SPECULATIVE HARVESTS

FINANCIALIZATION, FOOD, AND AGRICULTURE

Agrarian Change & Peasant Studies

JENNIFER CLAPP &
S. RYAN ISAKSON

SPECULATIVE HARVESTS

Advance Praise for *Speculative Harvests*

This book is packed full of insights and solid analysis of the complex ways in which the global food and financial systems are entangled. It is a must-read account of the power and pernicious impact of the financialization of agriculture and food, and how this relates to the food on your plate. If you want to better understand the social, political and ecological dimensions of the global food system, read this book!

– Annette Aurélie Desmarais, Canada Research Chair in Human Rights, Social Justice and Food Sovereignty, Department of Sociology, University of Manitoba

Speculative Harvests is essential reading about financial infiltration and reorganization of the contours, objectives and outcomes of the contemporary agri-food order, to the detriment of social and ecological goals. A state of the art treatment of the era of financialization through the food lens.

– Phillip McMichael, Author of *Food Regimes and Agrarian Questions*

Financialization in general, and speculation on food markets in particular, have generally escaped scrutiny, largely because the public was poorly equipped to understand what their implications were and how they could be addressed. In fact, the only 'experts' parliaments and regulators could consult on how to tackle these phenomena have generally come from the financial services industry itself, and their 'solutions' have been those preferred by the banks and investment funds. Jennifer Clapp and Ryan Isakson therefore not only provide a remarkably clear exposition of a complex topic, they are also serving democracy.

– Olivier De Schutter, former UN Special Rapporteur on the right to food (2008–2014)

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Preface to the 2021 ebook edition

The world has experienced dramatic changes since *Speculative Harvests* was first published in 2018. A global pandemic has gripped humanity for well over a year, affecting societies and economies in profound ways, including a global economic recession. Food systems have not been spared by these dynamics and have experienced gyrations in the wake of lockdowns and surges in COVID-19 infections. The pandemic has revealed the cracks in food systems – many of which we highlight in this book as being exacerbated by the rise of more financialized relationships throughout food economies – from the vulnerability of small-scale farmers to the fragility of global supply chains to the precarity of food system workers. Globally, food prices have soared since the early days of the pandemic, rising by 30 percent in the year since April 2020, with a wide variation in price effects in different countries: some countries experienced food price rises of 40 percent or higher while others saw much more modest increases. These price rises have resulted not just from disruptions to food systems caused by COVID-19, but also by changes in currency values and a changing climate that has brought extreme weather affecting production in multiple locations around the world. Farmland prices have similarly been on the rise, as real estate prices generally have experienced upward pressure as the pandemic unfolded, encouraged by low interest rates and financial stimulus to address the global recession.

As happened in the wake of the 2007-08 food crisis when food prices shot up dramatically, which we examine in the book, financial investors are again seeking to capitalize on rising commodity and land prices at a time when interest rates remain low and amid fears that stock markets are over-valued and due for a correction. The current pressures of financial investment in the sector could again drive a new financial bubble that, when it bursts, is likely to affect those within food systems who are the most vulnerable and marginalized – small-scale producers, food system workers, and poor food consumers – as well as the environment as investors push for agricultural growth at any cost through industrial production methods. These are the very

dynamics we outline in our analysis, looking set to be unleashed again in the context of this new crisis.

At the same time, in the period since *Speculative Harvests* was first published, there has been growing interest in responsible investment initiatives, including in the food and agriculture sector, particularly among younger, 'millennial' generation investors. But while there is great promise in some of these initiatives, they have, thus far, been limited in their scope, and have not yet been ramped up to a scale that can counter the resurging role of 'big finance' in the sector. As these developments unfold, the analysis we put forward in this volume thus remains as relevant as ever.

Jennifer Clapp and S. Ryan Isakson, May 2021.

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RRUSHES-S – Commodity & land rushes and regimes: Reshaping five spheres of global social life (food, climate change, labour, citizenship, and geopolitics) is a research project at the International Institute of Social Studies (ISS) of Erasmus University Rotterdam, Netherlands, in collaboration with the Transnational Institute (TNI), that has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No. 834009).

SPECULATIVE HARVESTS

FINANCIALIZATION, FOOD, AND AGRICULTURE

Jennifer Clapp and S. Ryan Isakson

AGRARIAN CHANGE AND PEASANT STUDIES SERIES

Practical ACTION PUBLISHING

FERNWOOD PUBLISHING

Practical Action Publishing Ltd
27a Albert Street, Rugby, Warwickshire, CV21 2SG, UK
www.practicalactionpublishing.org

First edition published by Fernwood Publishing, Canada, 2018
This edition published by Practical Action Publishing Ltd, 2021

A catalogue record for this book is available from the British Library.
A catalogue record for this book has been requested from the Library of Congress.

ISBN 978-1-85339-993-0 Paperback
ISBN 978-1-85339-992-3 Hardback
ISBN 978-1-78044-993-7 Ebook
ISBN 978-1-78044-992-0 Library PDF
Citation: Clapp, J. and Isakson, S.R.(2018) Speculative Harvests: Financialization, Food and Agriculture, Rugby, UK: Practical Action Publishing, <http://dx.doi.org/10.3362/9781780449920>

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Editing: Brenda Conroy
Cover design by John van der Woude

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To Zoë, Nels, Leo, and Rose,

in hopes that this book will contribute to the brighter future
that you, like all children, deserve.

Series Editors' Foreword

Speculative Harvests: Financialization, Food, and Agriculture by Jennifer Clapp and Ryan Isakson is the eighth volume in the Agrarian Change and Peasant Studies Series from ICAS (Initiatives in Critical Agrarian Studies). The first volume is Henry Bernstein's *Class Dynamics of Agrarian Change*, followed by Jan Douwe van der Ploeg's *Peasants and the Art of Farming*, Philip McMichael's *Food Regimes and Agrarian Questions*, Ian Scoones' *Sustainable Livelihoods and Rural Development*, Marc Edelman and Saturnino M. Borras Jr.'s *Politics of Transnational Agrarian Movements*, Henry Veltmeyer and Raul Delgado Wise's *Agrarian Change, Migration and Development*, and Peter Rosset and Miguel Altieri's *Agroecology: Science and Politics*. Together, these eight books reaffirm the strategic importance and relevance of applying agrarian political economy analytical lenses in agrarian studies today. They suggest that succeeding volumes in the series will be just as politically relevant and scientifically rigorous.

A brief explanation of the series will help put the current volume by Clapp and Isakson into perspective in relation to the ICAS intellectual and political project.

Today, global poverty remains a significantly rural phenomenon, with rural populations comprising three-quarters of the world's poor. Thus the problem of global poverty and the multidimensional (economic, political, social, cultural, gender, environmental, and so on) challenge of ending it are closely linked to rural working people's resistance to the system that continues to generate and reproduce the conditions of rural poverty and their struggles for sustainable livelihoods. A focus on rural development thus remains critical to development thinking. However, this focus does not mean de-linking rural from urban issues. The challenge is to better understand the linkages between them, partly because the pathways out of rural poverty paved by neoliberal policies and the war on global poverty engaged in and led by mainstream international financial and devel-

opment institutions to a large extent simply replace rural with urban forms of poverty.

Mainstream approaches in agrarian studies are generously financed and thus have been able to dominate the production and publication of research and studies on agrarian issues. Many of the institutions (such as the World Bank) that promote this thinking have also been able to acquire skills in producing and propagating highly accessible and policy-oriented publications that are widely disseminated worldwide. Critical thinkers in leading academic institutions are able to challenge this mainstream approach, but they are generally confined to academic circles with limited popular reach and impact.

There remains a significant gap in meeting the needs of academics (teachers, scholars, and students), social movement activists and development practitioners in the global South and the North for scientifically rigorous yet accessible, politically relevant, policy-oriented, and affordable books in critical agrarian studies. In response to this need, ICAS has launched this series. The idea is to publish "state of the art small books" that will explain a specific development issue based on key questions, including: What are the current issues and debates in this particular topic and who are the key scholars/thinkers and actual policy practitioners? How have such positions developed over time? What are the possible future trajectories? What are the key reference materials? And why and how is it important for NGO professionals, social movement activists, official development aid circle and nongovernmental donor agencies, students, academics, researchers, and policy experts to critically engage with the key points explained in the book? Each book will combine theoretical and policy-oriented discussion with empirical examples from different national and local settings.

The series is available in multiple languages in addition to English, namely, Chinese, Spanish, Portuguese, Indonesian, Thai, Japanese, Korean, Italian, and Russian. The Chinese edition is in partnership with the College of Humanities and Development of the China Agricultural University in Beijing, coordinated by Ye Jingzhong; the Spanish edition with the PhD Programme in Development Studies at the Autonomous University of Zacatecas in Mexico, coordinated by Raúl Delgado Wise, EHNE Bizkaia in the

Basque country coordinated by Xarles Iturbe; Fundacion Tierra in Bolivia coordinated by Gonzalo Colque; the Portuguese edition with the Universidade Estadual Paulista, Presidente Prudente (UNESP) in Brazil, coordinated by Bernardo Mançano Fernandes, and the Universidade Federal do Rio Grande do Sul (UFRGS) in Brazil, coordinated by Sergio Schneider; the Indonesian edition with University of Gadjah Mada in Indonesia, coordinated by Laksmi Savitri; the Thai edition with RCSD of University of Chiang Mai, coordinated by Chayan Vaddhanaphuti; the Italian edition coordinated by Alessandra Corrado at the University of Calabria; the Japanese edition with Kyoto University, coordinated by Shuji Hisano of Kyoto University, Koichi Ikegami of Kinki Universit, and by Sayaka-Funada-Classen; the Korean edition with Research Institute of Agriculture and Peasant Policy and coordinated by Wongkyu Song; and the Russian edition with the Russian Presidential Academy of National Economy and Public Administration (RANEPA), coordinated by Teodor Shanin and Alexander Nikulin.

Given the objectives of the Agrarian Change and Peasant Studies Series, one can easily understand why we are delighted to have as Book 8 the work by Clapp and Isakson. The first eight volumes fit together well in terms of themes, accessibility, relevance, and rigour. We are excited about the bright future of this important series!

Finally, Book 8 is being released in partnership and colloboration with The Rosa Luxemburg Foundation, the Transnational Institute (TNI), and the Institute for Poverty, Land and Agrarian Studies (PLAAS) of the University of the Western Cape.

Saturnino M. Borras Jr., Ruth Hall, Christina Schiavoni,
Max Spoor, and Henry Veltmeyer
ICAS Book Series Editors

Acknowledgements

A confluence of events in the late 2000s piqued our interest in the subject matter for this book. As political economists of food and agriculture, we not only wanted to understand the defining moments of the time — the twin food and financial crises of 2007–08, the onset of a new global land grab, a growing number of corporate mergers and acquisitions throughout the agrifood sector — but we also wanted to understand how these unfolding processes were connected. Without a doubt, the lens through which we sought to make sense of these connections was shaped as much by our respective partners' academic interests as our own.

Jennifer Clapp has had a longstanding interest in the impact of global financial relationships on both social and ecological outcomes, including in the food arena. She has benefited enormously from many conversations with Eric Helleiner over the past thirty years about the broader political and economic dynamics of the global financial system, which were especially helpful in untangling the political and economic dynamics of financial markets. Eric's intellectual contributions and ever-supportive encouragement are thus important to acknowledge here.

For his part, Ryan Isakson's interest in financialization emerged largely from conversations with Jackie Morse. She opened his eyes to the growing power of the financial sector in contemporary capitalism and was instrumental in helping him to see the role of financialization in shaping so many of the contemporary transformations in food and agriculture. Jackie's sharp mind and political commitment have been a beacon for the past thirteen years. Thank you, Jackie, for your support and encouragement.

We would also like to thank others who have made this collaboration possible. In 2013, Paul Kingston created the opportunity for the two of us to meet and discuss our shared interests in financialization, food, and agriculture. Oane Visser hosted several workshops

at the Institute of Social Studies in The Hague, where we were able to further develop our ideas in collaboration with other workshop participants. Oane also created our first opportunity to co-author when he invited us to help him edit two symposia on financialization. We are also especially grateful to Saturnino "Jun" Borras for inviting us to co-author this "small book" and the support he has provided us throughout the writing and publication process, as well as his enthusiastic encouragement to attend several workshops at which we were able to exchange ideas.

Several of our students and colleagues read drafts of this manuscript and provided editorial support. For helpful comments, reactions, and suggestions, we thank Sarah Martin, Marcus Taylor, Phoebe Stephens, Madeleine Fairbairn, André Magnan, Sarah Sippel, and Oane Visser, as well as two anonymous reviewers for Fernwood Publishing. Their feedback helped immensely to improve the quality of this book, although we take full responsibility for any errors or omissions. Georgiy Verby generously extracted Figure 4.1; without his help we would not have been able to include it in this book. We thank Rachel McQuail for her exceptional editorial support, as well as Errol Sharpe, Beverley Rach, and Brenda Conroy for their work in shepherding the book through the editorial and production process at Fernwood.

Jennifer Clapp thanks the Faculty of Environment at the University of Waterloo, the Social Sciences and Humanities Research Council of Canada, the Canada Research Chair program, and the Pierre Elliott Trudeau Foundation for financial support for the research on which this book is based. Ryan Isakson is grateful for support from the Centre for Critical Development Studies and the Vice Principal's Research Office at the University of Toronto Scarborough and the Social Science and Humanities Research Council of Canada.

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Acronyms

ABCD	The four largest agricultural commodity trading firms: Archer Daniels Midland, Bunge, Cargill, and Louis Dreyfus
ACE	agricultural commodity exchange
ACRE	Agriculture and Climate Risk Enterprise
BCOM	Bloomberg Commodity Index
BIS	Bank for International Settlements
CBOT	Chicago Board of Trade
CEO	chief executive officer
CFS	Committee on World Food Security
CFS-RAI (PRIAFS)	*The Principles for Responsible Investment in Agriculture and Food Systems*
CFTC	Commodity Futures Trading Commission
CIF	commodity index fund
CME	Chicago Mercantile Exchange
COMEX	Commodity Exchange, Inc.
ECX	Ethiopian Commodity Exchange
ETF	exchange traded fund
ETI	Ethical Trading Initiative
ETN	exchange traded note
FAO	Food and Agriculture Organization
FIA	Futures Industry Association
GIIF	Global Index Insurance Facility
GSCI	Goldman Sachs Commodity Index
IBAI	index-based agricultural insurance
ICA	international commodity agreement
ICE	Intercontinental Exchange
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IOSCO	International Organization of Securities Commissions
ISDA	International Swaps and Derivatives Association
LIFFE	London International Financial Futures and Options Exchange
MiFID	Markets in Financial Instruments Directive

NFA	new financial architecture
NYMEX	New York Mercantile Exchange
OECD	Organisation for Economic Co-operation and Development
OTC	over-the-counter
PE	private equity
PRAI	*The Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources*
PRI	U.N. Principles for Responsible Investment
PRIAFS (CFS-RAI)	*The Principles for Responsible Investment in Agriculture and Food Systems*
R&D	research and development
REIT	real estate investment trust
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VEB	Venturing and Emerging Brands
VG	Voluntary Guidelines

1

What Is the Link Between Food and Finance?

The issues surrounding food and agriculture have garnered enormous public and academic interest over the past decade. One could argue that there is nothing new about the themes of greatest interest, including rising food prices, land grabbing, corporate concentration, and the ecological consequences of an increasingly industrialized food system. Indeed, food activists and scholars have long sought to understand and counteract these processes, identifying factors that contribute to them and working toward more just and sustainable food provisioning. Yet, as a number of examples illustrate, there is, in fact, something new about these longstanding concerns with the food system — in particular, the ways in which financial actors and motives are intensifying and qualitatively transforming these negative features of the contemporary global food economy.

Consider, for instance, the major investment bank Morgan Stanley's purchase of leasing rights for more than 40,000 hectares of prime farmland in Ukraine in 2009 (*Economist* 2009). It was one of hundreds of large-scale land acquisitions by financial institutions that have compromised the land rights of millions of farmers over the past decade (White et al. 2012). Similarly, at the height of food price volatility in 2010–12, five major investment banks — Goldman Sachs, Barclays, Deutsche Bank, JP Morgan, and Morgan Stanley — reportedly made over US$2.7 billion speculating on food prices (Global Justice Now 2013). The associated spike in food prices diminished access to food for millions of the world's poorest people (FAO 2011). In another example, in 2015, under pressure from two separate hedge fund managers that were shareholders, the seed and agrochemical giants Dow and DuPont announced a US$130 billion merger of the two firms (Crooks 2015). The combining of these two firms set off a mad rush of further mergers and acquisitions in the

agricultural input industry that, if successful, will see just three firms control over two-thirds of the global seed supply (ETC Group 2016).

As the above examples make clear, food and financial systems are tightly coupled. However, the details of precisely how these systems interface in practice, and how those linkages affect the everyday lives of real people, are often in the shadows. Financial transactions in the sector are often obscured by the esoteric terminology surrounding them as well as by norms of corporate practice that are anything but transparent. But for those affected by these linkages between the food and financial systems, the outcomes have very real consequences. Understanding the ways in which these dynamics unfold should not be the privilege of financiers and large agrifood companies alone. All participants in the food system, including farmers and consumers, should have access to information about the interaction between the food system and the financial system and its wider implications.

More generally, a growing number of scholars are directing their attention to "financialization," a process in which financial actors and financially driven motivations have taken a larger role in society, across all sectors in the economy (e.g., Epstein 2005; Krippner 2011). These scholars point out the ways in which the growing primacy of finance has affected the non-financial economy, in which tangible goods and non-financial services are provisioned. The agrifood sector is no exception to this process of financialization. While the links between food, agriculture, and finance are literally centuries old, dating back at least to early commodity exchanges, the contemporary process of financialization has subtly, yet dramatically, infiltrated and reorganized the contours, objectives, and outcomes of the present-day agrifood order.

This book provides a closer look at the linkages between the food and financial systems and provides greater clarity to the topic through the use of ordinary language and concrete examples. It examines the mechanisms by which the processes of financialization have transformed many elements of the agricultural sector into "asset classes" or arenas for financial investment. It also explores how agrifood companies use sophisticated financial tools to enhance their own profits. It documents and explains the unprecedented scope and

form of these recent changes, giving particular attention to the roles played by different social actors and highlighting the impacts on a range of stakeholders in the agrifood system.

We argue that financialization in the agrifood sector reinforces three troubling trends in the food system. First, it exacerbates inequalities across and within different sets of food system actors, as well as across and within different geographical locations. The recent transformations have facilitated the consolidation of wealth and power among financial elites and corporate management at the expense of food labourers, agricultural producers, and ordinary consumers. The result is highly uneven consequences for different stakeholders both within and across food systems.

Second, financialization is driving a number of socio-economic changes that heighten the fragility of the global food system, undermining its socio-ecological resiliency. New financial instruments and a prioritization of the interests of shareholders have fostered unstable markets and have worked to further entrench industrial modes of agriculture while heightening the associated ecological and social risks. As a result, food systems are now much more vulnerable to economic shocks and environmental hazards such as biodiversity loss, pests, and climate change.

Third, financialization in the food system impedes collective action. It has vastly complicated the work of activists and policymakers in both the global North and the global South who advocate for more just and sustainable food systems. The highly complex nature of financial instruments, combined with the expanding lobby power of corporate and financial elites, has hindered the efforts of civil society groups and social movements to engage in policymaking and other efforts to challenge these detrimental processes.

Together, these implications of financialization within the agrifood sector weaken the ability of food systems to provide sustainable food security and livelihoods. The potential for these negative impacts has not gone unnoticed in political arenas, and a variety of interventions have been considered, from the introduction of new financial instruments to mitigate risks, to voluntary responsible investment initiatives, to (re)newed state regulation. We evaluate the likely impact of these proposed interventions and consider the

prospects for more socially just and environmentally sustainable agrifood systems as the process of financialization continues to evolve.

What Is Financialization?

Before delving into the specifics of financialization in the agrifood sector, it is important to take a step back and look at what exactly financialization means in a broader sense. Since the late 1990s, a number of scholars from a range of disciplines — from political scientists, to geographers, to economists, to sociologists and anthropologists — have turned their attention to the concept of financialization as a way to make sense of a what appears to be a shift in the creation of wealth away from productive industry toward finance (van der Zwan 2014). Financialization, according to Epstein (2005: 3), refers to "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies." Krippner (2011: 4) adds to this understanding by stressing that financialization results in "the tendency for profit making in the economy to occur increasingly through financial channels rather than through productive activities."

In both of these definitions, there is an important distinction between financial activities (the investment of funds with the expectation that it will result in interest, dividends, or capital gains) and the non-financial economy (sometimes referred to as the "real," or "productive," economy, where production, trade, and distribution of non-financial goods and services takes place). Traditionally, the financial system has allocated funds for the acquisition of physical capital, thereby financing investment in the real, or non-financial, economy. While there is some debate about how rigid the boundary is between these two realms, there is a general consensus that in recent decades finance has become increasingly autonomous, capable of expanding and generating profits on its own, through complex financial assets. That is, rather than generating profits through loans and other forms of financing to non-financial enterprises, since the 1970s, the financial sector in dominant economies has dramatically shifted to speculative activities that generate returns that are independent of — or, at the very least, distantly linked to — the

productive economy (Kotz 2011). At the same time, the growing prominence of financial motives, logics, and markets has infiltrated and fundamentally reshaped the underlying non-financial economy and the democratic societies in which it resides.

There are several strands in the literature that interpret the key features of financialization in different ways, although they overlap and build upon one another (for a review, see Krippner 2011; van der Zwan 2014). Although they deploy different entry points to explain the phenomenon, each centres on the idea that contemporary capitalism is being transformed by the growing role of finance in the economy, and each is important in considering the role of financialization as it reshapes the food and agriculture sector.

One strand highlights the ways in which financialization has reshaped economies such that capital is primarily accumulated through financial channels. In the U.S., for example, Krippner (2011: 28) notes that financial sector profits were around 10–15 percent of the total profits during the 1950s–60s. But that figure grew rapidly in the 1980s, more than doubling between the mid-1980s and 2008 to around 30–40 percent (Khatiwada 2010). Finance has become a lucrative sector, and financial firms — including investment banks, asset management firms, mutual funds, hedge funds, pension funds, and private equity funds, among others — have become increasingly important. The financial sector has become a leading source of profit generation in many economies, especially in rich industrialized countries, while the profitability of manufacturing has declined in recent decades. With the rise of finance as a key source of profit, non-financial firms are increasingly engaging in financial activities and earning a greater share of their revenues from the financial aspects of their business (Krippner 2011; van der Zwan 2014: 101). Payments from non-financial firms to the financial sector — in the form of interest payments, stock dividends, and share buyback schemes — have also increased in this context as these firms are increasingly pressed to provide payments back to their main investors (see Crotty 2009). As non-financial firms see a growing share of revenues going back to the financial sector, they are pressed to save costs and often end up offshoring production. As a result of this process, workers' wages have stagnated, economic growth has slowed, markets have become

more volatile, and income inequality has become more pronounced (Palley 2007; Khatiwada 2010; Baud and Durand 2012; Wolff 2013; Stockhammer 2004).

