

The Food Crisis, Industrialized Farming and the Imperial Regime

JAN DOUWE VAN DER PLOEG

This paper argues that the food crisis cannot solely be equated with abrupt food price increases or seen as merely market induced. The unprecedented price increases of the first half of 2008, and the extremely low prices that followed, are expressions of a far wider and far more persistent underlying crisis, which has been germinating for more than a decade. It is the complex outcome of several combined processes, including the industrialization of agriculture, the liberalization of food and agricultural markets and the rise of food empires. The interaction of these processes has created a global agrarian crisis that has provoked the multifaceted food crisis. Both these crises are being accelerated through their interactions with the wider economic and financial crisis.

Keywords: agrarian crisis, food crisis, liberalization, imperial food regime

INTRODUCTION: THE SPECIFIC AND THE GENERAL

At the beginning of 2008 the world was confronted with abrupt and huge increases in food prices, a crisis that considerably extended the proportion of the world's population suffering from hunger, even into developed countries. It suddenly became clear that affordable food could no longer be taken for granted. Initially it was argued that the price increases were the expression of temporary disequilibria in the relevant commodity markets, although other analyses suggested that the world is likely to face long-term scarcities. Banse et al. (2008) argued that growth in agricultural productivity would have difficulties in keeping up with demographic growth, the rapidly increasing demand for biofuels, expected changes in consumption patterns in China and India, and the effects of climate change. These pressures were all discussed in the 2008 World Development Report (World Bank 2007), the first to focus on agriculture in 20 years, which diagnosed a 'decade's long neglect of agriculture'.¹ Yet the responses that the report prescribed were startlingly familiar: more investment, especially in biotechnological research, more market freedom and the avoidance of any temptation to return to protectionism. This last point was mostly meant to emphasize that any public governance of, or intervention into, the agricultural and food markets should remain an absolute taboo.² Instead, the *market*

Jan Douwe van der Ploeg, Professor of Transition Studies, Wageningen University, Hollandseweg 1, 6706 KN Wageningen, The Netherlands. e-mail: jandouwe.vanderploeg@wur.nl

¹ For an assessment of the World Development Report, see Oya (2009).

² It is, though, extremely naive to assume that, for example, Argentina would not impose export taxes on some of its main agricultural commodities in order to avoid high world market prices

should be actively brought to smallholders, a recommendation reiterated by the 2008 G8 summit on agriculture.

The inflated prices of early 2008 had *specific* causes. These include speculation, extremely low levels of world grain reserves (actively run down as part of the neoliberal project), extreme weather conditions in major grain producing countries and the impact of biofuels. However, these specific causes could only trigger a food crisis because they occurred in a dramatically changed context. The new 'imperial' or 'corporate food regime' (Ploeg 2008, 256; McMichael 2009, 237), which increasingly governs the production, processing, distribution and consumption of food, implies that relatively small disequilibria in the markets translate into huge fluctuations in prices. It is not only material disequilibria that can cause such fluctuations, but also symbolic disequilibria; that is, those solely related to expectations. The mere assumption that there could be a scarcity (and the possibility of turning this fear into profit through dealing in *futures*) was, within this new imperial regime, a major factor in triggering the sharp price increases (see also Ghosh 2010, *this issue*). In the same way, changing expectations (partly related to material changes in supply–demand relations) also triggered the extremely low price levels that followed the peak of mid-2008, which translated into a widespread slump in agricultural production, especially in Europe and the United States. This, in turn, may provoke yet another wave of upward pressure on prices. Thus, turbulence is becoming a permanent feature of the new food regime, to the detriment of both farmers and consumers. Today we face the frightening combination of an evolving agrarian crisis and a highly differentiated, but increasingly generalized, food crisis.

THE ORIGINS OF THE CURRENT AGRARIAN AND FOOD CRISES

The current agrarian crisis emerges out of the interaction of: (1) a partial but constantly ongoing **industrialization** of agriculture; (2) the emergence of the world **market** as the ordering principle for agricultural production and marketing; and (3) the restructuring of processing industries, large trading companies and supermarket chains into '**food empires**' that increasingly exert a monopolistic power over the entire food supply chain. These three processes meld together in the creation of a new, worldwide, food regime that is deeply affecting the nature of farming, the ecosystems on which farming is grounded, and the quality and distribution of food. The resulting constellation is extremely sensitive to external shocks, which is precisely what occurred at the interface of the current agrarian and food crises, on the one hand, and the general economic and financial crisis on the other.

