmers. As of June 2008, the Fairtrade price was US$1.26/lb for washed Arabica beans,[12] and US$1.01/lb for washed Robusta beans.[13] By comparison, the reader may want to note, that in the recent coffee crisis Arabica prices paid to growers in Mexico reached about US$0.25/lb, suggesting the significant level of income

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rollover, a trader would hedge four seasons worth of output the first[t] year, three seasons worth the second year, two in the third, and one in the last year. In theory, the gains from such a strategy are pretty close to equal to those that would have been earned if futures markets extended four years into the future (which they do not: most commodity markets go about 18 months forward, with metals markets going somewhat further).

[10] The ICA was complemented domestically in Mexico by INMECAFE, the Mexican Coffee Institute.

[11] Fairtrade should not be confused with 'Fair Trade', with the latter representing a broader movement for social, economic and environmental justice that does not always conform to the strict standards of Fairtrade. Further, many corporations, like Starbucks, have implemented corporate social responsibility (CSR) strategies, the standards of which are lower than those utilised by Fairtrade.

[12] http://www.fairtrade.net/single_view.html?&cHash=39ac7fda2b&tx_ttnews[backPid]=168&tx_ttnews[tt_news]=32 Accessed 26 May 2008.

[13] http://www.fairtrade.net/fileadmin/user_upload/content/Robusta_Price_Chart_89-07.pdf Accessed 26 May 2008.

support that the Fairtrade premium provides producers during crises. Calo and Wise's calculations about the sufficiency of the Fairtrade premium to cover farmer costs suggest something similar: 'Fair Trade's fixed and higher premiums for both conventional and organic coffee could bring all producers to profitability' (2005: 26). In addition to the Fairtrade price, producers receive a US$0.10/lb premium dedicated to social and community investment. Such social investments help producers gain access to better financing, community-owned and operated transportation and communications systems, technical assistance, and health and education services.

Currently, the FLO has 20 member labelling organisations in 21 countries that certify the following commodities: coffee, tea, rice, bananas, mangoes, cocoa, cotton, sugar, honey, fruit juice, nuts, fresh fruit, quinoa, herbs, spices and wine.[14] Almost one-and-a-half million farmers, and workers, represented by over 600 producer organisations in 51 countries currently reap the benefits of Fairtrade.[15] In the coffee context, however, Fairtrade sales are only a small proportion of total global sales. In 2005, Fairtrade sales were less than one percent of total global coffee production, by volume (although by value Fairtrade's share would be somewhat higher). Baffes and colleagues note that 'differentiated' coffee sales, i.e. trade outside of 'traditional channels' including fairly traded, organic and other 'niche' coffees, accounted for roughly six to eight percent of global consumption. They also report that, of the 240,000 60 kg bags of Fairtrade coffee consumed in 2001, over 40 percent of this amount was consumed in Germany and the Netherlands (Baffes, Lewin and Varangis, 2005: 207).

Mexico is the world leader in Fairtrade and Fairtrade-organic coffee exports. By 2005, roughly 15 to 20 percent of Mexican coffee farmers were involved in Fairtrade (representing about ten percent of Mexican coffee exports), Fairtrade-organic or were transitioning over from traditional production techniques (Calo and Wise, 2005: 16). High levels of coffee farmer 'social organisation' (i.e. well-organised, long-standing cooperatives) as well as traditional farming practices that are already 'passively organic' are among those factors that have enabled Mexico's relative success in penetrating these niche markets (Calo and Wise, 2005: 16–18). This indicates that there is real potential in Mexico to incorporate greater numbers of producers into Fairtrade production. Small producers might especially benefit from public and donor support in meeting the FLO's certification requirements, given that most Mexican Fairtrade production is already done by small farmer cooperatives. Raynolds, Murray and Taylor (2006) do urge some caution, however, about overestimating the benefits of Fairtrade. They note that small producers often have difficulties meeting the technical and quality requirements set by the FLO and emphasise that significant support may be needed to overcome such obstacles. There is further concern about the sustainability of the movement in the long term if increasing numbers of producers move to Fairtrade

[14] http://www.fairtrade.net/about_fairtrade.html Accessed 26 May 2008.
[15] http://www.fairtrade.net/figures.html Accessed 26 May 2008.

production. At least in the short- to medium-term, however, it appears that Mexican farmers could profitably avail themselves of this opportunity.

All this is to say that there are alternatives to futures hedging that hold much promise. While only a first pass, the facts and figures presented above illustrate the income benefits for farmers of supply management and Fairtrade. At the very least, there is reason for policymakers, development institutions and researchers to cease their derivatives dogmatism and take a long look at other viable programmes to insulate small coffee farmers from market shocks.

Conclusion

In essence, the World Bank is gambling with the lives and livelihoods of small coffee farmers in its efforts to incorporate derivatives markets into agricultural development agendas. And this gamble is a costly one. Futures hedging can not only destabilise farmer incomes via margin calls and aggregate price effects, but the Bank's persistence in pushing this solution has misdirected precious resources away from solutions that may actually work.

Kamal Kabra, an influential Indian economist, submitted the following as part of his statement to the Standing Committee on Food, Consumer Affairs and Distribution, which was at the time considering 'a decision to intensify and expand the futures markets' in India:

> The farmers, already exposed to the vicissitudes of input prices and quality, along with the usual gamble in monsoon, would be exposed to yet another source of uncertainty and trouble over which and against which they would hardly have any defence (Kabra, 2006: 16).

Precisely right.

Oh, and one last thing… Did I mention that coffee prices are falling again?

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