Alongside the financialization of accumulation, a second approach sees financialization as a product of the so-called "shareholder revolution" of the 1990s, in which managers for firms of all types reoriented the direction of their enterprises such that their top priority is to satisfy their shareholders' demands for dividends (Froud, Haslam, Johal et al. 2000; Froud, Johal, Leaver et al. 2006; Crotty 2009; Baud and Durand 2012). To incentivize accommodating behaviour, chief executive officers (CEOs) are increasingly compensated with company shares, effectively linking their salaries to overall equity performance. As non-financial firms bow to shareholder pressure to maximize returns, wealth is redistributed among the key stakeholders within the firm, while workers' wages remain flat, leading to increased inequality (Froud et al. 2000). If firms are not able to provide a steady and competitive return on their investments, shareholders often pressure management to restructure the firm. This restructuring frequently results in the sale of unprofitable units, or mergers with other firms to increase market share, both of which can lead to job losses for employees. With monetary easing since the 2008 financial crisis, characterized by low interest rates, it has been relatively easy for firms to distribute a greater share of profits to shareholders. The availability of low cost loans reduces the need for firms to retain earnings to finance their various activities. Many firms have taken advantage of low interest rates to borrow funds for the acquisition of competing firms. In this context, employees face not only low or stagnant wages as the relative share of returns distributed to shareholders and managers increases, but also fewer benefits and less job security (Froud et al. 2000; Palley 2007).

A third approach many scholars have taken to examine financialization is to concentrate on the ways in which finance has infiltrated — and, indeed, become a necessity in — everyday life. Rather than focus on financial and corporate elites, these scholars have zeroed in on the ways in which ordinary citizens have become part and parcel of the prioritization of financial incentives by increasingly engaging with financial practices in their own lives (Aitkin 2007;

Langley 2008). Mortgages, the rise of consumer credit and debt, and increased participation in investment funds, including a greater focus on the need for individuals to save for retirement, are all ways in which consumers have become more engaged with finance as part of their normal day-to-day activities (Montgomerie 2008). Managing risk and security, activities that were once deemed the realm of financial experts and the state, are increasingly understood as the responsibility of ordinary individuals (Martin 2002; World Bank 2013). Through engagement with these kinds of mass-marketed financial products, people in effect internalize norms of behaviour that revolve around financial considerations. These changes in attitude, and in the practice of finance at the individual level, have been facilitated by technological and institutional developments such as online banking and investment interfaces and, notably in the context of the global South, mobile financial services like the widely celebrated M-Pesa. Ironically, as the everyday security of individuals becomes more entwined in their personal financial activities, they have become increasingly vulnerable to financial risk and may not have sufficient information about its inner workings and implications (van der Zwan 2014).

Each of these features is important for understanding the scope of financialization. But we must also ask what enabled the rise of finance in the first place? Krippner (2011) identifies three explanations, each affiliated with a prominent theoretical paradigm. For mainstream economists, financialization serves to align the interests of corporate chief executive officers with those of the firms' shareholders. While the former had previously been rewarded for reinvesting profits into the firm to spur innovation and expansion of production and sales, shareholders have made growing demands for a greater share of the profits to be paid out as dividends. Increasingly, corporate executives are compensated in stock options and their own positions are under threat from private equity takeovers and mergers. Such pressures have brought the interests of firm management and shareholders more in line with one another (Froud et al. 2006; Palley 2007).

A second explanation emerges from Keynesian thinking about speculative bubbles. Adherents argue that insufficiently regulated

financial markets are inherently prone to speculative excess, where asset prices far outpace their intrinsic value due to the belief of investors that prices will continue to rise, driving prices higher still. Investors' ignorance about the functioning of an economy leads them to engage in herd behaviour. That is, rather than admitting their lack of knowledge, investors collectively follow the speculative activities of leading actors. But such markets are inherently unstable and prone to crashes (Palley 2007; Crotty 2009).

Alternatively, Marxist scholars portray financialization as a cyclical feature of capitalism, which for them is prone to periodic crises. Such crises are caused by falling profits that result from the downward pressure on prices from competition, and episodes of "overaccumulation," during which the productive capacity of firms greatly exceeds effective demand, meaning that additional investments in working capital are unlikely to generate satisfactory returns. Kotz (2011), for instance, argues that under corporate capitalism, where ownership of enterprises takes the form of ownership of stocks in firms (often referred to as equity shares, or financial securities), economic elites can escape the risks posed by technological change and ruthless competition. This happened in the early twentieth century when antitrust legislation and economic volatility drove economic elites like the Rockefellers to transfer their wealth from the ownership of productive enterprises to real estate and finance. Similarly, during the 1970s, international competition and the declining profits of U.S. and British manufacturers drove many investors to redirect their surplus capital from productive investments to financial speculation.

It is important to note that financialization is not a process that is forced exclusively by financial elites, but also one that is fully embraced by corporate elites in search of profitable outlets for their capital during periods of economic uncertainty. Channeling surplus capital into financial markets (e.g., government bonds, corporate stocks, currency speculation, and home mortgage based investments) helps to postpone the full effects of economic crisis, thereby providing a "spatio-temporal fix" (Harvey 2003: 87). This process is typically encouraged by interstate competition for capital in international financial markets. In response to the most recent crisis, for example, many states actively deregulated financial markets in order to attract

financial capital to their jurisdictions. These dynamics worked to drive up financial asset prices even as profits in the non-financial economy remained stagnant (Harvey 2010; Krippner 2011).

Although these theoretical interpretations differ in their explanation of the contours of financialization, all note that the process unfolded in the context of financial deregulation, which was integral to the neoliberal economic restructuring that took place in the latter part of the twentieth century. Economic turmoil in the 1970s and early 1980s prompted governments in the U.S. and Britain to dismantle the Keynesian-style regulation of the financial sector, which had been in place since the 1940s (Helleiner 1994). This process was heavily influenced by the ascent of neoclassical economics at the time, especially the "efficient market hypothesis," which postulated that minimal government regulation was the key to better functioning markets. The result was a "new financial architecture" (NFA) that embodied this preference for keeping government involvement in these markets to a minimum. As economist James Crotty (2009: 564) writes, the NFA "is based on light regulation of commercial banks, even lighter regulation of investment banks, and little if any regulation of the 'shadow banking system' — hedge and private equity funds and bank-centered Special Investment Vehicles." The NFA enabled financial institutions, previously constrained by regulation, to freely amass large quantities of investment funds and to develop novel financial products. In the 1980s and 1990s, many debt-affected developing countries were pressured to adopt similar policies by multilateral banks that made access to loans contingent upon financial deregulation (Mosley 1991; Boucher, Barham, and Carter 2005).

The financial crisis of 2008 drove home the point that the financialized economy is more turbulent and highly susceptible to crisis. Poorly regulated financial markets, the growth of new financial instruments, low interest rates, and credit and housing bubbles set the stage for a global banking meltdown (Helleiner 2011). As a 2015 U.N. Conference on Trade and Development (UNCTAD) report notes, the expansion of credit and the rise of new financial instruments to manage risk in the past several decades have contributed to a system that may be more adept at absorbing smaller shocks, but

less able to anticipate and respond to the larger systemic weaknesses and risks that such a system brings. The financial crisis prompted governments around the world to consider enacting more stringent regulation in order to rein in risky financial practices. However, financial interests have fought hard against the adoption of any new rules that might curtail their activities, and nearly a decade later the few regulations that were put in place are now under pressure to be relaxed (Helleiner 2014).

As the literature makes clear, the implications of financialization are serious, affecting both the production and distribution of wealth. It drives further economic inequality by redistributing wealth within firms and contributes to job insecurity by shedding less profitable elements of firms and offshoring production. It also reinforces corporate concentration as firms strive to expand their revenues and the associated returns to shareholders through mergers with — and acquisitions of — their competitors. And it accustoms individuals to financial activities in their everyday lives, while at the same time making them more vulnerable to financial risks from rising debt loads and greater exposure to increasingly unstable domestic and global financial systems. In addition, financialization also makes political resistance more challenging by obscuring the processes that contribute to deteriorating socio-economic and ecological conditions behind complex financial tools. The increased offering of financial "solutions" to growing insecurity ostensibly makes the financialized economy more tolerable, while at the same time entrenching it. Such shifts conflate multiple social objectives into a much narrower set of abstract financial values, resulting in a depoliticization of the economy (Krippner 2011; Breger Bush 2016).

Financialization and the Food System

This book outlines the ways in which financialization has transformed the agrifood sector and highlights its impact on food systems in the form of more concentrated power and wealth, weakened socio-ecological resiliency, and stifled efforts to build more just and ecologically sound food systems. These effects are the culmination of the specific ways that the three main dimensions of financialization

outlined above — the opening of new arenas for accumulation, the prioritization of shareholder value, and the financialization of everyday life — unfold in the agrifood sector. We provide an overview of the ways in which these processes have unfolded in the agrifood sector and explain the important shifts that were necessary for this financialization of the food sector to take hold. We discuss both the direct impacts that arise from these specific modes of financialization, as well as their broader implications.

In addition to systematically analyzing these processes of financialization specific to the food and agriculture sector, we also show that these aspects are not always distinct or mutually exclusive ways to understand the processes and implications. Indeed, our in-depth look at these dynamics in the agrifood sector reveals that the distinct ways in which financialization is generally characterized overlap with and reinforce one another in complex ways. Further, our analysis highlights the socio-ecological dimensions of the financialization process, which are often underplayed, or outright ignored, in the more general literature on financialization. We show that questions of inequality and political agency are inextricably tied to questions of ecological sustainability, especially in the case of financialization in the agrifood arena.

Agriculture Targeted as a New Arena for Capital Accumulation

The food and agriculture sector has become a new site of investment, or arena of accumulation. Financial sector actors have increased their investments in the sector, and traditional actors in the food and agriculture sector are turning to financial tools and investments to secure profits. The transformation of the agrifood sector into an attractive site for financial accumulation required the abstraction of the cultural and physical qualities of food and land into financial values of interest to investors. It also required a regulatory environment that enables purely financial profit-making activities associated with these assets. Agricultural commodity markets, for example, involve trade in derivatives, which are financial products whose value is derived from the price of an underlying asset, in this case the prices of agricultural commodities. These financial instruments enable market participants to hedge their risks, that is, to offset unexpected changes

in the value of the commodities that may arise over the course of its production. Markets for agricultural commodity derivatives in the U.S. were tightly regulated for most of the twentieth century to enable hedging activities by farmers, grain buyers, and other actors directly involved in the agricultural sector, while limiting financial profit-taking by speculators, who were merely betting on the direction of prices. The deregulation of those markets after the 1980s, however, opened the floodgates to speculative activities and paved the way for the proliferation of new complex financial investment tools specifically geared toward the food and agriculture sector.

These novel financial investment instruments have drawn in new financial investors in ways that were not previously possible. With fewer restrictions on their activities, investment banks and commodity trading firms began to sell commodity index funds that track a compilation of commodity prices. And large-scale institutional investors, such as mutual funds, hedge funds, pension funds, insurance companies, and endowments for universities and foundations, sought to diversify their investment portfolios by adding exposure to commodities through these novel instruments (see Table 1-1 for a description of the main financial players in agricultural investment). In order to hedge their risks, the financial institutions and commodity traders that sold these funds then increased their investment in commodity derivatives products as well as physical assets in the sector. This development deepened the role of financial actors in agricultural commodity markets and enabled a larger number of investors to speculate on food and agricultural commodity prices. Increased speculation in commodity markets, in turn, has been widely implicated in driving up food prices and making agricultural commodity prices more volatile (Worthy 2011; Ghosh 2010).

The food and agriculture sector has also become a new site for financial accumulation in ways other than commodity speculation. There has been a rise in new types of investment funds based on food and agriculture that enable investors to profit from financial exposure to farmland and agribusiness companies. Again, it is large-scale institutional investors who have flocked to these new financial instruments tied to the sector. The flood of capital into these funds has been associated with the global land grab and soaring prices for farm-

land, which further limits access for small-scale farmers (Fairbairn 2014; Magnan 2015; Desmarais et al. 2017). Additional financial instruments in the sector include new kinds of derivatives that are

Table 1-1 Key Financial Players in Large-Scale Agricultural Investment

Investment Banks	Large banks, such as Goldman Sachs, Morgan Stanley, Citigroup, and Deutsche Bank, that focus on investment products and services
Hedge Funds	Funds that invest on behalf of high net worth actors; seek high returns in a short period of time
Private Equity Funds	Funds that invest on behalf of high net worth actors; use funds to gain control of enterprises that they overhaul before selling
Pension Funds	Funds that invest retirement and pension savings on behalf of members
Mutual Funds	Funds that invest in equities and other assets on behalf of investors who need not be especially wealthy
Sovereign Wealth Funds	Funds that invest state funds on behalf of governments
Commodity Trading Firms	Commodity traders, such as Archer Daniels Midland, Bunge, Cargill, and Louis Dreyfus (i.e., the ABCD companies), and their financial investment subsidiaries
Insurance Companies	Firms that pool the risks of individual actors and invest large sums of money to hedge risks
University and Foundation Endowments	Entities that invest large sums of money for the purpose of ensuring investment income for their operations
Asset Management Firms	An umbrella category that refers to the various types of companies that pool the funds of multiple clients for investment purposes. Types of funds these firms manage include hedge funds, mutual funds, pension funds, index funds, and private equity funds.

marketed to farmers as insurance even though they are speculative instruments that do not guarantee against loss. Sales of these derivatives cum insurance products has the potential to generate significant revenues for those actors who sell them — including various types of financial actors as well as multinational seed and agrochemical companies — even though they only provide farmers with a partial form of security (Johnson 2013; Isakson 2015). Financial actors are also providing credit services across the food and agriculture value chain in ways that tend to privilege large-scale producers and disadvantage those producers operating at a small scale (Boucher et al. 2005; Fletschner, Guirkinger, and Boucher 2010).

Agrifood Firms Reshaped by the Rise of Shareholder Value

A broader shift toward increased prioritization of shareholder value in the corporate sector in the 1980s–90s facilitated and shaped the process of financialization in the food sector from farm to plate. As in the broader economy, agribusinesses have embraced a growing belief that their primary function is to provide profit for shareholders, rather than to serve society's wider interest to provide nutritious food that is universally accessible as well as decent livelihoods (Jones and Nisbet 2011; Baud and Durand 2012). As a reflection of this shift, a greater share of food and agriculture companies across agrifood supply chains are now owned by large asset management firms that manage funds for institutional investors seeking to benefit from those equity values. Like in the broader economy, compensation for CEOs in the agrifood sector is now largely tied to equity values. In response, corporate managers have reshaped these firms in ways that maximize financial profits for shareholders, regardless of the social and ecological costs associated with that pursuit.

To satisfy the demands of their shareholders, agrifood firms have increasingly sought growth and profit expansion through mergers and acquisitions, rather than investment in productive activities (Jones and Nisbet 2011). They have also faced pressure to reallocate resources out of activities that would expand growth based on product improvements, such as research and development, and into dividend payments (Rossman 2010; Isakson 2014). Shareholder orientation also encourages firms to cut costs wherever possible,

increasing the externalization of environmental and social costs. The redistribution of wealth within food and agriculture firms has reshaped global supply chains, making them even more elongated as sourcing and processing are increasingly globalized to locations where wages are lower and environmental standards are weaker (Clapp 2014). Consequently, jobs have become less secure and wages have stagnated in the sector (Rossman 2010; Baud and Durand 2012; Burch and Lawrence 2013).

Everyday Activities Influenced by a Financialized Agrifood System

The financialization of everyday life has also permeated the food and agriculture sector along a number of dimensions. This aspect of financialization was facilitated by a shift toward neoliberal policies starting in the 1980s, which advocated a reduced role for the state in supporting the agricultural sector. Agricultural research and credit provision were once seen as key responsibilities of the state in many countries, as part of a broader project of building a strong nation state by stabilizing commodity prices to enable sufficient domestic food production. But this role has been abdicated in many countries, which have effectively handed off responsibility for these important functions to the private sector (Chang 2009; Martin and Clapp 2015).

In many cases, farmers are now expected to individually manage economic risks through their savvy participation in financial markets. This compulsion for individual agricultural producers to regularly participate in financial markets has normalized these activities in everyday contexts (Taylor 2011; Johnson 2013). Private banks and agricultural input firms have become providers of agricultural credit and insurance to producers, locking the latter into arrangements predicated on deriving profit, which is a different focus than support for the sector as part of nation-building. This trend has the effect of downloading responsibility for price smoothing functions for commodity markets onto farmers.

At the same time, food retail companies have become major providers of credit and other financial services to their customers, many of whom are cash strapped and engaged in precarious employ-

ment, often seeking their loyalty through points programs (Burch and Lawrence 2013). Ordinary citizens are also connected to the sector at a personal level through financial services, such as their purchase of mass-marketed agriculture-linked mutual funds as part of their retirement savings. Agriculture and food linked investments are presented by financial institutions as a means by which individuals can diversify and secure their savings and investment portfolios (Wheaton and Kiernan 2012; Fairbairn 2014). But linking food acquisition to the provision of credit by the same provider only heightens consumers' dependence on these firms for both financial security and food security.

Broader Implications of a Financialized Food System

As we show in more depth in the subsequent chapters, the targeting of the agrifood sector as a new arena of accumulation, the reshaping of firms in response to the rise of shareholder value, and the reorientation of everyday financial activities associated with the agrifood sector, have together transformed the food system in myriad ways. They are associated with numerous troubling trends in the food system, including land grabbing, food price volatility, corporate concentration, insecure agricultural and food system livelihoods, the homogenization of agricultural technologies, and a loss of autonomy for both producers and consumers, among others. While these impacts may at first glance appear to be separate from one another, a closer look reveals that they are interlinked in complex ways that have broader implications for the food system as a whole (see Table 1-2).

The abstraction of food into financial value, for example, enables not only new opportunities for accumulation through equity and other investments in the sector. It also facilitates shareholders' valuation of food firms in purely financial terms, which allows them to evaluate and compare investment options across the sector. In this way, financialization facilitates investment in the activities and enterprises that best adhere to financial objectives and, of course, denies funds to those that do not. The development of new financial tools for agricultural investment also infiltrates everyday life, as food system actors increasingly rely upon those tools to manage their own risks.

Similarly, as states offload responsibility for fostering agricultural innovation and farmer credit services onto private actors, the food and agriculture sector is increasingly valued in financial terms, which in turn draws in financial investors. The emergence of new mechanisms for managing price risk at the individual level not only opens new arenas for capital accumulation for banks and other providers of credit, but also shapes everyday financial transactions. The rise of index-based agricultural insurance, for instance, provides the private insurance industry with a new profit stream based on the inherent risks faced by farmers, while at the same time farmers are forced to incorporate this kind of financial mechanism into their daily operations.

The reinforcement of the trends is also evident when agribusinesses that pander to shareholder values work to cut costs by scaling back on employee benefits, like health insurance and retirement packages, that represent a short-term cost for the firm. In such cases, food sector workers are left with little choice but to assume these responsibilities through their individual purchase of financial and insurance products that, in turn, create new channels for accumulation for both food and financial institutions as well as investors.

These aspects of financialization collectively generate three broader implications that reinforce troubling macro-trends in the food system. These broader effects are summarized below and are emphasized throughout the analysis in the following chapters.

Concentrates Power and Wealth

Financialization has contributed to a consolidation of power and wealth among elite financial and corporate actors at the expense of other participants in the food system. Inequities in the global food system have long been present, but by many accounts this inequality has become more pronounced in recent decades (Friedmann and McMichael 1989; Clapp and Fuchs 2009). Financialization has exacerbated and extended this pattern of inequality by creating new opportunities for accumulation by financial and corporate elites through new financial instruments that simultaneously create conditions — such as food price volatility, threats to land rights, reduced job and livelihood security, and corporate concentration — that

disadvantage less powerful actors in the food system.

Food system inequality has also become more pronounced in recent years with the growing corporate concentration across the agrifood system (Howard 2016). The process of financialization, with its prioritization of shareholder value, has encouraged more merger and acquisition activity in the sector, thus contributing to more extreme forms of corporate concentration. At the same time, the power of the financial elites has become even more entrenched as financialization has left ordinary individuals increasingly dependent on the financial sector to manage insecurity through their personal acquisition of insurance, credit, and retirement savings, all of which link to the food and agriculture sector in various ways.

Compromises Socio-Ecological Resilience

Financialization has compromised the socio-ecological resilience of the food system. At a most basic level, the short-term profit-seeking tendencies of global financial markets are poorly suited to serving the long-term needs of sustainable agriculture. The novel financial instruments that enhance investors' opportunities for immediate financial gains, like commodity index funds and farmland investment products, have left the system more prone to instability. More volatile food prices associated with commodity index funds have increased vulnerability and uncertainty for both food producers and consumers, a trend that became painfully evident over the course of 2007–12 following the eruption of crises in both the food and financial sectors. Speculative farmland investments have encouraged production at all costs, typically employing industrial farming methods that have been associated with climate change and biodiversity loss (Jarosz 2009). Similarly, the proliferation of derivatives as tools for managing agricultural risk has had the paradoxical effect of promoting the homogenization of agricultural technologies, thereby reinforcing the movement towards less resilient agricultural systems (Cronon 1991; Isakson 2015).

The livelihoods of many agricultural producers have been rendered more fragile as the prioritization of shareholder value in agribusiness corporations has also encouraged more capital-intensive and ecologically damaging industrial modes of agriculture as a means

to deliver more immediate and substantial returns (Weis 2010). Corporate restructuring, under pressure from the financial industry, has had the effect of locking in reliance on a shrinking array of genetically modified seeds and associated agrochemicals, with deleterious effects on biodiversity and attendant knowledge and practices (ETC Group 2016). This "one size fits all" approach to agricultural technologies is likely to result in the greater homogenization of agricultural systems, which will heighten their vulnerability to ecological shocks, such as drought and extreme weather events associated with climate change (Taylor 2017). More generally, as financial values gain precedence over alternative social values, other important objectives ascribed to agricultural production — including its role in preserving biodiversity, providing livelihoods, and provisioning food — are subsumed by the prioritization of short-run returns on investments.

Impedes Collective Action

Financialization has generated new challenges for those trying to create more just and sustainable food systems. The new instruments for financial investment associated with the agrifood sector have become so complex and highly technical that civil society groups and policymakers seeking to promote food system reform are effectively excluded from participating in policy debates (Clapp 2014; Williams 2015). At the same time, the prioritization of shareholder value has created corporate giants that have ample budgets to put toward lobbying for rules that shape food systems to their own benefit (Fuchs, Meyer-Eppler, and Hamenstädt 2013). This inequity in access to policy processes results in rules that favour large-scale agricultural models, making it difficult for small-scale alternative food movements to scale up and out.

Meanwhile, the individualization of responsibility that has accompanied the financialization of everyday life has deflected attention away from the need for broader systemic change. In many ways, the food system has been "de-politicized" for ordinary citizens, as food and livelihood security have become increasingly dependent upon the purchase of financial services associated with the sector. Investments in farmland and agricultural commodities, for example, have become a normal component of retirement savings, the pro-

Table 1-2 Mutually Reinforcing Aspects of Financialization and Food System Change

Aspect of financialization	Shifts that enable financialization to take hold in food system	Specific mechanisms through which financialization is expressed	Potential direct consequences
New Arenas for Accumulation	Abstraction of food, agriculture, and farmland into financial values for investment; deregulation of financial markets	Commodity and farmland speculation; new financial products such as index funds and derivatives based insurance	Food price volatility; rising land prices and dispossession of farmers; environmental degradation; redistribution of value from food workers to finance
Prioritization of Shareholder Value	Growing belief that the primary function of firms is to generate shareholder returns	Profits paid as dividends rather than productive investment; mergers and acquisitions	Corporate concentration; cost externalization; livelihood/job insecurity; reinforces industrial agriculture
Financialization of Everyday Life	Neoliberal reconfiguration of the state; offloading of responsibility for risk management onto private actors	Mass marketed investment products for retirement savings; private sector consumer and producer financial services	Dependence on financial service providers; individual interest in financial gains; reduced security for farmers and consumers
Together, these processes drive food system change in three key ways			
Broader implications for the food system	(1) Exacerbates unequal distributions of wealth and power in favour of financial elites (2) Compromises food system resilience by undermining its social and ecological foundations (3) Dampens collective efforts to build more just and sustainable food systems		

curement of agribusiness-sponsored financial services has become necessary for securing food and productive inputs, and the purchase of derivatives has become the most available means for mitigating agricultural risks. Ironically, this context has obscured the role of financialization in laying the groundwork for the food and financial insecurity of individuals. For many in the general public, financialization is not recognized as the cause of their insecurity. Instead, it is understood as the solution.