The first process – that is, **the industrialization of agriculture** – is well documented and analyzed (see, e.g., McMichael 1994). Several dimensions of this have a critical bearing on the current crisis. Industrial agriculture involves an, often extreme, disconnectedness between farming and nature and locality: with natural growth factors (such as soil fertility, high-quality manure, carefully selected varieties and locally adapted breeds) increasingly being replaced by artificial growth

benefiting just a small segment of large landowners. It is equally naive to assume that India would not introduce a prohibition on exports of food in order to avoid major socio-political turmoil due to food scarcities.

factors entailed in external inputs and new technological devices. Instead of being built on ecological capital, farming has become dependent upon industrial and financial capital. This has led variable costs to become a relatively high and rigid part of total production costs and has sharply reduced the surplus (or margin) per unit of end product. Thus another indispensable ingredient of industrialization emerged: ongoing scale increase of farming became an intrinsic need. Together, the decreasing margins and the scale increases constitute a 'race to the bottom' (Marsden 2003).

The need for permanent scale increases has triggered another, and currently decisive, feature: a heightened dependency of farming upon capital markets. In order to expand, industrializing farms have had to take out considerable loans. Their indebtedness has grown exponentially. The strategies operated by the farmers involved in these processes have also changed considerably: moving from peasant-like styles to an entrepreneurial logic. While the former centre on autonomy, family labour and a self-controlled resource base, the latter focuses on market integration and competitiveness. The entrepreneurial logic also allows for the deactivation of farming: when margins become too low, capital shifts towards more profitable activities and agricultural activities diminish. As a consequence, agriculture is becoming far more sensitive to economic trends and fluctuations than it ever has been before. Its very foundations have started to follow 'the logic of the market' (Friedmann 1993).

Through this multidimensional process of industrialization, a new agricultural segment has emerged: a growth pole of highly intensive, specialized and large-scale farms that require a specific market environment in order to continue their needed expansion. There is a paradox here, for these farms require resources, such as land, labour, production quotas, environmental space and access to markets, to be freely available commodities; they also require market stability for long-term planning, investment decisions and the repayment of debts. Yet these requirements (which are intrinsic to the industrialization of farming) run counter to the reality of the new, global, liberalized markets, which have introduced turbulence where stability is needed. At the same time it is important to note that, while there has been considerable productivity growth within these industrializing farm enterprises, the process of industrialization has also decreased the rhythm of growth in the farming sector as a whole. The growth of expanding farm enterprises has occurred through takeovers of other farms and also led to large agricultural areas where the industrialization model could not be implemented, whether for ecological and/or social reasons, becoming marginalized.

The centrality of short-term financial results has also provoked a long-term decay in biophysical productivity within the industrializing poles. The longevity of milking cows, for instance, has been reduced from some seven or eight lactation periods (or more) to only three, while the overall efficiency of nitrogen use has decreased from some 60 per cent in the 1950s to less than 20 per cent in the 1990s. The use of energy and irrigation water has increased considerably, although the efficiency of their use has decreased (Ventura 1995; Dries 2002). Consequently, industrial farming has become a major contributor to environmental problems, including greenhouse gas emissions. There have been many attempts to transfer the model of industrialized farming to developing countries (the 'Green Revolution' being the major one). Yet these attempts often ran aground, as there was a lack of

resources to provide the required long term security (through, for example, market regulation, price subsidies and financial support for on-farm investments). Such attempts also ran counter to the complexities of ecosystems and the 'uncapturedness' of the peasant populations.