The connections between financialization and these broader trends in the food system are not always self-evident, because links can be diffuse and hard to pin down. In this book, we bring them to light by tracing the deeper shifts required for financialization to take hold and the specific mechanisms through which financialization is expressed, as well as the potential consequences of those mechanisms. Through this analysis, we connect the dots between financialization and broader trends that critics have identified in the food system.

Outline of the Book

The remainder of this book teases out these connections between food and finance, both the direct and the indirect, as well as the deeper structural shifts in the food system encouraged by the various dimensions of contemporary financialization. We explain and illustrate how these connections came about, how they operate, and their broader effects.

Chapter 2 provides a brief explanation of commodity-based derivatives, such as futures and forwards contracts, and identifies their use in a variety of historical contexts. While such contracts have the potential to help food system actors like farmers, traders, and food processors manage the inherent uncertainty of markets for agricultural products, they are also often of interest to financial speculators who hope to profit by trading on that uncertainty. The chapter describes how states and other actors have long regulated the activity of financial actors in derivatives markets, lest they end up hijacking the food system for speculative gain. It also explains how and why such regulations were rolled back in financial hubs

in recent decades, creating an opening for financial technicians to introduce new investment products based on agricultural derivatives, and facilitating a flood of capital into agricultural derivatives markets. We conclude with an explanation of how the recent burst of financial speculation on agricultural commodities is linked to growing price volatility in the markets for actual food, including the food price spikes of 2007–08, and describe the uneven social impacts of those price swings.

Chapter 3 explains how derivatives are increasingly promoted as a means for agricultural producers, particularly poor farmers in the global South, to manage the growing risks associated with food price volatility and environmental change. In many areas of the world, agricultural production has become riskier since the 1980s, with the unravelling of international commodity agreements and the rollback of state protections for farmers, like price supports and agricultural insurance. To address the resulting insecurity, a number of influential actors have promoted the expansion and development of derivatives markets wherein agricultural producers are expected to purchase financial instruments that will allow them to hedge against economic and environmental risks. The chapter details this financialization of daily life for agricultural producers, explaining how conventional derivatives like futures contracts are increasingly presented as the best means by which farmers can manage market-based risks, while new types of derivatives based on the weather and other environmental measures are widely promoted as "insurance" against threats from nature. The rollout of these market-based financial fixes across uneven socio-economic landscapes has exacerbated inequalities within agrarian populations and along agrifood supply chains.

Chapter 4 focuses on efforts to reconfigure farmland for financial purposes. While farmland has long been prized as an asset that retains its value, even in the face of general economic malaise, it is also a productive asset that is essential to farming. In the wake of the 2007–08 food and financial crises, financial actors joined the scramble of the "global land rush" in the hopes of capitalizing upon farmland's unique ability to store value while generating revenue from agricultural production. However, even though farmland may exhibit values that are prized by financial investors, it is also shaped

by place-specific historical, cultural, and political processes that can complicate efforts to reformat it for purely financial purposes. The chapter describes these challenges and outlines the methods and strategies for overcoming them. The distress of contemporary farmers, emanating from unmanageable levels of debt, an inability to access affordable credit, and increased vulnerability to economic and environmental stress, has facilitated the transfer of farmland from "willing sellers" to financial investors. The result is often the growing concentration of farmland ownership and erosion — if not outright elimination — of farmers' land rights.

Chapter 5 explores the financialization of agribusiness, giving particular attention to the ways in which the financialization of accumulation and the shareholder revolution have contoured four key sectors in agrifood systems: the seed and agrochemical sector; the commodities trading sector; the food retailing and services sector; and the food processing sector. The growing prioritization of shareholder values in these enterprises has been an important, if understudied, driver of corporate concentration in the contemporary food system. It has also spurred the introduction of new financial products that are an increasingly important source of corporate profits and shareholder returns; contributed to the development of new labour practices that channel a greater share of agrifood value from workers to financial actors; and reinforced the industrial agriculture and food model, which has contributed to the production and distribution of unsustainable and unhealthy food.

In light of the negative impacts that contemporary financialization has had on the food system, Chapter 6 examines the prospects for effectively reforming the governance of financial activities in agrifood provisioning. The 2007–08 food and financial crises spurred state initiatives to re-regulate speculative activities in commodity markets. But pushback from the financial sector and big agribusinesses, whose participation in commodity markets has become increasingly more speculative, has weakened the policies and delayed their implementation. Several voluntary initiatives to limit financial activities in agriculture and farmland grabs have also been implemented, but their effectiveness is questionable. Some civil society actors have taken the burden upon themselves as they have instituted

campaigns to shame financial institutions that are capitalizing upon food price volatility, yet their initiatives have not been particularly successful either, due in large part to the complexities of "following the money" through opaque and labyrinthine financial channels. Despite the limited impacts of initiatives to date, we remain hopeful that an informed and coordinated response from civil society and policymakers can contribute to the development of food economies where social justice and environmental sustainability trump financial profits.

Finally, in a brief concluding chapter, we tie all of the above together to review the broad implications of a financialized food system: its role in exacerbating socio-economic inequalities within and along different nodes in agrifood supply chains; the way it has compromised the socio-ecological resiliency of the food system; and how the new financial tools and actors have compounded the complexity of the food system with the effect of obscuring responsibility and dampening political resistance. We also consider prospects for change and potential responses to the current situation.

In light of the challenges outlined above, it is difficult to remain optimistic about the potential to reclaim our food system. Yet the stakes are enormous. Challenging the speculative activities and logics of finance capital is imperative to the creation of democratic, equitable, sustainable, and resilient food economies. For resistance to be effective, however, an understanding of how and why finance permeates and shapes food provisioning is imperative. The primary objective of this book is to contribute to this knowledge.

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2

Speculating on Commodities

The connections between food and finance are not entirely new. Financial actors have played an important role in agricultural commodity markets for centuries. They have served as providers of liquidity and investment, thereby creating new opportunities not only for those engaged in the food business to hedge the risks associated with agricultural variability, but also for speculative gains by financial operators engaged in those markets. In the United States, home to the largest commodity exchanges in the world, regulations were put in place in the 1920s–30s to prevent "excessive speculation" by financial participants in agricultural markets. These rules reflected the desire of regulators to ensure that commodity markets primarily performed hedging functions for legitimate operators engaged in commercial operations associated with physical commodities, rather than simply serving as an arena for speculative bets by financiers. Since the 1980s, however, these regulations have been relaxed to the extent that by the early 2000s, there was sufficient room for financial institutions to develop and market new complex commodity derivatives and index investment products. These new financial products enabled speculation on commodity prices to accelerate and grow, and much of this activity took place "off-exchange" and went unreported. A range of actors — including investment banks, hedge funds, sovereign wealth funds, pension funds, and large grain trading companies — became entwined as both investors in, and sellers of, these commodity-based financial products.

Excessive financial speculation on agricultural commodity markets was implicated in the food price crisis of 2007–08 and continued food price volatility through 2012. High and volatile food prices occurred at precisely the same time that financial investment in these markets spiked, which fueled a heated debate over the role of commodity speculation. On one hand, proponents of financial investment in the sector argue that speculation performs essential

functions for agricultural commodity markets, by providing "liquidity" (i.e., the ease and speed with which a security or asset can be exchanged for cash) and aiding "price discovery" (i.e., determination of the price of physical agricultural commodities based on knowledge of supply and demand conditions in the markets for those commodities). On the other hand, critics see speculators as having a largely negative effect on those markets because they can manipulate them to their advantage and drive price volatility, which may generate benefits for some types of financial investors but has detrimental effects on both consumers and small-scale agricultural producers.

This chapter takes a closer look at the ways in which agricultural commodities have become instruments of finance, constituting a new channel for capital accumulation, primarily in the form of new kinds of commodity derivatives, such as index funds. It traces the history of financial actor involvement in commodity exchanges, including how early markets interfaced with agricultural producers and grain trading firms. It also discusses the history of regulatory efforts to rein in speculative trading that can distort markets in harmful ways, and chronicles the ways in which those regulations were eroded in recent decades. It further shows that this deregulation paved the way for a proliferation of new financial instruments that have (1) promoted abstract understandings of food that prioritize financial values over social and ecological objectives for the food system and (2) enabled a wider group of investors, including ordinary citizens through their investments and retirement savings, to gain exposure to the agricultural sector. The chapter concludes with a discussion of debates over the impact of increased speculative financial investment on the ground in the sector, including its link to food price volatility and access to food for everyday consumers as well as ecological outcomes.

Early Agricultural Derivatives Trading

Financial investors have been active in the agricultural commodity trade for centuries. Futures trading, as explained below, serves as a financial instrument because it involves a financial payment for the future delivery of a good and the contract itself can be bought and

sold for profit. Futures trading thus constitutes a financial exchange that is abstracted from the physical product on which its value is based. Through futures trades, buyers and sellers exchange expectations about future commodity prices, not actual commodities.

Some of the earliest agricultural commodity futures trading took place in Amsterdam in the mid-1500s, as traders drew up contracts for the future delivery of grain and fish (Stringham 2003). By the 1600s, futures contracts were also being traded for other commodities, including coffee and pepper. These early futures trades were viewed by the Dutch government as speculative in nature and initially took place in an ad hoc fashion at the Amsterdam Bourse, which was first established by merchants in 1530 as an open-air commodity exchange and later rebuilt as a more permanent exchange in 1908 (Stringham 2003: 324). Futures markets also began to emerge in Asia around this time. Trading in bills linked to future deliveries of rice took place at the Dojima rice market in Osaka, Japan, beginning in the early 1600s, where one of the earliest formal futures exchanges was subsequently established in 1730 (Schaede 1989). The "rice bills" traded on this market, which entitled the holder to a certain amount and quality of rice from a specific warehouse, served the function of reducing transaction costs associated with the trading of large volumes of rice that entered Osaka in a short period of time. They also enabled the smoothing out of rice consumption, and prices, throughout the year (Schaede 1989: 492).

Commodity exchanges in England also date back to the 1600s, when traders and shippers met informally in several London coffee houses to arrange transportation and financing for internationally traded goods (Forrester 1931: 200). One of these informal trading establishments was the Virginia and Maryland Coffee House, which changed its name in 1744 to the Virginia and Baltic, to convey that its main business was trade in commodities between North America and the Baltic region. By 1823, the coffee house developed a set of more formal rules to reduce "wild gambling" in the market, which marked the start of what is now the Baltic Exchange. Commodities such as grain, timber, oil seeds, flour, and tallow were traded on the Baltic Exchange, which also arranged for their shipment (Forrester 1931: 200). Corn exchanges for the trade of domestically grown grain

were established across England in the 1700s. For example, the Corn Exchange of London was established in 1747 in Mark Lane; it later merged with its rival, the London Corn Exchange, in 1929. The Corn Laws, which imposed trade restrictions on grain imports, were repealed in 1846, paving the way for the emergence of other exchanges to trade imported grain. The Liverpool Corn Trade Association was established in 1853, for example, and consisted of both a spot market (for purchase and delivery on the spot) and a futures market (Forrester 1931: 203). The London Corn Trade Association, formed in 1878 to promote standardized trading contracts, was housed in the Baltic Exchange (Mercier 1999: 229; Perren 2000: 984).

In North America, the Chicago Board of Trade (CBOT) was established in 1848 as an exchange for trading grains and other goods (Levy 2006). By the end of the 1850s, the CBOT had become the dominant grain futures market in North America, even as other smaller commodity exchanges emerged in the U.S. Midwest (Santos 2013). Technological changes at that time, including the railroad and steam-powered grain elevators, transformed the transportation and storage of grain, with Chicago becoming a major grain trading city (Cronon 1991). These changes prompted a shift from selling and storing grain in individual sacks associated with the farm on which it was grown, to grain sold by weight and common storage that mingled grain from multiple farms according to type and quality grades. Farmers and other owners of grain were issued warehouse receipts, which were good for a certain amount, type, and quality of grain on demand. These receipts served more or less as currency, and grain elevators effectively became like banks for farmers. A sophisticated grain futures market emerged out of this new context, as it was now possible to trade receipts independently from trade in the physical grain. As such, grain was abstracted from its physical form and distanced from its natural context. According to Cronon (1991: 120), the trading of warehouse receipts "accomplished the transmutation of one of humanity's oldest foods, obscuring its physical identity and displacing it into the symbolic world of capital."

Other commodity futures markets also emerged in the U.S. in the latter half of the nineteenth century and the early twentieth century. The Chicago Butter and Egg Board was founded in 1898,

as a spin-off to the CBOT, to focus on the trading needs of the dairy sector. After adding several other agricultural commodities, including livestock, the Chicago Butter and Egg Board was reorganized and renamed the Chicago Mercantile Exchange (CME) in 1919. Similarly, in 1872 the Butter and Cheese Exchange of New York (renamed the New York Mercantile Exchange (NYMEX) in 1882) was founded for the trade not only of butter and cheese, but also poultry, eggs, and dried fruit (Meyer 2016). The Winnipeg Grain Exchange, second only to the CBOT in size, was established in Canada in 1887 to trade Canadian grain. Starting in the early 1900s, it also began to trade grain futures contracts (Levine 1987: 51).

The emergence of early commodity exchanges in these different contexts illustrates the unique role that financial arrangements have long played in grain marketing. Futures trading arose in these exchanges as separate from spot markets for physical grain, but futures contracts are just one type of derivative — a financial tool whose value depends on the price of an underlying asset — commonly used in agricultural commodity markets to manage risks by setting future prices and deliveries (Kang and Mahajan 2006). Other derivatives include forwards, options, and swaps (see Table 2-1). The use of these instruments enabled the buying and selling parties to lock in prices and hedge against the risk of adverse market movements. The hedging of prices and risk is especially important in the agricultural sector due to weather fluctuations and the perishable nature of grain and other foodstuffs, which add a significant degree of uncertainty to agricultural markets.

The most basic form of agricultural commodity derivative is a forward contract, which enables farmers, for example, to sell their product to a specific buyer, at a negotiated price, for delivery on a set date in the future. Buyers of forward contracts are typically commercial users of the physical commodity, such as grain elevator operators or milling companies, who seek certainty in terms of price and delivery dates of the commodity. Sellers of forward contracts, such as farmers, are obliged to deliver the commodity to the buyer at the agreed date and price, which provides protection against adverse price movements that may occur in the period it takes to grow and harvest the commodity. Forward contracts are not usually standard-

Table 2-1 Common Types of Agricultural Commodity Derivatives

Forwards	Forward contracts are agreements between two parties that require the sale or purchase of a specific asset at a future date at a price that is determined at the time the contract is made.
Futures	Futures are standardized forward contracts that are traded on formal exchanges.
Options	Options provide the holder of the contract a right (but not an obligation) to buy or sell an underlying asset at a set price; options can be either standardized and traded on formal exchanges or specific contracts privately negotiated between two parties.
Swaps	Swaps are arrangements that enable two parties to exchange cash flows (e.g., fixed vs. floating prices) over a specified time period.

Sources: Kang and Mahajan 2006; Spagna 2018: 28–29.

ized agreements, but are instead specific arrangements between two parties (Carlton 1984).

Futures contracts, on the other hand, are standardized forward arrangements, meaning that the contracts have identical terms, including the quantity and quality of the commodity traded and the delivery date. Standardization allows for futures contracts to be traded on formal exchanges, which have a clearing organization that stands between buyers and sellers. The clearing organization acts as a third party to "clear" the trades between multiple individual buyers and multiple individual sellers. In these standardized and cleared trades, buyers and sellers do not have a direct connection to each other or to the underlying transaction of physical commodities. In most cases, there is no actual commodity delivered at the end of a futures contract. Instead, the vast majority of contracts are typically "cancelled out," meaning that, prior to their expiry date, a trader will purchase opposite contracts (i.e., purchase "sell" contracts to offset existing "buy" contracts, or purchase "buy" contracts to offset existing "sell" contracts). This kind of trading is thus mainly a financial transaction based on a value (that is, the *expected* price) that is abstracted from the actual physical grain. The modern-day CME Group

estimates that less than 2 percent of the futures contracts exchanged result in the delivery of actual grain (CME Group 2015).

Although futures markets are somewhat disconnected from the physical commodities that underlie them, these markets are nonetheless widely referenced by both producers and consumers of agricultural products due to their functioning as a "price discovery" mechanism for agricultural markets. That is, futures markets can provide interested parties (e.g., food processors like General Mills) with a sense of what the future prices for actual commodities (e.g., wheat) will be, based on expected supply and demand. In short, futures markets are utilized for a variety of purposes. In addition to signalling expected commodity prices, they are used extensively by various market participants to hedge the risks of rising or falling prices, as well as by speculators seeking to gain from price movements.

Other commodity derivatives for risk management include options and swaps. Options contracts grant the holder the right (though not the obligation) to purchase or sell an agreed quantity of a commodity for a pre-determined price on or before a specified future date (Kang and Mahajan 2006: 17). Options contracts can be either traded on formal exchanges or negotiated privately with customized terms between two parties. An options contract gives the commodity seller an assurance of a minimum selling price and gives the commodity buyer assurance of a maximum purchase price. Thus, options contracts can work as a kind of "insurance" that enables buyers and sellers of commodities to hedge against the risk of falling or rising prices.

Swaps are bought and sold off of formal exchanges (this kind of sale is often referred to as "over-the-counter," or OTC) and have customized terms. A swap contract between two parties (one of which is typically a financial institution) obligates them to exchange cash flows over a specified time period. For example, two parties can exchange, or swap, a floating price for a fixed price (or vice versa) of a certain quantity of grain over a set time period (Kang and Mahajan 2006: 24). Again, this type of derivative enables both agricultural producers and consumers to hedge their risks by locking in set prices for agricultural commodities, or taking advantage of price changes for agricultural commodities, over a specified period of time.

The involvement of farmers in commodity derivatives markets has varied since the early exchanges started in sixteenth century. In the Osaka rice exchange, futures trades were typically made between merchants, feudal lords, and urban dwellers. Farmers were not normally engaged in these trades directly but contributed to their rise nonetheless as they were required to pay their taxes in the form of rice. Feudal lords needed to convert that rice into more liquid assets for their other expenditures, and so the rice bills that were traded for future delivery served as a form of currency (Schaede 1989). By contrast, the early forward trading and futures markets in the U.S. were more directly linked to the farming sector by creating opportunities for both farmers and end-users of commodities — i.e., grain merchants, storage operators, and food companies who take possession of physical commodities — to hedge risks of uncertainty. But while producers may have had an ability to engage directly with agricultural derivatives markets, farmers have long been deeply skeptical of these markets and distrustful of the other players taking part (Cronon 1991; Martin 2016).

Farmers were often at the mercy of the major grain trading companies of the mid-nineteenth and early twentieth centuries, such as the Continental Grain Company (1813), Bunge (1818), Louis Dreyfus (1851), Cargill (1865), and Archer Daniels Midland (1902). The ability of these firms to use agricultural commodity derivatives to hedge their position in the physical grain markets enabled them to expand their scope, size, and power in the latter part of the nineteenth century, leaving few choices for farmers selling their grain (Morgan 1979). Grain elevators, the main firms that store grain, have also made extensive use of agricultural commodity derivatives markets to hedge their risks. Their ability to make decisions about the quality and grade of grain often put grain elevators at odds with farmers, who saw them as abusing their power to determine farmer incomes (Cronon 1991). Both the grain trading firms and elevator operators had intimate knowledge of the state of the overall grain markets, giving them not just an enormous advantage in their hedging activities, but also creating openings for them to speculate on those markets.

Farmers have long been critical of financial speculators, espe-

cially when they operate in ways that distort markets for their own gain. Traditional speculators play an important role in agricultural commodity markets by providing liquidity, since the buyers and sellers of these products do not always find equal matches for their needs. A financial investor speculating on price movements, for example, might buy a futures contract and later sell it to an end-user who wanted to purchase that grain or hedge their own risks in the physical market by offsetting their purchases in the futures market. The speculator's gain or loss would be determined by the movement in prices that occurred between the purchase and subsequent sale of the contract. Farmers' critique of speculators derives from unsavory practices they developed early on in these markets, including cornering markets for grain, whereby they buy up enough of the physical grain and warehouse receipts such that others cannot meet their obligations, causing prices to spike. A series of corners on wheat, for example, took place in the late 1860s in Chicago, leading to wildly distorted markets (see Cronon 1991).

As these various actors increased their use of commodity exchanges, simple forward contracts that involved the delivery of grain at a certain date were soon overshadowed by the growing size of the purely financial trades embodied in futures contracts. By the 1870s, more than 90 percent of the grain futures contracts at the CBOT were settled by offsetting trades rather than through the delivery of grain (Santos 2013: 289). In the 1884–88 period, the grain futures trade was around eight times the average volume of crops produced during that period (Santos 2006). The overwhelming dominance of the trade in warehouse receipts over actual grain led many to view these markets as merely outlets for sophisticated gambling.

Today, the landscape of commodity exchanges has shifted to become more concentrated in the U.S., but also more diverse globally. The CME and CBOT merged in 2007 to form the CME Group, which then acquired the NYMEX in 2008, as well as Commodity Exchange, Inc. (COMEX), a metals trading exchange. Today, the Chicago Mercantile Exchange (CME) Group is one of the largest commodity exchanges in the world and a centre of agricultural futures trading for grains and oilseeds (wheat, corn, soybeans, oats, rice, palm oil), livestock (hogs, cattle), and dairy (milk, butter, cheese).

Globally there is now a wide range of commodity exchanges, but they tend to be more regionally focused than the CME Group. The Dalian Commodity Exchange in China, for example, restricts foreign investors from participating. The Tokyo Grain Exchange, the Indian Multi-Commodity Exchange, the Brazilian Mercantile and Futures Exchange, and the Ethiopia Commodity Exchange (ECX) all deal in relatively small volumes of trade and serve primarily regional markets. Other globally significant commodity exchanges specialize in a relatively small group of commodities, such as the London International Financial Futures and Options Exchange (LIFFE) (coffee, cocoa) and the Bursa Malaysia (palm oil). As discussed further in Chapter 3, commodity exchanges have emerged in many countries in recent decades.

Unwinding Agricultural Commodity Derivatives Regulation

As noted, financial speculators on commodity futures markets can act to stabilize markets by providing a liquidity function between farmers and the commercial handlers of those commodities. But regulators have historically kept a close eye on financial speculators because they have the potential to manipulate markets and thus cause harmful market volatility from which they could profit. In the early twentieth century, agrarian political movements, such as the U.S.-based Granger movement, were concerned about the potential for market manipulation by financial speculators and large market players. These groups pushed hard for stricter regulations to rein in speculators, banks, and grain monopolies (Martin 2016: 104). In response to these concerns, the U.S. government began to tightly regulate agricultural futures markets starting in the early part of the twentieth century. The 1922 Grain Futures Act, for example, required all futures trading to take place on approved exchanges and outlawed the cornering of markets. Since 1923, market traders have been required to report their trades daily, making it possible to catch any activities that might influence prices. This reporting has allowed regulators to track market movements and ensure transparency among the participants (Clapp and Helleiner 2012).