The second process is the **restructuring of markets** under the aegis of the neoliberal project. The World Trade Organization's Agreement on Agriculture is, in this respect, an important landmark (Weis 2007). Although only some 15 per cent of the world's total agricultural production crosses borders (thus *de facto* becoming part of a world market), the remaining 85 per cent (which circulates within national, regional and/or local markets) is now being aligned with the price levels, trends and ratios that govern the world market (EC 2006). The previous differentiation of interconnected, locally or regionally centred markets, that to a degree reflected the specificity of relative factor prices at the regional or local level, is being restructured into one global market, increasingly characterized by the same set of price levels and price ratios. This global market also allows for enormous flows of commodities between different parts of the globe. This possibility, together with the extensive commoditization of all the main resources (e.g. land, water, seeds), has induced a completely new feature into the world agricultural and food market: the complete exchangeability of large agricultural systems. For example, asparagus production was once completely unknown in Peru, but in recent years the country has become the world's largest exporter of asparagus. The 'asparagus system' is currently travelling to China, where even 'better' conditions are available. This exchangeability now applies to all fresh products, introducing considerable insecurity and turbulence. Polanyi once wrote that 'leaving the fate of soil and people to the market would be tantamount to annihilating them' (1957, 131). These words clearly apply to the actively 'globalized' food and agricultural markets. This turbulence is not only reflected in sharp price fluctuations, but is globalizing insecurity and threatening the very continuity of many agricultural systems.

The liberalization of food and agricultural markets is intimately interwoven with the third process: **the rise of food empires.** Liberalized markets have become an arena in which agribusiness groups are striving for hegemony. Through a series of accelerated takeovers, facilitated by the nearly unlimited availability of credit, food empires have been constructed that increasingly control large segments of the global food supply chain. These include well established empires such as Nestlé, Unilever and Monsanto, which are continuing to expand, together with new food empires that emerged over the last 20 years, including Ahold, Parmalat and Vion, the recently created north-west European meat empire (for a review of these trends, see ETC Group 2008). These food empires exert considerable monopoly power:³ it is becoming difficult, if not often impossible, for farmers to sell food ingredients or for consumers to buy food outside of the circuits that they control. Food empires increasingly represent a 'visible hand' that governs a range of markets, by exerting control over important linkages within, and especially between, different markets, and in so doing have constructed new linkages between spaces of poverty and spaces of wealth. High-value products such as asparagus, vegetables, chicken, pork,

³ Although they themselves are particularly vulnerable, Ahold nearly went bankrupt in 2002 and later on in the same year Parmalat did collapse, leaving a total debt of 14 billion euro.

beef, dairy products and flowers are now being produced in Peru, Kenya, Thailand, Brazil, Argentine, Poland and Colombia, respectively (although tomorrow this might shift to countries such as China, Ukraine and Madagascar) and transported, often by air, to the north-west of Europe and the metropolises of the US.⁴ These new linkages allow for an enormous accumulation of wealth (Friedmann 2004) and at the same time introduce huge downward pressures in other spaces.

Mainly financed by credit (and partly consolidated through shares), the food empires have contributed considerably to the making of (what we now know as) the financial crisis. The **dependency on credit** (and the requirement to enlarge stockholder value) introduces the need to generate a large enough cash flow to pay redemption and interest rates as well as to co-finance further expansion. Thus, these structures that link the production and consumption of food have a strong inbuilt need to 'squeeze out' as much value as possible, by exerting a permanent downward pressure on the prices received by primary producers and an upward pressure on food prices paid by consumers, allowing for considerable accumulation. This explains why massive levels of chronic undernutrition coexist with persistent trends towards de-activation of primary production. The latter might be triggered by (farm-gate) prices being too low, while the former is partly due to (consumer) prices being too high. For example, in the period from 1980 to 2003, most industrial subsectors in Italy witnessed only a small increase in total value added (from an index of 100 in 1980 to 112 in 2003 for the chemical industry; 109 for wood processing, 106 for mineral processing) or even a considerable decrease (to 79 for textiles, 84 for the automobile industry, 91 for the chemical industry and 92 for the mechanical industry). *The only exception was the food industry*, where the index for total value added increased from 100 in 1980 to 148 in 2003. The same occurred in The Netherlands, where the Gross Value Added of the food industry grew from 22.5 billion euro in 1985 to 33.0 billion euro in 1997 – a growth of 46 per cent in only 12 years. These exceptional levels of growth also explain why large chemical industries (such as DSM) have increasingly started to invest in the food industry (Ploeg 2008).

The other side of this accumulation is a **large-scale draining of wealth** out of agricultural sectors. This reduces the capacity for autonomous growth and simultaneously reduces to redundancy large, potentially productive, areas and large numbers of people who have little alternative apart from earning a living in farming. 'Wasted lives' (Bauman 2004) and wasted land have thus become a chronic feature of many rural areas⁵ – just as Polanyi anticipated many years ago. The same draining also affects food quality. Impoverished farmers facing a continuing squeeze can hardly afford to provide the care that is required for the production of healthy and high-quality food. But this is not the only threat to food quality.