The 1936 U.S. Commodity Exchange Act gave federal regulators

the authority to establish "position limits" that place a ceiling on the number of agricultural futures contracts a single non-commercial trader (i.e., speculator) is allowed to hold at any given time. The rationale for instituting position limits on non-commercial traders was that these actors are not *bona fide* hedgers in the markets. Rather, they are primarily speculating in those markets, and the number of futures contracts they were legally allowed to hold at any time was strictly controlled in order to prevent speculation from being the primary driver of market trends. The aim of the legislation was not to outlaw speculation outright, as the liquidity these actors provide was seen to be necessary for the markets to function well. The position limits instead sought to prevent "excessive speculation" that might result in market manipulation and sudden sharp price shifts (Clapp and Helleiner 2012). Since 1974, the Commodity Futures Trading Commission (CFTC) has maintained regulatory oversight of commodity futures markets in the U.S., including the monitoring of position limits.

Although tight regulations governing U.S. agricultural derivatives trading had been in place for over fifty years, in recent decades those rules have been substantially relaxed as governments have increasingly adopted policies that support more open and liberalized markets (Ghosh 2010). The loosening of these rules has contributed to the intensification of financialization in agricultural commodity markets. In the 1980s and 1990s, in response to pressure from some large investment banks to relax the tight position limits for non-commercial operators, the CFTC began to issue "no action letters." These letters enabled specific banks that requested them to exceed the position limits on the grounds that their positions in commodity futures markets were hedges against real risks they faced in financial markets (Clapp and Helleiner 2012).

These regulatory changes enabled the development of a new breed of financial investment mechanisms linked to food and agriculture, including index-based investment products that are based on sophisticated commodity swap operations, such as commodity index funds (CIFs), as well as commodity focused exchange traded funds (ETFs) and exchange traded notes (ETNs) (Russi 2013). These new investment products track the performance of an index that bundles

the prices of a basket of different types of commodities, which typically include agricultural commodities, minerals, livestock, and petroleum products. Investors who buy these products swap a fixed price plus a fee in return for payments that replicate changes in commodity prices over time. What the index-based products offer investors is an opportunity to gain exposure to price fluctuations on commodity markets without being required to purchase futures contracts on commodity exchanges and without requiring much knowledge at all about the sector. The most popular commodity indexes that these products are linked to are Standard and Poor's Goldman Sachs Commodity Index (GSCI) and the Bloomberg Commodity Index (BCOM) (Meyer 2015). The estimated value of speculative investments in commodity index products ballooned more than twelve-fold, from US$15 billion in 2003 to US$200 billion by mid-2008, the height of the food price crisis (United States Senate 2009: 5).

In selling these products, investment banks act as middle operators, providing a financial investment product to investors that is based on the performance of commodity markets. Commodity index funds, the most common index investment instruments, are typically sold over-the-counter, or OTC, directly to investors and not on exchanges. Commodity-based ETFs and ETNs are traded on the stock exchange. As banks began to sell large numbers of index-based commodity investment products, those same banks also carried increased risks. If commodity prices rose sharply, the banks would be on the hook to make huge payouts to investors. To hedge these financial risks, the banks began to make large-scale purchases of commodity futures contracts on commodity exchanges. This need to invest directly in the commodity futures markets is precisely why these banks pressed regulators to relax position limits on commodity futures trading by non-commercial operators (Clapp and Helleiner 2012).

In 2000, the relaxation of regulations was reinforced with the passage of the U.S. Commodity Futures Modernization Act (Ghosh 2010). This law exempted OTC derivatives from regulatory oversight by the CFTC. In effect, the passage of the Act meant that the sale of commodity index swaps and commodity index funds was not subject

to regulation, and that purely speculative trade in these types of OTC derivatives products was freely allowed without the need for reporting (Russi 2013). This deregulation in the United States, which at the time had the most tightly regulated commodity futures markets, brought the country more into line with markets in other countries. The E.U., for example, had only light regulations on commodity derivatives markets, and prior to 2008 placed no regulations on OTC derivatives trading (Tilburg and Vander Stichele 2011). As discussed in Chapter 6, both the U.S. and the E.U. sought to strengthen regulations on OTC markets following the 2008 financial crisis.

Banks were not the only actors to capitalize on the deregulation of commodity derivatives markets. Four of the world's largest agricultural commodity trading firms, Archer Daniels Midland, Bunge, Cargill, and Louis Dreyfus — collectively known as the ABCD companies — have also tapped into rising investor demand for commodity-linked financial products and are now heavily engaged in the agricultural derivatives market. These firms have historically operated under a complex business model that involves dealing in bulk commodities and trading high volumes at typically low margins. Each of these firms is intimately linked to the world of complex agricultural commodity chains, with different components of their businesses touching all aspects from production to consumption. These activities have provided each firm with privileged access to information that helps them to maintain an advantage over their competitors (Murphy, Burch, and Clapp 2012).

As is discussed in more depth in Chapter 5, commodity trading firms have long used their information advantage to manage their own business risks by purchasing and selling agricultural commodity futures contracts on commodity exchanges (see Kneen 2002; Morgan 1979). In some cases, these firms are engaged in hedging their own business operations with futures contracts (Salerno 2017). But it is virtually impossible to tell when these firms are instead making purely speculative investments based on their privileged inside knowledge of agricultural commodity markets. Commodity trading firms are often the first to become aware of crop shortages or other interruptions to agricultural trade around the world, giving them an information advantage in the futures

markets (Meyer 2011). Capitalizing on this information, all of the ABCD firms have established subsidiary companies that specialize in financial services. These financial subsidiaries manage not only the firms' futures trades but also sell OTC index products to third parties (Murphy et al. 2012).

The distinction between investment banks and commodity trading firms has become increasingly blurred since the mid-1990s as both sets of actors became actively engaged in selling agricultural commodity investment products such as CIFs and other OTC financial derivative products (Burch and Lawrence 2009: 277). As sales of indexed products increased, index traders (that is, the dealers and other sellers of these index products) increased their purchase of agricultural futures on commodity exchanges, as a means by which to hedge their risks from selling these products. Between 2006 and 2008, when demand for index products skyrocketed, some 35–50 percent of all outstanding purchases of wheat futures on the Chicago Board of Trade came from index traders (United States Senate 2009: 2).

Investor Motivations

The market for these new types of agricultural commodity investment products grew rapidly, especially between 2000 and 2012, as commodity prices were generally rising in that period. Total financial assets under management in commodities rose from around US$10 billion in 2000 to US$150 billion just before the 2008 financial crisis, and to over US$450 billion in 2011 (Meyer 2015; UNCTAD 2015: 21). The number of commodity futures contracts traded on commodity exchanges doubled in the 2004–2007 period (Meyer and Authers 2015), and the amount invested in commodity index products expanded sharply. Investment in commodity ETFs alone climbed from under US$10 billion in 2006 to over US$200 billion in 2012 (UNCTAD 2015). Agricultural commodities have been an important component of this overall financial investment in commodities, making up around one-quarter of commodity investments. Between 2006 and 2011, speculative investment specifically in agricultural commodities almost doubled, from US$65 billion to

$US126 billion (Worthy 2011). Much of this increase was due to financial speculation. In the U.S. wheat futures market, for example, financial speculators' share of the trade quintupled, from 12 percent in the mid-1990s to 61 percent in 2011 (Worthy 2011: 13).

The surge of investment into the sector reflects a widening group of investors who found the new investment products for commodities, including agricultural commodities, attractive investment vehicles. These investors were spurred on by advice based on an academic paper that argued that commodity futures offered not only stable returns over time, but also that they were negatively correlated with equities and bonds (Gorton and Rouwenhorst 2006). The implication of this study's findings was that investors should balance their portfolios to include exposure to commodities as well as other investment vehicles, and this advice was passed on to investors by asset management firms (Meyer 2010).

Large-scale institutional investors, especially those with passive management strategies seeking low-maintenance assets with the intention of holding them for a long period of time, were especially drawn to commodity index investment products. The new investment tools enabled insurance companies, pension funds, mutual funds, hedge funds, sovereign wealth funds, commodity trading firms, and endowments for universities and foundations to radically increase their investment exposure to the commodities sector (Burch and Lawrence 2009: 272–3; Buxton, Campanale, and Cotula 2012). These investors are essentially betting on long-term trends, and for this reason are sometimes referred to as "index speculators." Whereas, typically, speculators buy and sell commodities in order to take advantage of price movements over relatively short periods of time, index speculators tend to buy index products with the intention of holding onto them for long periods of time, in order to capitalize on what they see as inevitably rising food prices over the long run (Russi 2013: 47). Institutional investors with more active strategies, such as hedge funds, are also effectively speculating with the purchase of index products and seek to benefit from market volatility (Russi 2013: 48).

Institutional investors as a whole invest multiple trillions of dollars every year. In 2016, insurance companies, pension funds,

and mutual funds, by far the largest of the institutional investors, together managed over US$100 trillion in OECD countries alone (OECD 2016a). Some individual institutional investors manage enormous sums of money. This includes not just hedge funds that manage the money of elite financial investors with deep pockets, but also the retirement savings of a wide range of ordinary individuals through pension funds and individual savings accounts. Thus, through these investment products, the everyday life of millions of people is influenced by the financialization of food and agriculture.

Public pension funds invest billions of dollars annually. In 2015, for example, the U.S. Social Security Trust Fund held US$2.8 trillion in investments, the Japanese Pension Investment Fund held investments of US$1.1 trillion, and the Norwegian Government Pension Fund held nearly US$900 billion (OECD 2016b). The California Public Employees Retirement System is also huge, managing over US$300 billion in assets in 2016 (CalPERS 2016). These large-scale pension funds have some unique features, one of which is that they tend to adopt passive investment strategies. With enormous amounts of money to invest, they tend to make long-term investment decisions that do not require active management and consequently do not always have detailed knowledge of their own investments.

Large-scale financial investors were initially pleased with their increased exposure to agricultural commodities after 2000, as commodity prices in general were rising in this period (Burch and Lawrence 2009: 273). Rising commodity prices were partly the product of financial malaise in the United States, which saw the value of the dollar fall. When the value of the U.S. dollar drops, commodity prices in general tend to rise. This is in part due to the fact that most of the commodities traded on international markets are denominated in U.S. dollars, and a falling U.S. dollar leads to rising commodity prices to make up for the depreciation of the currency. But the relationship between the U.S. dollar and commodity prices is also influenced by the fact that a falling dollar initially makes U.S. commodities appear to be less expensive to foreign buyers, who may then drive up demand for those commodities, further putting pressure on prices to rise. Financial instability in the U.S. after 2000, in particular the onset of the housing and mortgage crisis after 2006, led to a depreciation of

the U.S. dollar by 22 percent between 2002 and 2007 (Abbot, Hurt, and Tyner 2008: 28). This decline in the U.S. dollar value made commodity investments, including commodity index investments, extremely attractive to large-scale investors, who were seeking the highest investment returns they could find (Clapp 2016).

Seeking to capitalize on rising commodity prices, large-scale institutional investors sought to purchase financial products from large banks and from the financial arms of commodity trading firms who offered exposure to commodities and farmland through CIFs, ETFs, and other kinds of agriculture-based financial investments. Some estimates put agricultural investments of pension funds at around US$320 billion in 2012, a significant jump from the US$6 billion they held in investments in this sector in 2002 (Buxton et al. 2012: 2). The new agriculture-based investment products — including CIFs, ETFs, and ETNs — on offer from banks and commodity trading firms enabled these institutional investors to get around the two problems that previously prevented them from gaining major exposure to commodity futures markets: first, their lack of detailed knowledge of commodity markets; and second, the position limits imposed by U.S. regulations. By operating through banks and commodity trading firms, these large-scale institutional investors, managing the retirement savings of millions of ordinary individuals who likely have little knowledge of how their employers are managing their pension contributions, could circumvent the limits and capitalize on the knowledge of others who were happy to provide the service, for a fee. Investors could sit on these investments for long periods of time, waiting to reap profits as commodity prices rose.

Commodity markets are fickle, however, and the bubble in commodity prices that inflated in the 2007–13 period did not last. Commodity assets under management fell sharply in 2014, as investors pulled out of the sector after commodity prices took a dive in 2013 (Meyer and Authers 2015). Assets under management in the commodities sector fell from a peak of US$450 billion in early 2011 to US$161 billion by the end of 2015 (UNCTAD 2015; Hume and Sanderson 2016). But despite subdued investor interest in the sector after 2013, index investors still held around 30 percent of futures in wheat, corn, and cotton in mid-2015 (Meyer 2015). Commodity

ETFs have also remained popular investment tools, with just over US$100 billion in these assets in 2015. Throughout 2016 investor interest in commodities picked up again, and around US$391 billion was invested in the sector as of early 2017 (Holmes 2017).

The 2007–08 Food Price Crisis

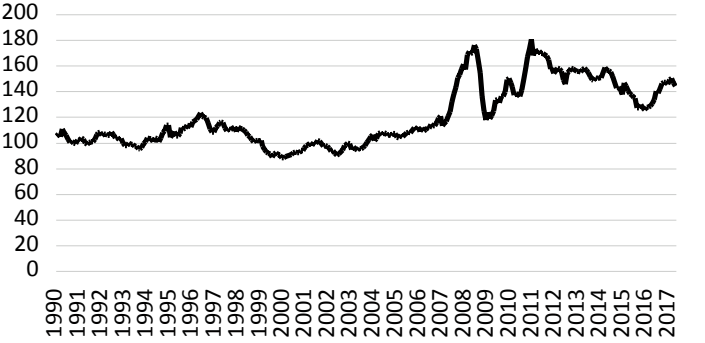
The growth of investment vehicles based on agricultural commodities has exposed agricultural prices to broader trends in financial markets. As noted above, financial market turmoil after 2006 contributed to disruptions in food markets by encouraging investors to move into commodity-linked financial investments. As money flooded into commodity investments during this period, food prices began to climb. Between 2000 and 2008, average world prices for rice rose by 217 percent, wheat by 136 percent, maize by 125 percent, and soybeans by 107 percent (WRI and A.T. Kearney 2008). Several nongovernmental organizations immediately pointed to financial speculation as a driving force in food price rises (e.g., IATP 2008), although a number of economists and international organizations were skeptical of that explanation (e.g., Sanders and Irwin 2010). Most accounts initially focused attention on a variety of forces that contributed to food price rises, rather than singling out any one factor (e.g., Headey and Fan 2008).

A decade on from the crisis, which sparked several years of both high and volatile food prices (see Figure 2-1), there is now growing recognition among international organizations that speculation in agricultural commodity futures markets and financial derivatives at the very least exacerbates price trends. The Bank for International Settlements (BIS) notes that financialization influences commodity prices, especially in the short term (BIS 2011), and several U.N. reports have come to a similar conclusion (De Schutter 2010; UNCTAD 2011). A 2011 UNCTAD report explains that investors often act in a herd-like fashion, following each other due to the lack of perfect information. This herd behaviour can make prices swing up and down more dramatically than they otherwise would. Indeed, as food prices spiked in mid-2007–08, a 2008 FAO report indicates that a significant portion of the price volatility on international food markets was well

beyond what would be explained by underlying supply and demand for food. Wheat futures prices, for example, were some 60 percent beyond their underlying expected value in March 2008. Although it is difficult to tell the exact extent to which financial speculation was responsible for this price volatility beyond what the fundamentals of supply and demand would have dictated, there is growing consensus that it played a role. Indeed, the food price gyrations as shown in Figure 2-1 closely paralleled commodity assets under management in index investment products in the 2006–11 period (BIS 2011: 57).

It is not difficult to see how increased and sustained investment in commodity-linked financial products can have a strong influence on agricultural commodity prices. Holding index investments over long periods of time, according to some experts, can result in the same kind of outcomes as hoarding physical stocks of commodities. Specifically, it can drive up commodity prices, including food, which could be considered manipulation of the market, enabling speculators to reap profits. Large movements of money into these particular financial products can thus cause severe disruptions to commodity markets, even though the investment is "virtual" because it is just tracking an index. In testimony to the U.S. Congress, former hedge fund manager Michael Masters (2008) noted, "Index speculators' trading strategies amount to virtual hoarding via the commodities

Figure 2-1 FAO Food Price Index 1990–2017



Note: 100=2002–04
Source: FAO Data (real prices, adjusted for inflation)

futures markets. Institutional investors are buying up essential items that exist in limited quantities for the sole purpose of reaping speculative profits." Such virtual hoarding effectively undermines the price discovery function of futures markets and can lead to higher and more volatile food prices.

Large-scale investment in commodity derivatives often takes place in a context where there are relatively few traders on commodity markets. At the height of the food price rises in 2008, for example, just a handful of financial traders dominated the trade in agricultural commodity derivatives. According to a 2009 United States Senate report, just six traders held up to 60 percent of the Chicago wheat futures contracts that were linked to index funds. In this context, even very small changes in how investment portfolios are managed can result in dramatic changes in agricultural prices. In short, due to financialization, food prices became vulnerable to sharp volatility at the hands of a relatively small number of commodity index traders, who act on behalf of trader firms, investment banks, and their clients.

More volatile food prices are a concern because higher prices often mean heightened levels of hunger among the world's poorest people, especially when prices spike to high levels very quickly (IFPRI 2011). Poor people in developing countries spend 50–80 percent of their income on food. For example, in Bangladesh and Malawi, the poorest 20 percent of the population spends over 60 percent of their income on food. In Pakistan and Ghana, that figure is over 70 percent (FAO 2011). Spikes in food prices can easily overwhelm a poor family's entire budget, resulting in an immediate and sharp decline in food consumption as well as a rise in poverty (IFPRI 2011: 21–22). The rioting that occurred in a number of developing countries in 2008 during the food price spikes illustrated people's frustration with these circumstances (Patel and McMichael 2009). Experiencing acute hunger even for a short period of time during the first thousand days after conception can have permanent effects on children's health (FAO 2011). Research has shown that stunting due to episodes of malnutrition early in childhood negatively affects people's income earning potential into adulthood, thus making it very difficult to escape from a cycle of poverty and hunger (e.g., Alderman, Behrman, and Hoddinott 2007; Hoddinott 2006).

Poor people in developing countries who are highly dependent on food imports are the most vulnerable to food price volatility on world food markets. Dependence on imported food is itself a product of longstanding imbalances in global trade rules and declining investment in the agricultural sector, which have made this vulnerability especially pronounced (Clapp 2009; Wise and Murphy 2012). Many Sub-Saharan African countries, for example, are highly dependent on imported food and the rate of hunger on that continent rose by 2 percent per year between 2007 and 2011, reversing modest gains made in the previous decade (FAO 2012: 11). Poorer agricultural producers are also typically negatively affected by sharply fluctuating food prices. Farmers derive the bulk of their income from food sales, and volatile food prices bring them great uncertainty about their income. Moreover, if there are gains for farmers, these are not evenly distributed. As outlined in more detail in Chapter 3, price rises tend to benefit wealthier farmers, who have access to good land, more than landless labourers and smaller-scale farmers, who are more likely to work marginal lands. Uncertainty in food markets due to price volatility also makes it very difficult for farmers to plan ahead. Investing in greater production in high price years provides no guarantee that food prices will stay high and cover the cost of that investment (FAO 2011).

The higher and more volatile food prices that immediately followed the 2007–08 food crisis also spurred investment to expand agricultural production around the world. Efforts to increase food production can have important ecological implications, and scientists have raised concerns about the threats to biodiversity from the expansion of industrial forms of agriculture in particular (Tilman 1999). At the height of food price volatility in the 2008–12 period, investment in the production of cereal crops such as wheat, maize, and rice, as well as oil crops, such as soy, increased sharply. According to the FAO (2017), cereal production rose from 2100 million tonnes in 2007–08 to 2600 million tonnes in 2016–17, a 24 percent increase. Over that same period, the production of oil crops increased 43 percent, from around 398 million tonnes to 570 million tonnes. There are several pathways via which increases in crop production can affect biodiversity. These include land clearing for new production and in-

tensification of production on land that is already cleared, using more intensive farming methods. The former can result in overall biodiversity loss, particularly when accompanied by deforestation in diversity rich areas (Foley et al. 2011). Crop genetic diversity can be eroded by the latter, due to the genetic uniformity typical of monoculture planting practices (Rosset and Altieri 2017). Heavy agrochemical use associated with more intensified production methods can also threaten biodiversity in and around fields, affecting wildlife and key pollinators, such as bees and butterflies, that rely on weeds and wild plants for their survival (Brown et al. 2016).

Conclusion

Although financial actors have participated in agricultural commodity markets for centuries, the scope and scale of their activities have increased significantly in recent decades. The relaxation of regulations in U.S. commodity markets that have unfolded since the 1980s unwound more than half a century of efforts to rein in excessive financial speculation. Deregulation of commodity derivatives markets opened the gateway to the development of new, complex financial instruments linked to the sector, such as commodity index funds and swaps as well as exchange traded index products. These new financial products further pried open food and agriculture as an arena of capital accumulation and led to an enormous influx of a wide range of financial institutions, grain companies, and institutional investors, including pension funds and university endowments, into these markets.

The immediate impact of this increased financialization within agricultural commodity markets was food and commodity price volatility, which had wide-reaching effects. The uncertainty about — and occasional spikes in — food prices generated profit opportunities for investors but had detrimental impacts on the poorest segments of society. Underpinning this food price volatility was a deeper process of abstraction in the food system. Specifically, the relaxation of regulations enabled the proliferation of instruments that further abstracted agricultural commodities from their physical form, reducing them to highly complex financial metrics. The increased focus

on the financial value of agricultural products and their potential for speculative profit, in turn, has separated food and agriculture from their broader cultural, social, and ecological values. In the global North, this process has become normalized for ordinary people, whose pension funds are often tied up in these kinds of investments, even as many, if not most, are largely uninformed about the ways in which their money is being managed by others on their behalf. At the same time, the poorest members of society, particularly food consumers and agricultural producers in the global South, have been forced to bear the brunt of growing uncertainty and more volatile food prices, which are associated with these investments.

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3

The Financialization of Agricultural Risk Management

Agricultural production is an inherently risky activity. Farmers are confronted with a variety of natural threats, from pests, plant disease, and spoilage to climatic events. Market linkages can generate additional stress, including rising input costs, uncertain output prices, uneven exchange conditions, and, for export-oriented farmers, fluctuating exchange rates. The recent confluence of climate change and growing economic uncertainty has generally exacerbated the riskiness of farming, the impacts of which will vary according to the relative vulnerability of different types of agricultural producers.

The uncertainty of agricultural production is at the root of a tumultuous relationship between farmers and private financial actors. Throughout much of modern history, financiers have deemed investment in agricultural production too risky unless it was backed by guarantees or subsidies from the state (Martin and Clapp 2015). In recent years, though, the financial sector has taken an about face. It now offers an array of innovative credit and insurance products, many of them targeted at small-scale farmers who were historically deemed too risky and unprofitable to service.

The expansion of formal financial markets into poor rural areas not only includes the well-documented growth of microcredit, but also the development of new types of derivative markets in which small-scale farmers are expected to manage the risks of agricultural production. Since the early 2000s, for instance, financial service providers have teamed-up with prominent development actors, like the World Bank and United Nations Conference on Trade and Development (UNCTAD), to develop more inclusive markets for conventional commodity derivatives, like forward and options contracts, that, in theory at least, will allow small-scale farmers in the global South to hedge against the risks of price uncertainty. Similarly,

as we discuss below, insurance companies have devised derivative products based upon climatic variables like rainfall, temperature, and wind speed that are marketed to farmers as insurance against the environmental risks of agricultural production.

Ostensibly, derivatives provide security to farmers whose vulnerabilities have been laid bare by the neoliberal rollback of regulations and state protections. Proponents maintain that, through their participation in derivatives markets, farmers can buy or sell financial products that will provide monetary compensation when specified adverse events occur, effectively allowing them to trade away uncertainty and achieve greater control over their returns from agricultural production. In turn, proponents claim, this certainty and control will embolden farmers to abandon time-tested practices and technologies that generally ensure stable yields in favour of riskier yet potentially more lucrative activities. Since farmers will be compensated when losses occur, the logic follows that they will be emboldened to experiment and adopt the most productive technologies available, thereby improving agricultural productivity and alleviating rural poverty (Skees and Collier 2008; Varangis and Larson 1996).

As this chapter discusses, the promises made by proponents of financialized agricultural risk management are dubious. In general, the protections purportedly offered by derivatives are uncertain and incomplete. They tend to benefit relatively better-off farmers and powerful actors in finance and the agrifood sector. Meanwhile, the vulnerable farmers in greatest need of security are either excluded from derivatives markets or, if they are included, are less likely to benefit. Moreover, rather than addressing the underlying causes of vulnerability or the production of risks, these financial products are, at best, only capable of treating their effects. The contemporary campaign for financialized risk management promotes the idea that agricultural producers are responsible for achieving their own security through the savvy purchase of derivatives. This "financialization of daily agricultural life" not only generates demand for financial products, it also occludes the actors and processes that produce contemporary insecurity in agrarian settings.

Approaches to Risk Management

Recent financial innovations aside, there is nothing new about the uncertainty of agricultural production. Across space and time, societies have devised various strategies for mitigating the inherent risks associated with farming. Throughout much of human history, farmers have reduced uncertainty through a combination of community institutions and the diversification of agricultural practices and livelihood strategies. In their fields, for instance, farmers have long mitigated risk by cultivating a diversity of "traditional" seed varieties that are often native to their growing environment and relatively resilient to local environmental stresses. In addition to cultivating multiple varieties of the same crop species (intra-crop diversity), they often intercrop with various complementary crop species (inter-crop diversity) and livestock, and spread their agricultural production across several non-contiguous plots of land (habitat/spatial diversity). This strategy of "diversity management" minimizes variability in agricultural yields and improves the reliability of harvests, thereby helping to protect marginalized farmers against their food supply falling below subsistence levels (Lipton 1968; Bellon 1995; Brush 2004). To further protect against uncertainty, agricultural households also complement on-farm diversity with the diversification of their livelihood strategies, participating in multiple economic activities, which helps to ensure a constant stream of income, even when faced with a poor harvest (Ellis 1998; Isakson 2009).

While diversity management and other traditional practices improve the resiliency of farms to various stresses (Holt-Giménez 2002; Rosset, Machín Sosa, Roque Jaime, et al. 2011), they are not a guarantee. Exposure to risks and abilities to cope are uneven. To offset so-called "idiosyncratic" risks, which are specific to individual farms, many agrarian communities have complemented household-level practices with social customs that oblige relatively food secure actors to allocate surplus to those in need. Patterned upon reciprocity and redistribution, these "moral economies" are embedded in elaborate cultural and political practices (Scott 1976). Though they often work to legitimize hierarchy, moral economic arrangements also offer security to marginalized community members and those who suffer

from idiosyncratic shocks by allowing them to make moral claims on economic and governing elites (Scott 1976; Watts 1983). Moreover, the redistributive nature of such collective risk pooling also helps to offset socio-economic differentiation (Akram-Lodhi 2013).

Colonial practices during the nineteenth century severely compromised moral economies. The introduction of cash-based land taxes and the associated insertion of colonies into the global food system severely weakened these embedded risk pooling arrangements in many societies, in particular by promoting the ambivalence of market exchange over the assurances of moral economies and by promoting the production of export crops for the European Empire over diversity management and crops for domestic consumption (Myrdal 1968; Scott 1976; Watts 1983). Combined, these changes have heightened the vulnerability of the rural poor to economic and environmental stress and have also been linked to recurrent famine in the global South (Watts 1983; Davis 2002; Akram-Lodhi 2013). Protests against the resulting vulnerability, in turn, have been linked to political unrest and peasant rebellions (Scott 1976; Patel and McMichael 2009).

States began to play a more prominent role in managing the uncertainty of agricultural production in the modern era. As they sought to centralize political control in the late nineteenth century, for example, governments in Germany and Japan implemented a variety of agricultural support policies, including targeted lending through state banks and credit cooperatives, state-backed insurance programs, and, later, price supports. Similar policies were subsequently adopted throughout Western Europe and North America in the early twentieth century before spreading to many African, Asian, and Latin American countries during nationalist development campaigns following World War II (Chang 2009). These types of state agricultural policies have helped to protect farmers against so-called "covariate risks." That is, they protect against risks that broadly affect whole populations of agricultural producers, including price shocks emanating from their participation in national and international commodity markets or widespread crop losses, which are particularly acute when natural hazards hit homogenous agricultural landscapes.

Despite various state protections, private financiers have been

generally reluctant to service agricultural producers, preferring instead to invest in other economic sectors, like manufacturing and services, where returns are more certain. Thus, in addition to mitigating the risks in the agricultural sector, many states also worked to improve farmers' access to capital. Starting in the nineteenth century, for example, many European governments supported the development of credit institutions that specifically serviced agricultural producers. This practice spread to the U.S. and Canada in the early twentieth century and to the developing world, in the form of agricultural development banks, in the 1960s and 1970s. To encourage otherwise reluctant financiers to support their farmers, many governments also provided assurances through state-backed collateral, contract enforcement, and bankruptcy laws. In addition, many states implemented strategies to stabilize farmers' incomes and protect them against market uncertainty, including price controls, buffer stock management, trade protections, and warehousing facilities (Martin and Clapp 2015). Though not as widespread, state-subsidized and state-provisioned agricultural insurance have also helped to offset agricultural losses suffered when natural disasters occur (Hazell, Pomareda, and Valdes 1986; Chang 2009).

By offsetting the risks of agricultural production, state initiatives have helped to stabilize farmers' incomes, enhance their creditworthiness, and, ultimately, improve the delivery of financial services to the agricultural sector. To be clear, these policies were often part of a broader campaign to modernize agriculture, facilitating access to capital goods and the adoption of agrochemicals and improved seed varieties (Chang 2009; Griffin 1979). While the resulting modernization may improve some measures of yield, it can also have the paradoxical effect of rendering agricultural systems less resilient to environmental stress (Scott 1999; Rosset et al. 2011; Mercer, Perales, and Wainwright 2012). Consequently, many state-led agricultural programs, particularly those during the post-WWII era, helped to mitigate agricultural producers' exposure to economic risks but exacerbated their vulnerability to environmental risks, meaning that their overall impact on agricultural producers' security is ambiguous. Moreover, although the intent of such state interventions was to support agricultural development broadly, in practice these

measures often favoured large-scale farmers and agricultural trading interests, ultimately exacerbating socio-economic inequalities in the countryside (Boyce 1987; Griffin 1979).

State agricultural policies throughout the world, but particularly in the global South, were rolled back during the neoliberal restructuring of the 1980s and 1990s. They were dismantled not because they contributed to the homogenization of agricultural landscapes or the stratification of agrarian populations, as discussed above, but because orthodox economists condemned them as costly, market-distorting, and prone to mismanagement and corruption (Hazell et al. 1986; Chang 2009). The rollbacks compounded the precarious livelihoods of farmers whose vulnerability had already been heightened by the unraveling of moral economies and the adoption of modern technologies (Akram-Lodhi 2013). In keeping with the neoliberal ethos of individual accountability, farmers are now made to believe that their security is not an obligation of the state, but a personal responsibility. They no longer have rights to protection. Rather, like so many other state initiatives in neoliberal capitalism, daily life has become financialized and risk management has become privatized (Maurer 1999; Martin 2002). Individuals are tasked with taming uncertainty through prudential purchases of insurance and other financial products, many of which are relatively novel innovations, introduced in recent decades to fill the gaps left by the rollback of state protections (Soederberg 2014; Breger Bush 2016).

The recent agenda for "financial inclusion" has greatly facilitated the individualization and financialization of risk management. Understood as the incorporation of previously excluded populations into markets for financial services, financial inclusion emerged as a key tenet of development discourse and practice in the mid-2000s. The agenda has been advocated by a number of prominent international bodies, including the World Bank (2013, 2014), the United Nations (2006) and the G20 (2010). According to proponents, recent initiatives that expand opportunities for previously excluded populations to participate in credit, savings, and insurance markets contribute to the "democratization" of finance and will improve the ability of these populations to convert risks into economic opportunities (e.g., Shiller 2003; World Bank 2013). Initially, financial

inclusion initiatives emphasized marginalized actors' access to credit and savings. In more recent years, markets for insurance and other risk management products targeted at poor people have proliferated (World Bank 2013; Dror 2016).

Critics argue that, in practice, financial inclusion is duplicitous: poor people, women, peasant farmers, and minorities are still deemed too risky for inclusion in formal financial markets so they are adversely incorporated into markets for alternative financial services, like subprime lending and commercial microcredit, which can be highly exploitative (Taylor 2011; Aitken 2015). Consequently, "banking the bottom billion" creates an outlet for over-accumulated capital to continue generating profits by preying upon the poor households that were previously external to it (Roy 2010; Rankin 2013). Critics also argue that financial inclusion is emblematic of a broader neoliberal campaign to depoliticize the root causes of poverty and transfer responsibility for security from the state onto individuals, who are expected to manage their own risks and opportunities through financial markets (Johnson 2013; Soederberg 2014).

Despite the recent development of risk markets, risk itself is not a natural commodity. It is not something that is intentionally produced to be sold. Rather, it is a product of nature and a by-product of markets, leading some scholars to observe that it is more akin to a "fictive commodity" (Ribot 2014; c.f. Polanyi 1957). Packaging risk into derivatives and insurance products that can be exchanged in markets requires work and a certain degree of conjuring. The sources of agricultural uncertainty are innumerable, unknown, and deeply embedded in the relations of farmers with one another, nature, and society more broadly. Assembling agricultural derivatives and insurance requires financial technicians to identify specific risks and dissect those risks from their broader socio-ecological context, to determine the probability of their occurrence, assign a price, and specify the rules of exchange, among other things (c.f. Dean 1998).

Inevitably, some dimensions of uncertainty are excluded, perhaps because they are invisible to product designers (i.e., "unknown unknowns") or not perceived as sufficiently dangerous. Others might be excluded because they are too difficult to package into a transferable commodity. There are bound to be incongruities between and

among agricultural producers' and financiers' understandings of uncertainty and risk management. The emerging contradictions and mistranslations will shape the extent to which farmers accept, resist, and work to renegotiate the terms of participation in risk markets. In the following sections, we discuss some of the challenges and potentials of instituting markets for the price and environmental risks faced by agricultural producers.

Price Risk Management

As discussed in Chapter 2, global food commodity prices were highly volatile between 2006 and 2012, fluctuating within a much wider band than during any other period in history (Jha and Rhee 2012). That volatility was linked, at least in part, to growing financial speculation in commodity markets. The costs of rising and increasingly volatile food prices are most sharply felt by poor consumers, particularly in developing countries that are highly dependent upon food imports. Yet fluctuating prices are also a danger to agricultural producers. In her analysis of coffee commodity chains, for instance, Newman (2009) observes that regional buyers who sell to international distributors will cushion themselves against the potential of adverse price movements by paying farmers less for their output, meaning that farmers absorb the risk of uncertain global prices through lower revenues.

Uncertainty about prices can also complicate the already challenging tasks of planning and investment for agricultural producers. Expected prices are often the key determinants of which crops to plant, how much acreage to dedicate to each crop, and whether to invest resources in activities and technologies that increase productivity and/or the resiliency of the farm. Failure to adequately predict output prices can translate into devastating losses for agricultural producers, who must make many of these decisions upfront. Moreover, food price volatility tends to exacerbate economic inequality in rural areas since better-off farmers are typically net sellers and tend to have better access to storage facilities, allowing them to sell when prices are high. Meanwhile their poorer counterparts tend to be net buyers and, with less ac-

cess to storage, generally have fewer options about when to sell and when to buy (von Braun and Tadesse 2012: 12).

Following World War II, during the Keynesian era, uncertainty about agricultural prices was often reduced through direct interventions in commodity markets. Governments from both the global North and global South utilized buffer stocks and other supply-management techniques to stabilize domestic prices. In international markets, many states established mechanisms that would compensate exporters in the face of adverse price shocks and many more participated in international commodity agreements (ICAs) to coordinate supply and demand for widely traded agricultural products like coffee, sugar, and cocoa (Breger Bush 2012). The unraveling of the ICAs in the late 1980s combined with the neoliberal rollback of states' price stabilization policies contributed to growing uncertainty about commodity prices and exacerbated risks for providers of agricultural credit and traders in international commodity markets (Martin 2016).

Despite growing uncertainty about agricultural prices, the World Bank and other influential organizations continue to discourage state management of commodity markets. Instead, they support the development of markets for new products that facilitate coping with economic adversity or enable the transfer of price-based risks to speculative actors (Larson, Varangis, and Yabuki 1998; Varangis, Larson, and Anderson 2002; Martin 2016). Agricultural derivatives are arguably the most prominent component in the new market-based approach to risk management, but microcredit and warehouse receipt systems also receive mention. By providing loans to farmers, the expansion of markets for microcredit purportedly improves farmers' ability to "smooth" consumption when they suffer from adverse price shocks for their output (Byerlee, Jayne, and Myers 2006).[1] As noted in the previous chapter, a warehouse receipt system is fee-based and provides storage facilities for farmers who cultivate standardized products. Farmers are provided with a receipt entitling them to the same quantity and quality of the commodity that they deposit there. The receipts, which are usually transferable, are said to expand farmers' choice over when they sell their output, thereby offsetting some post-harvest price risk, while also enabling them

to collateralize their output in order to access credit (Varangis and Larson 1996; Coulter and Onumah 2002; Martin 2016).

Complementing rural microcredit and warehouse receipt systems, agricultural derivatives are the cornerstone of the market-oriented strategy for managing price risk. Prominent development organizations, most notably the World Bank and UNCTAD, have promoted the use of financial instruments like forward, futures, and options contracts in the global South since the early 1990s. As described in Chapter 2, forward and futures contracts are agreements between buyers and sellers of agricultural commodities to transact a specified quantity of a good for a specified price on a specified date in the future. Options contracts are similar to futures and forward agreements; the key difference is that they provide buyers and sellers with the right (i.e., the option), rather than the obligation, to engage in a specified transaction in the future. According to proponents, exchanging these commodity-based derivatives provides agricultural producers and distributors with greater certainty about the prices that they will receive for their output. Observing that agricultural producers in the global North have long participated in such markets, they maintain that Southern farmers should have the same opportunity.

Initially, international organizations promoted agricultural derivatives as a means for the governments of developing countries to manage the risks of trading in international commodity markets. Beginning in the early 2000s, however, with the privatization of risk management, the focus shifted to the inclusion of individual small-scale farmers. Though their particular prescriptions for doing so varied, proponents at prominent international bodies like the World Bank, UNCTAD, and the FAO argued that access to derivative markets would enable producers to manage the price risks emanating from liberalized commodity markets. This control over price risk, in turn, would purportedly enhance producers' ability to invest in new technologies and participate in global value chains (UNCTAD 2002; Miller and Jones 2010; Martin 2016). For its part, the World Bank has advocated mechanisms that facilitate small farmers' participation in international derivatives markets. For example, it teamed-up with the Mexican government to develop a program in which the state's

agricultural marketing agency sells options contracts to farmers of basic crops (e.g., wheat, maize, soybeans, sorghum) and then, through a public bank, hedges those price guarantees with derivatives traded on the Chicago Board of Trade (Casco 1997; Ávalos-Sartorio 2006). Upon the World Bank's recommendation, the state-controlled Ghana Cocoa Board implemented a similar arrangement for the country's cocoa farmers (World Bank 2011; Rashid 2015).

UNCTAD has promoted agricultural derivatives through a different channel. Rather than integrating poor farmers into existing derivatives markets, as the World Bank encourages, it advocates establishing agricultural commodity exchanges (ACEs) directly in the global South, a strategy that has also been supported by the United Nations Development Program (UNDP) and the FAO (Breger Bush 2012). While ACEs may not necessarily trade in derivatives, they oftentimes do and, at the very least, are understood as a prerequisite to establishing such markets (Martin 2016). In collaboration with the International Swaps and Derivatives Association (ISDA) and a variety of financial actors who aim to tap into emerging derivatives markets, UNCTAD has achieved some notable successes (Breger Bush 2016). The number of ACEs has increased substantially since the 1990s; more than half of the exchanges are now located outside of OECD countries (Rashid 2015). There has been a corresponding increase in trading. According to the Futures Industry Association (FIA 2016), trading of commodity futures and options has increased faster than any other sector of global derivatives markets since 2005, with positive growth in nine of the last ten years. Fueled in large part by increased activity on Asian exchanges, particularly in China, the trading of agricultural derivatives increased more than 18 percent in 2015. Indeed, seven of the ten most traded agricultural derivatives were exchanged in Asian markets.

While recent efforts have contributed to the growth of ACEs and the volume of derivative contracts traded, the impacts of these achievements on development are questionable. Much of the recent growth has been confined to the so-called "emerging" economies of India, Brazil, South Africa, Malaysia, and, especially, China. More generally, exchanges in the global South remain highly dependent upon state funding and donor support (Rashid 2015; Martin 2016).

This, of course, raises questions about whether the "distortions" created by state initiatives to manage price risk have been eliminated under neoliberal restructuring or simply re-oriented to facilitate financial accumulation. Perhaps such a shift could be justified if it improved the security of vulnerable farmers. But recent research suggests that the opposite has occurred. Specifically, the shift from state to market-based price risk management has, in fact, heightened inequalities along agrifood supply chains and exacerbated uneven vulnerabilities within agrarian populations.

As several observers, including some World Bank economists, note, agricultural derivatives are not well-suited to the small-scale and poor farmers that they have purportedly been instituted to help (Varangis et al. 2002; Ávalos-Sartorio 2006; Byerlee et al. 2006; GPFI and IFC 2011; Breger Bush 2012; Martin 2016). These analysts identify several barriers to participation in risk markets, including the following: (1) the minimum lot sizes traded on exchanges exceed the productive capacity of resource poor producers; (2) upfront fees can be prohibitively expensive; (3) participation in futures and options markets typically requires that farmers produce standardized varieties of widely traded crops for which derivative markets exist; and (4) marginalized farmers lack the knowledge and information (i.e., "financial literacy") to successfully participate in financial markets. Thus, trading away price risk is typically only an option for larger, relatively better-off agricultural producers. Breger Bush (2012) argues that uneven access to derivatives markets exacerbates rural inequalities. In particular, the agricultural producers with greater access to land, credit, and other resources that improve their coping abilities have access to a new risk management tool while their poorer and more vulnerable counterparts continue to have few options for managing growing price uncertainty. The predicament of poor farmers is further compounded when intermediaries pay producers lower prices in order to protect themselves against the possibility of price drops in international commodity markets (Newman 2009).

In addition to sharpening inequalities across agricultural producers, recent studies of the global coffee sector suggest that the current shift to speculation-based risk trading has exacerbated economic power differentials along agrifood supply chains. While there is a

general tendency towards market concentration within every node of the coffee derivatives chain, the consolidation among traders arguably has the greatest impact on farmers. Just as the large lot sizes required for futures and options contracts exclude small-scale farmers, they also exclude small-scale traders, who have few options for managing growing price uncertainty. Many have suffered losses that have driven them out of business or rendered them susceptible to acquisition by their larger counterparts. The resulting market concentration means that coffee producers have fewer buyers to whom they can sell their product, thus shrinking their market power. Moreover, as the expanding coffee traders become more active in derivative markets, there are indications that they are increasingly involved in speculative rather than hedging activities (Newman 2009). Ultimately, the financialization of coffee risk management has solidified the position of powerful actors in coffee supply chains and generated new opportunities for them to profit while poorer producers face growing risks (Breger Bush 2012).

Environmental Risk Management

Parallel to the prescription of agricultural derivatives as a means for coping with volatile commodity prices, the World Bank and other influential actors have recently begun to promote new types of derivatives that are linked to the weather and other environmental parameters as a solution to natural hazards. Packaged as "index-based agricultural insurance" (IBAI), the number of markets for these weather-based derivatives has grown rapidly over the past decade. Since they were first devised in the early 2000s, hundreds of IBAI products have been launched, the vast majority of them in the global South, and many more are in the development stage (Jensen, Mude, and Barrett 2014; Greatrex, Hansen, Garvin, et al. 2015).

The concept for IBAI emerged in the late 1990s, when the World Bank teamed up with major transnational insurers and academic economists to develop a replacement for state-backed insurance schemes. Such schemes had been rolled back throughout the developing world during the 1980s and 1990s because, like the price stabilization mechanisms described above, they were deemed too

costly and inefficient (Hazell et al. 1986; Skees, Hazell, and Miranda 1999; World Bank 2011). The novelty of index-based agricultural insurance is that it links compensation payouts to measures of environmental parameters like rainfall, temperatures, and satellite images of vegetative cover that are often *correlated* with agricultural yields. Whereas conventional agricultural insurance bases payments upon the estimated losses in policyholders' fields, farmers who hold IBAI policies receive payouts only when an index based on the environmental parameters meets or exceeds specified thresholds. That is, insurance payouts are based on measures of environmental variables, not the actual outcomes in farmers' fields. There is a risk that policyholders may suffer an agricultural loss and not qualify for compensation or, conversely, receive a payment when there is no loss. This risk that agricultural performance diverges from predicted outcomes is known as "basis risk," and it can be quite high, even for the most sophisticated IBAI products (Clarke et al. 2012; Jensen, Barrett, and Mude 2014).

Basis risk aside, proponents maintain that packaging weather derivatives as agricultural insurance has the potential to advance a variety of development objectives. Chief among these is that IBAI will "climate proof" small-scale agriculture by improving farmers' adaptive capacity to extreme weather (e.g., Collier, Skees, and Barnett 2009; FAO 2013; Greatrex et al. 2015). Another common claim is that — by linking insurance payouts to easily measured environmental parameters rather than undergoing the lengthy and expensive process of sending claims adjustors to assess the extent, cause, and value of agricultural losses — IBAI makes it possible to insure small-scale and remote farmers who are often deemed too costly to cover in conventional insurance markets (e.g., Skees and Collier 2008). Thus, index insurance helps to promote the aforementioned development goal of "financial inclusion" (GPFI and IFC 2011; World Bank 2014), an objective that is reinforced when holding an insurance policy makes farmers more "creditworthy" to formal lenders (Barnett, Barrett, and Skees 2008; Dowla 2009). Additionally, proponents argue that index insurance renders agricultural uncertainty manageable and will thereby enable risk-averse farmers to abandon low-yielding yet reliable traditional agricultural practices in favour of riskier yet

potentially more profitable agricultural technologies and practices. Ultimately, the proliferation of IBAI is portrayed as an institutional intervention that will catalyze agricultural modernization and the alleviation of rural poverty (e.g., Skees and Collier 2008).

Trumpeting these potential benefits, development actors of various stripes have championed IBAI in recent years. The World Bank's International Finance Corporation (IFC) is arguably one of the most prominent proponents of index insurance. In 2009, it established the Global Index Insurance Facility (GIIF) to provide financial and technical support for the development of index insurance markets in the global South. As of July 2016, its implementing partners had provided indexed policies to more than 1.3 million agricultural producers in Sub-Saharan Africa, Latin America, the Caribbean, and the Asia-Pacific (IFC 2017). GIIF's promotion of IBAI has been complemented by the efforts of major governmental (e.g., GIZ, USAID) and nongovernmental development organizations (e.g., Mercy Corps, Grameen Foundation). They often collaborate with host governments to create an accommodating legal context; enlist banks and microfinance institutions to act as marketers and aggregators of IBAI products; work closely with major international insurers like Swiss Re and Munich Re, which provide technical support and financial backing; and partner with private enterprises that aim to profit from the financialization of farmers' everyday practices of agricultural risk management.