⁴ The crisis of the 1880s was partly resolved, at least in Europe, through a massive change from the production of basic grains to the production of high-value products such as meat, vegetables and cheeses. Such a response is now impossible: high-value products are now being imported, through channels controlled by different food empires, from spaces of poverty. Typically, the response that helped to overcome the agrarian crisis of the 1930s – that is, the introduction of a well-tuned agrarian policy – is now equally impossible, as it is excluded by the reigning free trade regime.

⁵ This phenomenon is exemplified by the millions of smallholders, especially in Africa, Latin America and parts of Asia, who experience hunger in their homes while their fields are lying fallow. They lack the means to initiate agricultural production or, if such means are available, the marketing channels to sell their products.

Parmalat was one of several food empires created through aggressive takeovers, which resulted in very large debts. To generate the cash flow needed to deal with this situation, a major project was designed that later became known as the *latte fresco blu* project (fresh blue milk).⁶ This project involved the deconstruction of milk into its constituent elements, a range of technological interventions (micro-filtration and repeated pasteurizations) and then a subsequent recombination of the different (and differently treated) elements into 'fresh milk' (Benvenuti et al. 2004). The strategic advantage of this technology lay in that it allowed the bridging of huge distances in both time and space. It allowed for milk produced, say, one month ago in, for example, Poland or Ukraine to be transported, re-fabricated and sold as 'fresh milk' in Italy. For Parmalat, which controlled the UHT segment of the milk market, the ability to construct a linkage between places of poverty and the Italian food market (where prices of up to 1.50 euro are paid for one litre of milk) would have allowed them to conquer the market for fresh milk, controlled by the Granorolo group and regional co-operatives, and, consequently, the accumulation of enormous wealth. However, the success of the 'fresh blue milk' project would have implied an abrupt marginalization of Italian dairy farmers. Their 'market' would have been completely taken over. For Italian consumers it would have implied an undeniable degradation of food: from real fresh milk to a look-alike product. Food empires need (and therefore introduce) food engineering to make 'high-value' products out of cheap ingredients. There is a clear link between this need and the qualitative side of the food crisis. Additives (such as sweeteners, colorants, softeners, preservatives and boosters) are systematically added (even when there is little knowledge of their long-term and cumulative effects on human health) as the range of 'look-alike' food products constantly expands. Due to its enormous debts, Parmalat imploded before the '*latte fresco blu*' project had generated enough returns. Nonetheless, the case clearly shows how an abrupt acceleration of the agrarian crisis and a widening of the food crisis can go hand in hand – each being a prerequisite for, and a result of, the other.

The interface of the industrialization of agriculture, the liberalization of food markets and the rise of food empires has seen the creation of a persistent and worldwide agrarian crisis. Liberalization and the emergence of food empires have induced an unprecedented tightening of the squeeze on agriculture. Beyond this, food empires have considerably widened the gap between farm-gate prices and those paid by consumers. Finally, the liberalization of markets, and especially the worldwide operations of food empires, have provoked high levels of turbulence that now characterize not only the 'world market' *sensu stricto*, but also the many national and regional food markets that materially link the production and consumption of food. Yet these effects run counter to the intrinsic requirements of industrialized farming, which needs predictability (as opposed to turbulence), prices that cover both the higher financial obligations and costs related to the increased use of inputs (as opposed to the squeeze), and consumer prices that allow for an increase in demand (as opposed to consumer prices that reduce demand and produce considerable exclusion).

In synthesis: food empires require industrial farming (for its capacity to deliver large amounts of standardized and cheap raw materials for further processing and

⁶ The adjective '*blu*' was added in order to avoid problems with the Italian law that very strictly specified the characteristics of fresh milk.

trading) while, at the same time, they tend to destroy it. This particular contradiction (which has intensified due to liberalization) has led to a range of new and permanent phenomena: poverty (especially among large farmers), less room for manoeuvre due to asphyxiating regulatory schemes (partly imposed by food empires, partly by state agencies), an ongoing degradation of ecological capital, and a substantial increase in the quantity and intensity of frictions between farmers and society at large. The sharply increased number of 'food scares' is just one of the many expressions of such frictions (in the US, the number of publicly admitted food scandals has tripled over the last 10 years).