The broad cast of characters supporting IBAI is illustrated by the case of the Agriculture and Climate Risk Enterprise (ACRE), a pioneer in the development of IBAI and the largest agricultural insurance provider in Africa (World Bank 2017). Under its original name, Kilimo Salama, ACRE was established in 2009 as a collaborative project between GIIF and the Syngenta Foundation, the nominally philanthropic arm of the major seed and agrochemical company. When it first began operating in Kenya, Kilimo Salama partnered with the prominent East African insurer UAP, marketed and sold policies through Syngenta's network of agricultural input providers, and distributed and implemented its products through Kenya's largest mobile network operator, Safaricom. Kilimo Salama began selling its insurance products in Rwanda and Tanzania in 2013, more than

doubling its number of clients in the process, and transitioned into the present day for-profit enterprise, ACRE, in 2014 (Greatrex et al. 2015; Tantia and Comings 2015). As it has scaled up its operations, ACRE has also expanded its partnerships to include government ministries of agriculture and meteorological services; several banks and microfinance institutions; reinsurers Swiss Re and Africa Re; the financial philanthropic foundations of LGT Venture and Grameen Crédit Agricole; and the U.K.'s Department for International Development (ACRE 2017). Through its numerous partnerships, ACRE has developed a variety of products, many of which are packaged in ways that protect the credit portfolios of lenders, facilitate farmers' purchase of commercial seed varieties and agrochemicals, and offset the economic risks for agribusinesses that contract with agricultural producers (Greatrex et al. 2015; Isakson 2015).

Despite widespread support for IBAI, the developmental impacts of such products are not well documented. To be sure, there are some instances of success. In Ethiopia, for example, an IBAI product sponsored by Oxfam America (and funded by the Rockefeller Foundation and Swiss Re) has had relatively high participation rates, with 29 percent of the target population enrolling in the program. This initiative was found to improve cereal farmers' ability to cope with drought. At the same time, though, "almost all farmers and village leaders agree that [the program] is not yet improving livelihoods in a transformative way" (Madajewicz, Tsegay, and Norton 2013: 6).

Much to the dismay of the promoters and providers of IBAI, participation rates in other programs have been much lower (Da Costa 2013; Matul, Dalal, De Bock, et al. 2013). Several studies have investigated the causes of low enrolment rates and explored strategies for increasing demand (e.g., Matul et al. 2013; Jensen, Mude, and Barrett 2014; Norton, Osgood, Madajewicz, et al. 2014). In one, former World Bank economist Hans Binswanger-Mkhize (2012: 187) suggests that there has been "too much hype about index based agricultural insurance." He maintains that wealthier farmers are not likely to demand such products since they possess sufficient economic and social assets to self-insure. Meanwhile, poorer farmers in need of additional protections lack the resources with which to purchase IBAI policies, leading Binswanger-Mkhize to conclude that IBAI is

not likely to benefit the most vulnerable farmers. Taylor's (2016) research on an index-based livestock insurance program in Mongolia supports this assessment. Not only does he find that the program is biased towards larger and relatively well-off pastoralists, but that the introduction of the program has exacerbated socio-economic inequalities within the agrarian population.

Weak demand for IBAI is often attributed to the financial ignorance of small-scale farmers. In response, insurance marketers and other promoters of IBAI have sought to create an accommodating "insurance culture" through pedagogical strategies that include games, comics, and online videos (Da Costa 2013; Matul et al. 2013). Yet research suggests that the low rates of participation in IBAI initiatives may have less to do with the ignorance of farmers than the fact that indexed products are not, in fact, insurance. Despite being labelled as insurance, IBAI products are actually derivatives since they do not *guarantee* compensation when policyholders suffer an agricultural loss (Clarke 2016). They only offset the potential dangers parameterized in the index and, due to the basis risk described above, even those protections are imperfect. Consequently, the security provided by IBAI is partial; policyholders still face significant uncertainty (Johnson 2013; Clarke 2016). In one of the most rigorous case studies to date, Jensen, Barrett, and Mude (2014: 20) determined that holders of a particularly well-designed index product in Kenya were still highly vulnerable to environmental threats and concluded that "caution seems warranted in the promotion of index insurance as a risk management instrument for low-income populations." After initial optimism, farmers in India have recognized the limited security provided by index insurance and now liken the products to a "village lottery," highlighting the speculative nature of weather derivatives (Posada 2016).

Despite the imperfect security provided by weather derivatives, they are often components in broader strategies to modernize agriculture. Such initiatives may encourage farmers to take on risks that are excessive relative to the actual protections provided by IBAI policies (Peterson 2012). Faced with low demand for *à la carte* index insurance, an increasingly common practice is to bundle the policies into seed purchases, formal loans, and contract farming arrangements. In

theory, bundling reduces the risks of adopting modern inputs and/or commercializing output and participating in formal value chains. In practice, however, these initiatives tend to promote market linkages and industrial technologies that can reduce the resiliency of agricultural production to environmental stresses and expose farmers to new forms of market uncertainty and exploitation (Isakson 2015). Thus, while IBAI may improve farmers' ability to cope with specified risks, participation in such schemes may also heighten their vulnerability while exposing them to new types of economic and environmental threats, ultimately reducing their overall security.

The benefits of IBAI are also likely to be unevenly distributed. As noted above, wealthier farmers are relatively more likely to purchase the derivatives. They are also the most likely to benefit from the presence of basis risk, or the possibility that actual agricultural performance differs from that predicted by the index. This is because farmers who control more and better quality assets like farmland and irrigation are more likely to benefit from "false positives" (i.e., they receive a compensation payout even though their assets protected them from agricultural losses) while their poorer counterparts are more likely to suffer from "false negatives" (i.e., they suffer a loss that could have been prevented with better assets but do not receive compensation) (c.f. Taylor 2016; Clarke, Mahul, Rao, et al. 2012; Jensen, Barrett, and Mude 2014).

Bundled index products also tend to provide more security to less vulnerable actors in agrifood supply chains. Products bundled into loans, for instance, usually compensate the providers of credit, thereby helping to protect the loan portfolios of banks and microfinance institutions, while farmers are left to suffer from crop loss. Similarly, IBAI bundled into contract farming and other value chain integration initiatives tends to prioritize input suppliers, buyers, and processors over farmers (Dowla 2009; Isakson 2015). In short, the rollout of IBAI across socio-economically stratified agrarian landscapes and along uneven supply chains is likely to exacerbate existing inequalities and could very well accentuate the poverty and ecological vulnerability of the poorest farmers.

Conclusion

While derivatives have long been deployed as a means for managing the uncertainties of farming, they have come to play a more prominent role in agricultural risk management strategies since the 1990s. To fill the void left by the neoliberal rollback of state protections and market regulations in the agricultural sector, a variety of actors — including prominent development organizations, transnational seed and agrochemical corporations, neoliberal states, and financial actors like derivatives exchanges and clearinghouses, insurance companies, banks, and microfinance institutions — have joined forces to promote market-based financial "solutions." These include conventional derivative products to manage market-based uncertainties in agricultural markets, as well as new-fangled weather-indexed derivatives that are marketed as insurance against environmental risks. This transformation from state assurance to individual risk management is not only reflective of the broader trend of the financialization of daily life, in which individuals are increasingly charged with achieving their own security through their personal purchases of financial services. It has also expanded profit opportunities for financial actors and agribusinesses, thereby contributing to the financialization of accumulation.

However, the potential of financial derivatives to provide the promised security is questionable. In part, this is due to their very nature. Derivatives are inherently speculative instruments. The specification of derivatives contracts is based on the strong assumptions that future risks are identifiable, that they can be abstracted across different contexts, and that the probability of their occurrence can be calculated. They may help to transfer some risks. But, as Indian farmers' likening of weather derivatives to a lottery suggests, uncertainty about the future inevitably remains (Posada 2016). Any security that they may provide is partial at best. Partial though it may be, the degree of security provided by derivatives may be greater for some actors than for others. Empirical analyses of both agricultural futures/options markets and index-based agricultural insurance suggest that relatively wealthy farmers are in a better position to capture the benefits from both types of derivatives products than their poorer and

more vulnerable counterparts. Inequalities are further exacerbated by the bias of derivatives markets towards other, more powerful actors in supply chains, including larger-scale commodity traders, providers of agricultural credit, seed companies, and commodity exchanges.

Moreover, the commodification of risk and its exchange through derivatives markets may have the paradoxical effect of generating even more risks. In the case of futures and options contracts, their requirements that the underlying commodities adhere to product specification standards means that farmers who seek their protections must cultivate the limited number of crops and crop varieties for which derivatives contracts exist. This pressure towards the homogenization of agricultural technologies renders agricultural systems more vulnerable to environmental threats like pests, disease, and extreme weather. Additionally, the establishment of new derivatives markets creates new arenas for the speculative trading that exacerbates food price volatility. The promise that weather derivatives that are packaged as agricultural insurance will protect farmers may also encourage producers to adopt agricultural practices and market linkages that expose them to an even greater array of economic and environmental risks, thereby exacerbating rather than alleviating their insecurity.

At best, derivatives are a technical fix that have the potential to help farmers cope with adverse price movements or the limited number of environmental threats that are parameterized in index insurance policies. They do not, however, correct for the underlying causes of producers' vulnerability. They only treat the symptoms. This focus upon the symptoms and not the causes of agricultural risk and farmer vulnerability allows for the continuation of the processes that produce them (Taylor 2016). Moreover, the framing of security as the individual responsibility of farmers obscures the forces producing their insecurity. By framing insecurity as the failure of agricultural producers to purchase appropriate protections, the current campaign for financialized risk management works to deflect collective demands for social change even as it generates profits for financial actors and agrifood corporations.

Note

1. Or, as Taylor (2011) argues for the Indian context, access to microcredit may provide a short-term coping solution for farmers who are faced with chronically low farm gate prices and rising input costs. But it fails to rectify the underlying causes of farmer insecurity, and the resulting debt has greatly exacerbated agrarian distress in the country.

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4

Farmland as a New Asset Class

In 2008, amidst the concurrent financial and food price crises, reports of a "global land grab" began to capture headlines. Initial news items focused upon the actions of sovereign countries, especially China and the Persian Gulf States, which sought to secure food supplies for their populations by acquiring large swaths of farmland in foreign countries. Subsequent reporting highlighted the equally important role of financial enterprises in the scramble for land. While speculative motives have long played a role in farmland transactions, the number of financial actors participating in land markets and the value of their acquisitions have increased substantially since the mid-2000s, particularly between 2007 and 2012, when food prices were highly volatile. By 2010, financial actors had invested some US$10–25 billion in farmland, growing to an estimated US$30–40 billion at the height of the land rush, in 2012 (HighQuest 2010; Wheaton and Kiernan 2012).

Initially, financial acquisitions of farmland took place in relatively "safe" markets in North America, Australia, New Zealand, and Western Europe (Luyt, Santos, and Carita 2013; van der Ploeg, Franco, and Borras Jr. 2015). In the heart of the U.S. Corn Belt, for example, the share of farmland purchased by financial investment funds and institutional investors more than doubled, from less than 20 percent in the early 1990s to almost 40 percent in the mid-2000s (Duffy 2011). Financial acquisitions of farmland in the Canadian Prairie province of Saskatchewan have been even more dramatic, increasing sixteen-fold between 2002 and 2014 (Desmarais et al. 2017). The speculative euphoria has spread well beyond these conventional markets though, as financial actors have been eagerly snapping up farmland in Brazil and have shown significant interest in other "transition" countries, like Argentina and Russia (HighQuest 2010; Murmis and Murmis 2012; Fairbairn 2015; Visser 2017). While financial investors have generally been less interested in

farmland in "frontier" countries, where land markets function less smoothly and property rights are uncertain, some have been willing to gamble on acquisitions in "high risk" markets like Mozambique, Tanzania, and the Ukraine (Cotula 2013; Luyts et al. 2013; Scott 2013; Kuns, Visser, and Wästfelt 2016).

In some respects, financial acquisitions of farmland are not new. To be sure, debt financing has long given banks and other lenders significant control over agricultural producers' access to land and their land-use practices. Similarly, since the 1960s, there have been several instances of institutional investors acquiring farmland in the U.S. and Australia; many of them were short-lived experiments in which investors sought relatively safe assets during periods of economic uncertainty (Fairbairn 2014; Gertel and Sippel 2016; Ouma 2016). Nonetheless, as Ouma (2016) explains, several features distinguish the contemporary land rush from previous farmland investments. Chief among these is the sheer volume of landholdings that have been tapped for the generation of financial profits over the past decade. As noted above, the value of financial investments in farmland more than doubled between 2010 and 2012 and, at some US$30–40 million in 2012, dwarfed previous financial ventures of this kind (Wheaton and Kiernan 2012). But an equally important difference is the growing variety of investment products. This is reflected in the changing nature of land control, as contemporary financial actors are much more interested than their predecessors in direct acquisitions of farmland. There is also a wider array of the types of financial actors involved in the contemporary land rush.

This chapter explores these features of the contemporary financialization of farmland control. It considers the types of financial actors involved in the current land rush and their motivations for participating. Farmland is a peculiar asset that is not necessarily compatible with financial logics and practices. We describe the common practices and technologies that are deployed for reconciling those incompatibilities and formatting farmland for financial purposes. As we explain, these transformations have only been partially successful. Financial actors' interest in farmland has cooled — but certainly has not been extinguished — since 2013. Nonetheless, their activities have exacerbated the concentration of landholdings in many con-

texts, reduced agricultural producers' control over land-use practices and the value produced on the farm, and intensified the application of industrial technologies.

Actors and Motivations

A diverse range of financial actors have participated in the land rush, including hedge funds, asset management firms, pension funds, wealthy individuals, and private equity groups. As Knuth (2015) emphasizes, these investor types vary considerably in their objectives and activities. Some, like pension funds and sovereign wealth funds, are likely to prefer safer, if lower return, long-term investments. Others, like private equity groups and hedge funds, tend to have a greater appetite for risk and are more likely to engage in short-term speculative investments. The latter, more aggressive investors see themselves as "market makers," creating land-based assets in which the former, more passive actors can subsequently invest. Additionally, Knuth (2015) observes, some types of financial actors are more active on the "supply side," engineering land-based investment vehicles, while others create "demand" by directing their capital into the established funds (c.f. Wójcik 2012).

While there are numerous explanations for the financial sector's growing interest in farmland, they generally fall into two broad camps: (1) Marxist inspired and other critical explanations that contextualize the land rush as an outcome of the unfolding crises of neoliberal capitalism, and (2) mainstream narratives rooted in the logics of Malthusian scarcity and the primacy of economic efficiency. As described in Chapter 1, analysts of the Marxist persuasion understand the general trend of financialization as an effort by financial, corporate, and governing elites in the global North to continue accumulating capital despite declining profit opportunities in the industrial sector. McMichael (2012) and Akram-Lodhi (2012) note that rising food prices between 2007 and 2012 further contributed to declining profits in the productive economy, as workers required higher wages to maintain living standards. They go on to argue that the spate of land grabs over the five-year period was a direct response to the unraveling of a regime of cheap food

under neoliberal restructuring and the contradictory challenges that it posed for capital accumulation. At the same time, investing in farmland has provided an outlet where financial actors can safely and profitably deposit their over-accumulated capital despite a more general condition of economic malaise. Long-term investment in natural capital like farmland can help to resolve a general crisis of accumulation — at least in the short- to medium-term — and thus can be likened to what Harvey (2003) terms a "spatio-temporal fix" that geographically displaces and temporally resolves the contradictions of capitalism and its proclivity for crisis (c.f. Haila 1988; Fairbairn 2014; Gunnoe 2014; Ekers and Prudham 2015).

Whereas critical and Marxist scholars situate the land rush in the socio-economic contradictions of neoliberal capitalism, promoters for financial funds deploy a Malthusian-inspired narrative of a shrinking resource base and rising food insecurity. Appeals to investors are steeped in the logic of "market fundamentals." Population growth, rising commodity prices, increasing consumption of animal protein, and declining land quality, along with urbanization and suburban sprawl are identified as long-term changes to supply and demand that translate into appreciating land values and the potential of high returns on capital investments. Some have even portrayed farmland acquisitions as a means for investors to indirectly speculate on the growing scarcity of water, arguing that ownership of properties with access to water will generate increasing returns over time (Sliper 2012; c.f. Franco, Mehta, and Veldwisch 2013; Larder, Sippel, and Argent 2017).

Real estate has long been understood as a secure investment that tends to retain its value. It is particularly appealing to investors with a low tolerance for risk and is often prescribed to offset more aggressive investments in a balanced portfolio. In a 2010 survey of institutional investors commissioned by the OECD, respondents listed inflation hedging — or the belief that an asset will maintain its value even in the face of rising prices elsewhere in the economy — as their principal reason for investing in agricultural land (HighQuest 2010). They were also attracted by the low correlation of real estate investments with equity markets, meaning that, even during a "bear" market of widespread pessimism and falling securities prices, land investments

tend to appreciate in value. "For some people it's simply sheltering their wealth, knowing it's not going to disappear overnight," notes the head of agricultural investments for Frank Knight, the renowned real estate consultancy. He continues: "It won't lose you money and when you come back to it in ten years' time it will have increased in capital value" (Pickford 2015).

In addition to serving as a safe store of value, financiers also highlight the productive nature of farmland and its potential to generate an income stream through rent or production. In reference to these dual qualities, proponents of farmland investment often liken it to "gold with a coupon" or "gold with yield" (Fairbairn 2014). Some investors, however, stress that capital investment is necessary to realize meaningful returns on agricultural production. Although agriculture has historically been neglected in private finance, it has been reframed by financial actors as a potential source of windfall profits. One fund manager observes: "The farming sector is starving for cash" (Scott 2013). Other analysts trumpeted that, globally, there is nearly US$1 trillion of underutilized "investible" agricultural land (Wheaton and Kiernan 2012: 5).

To unleash the productive potential of farmland, fund managers prescribe familiar solutions: modernization of agricultural technology and economies of scale, as in the industrial agricultural model. Such interventions, they claim, will not only generate returns for investors but also improve the efficiency of agricultural production. Following this logic, investors maintain that they are providing an important public service. "Given the small scale of the average farm globally and the challenges for such businesses accessing capital," write two industry insiders, "the *scope and need for institutional capital* to be deployed in agriculture in order to improve efficiencies and generate higher returns is significant" (Wheaton and Kiernan 2012: 1, emphasis added).

In addition to modernizing agricultural practices, the analysts propose amalgamating smaller family-held farms into centrally managed industrial enterprises:

> What is striking is the proportion of land owned and operated by family farmers, resulting in a very fragmented industry. One

> of the attractive features from an investment perspective is the opportunity for consolidation given the importance of scale in driving returns from agriculture. (Wheaton and Kiernan 2012: 4)

In their eyes, the predominant model of family farming — particularly small-scale farming — is inefficient and, thus, at the root of the contemporary food crisis. The solution to this simplistic portrayal of food insecurity is to increase production through farmland consolidation and by financing the adoption of modern technologies. Such narratives serve a dual purpose. In addition to sparking investors' "animal spirits," or their emotional urge to speculate (Keynes 1936), and attracting funds, they are also deployed to win public approval for land acquisitions (Larder, Sippel, and Lawrence 2015). To further garner support, funds have promised contributions to the construction of schools and health-care centres and have sponsored sports teams. They also maintain that their projects create jobs, improve public infrastructure, generate taxes, and facilitate market access in rural areas (HighQuest 2010; Magnan 2012). As we discuss later, their ability to deliver on such promises is questionable.

Assembling Farmland as an Asset Class

Specialized investment companies provide a variety of channels for actors who wish to invest in farmland, including compiling a portfolio of properties, managing the leases of tenant farmers, servicing mortgages on farmland, directly engaging in agricultural production, or some combination of the above (Desmarais et al. 2017). Fairbairn (2014) classifies the strategies pursued by investment companies into three broad models: "own lease-out," "lease operate," and "own operate." Each model offers varying degrees of exposure to farmland as a productive resource and farmland as a store of value, thus appealing to different types of financial actors (Knuth 2015).

The "own lease-out" model is most in line with understandings of land as a financial asset. Under this strategy, investors acquire farmland and then rent it to tenant farmers; their interest is in the potential of land values to appreciate and rental profits, not agricul-

tural production. It provides the security of land ownership while offloading the risks of agricultural production and volatile commodity prices onto independent farmers. By contrast, the "lease operate" model provides no such guarantees. Instead, an investment company that is primarily interested in the productive attributes of farmland, and is willing to assume the associated risks, rents the land and either directly engages in agricultural production or hires a farm management enterprise to do so on its behalf. Under the third strategy, "own operate," investors gain exposure to both the financial and productive features of farmland and the attendant risks and benefits. The specific form that investments take will vary according to the institutional context and motives of asset managers and investors (Magnan 2015).

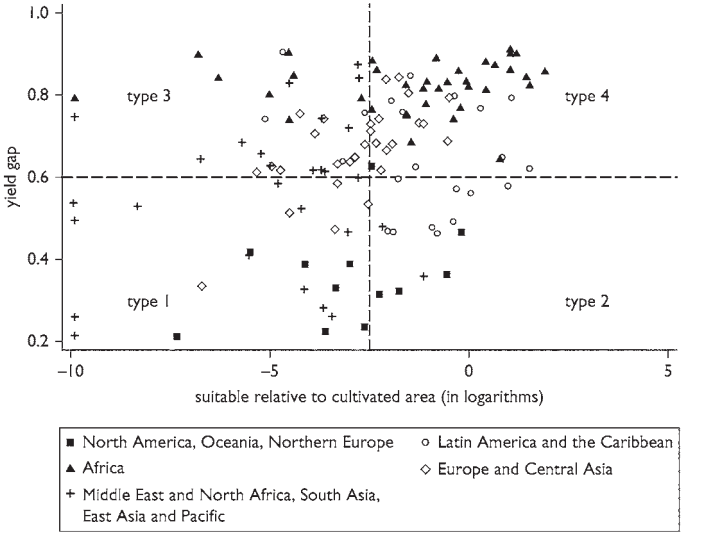
Regardless of the model pursued, the peculiarities of farmland complicate efforts to mould it into an asset class. Whereas conventional asset classes, like stocks, bonds, and even commodity futures, can be easily traded and have relatively homogenous qualities, farmland is immobile and heterogeneous; its transactions are complicated and can be politically contentious. Several scholars discuss the challenges of transforming land into a financial asset and identify a number of requisite conditions for doing so (Haila 1988; Coakley 1994; Li 2014; Ouma 2016; Visser 2017; Ducastel and Anseeuw 2017). The two main ones are (1) the development of standardized metrics that render land legible to investors and (2) initiatives to facilitate transactions of land-based investments (i.e., improve their liquidity).

Land is notoriously illiquid. It is a source of multiple privileges and benefits that can be understood as "priceless" and limit its supply in markets. Land can take various shapes and sizes, and the rights over its control are often overlapping and rooted in place-based political and cultural histories, some of which are more conducive to market exchange than others. Formatting land for financial purposes requires the erasure of its history and nonmarket values and meanings. It also requires translating the qualitative differences that define each plot — variables like soil quality, climatic conditions, access to water, slope, location, proximity to infrastructure, etc. — into standardized benchmarks that are intelligible to investors and allow them to evaluate the relative merits of different land-based

investment vehicles (Li 2014; Visser 2017; Ducastel and Anseeuw 2017). In short, like the financialization of food and agriculture in general, formatting farmland as an asset class requires its abstraction into financial values.

In recent years, real estate consultants, land fund managers, and international development organizations have developed various metrics, reports, and visualizations that help to translate the messiness of farmland into the financial language of calculable risks and economic rewards. In 2011, for instance, World Bank analysts compiled an extensive report to advise the various actors involved in the unfolding farmland rush, including investors, states, and civil society. To inform investment policy and activity, the report classifies countries throughout the world according to two measures: (1) the yield gap, or actual agricultural yields relative to potential yields; and (2) the ratio of the area of "suitable" agricultural land relative to the area of that which is actually cultivated. It then plots each

Figure 4-1 Worldwide Yield Gaps and Relative Land Availability



Source: from Deninger, Byerlee, Lindsay et al. (2011, 86) available under the World Bank CC-BY 3.0 IGY licence.

country on a corresponding two-dimensional grid, resulting in four types of countries, as seen in Figure 4-1. According to these metrics, countries with higher than average yield gaps and unutilized farmland offer the greatest potential for private investors "to contribute technology, capital, and skills to increase productivity and output in the short to medium term" (Deininger et al. 2011: 90). These are the type 4 countries in Figure 4-1. All other types of countries are either using their farmland efficiently (type 2), have limited arable land available for expanded cultivation (type 3), or both (type 1). Having abstracted away all other qualitative features, the figure conveys the clear, if overly simplistic, message that acquisitions of farmland in type 4 countries — which are primarily located in Africa and, to a lesser extent, Europe and Central Asia, Latin America and the Caribbean — will generate the greatest returns on investment.

Assembling farmland as a liquid asset class requires more than standardization and abstraction. It also necessitates an accommodating institutional environment. The potential win-win outcomes of investing in type 4 countries, for instance, must be weighed against the following World Bank caution: "Many countries in this group have weak institutional frameworks for land governance that can create challenges" (Deininger et al. 2011: 91). The neoliberal restructuring of recent decades has included several strategies aimed at stimulating land markets. The market-led agrarian reforms instituted in many countries in the 1990s and early 2000s, for example, included initiatives to title land to facilitate exchange and to improve rural poor people's access to credit for land purchases (Deininger 1999; Borras, Kay, and Lahiff 2008). By increasing the number of buyers and sellers in land markets and reducing the transaction costs of participating in them, neoliberal land reform has likely improved liquidity and facilitated financially motivated acquisitions of farmland.

Similarly, in the Canadian province of Saskatchewan, the partial liberalization of ownership rules in 2003 unleashed a wave of farmland acquisitions by investors hoping to capture windfall profits as land prices adjusted to the new market conditions (Sommerville and Magnan 2015). Since the law went into effect, private equity firms, pension funds, and wealthy individuals have acquired nearly 850,000 acres of farmland, and ownership has become increasingly

concentrated in the hands of financial actors. When acquisitions by financial investors peaked in 2012, they participated in 9.6 percent of non-familial transactions in the province; in some municipalities, investor purchases represented nearly one-third of the farmland bought and sold among independent parties (Magnan and Sunley 2017; Desmarais et al. 2017).

While accommodating land laws improve liquidity, they may be insufficient to facilitate investment in "frontier" lands, characterized by elevated levels of uncertainty. Additional guarantees may be necessary to create an accommodating institutional context. In recent years, for instance, the potential of high returns has piqued financial actors' interest in African and South American farmland, but the associated risks have been off-putting. Through its member bodies, the World Bank has worked to allay these fears. Daniel (2012) describes how the Bank promotes private equity markets as a catalyst for rural development in Africa. Its Multilateral Investment Guarantee Agency provides contracts that guarantee foreign direct investment against a number of risks, thereby enabling fund managers to attract investors who want to insure themselves against non-commercial (i.e., political) risks. Similarly, the Bank's International Finance Corporation (IFC) supports networking among institutional investors and has backed a number of private equity funds that invest in agriculture. The IFC also launched a US$500 million fund that provides investors with an exit option from funds operating in emerging markets. Combined, these initiatives have facilitated the acquisition of low-priced farmland in the global South by financial actors while reducing the risks associated with doing so, thereby making their investments more liquid and contributing to the assemblage of farmland as an asset class.

Innovating Liquidity

Even with standardization and an accommodating institutional environment, formatting farmland for financial purposes requires significant work from actors on the ground. Such work includes efforts by land brokers and asset managers to neutralize the political and social tensions surrounding such investments and to mediate

between international financial investors and agricultural actors (Ducastel and Anseeuw 2017). It also requires financial engineers to devise and implement vehicles that "unlock" the financial value of farmland, making it possible for investors to realize a return (Fairbairn 2014).

There are various options for investing in farmland. Few of them, however, provide the desired levels of liquidity. As noted above, investors have long been interested in the direct acquisition of farmland, albeit not on the scale of recent years. But direct purchase often entails significant transaction costs and, despite institutional reform, land itself remains a highly illiquid asset. A growing number of limited private partnerships and private equity initiatives eliminate the hassle of acquiring farmland but are only available to very wealthy investors and require a long-term commitment of funds. Alternatively, "mom and pop" investors can purchase stock in publicly listed landholding companies, which is a more liquid investment option but provides only indirect exposure to the benefits of owning farmland.

A recent innovation, farmland real estate investment trusts (REITs), provides a highly liquid investment vehicle that offers direct exposure to the benefits of farmland (Fairbairn 2014). Utilizing the technique of "securitization," REITs compile multiple properties (or the mortgages on them) into a single holding and sell shares that entitle holders to a portion of the associated returns and losses. Sometimes referred to as "mutual funds that own real estate," REITs can offer shares of varying sizes, making them available to investors of all sizes.

The practice of securitizing general real estate is not new. U.S. investors have been able to purchase publicly traded shares in commercial property REITs since the 1960s and timberland REITs since the 1990s (Gunnoe 2014; Peterson and Kuethe 2015). As of August 2016, 189 REITs were listed on the New York Stock Exchange and there are hundreds more that are not publicly traded (NAREIT 2017). The practice of securitizing *farmland* via REITs, however, is relatively novel and not widespread. The first farmland-based REITs were created in Bulgaria in 2005 (Fairbairn 2014). Since then, others have been established in Europe and North America. Their numbers, however, are still relatively small.

Three farmland REITs went public in the U.S. during the height of the land rush: Gladstone Land in 2013, Farmland Partners in 2014, and American Farmland Company in 2015. Amid disappointing returns, American Farmland was merged into Farmland Partners in 2017. The combined entity now holds more than 148,000 acres of farmland in sixteen U.S. states, compared to Gladstone's holdings of more than 54,000 acres in seven states (Farmland Partners 2017; Gladstone 2017). Both of the U.S.-based REITs lease all of their land to independent farmers on a "triple net basis," meaning that in addition to rent, which is due in cash before the start of each planting season, agricultural producers are required to pay other property related expenses, including taxes, water usage, maintenance, and insurance (Robaton 2015). According to U.S. law, the REITs must distribute at least 90 percent of these payments and other income to shareholders as dividends (Peterson and Kuethe 2015). In reference to the so-called "rentiers," whose ownership of assets allows them to earn profits even though they do not engage in productive labour, Gunnoe (2014) describes this new ability of unproductive financial actors to extract value from agricultural producers simply because they own the farmland as a form of "neorentier" capitalism.

"A Little Bit of Pain in Farm Country Makes Our Job Easier"

In most instances, the farmland acquired by investment funds was previously cultivated. In the case of those utilizing the "own lease" model, the new landowners often rent the land back to the very farmers who sold it to them, suggesting that the financialization of land ownership introduces new social relations of agricultural production and contributes to the concentration of land control (HighQuest 2010; van der Ploeg et al. 2015; Desmarais et al. 2017). The fact that farmers are renting back property that they used to own raises the question of why they would sell their land to financial actors in the first place. In some instances, the previous landowners had little choice. In 2015, for example, the prominent U.S. pension fund TIAA-CREF was accused of acquiring vast holdings of Brazilian farmland from a notorious land broker who had deployed deception, intimidation, and force to displace the previous occupants (GRAIN et

al. 2015). Though less sensational, one could argue that oftentimes when financial actors acquire farmland from "willing" sellers they are, in fact, preying upon the hardships faced by contemporary farmers. Indeed, when explaining how the recent slump in commodity prices has created buying opportunities for his REIT, the chief executive of Farmland Partners stated: "A little bit of pain in farm country makes our job easier" (Kesmodel and Newman 2015).

Fund managers portray their acquisitions of farmland as a service to farmers. They maintain, for instance, that they facilitate farm succession when younger generations are not interested in producing on family land and that their purchases provide a nest egg for retiring farmers. They also highlight that the land sales can facilitate farmers' access to capital, which would improve their productivity in a competitive market environment (Sommerville and Magnan 2015). Studies based on interviews with Australian and New Zealand farmers found that there is some validity to the investors' narrative, with some agricultural producers expressing gratitude for the opportunity to sell to the funds. Yet equally important is that they have been driven to do so by hardship. Some farmers pointed to the difficulties presented by drought and health problems, but the more prevalent explanation seems to be rooted in the persistent economic challenges of agricultural production. Farmers spoke of rising levels of debt amidst high input costs and stagnant farm gate prices, as well as the need to make capital investments in a context where additional credit was not readily available or too costly. Many farmers sold their land so that they would be able to continue farming, albeit on rented rather than owned land (Ouma 2016; Sippel, Larder, and Lawrence 2017).

The ability of the financial sector to leverage its control over credit so that agricultural producers divest their farmland is, once again, reflective of Gunnoe's (2014) "neorentier" capitalism (c.f. Soederberg 2014). The associated change in the social relations of agricultural production opens new channels for the transfer of value from farmers to financiers. It also compromises the autonomy of agricultural producers, who are now in a relatively weak position when negotiating rent and other payments and whose practices are now disciplined by watchful corporate landlords (Sommerville

and Magnan 2015). Rather than expressing alarm over shifting the balance of farmland control, however, policymakers and farmer advocates who have embraced the logics of financialized daily life celebrate the new financial arrangements as innovative solutions to the structural constraints faced by contemporary farmers. In Australia, for example, the state, prominent agricultural bodies, and economists encourage farmers to partner with private equity groups that provide financing for capital investments in return for a claim to farmland and other agricultural assets (Larder et al. 2017). Larder et al. (2017) suspect that relatively larger farms have been more successful in these ventures, often at the expense of their smaller counterparts.

The push for larger-scale farms in the face of these pressures carries enormous risks. It is widely recognized that agriculture is a major contributor to greenhouse gases (Godfray, Beddington, Crute et al. 2010; Vermeulen, Campbell, and Ingram 2012). Agriculture accounts for 17–32 percent of all anthropogenic emissions, including land-use changes (Smith and Gregory 2013: 23). There is a growing consensus that large-scale industrial farming systems are the principal contributors to these emissions (Stavi and Lal 2013; Smith and Gregory 2013). Deforestation caused by agricultural land clearing, the application of fertilizers and agrochemicals, large-scale livestock rearing, and energy use for farm machinery all contribute to greenhouse gas emissions associated with agriculture. By contrast, smaller-scale production systems use much less energy and hence emit far less carbon. Indeed, some studies show that small-scale agroecological production systems absorb, rather than emit, carbon and are much more resilient to the effects of climate change (Nair et al. 2010; Rosset and Altieri 2017).

In light of the regressive impacts associated with the financialization of farmland control, one might question whether there is a better alternative for improving the viability of agricultural production and securing the livelihoods of farmers. In response to claims that land acquisition by agribusiness and investors is necessary to improve agricultural productivity, the former U.N. Special Rapporteur on the Right to Food, Olivier de Schutter (2011), stresses that there are alternative means for assisting farmers, including state investments

in agricultural infrastructure and supporting farmers' land and water rights. Similarly, state protections could help farmers cope with various other pressures driving land sales, including high input costs, uncertain farm gate prices, health-care costs, retirement insecurity, and inclement weather.

Of course, the financialization of land ownership has not impacted all farmers equally. With the current socio-economic context as a given, no doubt some agrarian actors have benefitted. As noted, new financial arrangements have enabled some large-scale farmers to expand the scale of their operations. And, claims by investors that they are creating employment and facilitating investments that improve agricultural productivity may be true in some cases. Moreover, with massive pools of capital at their disposal, financial investors have been found to pay more for farmland than others (Magnan and Sunley 2017). As such, some farmers wishing to exit agriculture or secure a nest egg for their retirement are likely receiving a greater return on their asset than they would otherwise. And yet there are significant negative impacts for many farmers, ones that go beyond the reduced autonomy described above.

There is no doubt that the desire to capture financial funds inspires some land brokers to use intimidation and violence to expel farmers (GRAIN et al. 2015). When operating through the legal market channels with "willing sellers," financial interest in farmland is correlated with rising farmland prices (Magnan and Sunley 2017; Kesmodel and Newman 2015; Sippel et al. 2017). While rising prices may be a boon to willing sellers, they create a formidable barrier to entry for aspiring farmers or existing producers who wish to expand their production (Desmarais et al. 2017). Paradoxically, many may find that their only option is to rent farmland from financial landowners. Similarly, assuming that farmers who lease their land are able to make investments that improve their productivity, this could put the farmers who hold on to their land at a competitive disadvantage, thereby exacerbating their economic hardships (Sommerville and Magnan 2015).

There are also reasons to question whether financial investments in farmland create meaningful rural employment. In the aforementioned survey of institutional investors in farmland, many

respondents claimed that their investments boost employment opportunities for the local population (HighQuest 2010). Yet despite explicit promises to that effect, such jobs rarely materialize (Sommerville and Magnan 2015; Kuns et al. 2016). Labour, of course, is not the primary concern in land investments. As several analysts argue, workers who do not contribute to financial interests are expelled (Li 2011; Daniel 2012; Levien 2012). When the local populations *are* employed, they are often adversely incorporated as poorly paid workers on plantations or as contract producers (Borras et al. 2012; Alonso-Fradejas 2012).

The Future of Financialized Farmland Ownership

Financial actors' interest in farmland seems to have cooled in recent years. In one of the most detailed studies to date, Magnan and Sunley (2017) found that acquisitions of farmland by financial investors in Saskatchewan have levelled off since peaking in 2012. As elsewhere, investors are still acquiring farmland in the province, but not to the same extent that they once were, and some have even started to sell, oftentimes to other investors. In part, these developments might be attributed to the actions of shorter-term speculators hoping to capitalize on the liberalization of land markets or of others put off by the recent drop in commodity prices. But there are also some indications that financial actors in a variety of contexts are beginning to truly appreciate the challenges of investing in farmland (c.f. Fairbairn 2014; Ouma 2015; Visser 2017).

Despite the efforts of financial actors, many of the peculiarities of farmland and agricultural production that have discouraged corporate ownership in the past (i.e., the illiquidity of land, the challenges posed by nature, and the low profit margins in farming) continue to stymie the making of farmland into an asset class. Studies based on interviews with land fund managers suggest that many have had difficulty generating sufficient capital (Cotula 2012; Magnan 2015). In part, the inability to raise the necessary funds can be attributed to the long-term commitment required to invest in many land funds and potentially an even longer wait before returns are realized. "Farmland," notes the chief executive of one fund, "is the tortoise

in the tortoise and hare race" (Kesmodel and Newman 2015). Even when legal structures to facilitate exit are in place, Cotula (2012) found that investors are put off by the illiquidity of many land funds. Yet even more liquid alternatives like REITs have not generated the anticipated levels of investment. In the U.S., for instance, lacklustre interest forced American Farmland Company to drop its initial public offering deal by 58 percent before it went public in October 2015 (Renaissance Capital 2015); and to reduce costs it merged with REIT Farmland Partners fourteen months later (Farmland Partners 2017). Meanwhile, share prices for Farmland Partners and its competitor, Gladstone Land, have remained well below initial levels.

In contrast to the challenges that many land funds have encountered in raising capital, Kuns et al. (2016) report enthusiastic investment in publicly traded agricultural enterprises that deploy the "own operate" model in Eastern Europe. This good fortune, however, came with its own set of problems. The ease of buying and selling stocks in the companies (i.e., their high liquidity) necessitated that they generate immediate returns lest fickle investors pull their money. Pandering to these speculative interests, the companies prioritized short-term returns over longer-term sustainability and production-oriented investments. The investments they did make entailed the cookie-cutter application of industrial technologies that were poorly suited to local environmental conditions. Kuns et al. also found that, relative to family farms, the decision-making of corporately managed farms was slow and cumbersome, and the managers were less willing to put in long hours when needed on the farm. The short time horizon of impatient investors was incompatible with the longer time horizon of family farmers, whose livelihoods are dependent upon the success of the agricultural operation over time. Australian farmers have voiced a similar concern (Sippel et al. 2017; c.f. Mann and Dickinson 1978).

The traded companies operating in Eastern Europe were unable to realize the increases in agricultural productivity that they promised and, in an effort to remain viable, began offloading some of their landholdings (Kuns et al. 2016). Failure to satisfy investors combined with the growing geopolitical risks in the region drove two of the three companies that were the focus of the study to delist

from the stock exchange in 2017, while the third divested all of its holdings in Russia to focus exclusively on the Ukraine.[1] The Eastern European experience is one of many cautionary tales about farmland investment. Land funds operating in Australia, Canada, and several African countries have been unable to achieve projected dividends for investors, and there have been a number of high profile failures (Cotula 2013; Magnan 2015; Ouma 2016).

The woes of some land funds have been compounded by government actions to re-regulate financial investments in some of the most active land markets. Examples include the 2010 resurrection of a four-decade-old law requiring that nationals hold a majority share in corporations acquiring farmland in Brazil (Fairbairn 2015); the 2015 law prohibiting farmland acquisitions by pension funds and large trust funds in Saskatchewan, Canada (Magnan 2015); and the implementation in 2015 of a more restrictive review process for foreign investments in Australian farmland, which, ironically, has been accompanied by efforts to encourage Australian pension funds and private equity groups to invest in the country's farms (Larder et al. 2017; Sippel 2018). Combined with falling commodity and land prices in many contexts, enthusiasm for farmland has tapered significantly, with some analysts claiming that it is "the worst investment out there" (Caldwell 2015). Returning to their practices before the land rush, many segments of capital are shifting their investments to other nodes in agrifood supply chains (as we discuss in Chapter 5), where they anticipate greater risk-adjusted returns (Ouma 2016). Still though, some funds remain bullish on farmland.

The inability to identify a general trend complicates predictions about the long-term implications of the financialization of farmland ownership. Assuming that there is a widespread exodus, would there be a return to the status quo? Might another spike in commodity prices trigger a new rush? Would restrictions on land acquisitions prevent such a rush? Or, as Fairbairn (2015) has documented in the case of Brazil, will the fungible and de-territorialized nature of financial capital allow it to circumvent targeted restrictions? With a focus on urban real estate, Haila (1988) argues that the introduction of financial actors in land markets and the emergence of accommodating regulations and institutions contribute to the mainstreaming of

speculative understandings of land and help to fortify its treatment as a pure financial asset. Whether such predictions will come to pass with farmland is debatable, but it is certainly plausible that the channels established in recent years could facilitate even greater flows of financial capital into farmland in the future.

Conclusion

Financial actors of various stripes have played a prominent role in the contemporary land rush, in terms of both creating land-based vehicles for speculative activities and supplying the massive amounts of capital for those funds to operate. Their pronounced interest in farmland is rooted in the economic crises that rocked global markets in the mid-2000s. With the conventional channels of accumulation disrupted, financial capital flooded into markets for alternative assets. In their "flight to quality," financiers sought to take advantage of farmland's ability to retain its value, even when most other asset classes perform poorly. Moreover, guided by the associated food price crisis of 2007–08 and ensuing price volatility through 2012, as well as Malthusian-inspired narratives of growing food scarcity, investors also hoped to capitalize on farmland's productive potential.

Financiers, states, and multilateral development agencies have all worked to reconfigure farmland for financial purposes. In particular, they have utilized the process of abstraction to render farmland meaningful in financial logics and deployed innovative technologies to open new channels for farmland-based accumulation. Financiers often claim that their investments generate social benefits, including funding for capital investments, a nest egg for retiring farmers, increased agricultural productivity, and, consequently, lower food prices and improved food security. Critics see little support for these claims.

The actual impacts of the financialization of farmland ownership are less than promising. As several case studies have documented, the process has contributed to growing political and economic inequality as well as less resilient agricultural systems. The participation of financial actors in farmland markets is associated with rising land prices, which, while beneficial to those wishing to sell their land, create new

challenges for aspiring farmers or existing producers who desire to expand their operations. Landholdings have become more concentrated in the hands of financial actors and a handful of large-scale farmers while many agricultural producers have lost control over land-use practices and the value produced on the farm. Meanwhile, the desire of many financial actors for quick returns and their limited knowledge of farming have translated into simplistic applications of industrial technologies that are susceptible to environmental stress and are major emitters of greenhouse gases.

Note

1. Personal communication with study co-author Oane Visser (September 12, 2017).

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5

Feeding Finance from Farm to Plate

The processes by which food makes its way from field to plate have been fundamentally reshaped in recent decades by the growing presence of financial actors and the increasing importance of financial motives in agricultural supply chains. The food and agriculture sector has become increasingly attractive as a site for financial investment, particularly following the 2007–08 food price crisis, which gave credence to the narrative that a growing world population would soon outstrip the Earth's capacity to provide sufficient food. For financial investors, this neo-Malthusian outlook stressing higher food prices and a growing concern about future food supplies translated into a desire to own a stake at different points along agrifood supply chains, which they considered to be a sure bet for higher returns. New investment vehicles enabled investors to buy into the global food and agriculture sector via agricultural index products that bundle investment shares in commodities, land, and different agrifood companies. Financial actors have also provided loans and other financial services to various actors along agrifood supply chains as a way to reap additional returns from the sector.

At the same time, under pressure from shareholders to increase profit margins, various agrifood enterprises have also increasingly engaged in financial activities in recent decades. Seed and chemical giants, for example, are dabbling in offering various forms of agricultural credit and insurance. Grain trading companies have a long history of trading commodity futures as a means to hedge their risks in the physical grain trade, as discussed in Chapter 2, but more recently they have begun marketing financial index investment products to farmers and other investors as a means to earn additional income. Even the processing sector has begun to actively use financial markets as a means to hedge the price of ingredients. Meanwhile, the food retail sector has developed other financial income strategies, including offering supermarket-brand credit and other financial services to customers.

The melding of finance and agrifood supply chains has resulted in the restructuring of the global food system in ways that prioritize financial profits over other goals, such as food security, environmental sustainability, and cultural diversity. The new financial instruments that have become available to investors further abstract food and agriculture by reconfiguring them as financial opportunities, creating new channels for capital accumulation in the sector. The prioritization of shareholder value across a variety of agrifood companies has put pressure on firms to focus more exclusively on their financial returns, which has encouraged them to increase their own financial activities as a means of profit-making as well as to participate in merger and acquisition activities. Many of these developments have further deepened the role of finance in everyday life, in particular as firms across agrifood supply chains are increasingly engaging in farm and consumer credit provision and as financial investment funds are marketed to ordinary individuals.

Together, these developments have important implications for farmers, consumers, and the environment. As noted in Chapter 2, financial speculation in agrifood commodities by food processors and trading companies can contribute to food price volatility, which has its harshest effects on the world's poorest people while enabling those trading in food to increase their profits. Growing concentration among food and agriculture firms, which results from increased mergers and acquisitions, has led to greater job and livelihood insecurity, while contributing to a concentration of wealth and power in agrifood firms. This concentration also enriches already giant agrifood firms, in turn reinforcing a model of large-scale industrial food and agriculture, which poses enormous health and environmental risks. And the provision of credit/debt by both input companies and food retailers exacerbates the insecurities faced by farmers and consumers, while simultaneously promoting certain forms of production and consumption that increase sales of their products.

Financial Investment throughout the Agrifood Sector

The growing presence of financial investors at various nodes within the food system has shaped incentives in ways that prioritize financial

returns for shareholders over other diverse values that have traditionally been promoted through food systems, such as food security, cultural identity, livelihoods, and sustainability. Hundreds of investment funds linked to the food and agriculture sector have emerged in recent years, creating a new food landscape where financial investors are present in nearly all activities in the sector. The main objective of these funds is financial profit. One investment advising firm, for example, identified over 240 financial investment funds linked to the food and agriculture sector, a more than seven-fold increase from the thirty-three it counted in 2005 (Valoral Advisors 2015). The total assets under the management of these funds stood at approximately US$45 billion in 2014.