THE FOOD CRISIS UNDER CLOSE SCRUTINY

It is ironic that the world only started to discuss the food crisis when the price shock of 2008 provoked discomfort and fears (notably over restrictions on the free trade of food) in the spaces of wealth – the chronic hunger elsewhere has largely been neglected for two decades. Currently, the distortions of the food market are extending into a *global*, albeit highly differentiated phenomenon, with the sudden price increases for food having led to food riots, export restrictions and reductions in import-tariffs. However, these problems cannot be explained by the food market only. They are strongly rooted in the agrarian crisis. What we witnessed in the first half of 2008 is that the agrarian crisis is now translating into a **persistent and worldwide food crisis**.⁷ The two cannot be discussed in isolation – they are intimately intertwined. Firstly, the agro-food complex, as it is currently ordered, introduces massive and chronic levels of **undernutrition**, mainly, though far from exclusively, in the South. From the mid-1980s onwards, some 850 million people have been chronically suffering from undernutrition. Regardless of all the rhetoric associated with millennium goals and the like, the world has not been able to reduce this shameful phenomenon. During the past two years, this figure has risen to more than 1,000 million people.

Secondly, the agro-food complex is also creating an epidemic of **obesity**. It is estimated that a further 1,000 million people in the world are obese (see also Lang 2010, *this issue*). This is strongly related to both food engineering (of the *latte fresco blu* type) and the orientation towards short-run profitability that drives food empires, the same combination that also provokes the ongoing flow of food scandals (Lang and Heasman 2004).

Thirdly, the 'world market' is an intrinsically unstable organizing principle. It constantly produces **disequilibria, insecurity and turbulence** (just as it is unable to create the required coordination between the production of biofuels and food). This both sharpens the agrarian crisis and makes the food crisis more widespread.

THE ACCELERATION

The economic and financial crises are currently *accelerating* the agrarian and food crisis, through two principal mechanisms. These are the overall reduction in

⁷ The nearly unavoidable pressure to introduce forms of protectionism is probably the biggest menace that the food crisis presents for the free trade ordering of the world.

purchasing power, which will negatively translate into the volume and value of food consumption (and in farmers being paid even lower prices) and the impossibility of refinancing all existing debts. Together, these two effects produce a third, and so far hardly recognized, effect: **the impossibility of reproducing industrialized farming.**

Food empires are highly dependent upon credit, as is industrialized agriculture. Both these sectors have expanded through the principle of leverage. Earlier, more limited, crises in the US showed how large farms and rural banks are interwoven. When large farms entered the risk zone, rural banks went bankrupt – and this affects all the farms in the area.

In 2007 the total debts of Dutch agriculture as a whole were equal to 38.8 billion euro (family capital excluded), a 33 per cent increase compared to 2002 (Berkhout and van Bruchem 2008). The average farm owed 550,000 euro to banks and other institutions, although this figure masks large variations. Some farms tend to be ‘free’, as the expression in the countryside goes; others – especially in the industrialized segment – have levels of indebtedness that far exceed the average. The magnitude of the total debts becomes clear when they are related to other parameters: the gross value of agricultural production in 2007 was 22.9 billion euro, net value added was 6.6 billion euro and total agrarian income equalled 3.0 billion euro. Thus, total debts were *six* times higher than the net value added per year and more than *twelve* times as high as the annual agrarian income. While there are huge international variations in these debt/earnings ratios, Dutch agriculture is far from unique in this respect. Considerable segments of the agricultural sectors in the US, Latin America, South Africa, some parts of Asia, Eastern Europe and the rest of the European Union are showing (albeit sometimes for different reasons) similar or even higher levels. The high levels of indebtedness imply that, if banks became less willing to, or less capable of, refinancing debts this could trigger a forced selling of animals (as occurred in the second half of 2008 and the first half of 2009 throughout the United States), a complete closure of farms and/or a temporary reduction of production (the EU dairy sector has seen a remarkable de-activation since the middle of 2008). Reduced imports of feed and fodder (that follow from the slaughtering of cattle in the US and de-activation in the EU) will then create havoc in large areas elsewhere that specialized in the production of soybeans, groundnuts and cassava.

Together, the current difficulty of refinancing highly indebted industrial farms and the low price levels paid by food empires will set a trend that is likely to characterize the coming years. It is now the, apparently impressive, industrialized farms that are de-activating production or even going out of business: their negative cash flows (resulting from low prices and high costs, including financial duties) do not allow for any other alternative. This tendency was latent for several years. This somewhat hidden Achilles heel of industrialized farming is now growing and becoming more visible as result of the general economic and financial crisis. Considerable parts of the industrialized farming segment will go broke; and of those that do not, many will increasingly run counter to socio-political pressures. As a consequence, more peasant-like forms of farming may well be reactivated and come to the fore. History shows that this is exactly what has happened during and after earlier agrarian crises. The difference now is that urban people may well be supportive of such a change, as they start to understand some aspects of how the

agrarian and the food crises are linked to each other and to the availability and quality of the food they consume.

REFERENCES

- Banse, M., P. Nowicki and H. van Meijl, 2008. *Why are Current World Food Prices So High?* LEI, Report 2008-040. The Hague: LEI.
- Bauman, Z., 2004. *Vite di Scarto* [Wasted Lives: Modernity and its Outcasts]. Rome: Edizione Laterza.
- Benvenuti, B., E. Bussi, G. Losi, C. Pignagnoli, C. Petrini, J.D. van der Ploeg and C. de Roest, 2004. *Latte vivo. Il lungo viaggio del latte dai campi alla tavola. Prospettive dopo il Parmacrack*. Reggio Emilia: Edizione Diabasis.
- Berkhout, P. and C. van Bruchem, 2008. *Agricultural Economic Report of The Netherlands*, LEI, Rapport 2008-030. Den Haag: LEI.
- Dries, A. van den, 2002. *The Art of Irrigation: the Development, Stagnation and Redesign of Farmer-Managed Irrigation Systems in Northern Portugal*. Wageningen: Circle for Rural European Studies, Wageningen University.
- EC (European Commission) Directorate-General for Agriculture and Rural Development, G5, 2006. *Agricultural Trade Policy Analysis: Agricultural Commodity Markets – Past Developments and Outlook*. Brussels: EC, G5.
- ETC Group, 2008. *Who Owns Nature? Corporate Power and the Final Frontier in the Commodification of Life*. Leusden: ETC Group.
- Friedmann, H., 1993. 'The Political Economy of Food: A Global Crisis'. *New Left Review*, no. 197: 29–57.
- Friedmann, H., 2004. 'Feeding the empire: the pathologies of globalized agriculture'. In *The Socialist Register 2005: The Empire Reloaded*, eds. L. Panitch and C. Leys, 124–43. London: Merlin Press.
- Ghosh, J., 2010. 'The Unnatural Coupling: Food and Global Finance'. *Journal of Agrarian Change*, 10 (1): 72–86.
- Lang, T. and M. Heasman, 2004. *Food Wars: The Global Battle for Mouths, Minds and Markets*. London: Earthscan.
- Lang, T., 2010. 'Crisis? What Crisis? The Normality of the Current Food Crisis'. *Journal of Agrarian Change*, 10 (1): 87–97.
- Marsden, T., 2003. *The Condition of Rural Sustainability*. Assen: Van Gorcum.
- McMichael, P., 1994. *The Global Restructuring of Agro-Food Systems*. Ithaca, NY: Cornell University Press.
- McMichael, P., 2009. 'Banking on Agriculture: A Review of the *World Development Report 2008*'. *Journal of Agrarian Change*, 9 (2): 235–46.
- Oya, C., 2009. 'Introduction to a Symposium on the *World Development Report 2008*'. *Journal of Agrarian Change*, 9 (2): 231–4.
- Ploeg, J.D. van der, 2008. *The New Peasantries: Struggles for Autonomy and Sustainability in an Era of Empire and Globalization*. London: Earthscan.
- Polanyi, K., 1957. *The Great Transformation: The Political and Economic Origins of Our Time*. Boston: Beacon Press.
- Ventura, F., 1995. 'Styles of Beef Cattle Breeding and Resource Use Efficiency in Umbria'. In *Beyond Modernization, the Impact of Endogenous Rural Development*, eds. J.D. van der Ploeg and G. van Dijk, 219–32. Assen: Van Gorcum.
- Weis, T., 2007. *The Global Food Economy: The Battle for the Future of Farming*. London: Zed Books.
- World Bank, 2007. *World Development Report 2008: Agriculture for Development*. Washington, DC: The World Bank.