Institutional investors are drawn to financial opportunities in food and agriculture across a range of asset types, including farmland, commodities, listed equities (shares in companies traded on the stock market), private equities (shares in companies not traded on the stock market), and venture capital (funds that invest in start-up companies). Pension funds in particular have been a major source of new capital in the sector over the past decade, and as noted in Chapter 2, they invest trillions of dollars annually. Agriculture and food investment vehicles are typically advertised as a good fit for pension funds because their investors tend to be passive, with a long-term outlook. Accordingly, their promotional materials stress long-term trends regarding population growth and a rising middle class in emerging economies that will inevitably consume not just more food, but high-protein foods such as meat and dairy, which rely on a steady supply of grain in the predominate industrial food model. Rising demand for biofuels also makes investment in the food and agriculture sector particularly attractive to investors, who can reap profits when oil prices rise (TIIA Global Asset Management 2016; TIAA-CREF 2013). A significant proportion of investor interest in agriculture is in financial products tied to commodities and farmland. Investment in these subsectors was discussed in detail in Chapters 2 and 4 and are only briefly mentioned in this review of investment across agrifood supply chains.

While investments in farmland and commodities have garnered a large amount of attention in analyses about the linkages between

food and finance, investments in agrifood-linked equities have received relatively less consideration. Yet approximately one-third of financial investment in agriculture is in listed equities — i.e., shares in firms traded on the stock exchange and indices that track the value of the shares of those companies (Valoral Advisors 2015). A number of investment management firms that cater to large-scale institutional investors sell both over-the-counter (OTC) index fund products (e.g., agriculture-focused mutual funds) and exchange traded funds (ETFs) specifically tied to the sector. These types of index funds are based on complex swap arrangements orchestrated by financial institutions. Similar to commodity index funds, outlined in Chapter 2, OTC equity index funds are sold directly to investors off-exchange, while exchange-traded funds are traded on the stock exchange.

Asset managers have developed equity-based index funds to give investors broad exposure to firms across the agrifood sector, without those investors having to purchase stocks in those companies directly. Rather, the funds track the performance of an index of agrifood company stocks, while the asset management firms actually own stocks in those same companies as a way to hedge their risks from selling the index product. A number of equity-based index funds focusing on agriculture have emerged in the past decade that index shares of a variety of firms across agrifood supply chains. These include funds that invest in companies that specialize in fertilizer, farm machinery, seeds and crop protection, food processing, agricultural commodity trade, packaged foods, and ingredients, as well as grocery retail and fast food. Some funds provide broad-based coverage of firms from across the entire agrifood sector, while others focus on specific subsectors.

One of the larger equity index funds that offers broad exposure to food and agriculture is VanEck Vectors Agribusiness ETF (which has a ticker nickname of "MOO"). This fund was launched in 2007 and has over US$800 million in assets under management (VanEck 2017). MOO tracks shares of firms in the seed and agrochemical industry (e.g., Monsanto, Syngenta), farm equipment (e.g., Deere, Toro, Kubota), and agricultural commodity traders (e.g., ADM, Bunge, Wilmar). It also tracks some food processing companies (e.g., Tyson), fertilizer firms (e.g., Potash, Agrium, Mosaic), and

animal health companies (e.g., Zoetis) (see VanEck 2017). Other funds include Blackrock iShares Global Agriculture Index (which has a ticker nickname of "COW"), which launched in 2007 and manages some US$230 million in assets (BlackRock 2017a). COW has holdings across the agrifood value chain, including shares in firms specializing in seeds and agrochemicals (e.g., Du Pont, Monsanto, Syngenta), fertilizer (e.g., Agrium), commodity traders (e.g., ADM, Bunge), food companies (e.g., Tyson, Del Monte), farm equipment (e.g., Deere), and food ingredients (e.g., Ingredion) (see BlackRock 2017a). BlackRock also markets its World Agriculture Fund, an OTC index fund launched in 2010, which manages US$115 million in assets. This fund also invests across the value chain with similar holdings to COW, but with a heavier presence of fertilizer stocks (see BlackRock 2017b). Some large asset management firms, such as State Street and Vanguard, include agriculture, food, and beverage stocks in their general and consumer staple index funds, which include a range of stocks from across many different sectors and industries.

As a result of the growing popularity of agrifood equities index funds, institutional ownership of shares in agribusiness companies across the sector has increased in recent decades. This greater institutional ownership in the agrifood sector reflects a broader ownership trend in U.S. publicly traded firms, where institutional investors now collectively hold around 70–80 percent of the shares in large firms traded on the stock exchange. The top asset management companies, such as Blackrock, typically own around 10–20 percent of most publicly traded American companies (*Economist* 2016). Consequently, many purported "competitors" in an already concentrated agrifood system are largely controlled by a relatively small number of asset management firms. Although these asset management firms are managing the money of "passive" investors, they frequently engage directly with the management of the firms in which they invest, pressuring them to ensure decent returns for shareholders.

This kind of continual pressure has resulted in increased attempts by firms to acquire their rivals through mergers and acquisitions as a way to increase shareholder value (Spross 2015). Recent mergers across the agrifood value chain, as outlined below, can be viewed

in this light (Clapp 2017). According to Azar, Schmalz, and Tecu (2017), this kind of common ownership intensifies the effects of corporate concentration and can lead to higher prices and fewer product offerings for the goods those firms sell. In this way, financial investment trends have direct bearing on the concentration of wealth and power in the sector. It also manifests in changes at the level of everyday life, as both farmers and consumers face higher prices and less choice.

Investors are also diving into private equity (PE) funds linked to food and agriculture. PE funds typically invest in privately held firms — or, as discussed in the previous chapter, farms — that are not traded on a stock exchange, or they may buy out those that are. Usually private equity funds pool the assets of wealthy investors and require a large minimum investment, often in the hundreds of thousands of dollars. PE firms then deploy the capital to invest in firms where they anticipate high returns over the medium term, during which investors' funds are "locked in." Private equity investments are attractive to institutional investors, because the latter have large sums of money to invest and the payoffs are potentially large. In 2014, over thirty-five PE funds that are specifically focused on agriculture had some US$15 billion under management (*Economist* 2014). There are approximately one hundred other private equity funds that consider agriculture in their broader strategy, with over US$30 billion under management (Simpson 2014).

TIAA Global Asset Management has been a large investor in agriculture-related private equity, for example, investing in farmland as well as agribusiness. Its agribusiness investments, worth over US$560 million (this is in addition to over US$6 billion the firm has invested in farmland), have included investments in agricultural input, processing, protein production, and storage and distribution companies (TIAA Global Asset Management 2016; Nuveen-TIAA 2017). Because private equity investments are made through private channels, there is little transparency and the effects are hard to trace. An Oakland Institute report on agricultural private equity concludes that the potential impacts on land rights, the environment, and smallholder farmers can be significant, yet when pressed directly about their environmental and social practices in these investments,

many fund managers were evasive in their responses (Bergdolt and Mittal 2012).

Venture capital, another type of private equity funding, is also a popular investment vehicle for financial investors, attracting US$4.6 billion into the food and agriculture sector in 2015 (Burwood-Taylor 2016). Venture capital in the agrifood sector typically invests heavily in start-up technology firms, ranging from agricultural biotechnology, to big data and precision agriculture, to food e-commerce, to high-tech food processing. It was venture capital, for example, that provided funding for The Climate Corp, a big data precision farming and agricultural insurance firm, which was later purchased by Monsanto (Jacobius 2015). The growth in funding to this type of investment is contributing to the continued growth in the industrial high-tech farming model (Bronson and Knezevic 2016).

In addition to their interest in the agricultural sector more generally, as outlined above, financial investors also interface with different subsectors of the food system in specific ways through more specialized investment funds and financial services. These specialized investment funds seek to capitalize on particular points along agrifood supply chains. At the same time, agrifood supply chain actors themselves have also increasingly engaged in financial activities, further blurring the lines between food and finance. These types of interactions at different nodes in agrifood supply chains, as we outline below, illustrate the ways in which financialization has taken hold in the food system from farm to plate and the wider effects this process has had on farmers, workers, and the environment.

Agricultural Input Sector

Finance has played a role in the provisioning of agricultural inputs for over a century. Since the advent of industrial agriculture and the attendant commercialization of inputs, farmers have relied upon agricultural credit to purchase seeds, agrochemicals, fertilizer, and, of course, farming equipment, as outlined in Chapter 3. From the late nineteenth and early twentieth centuries, agriculture was supported by the state in the U.S., Canada, Australia, and Europe, among others, with formal credit schemes and cooperative marketing arrangements.

But since the rise of neoliberal economic policies in the 1980s, the role of the state in backing agricultural credit provision has declined markedly, and private financial institution lending has come to be the norm in the sector (Martin and Clapp 2015).

Financial actors have also made significant investments in enterprises that produce farm inputs, including tractors and other farm equipment, seeds and agrochemicals, as noted above. In addition to adding investments in these firms to their general index funds as well as to agriculturally focused funds, investors have made more targeted investments in the inputs sector. The fertilizer industry, for example, has been especially interesting to financial investors in recent years. Based on the logic that farmers will respond to rising food prices by expanding and intensifying their production, private equity groups have invested in fertilizer producers in China, India, Egypt, and other key countries (Davis 2011; Friedland 2011; ICIS 2007; IFC 2011; Ross 2008). Some specific ETFs are geared toward this sector as well, for example, Global X SOIL fund, which tracks the performance of a number of fertilizer firms, including Yara, Agrium, Mosaic, and K+S, among others (Global X 2016).

Institutional investment is very prominent in the input sector. Large asset management firms — e.g., BlackRock, Capital Group, Fidelity, Vanguard, State Street, and Norges Bank Investment Management — manage money for institutional investors and collectively own around 15 percent or more of the shares of the seed and agrochemical giants Monsanto, Bayer, Dow, DuPont, Syngenta, and BASF, as shown in Table 5-1. This collective ownership has put pressure on input firms to improve their performance. Alongside this more general pressure from shareholders, in the cases of Dow and DuPont, "activist investors" (i.e., very wealthy individuals who purchase enough shares to make demands of the management) have also applied pressure on these firms to take actions that will increase shareholder returns. Nelson Peltz's Trian hedge fund acquired just under 3 percent of the shares in DuPont in 2013 and immediately began to pressure the firm to restructure. In 2014, Daniel Loeb's Third Point hedge fund purchased just over 2 percent of the shares in Dow and pushed a similar line regarding the need to restructure. Although these share percentages appear on the surface to be relatively small,

they are significant enough to allow these shareholders to push for change at the firms (Crooks 2015).

These kinds of pressures were present in the run-up to the mega-mergers announced in the agricultural input sector over the course of 2015–16 and can be interpreted as a strategy of the big input companies to meet investor demands for higher share prices (see Clapp 2017). In the low interest rate environment since the 2008 financial crisis, it has been easy for firms to borrow funds with which to acquire their rivals. At present, these mega-mergers have largely gained approval by regulators in the thirty or so jurisdictions that require a review of the corporate tie-ups. Once completed, the resulting corporate concentration is likely to have a negative effect on farmers through fewer available technologies, higher prices, and reduced farmer autonomy. It is also likely to further entrench the industrial agriculture model because these firms' profit base is highly dependent upon large-scale high-tech farming practices (IPES-Food 2017).

Financial activities also account for a greater share of the revenue

Table 5-1 Shares Held in the Big Six Seed and Chemical Firms

Firm/Asset Management Company	Monsanto %	Bayer %	Dow %	DuPont %	Syngenta %	BASF %
BlackRock	5.76	10.09	6.11	6.61	6.00	8.30
Capital Group	2.68	3.68	3.60	10.69	4.01	0.91
Fidelity	3.12	1.71	1.17	3.54	0.21	0.50
Vanguard	7.33	2.30	6.27	6.87	2.28	2.31
State Street	4.63	0.50	4.14	5.01	0.40	0.45
Norges Bank	0.81	1.64	0.43	0.63	1.75	3.00
Total percentages owned by top asset management firms prior to mergers	24.34	19.93	21.72	33.36	14.65	15.47

Source: Thomson Reuters Eikon Database (as of Dec.31, 2016), cited in Clapp 2017.

of agricultural input firms, especially as they dabble in the provision of farm credit. The neoliberal restructuring that has taken place since the 1980s has led to a reduction in government subsidies for agricultural inputs and curtailed support for rural development banks. These changes only increased pressure on farmers, who have responded by intensifying agricultural production as a means to generate additional revenue. Ironically, this production increase, on aggregate, has put downward pressure on farm gate crop prices, catching many farmers in a "price-cost squeeze." Lower crop prices, in turn, have put downward pressure on the revenues of farmers, who, as a group, have increased their expenditures on seeds, fertilizers, and other inputs. The result has been rising levels of farmer debt and growing levels of agrarian distress (Weeks 1995; Vakulabharanam 2005; Isakson 2014). Elevated levels of farmer debt have no doubt enriched rural creditors, including moneylenders, microfinance institutions, and agricultural input suppliers who sell their products on credit (Taylor 2011).

Most of the major agricultural input firms — Monsanto, Syngenta, BASF, DuPont, and Dow — have also set up venture capital funds to invest in start-ups. These venture capital initiatives invest in a range of firms, including biotechnology companies, firms that develop technology for precision farming, and digital communication companies. Monsanto Growth Ventures, for example, invests in early stage companies engaged in biotechnology, pharmaceuticals, microbes, software, market development, and connected devices. The investment arm works to facilitate partnerships with Monsanto to create strategic opportunities that will benefit both Monsanto and the start-up firm (Monsanto Growth Ventures n.d.). Bayer is an outlier in that it does not have its own venture capital fund, but rather invests in external venture capital funds that focus on emerging agricultural technologies (Burwood-Taylor 2016). One of the funds in which it invests, for example, is Finistere Ventures, which invests in start-ups that specialize in agricultural biotechnology, animal health, biopesticides, precision agriculture, trading platforms, biomass, water conservation, and agricultural chemicals, among others (Finistere Ventures n.d.). According to Bayer's new ventures manager, "The agtech space is absolutely exploding with opportunity" (quoted in Burwood-Taylor 2016).

Capitalizing upon the economic distress of agricultural producers, input companies and financial institutions are teaming up to provide credit and other services specifically designed for farmers. In Canada, banking and insurance firm Desjardins offers an "AgriCard" in conjunction with DeKalb seeds, billed as "Seed Now, Pay Later." This arrangement offers up to fourteen months of interest-free credit when the card is used to purchase DeKalb (owned by Monsanto) brand seeds from one of over 800 participating farm input suppliers. The card also offers different credit limits and payment schedules for day-to-day expenses and for larger purchases such as seeds and crop inputs (Desjardins 2017).

Similarly, in Ethiopia, DuPont has teamed up with USAID as part of the G-8 New Alliance for Food Security and Nutrition initiative to invest in programs to improve the use of hybrid seeds in the country, which includes the provision of credit and training (DuPont 2017a). Much like the partnership between Syngenta and its index insurance spin-off ACRE, described in Chapter 3, DuPont also includes insurance with sales of certain herbicides it sells, through its Crop Protection Plus program, offering credit for DuPont products should its product be adversely affected by weather conditions (DuPont 2017b). In collaboration with financial service providers, Monsanto, Deere, and Cargill had also sold crop insurance but began retreating from the sector in 2014, when falling crop prices and uncertainty about weather cut into profits (Bjerga 2016).

Commodity Traders

Major financial institutions like Deutsche Bank and Barclays have invested billions of dollars in commodity futures, and a number of hedge funds emerged in the wake of the 2007–08 food price crisis to facilitate investors' participation in food and commodity derivatives markets, as noted in Chapter 2. These financial institutions offer commodity futures index funds, such as Powershares DB Agriculture Fund, which tracks a Deutsche Bank price index of eleven agricultural commodities, including corn, soy, wheat, cattle, hogs, coffee, and cotton (Invesco 2016). Another fund is the iPath Pure Beta Agriculture Exchange Traded Note (ticker name DIRT), which

tracks a Barclays commodity index that includes soy, corn, sugar, cotton, coffee, and wheat, among others, and manages over US$100 million in assets (iPath 2017). Similarly, in recent years specialized funds have emerged that allow investors to focus their investments on specific commodities, like coffee, wheat, corn, cocoa, sugar, livestock, soybeans, and cotton. Financial institutions are also becoming directly involved in the physical storage and transport of agricultural commodities. In addition to purchasing livestock, grain, and other agricultural products, these funds have acquired storage facilities and transport vessels, enabling them to buy maturing futures contracts from fellow investors. Beyond charging fees for their services, the funds benefit from their more direct access to information about agricultural supply (Meyer 2009).

Even as financial actors have become more active in commodity trading, trader firms have become more involved in financial activities. The dominant agricultural commodity trading houses ADM, Bunge, Cargill, and Louis Dreyfus — collectively referred to as the ABCDs — have all established investment vehicles. These include both venture capital funds and financial institutions that allow external investors to speculate on agricultural commodities and other dimensions of food production (Clapp 2015). Perhaps their most successful ventures have facilitated investment in agricultural derivatives markets, where grain traders have a long history of hedging against undesirable price movements but, since the financial deregulation that began in the 1980s, have become increasingly active in speculation (Murphy et al. 2012; Salerno 2017). Grain storage that was previously public has been privatized under neoliberal restructuring, translating into significant uncertainty about food supplies. Their prominent market position in agricultural trade and direct contact with crop growers and food suppliers mean that the ABCDs are among the first to know about supply conditions. This unique position enhances the perceived value of their financial instruments among investors seeking to speculate on agricultural derivatives markets (Murphy et al. 2012: 64).

Among the ABCDs, Cargill is the most involved in financial activities (Murphy et al. 2012; Salerno 2017). After 2003, when Cargill began offering financial services to external investors, it created a

number of financial subsidiaries that offer a variety of financial products, including commodity index funds, asset management services, insurance, and opportunities to speculate on real estate, commercial credit, and energy. Its Black River Asset Management company operated a hedge fund arm that managed US$7 billion in assets. In 2015, parts of the firm were spun off into three independent companies, in response to declining demand for agricultural investments in a period of low commodity prices (Meyer 2015b). Cargill still owns CarVal Investors, however, which has US$10 billion in assets under management and specializes in liquidations, credit, and real estate (CarVal Investors 2017). Cargill also still operates its Cargill Risk Management arm, which offers customized hedging services in both commodities and currencies (Cargill 2017). In short, Cargill, the world's largest private company, is not only a grain trader but operates as a financial enterprise as well.

It is nearly impossible to discern the extent to which the financial activities of the ABCD firms contribute to their overall revenues. But we can see that these firms were enormously profitable after commodity prices began to rise and become more volatile after 2000, especially as food prices rose sharply in the 2007–2012 period (see Figure 5-1). As Murphy et al. (2012) note, Bunge and Cargill explicitly acknowledged that their financial activities at least partially played a role in their strong performance during that period. The unique vantage point of these firms, between both producers and buyers of agricultural commodities, gives them exceptional insight into the state of global food stocks and global food demand, which is extremely useful information when hedging and speculating on food price movements. In 2008, for example, Cargill was among the first to bet that the price of wheat would fall (Murphy et al. 2012: 25), a move that correlated with a significant increase in that firm's profits. When marketing their financial products, these firms highlight their specialized knowledge as a selling point.

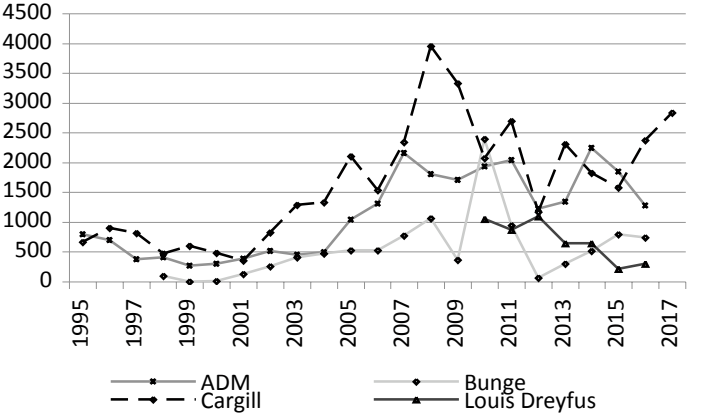
While it is difficult to determine whether the ABCD firms have, in fact, engaged in speculation for their own financial gain (rather than simply hedging their risks), some observers have likened their activities to insider trading (see Salerno 2017). Even the U.S. Commodity Futures Trading Commission (CFTC) recognizes that it is not always

easy to tell the difference between hedging and speculating activities, especially in a context of complex global supply chains (Meyer 2014). Take, for example, firms engaging in "cross-commodity" hedging, which involves trading in one commodity, such as soy, to offset risks in another commodity, such as maize. If the prices of the two commodities are generally correlated, meaning they move together, it is largely considered hedging. But if they do not, then it could be classed as speculation. But the big commodity trading firms do this type of cross-commodity trading on a regular basis. When questioned on this practice, a Louis Dreyfus executive stated: "I don't consider that speculating at all. It's what's normally done in the norm of our business. It is our business. It is what we do" (quoted in Meyer 2014).

Food Processing Companies

Similar to their activities in other nodes of agrifood supply chains, investment banks are playing a more active role in the food processing sector. In 2008, at the height of the food crisis, when many voices were raising concern about the impact of rising meat consumption in China on food prices, Goldman Sachs acquired a 13 percent share of China's second largest meat and poultry processor, Yurun Food Group, and invested a further US$300 million in the acquisition of

Figure 5-1 Profits of the ABCD Companies (US$ millions)



Sources: Clapp 2015; company websites and financial press.

another ten poultry farms (Burch and Lawrence 2009; c.f. Schneider 2014). Financial investors have also begun to gain exposure to shares of firms in the food processing sector via the index fund PBJ, which is the ticker name for Invesco Powershares Dynamic Food and Beverage Portfolio ETF. PBJ was set up in 2005 and it manages around US$150 million in assets. This fund tracks the Dynamic Food and Beverage Intellidex Index, which includes fast food companies (e.g., Dominos, Wendy's), snack food firms (e.g., Hershey, PepsiCo), processed foods (e.g., General Mills, Kellogg), retail (e.g., Kroger), food service (e.g., Sysco), and commodity traders (e.g., ADM, Bunge) (Invesco 2017).

At the same time, food traders and processors have diversified into — and are earning an increasing share of their revenues from — financial activities. As "shareholder value" becomes prioritized in a more financialized world economy, corporate management has bowed to shareholder pressure to maximize the value of shares in the firm (Krippner 2011; Palley 2007). As food price volatility took hold in the years after the food crisis, shareholders in the food processing sector demanded returns in the order of 20–30 percent (Rossman 2010; Jones and Nisbet 2011). Such financial demands have influenced the kinds of foods that manufacturers make available to consumers (Fuchs et al. 2013: 228–29). In this context, food manufacturers have focused on growing markets for snack foods laden with salt, sugar, and fat, which encourage overeating, thereby maximizing sales and dividends for stockowners (Moss 2013). Indeed, the snack food industry is one of the fastest growing segments of the market, with the highest profit payoffs, especially in emerging markets (Neilson 2014). Corporate restructuring in the agrifood sector has also been linked to shareholder pressure to maximize profits. Mergers, acquisitions, and downsizing among agrifood firms have been accompanied by significant job loss in the European Union and the U.S. In many instances, such restructuring has resulted in the outsourcing of food production and manufacturing to counterparts in the global South, whose jobs are less well paid and more precarious (Rossman 2010; Jones and Nisbet 2011).

Research and development (R&D) has also been increasingly outsourced by food processors in the wake of growing pressure to

maximize shareholder value (Rossman 2010). Instead of directly employing food scientists to innovate, many of the top food manufacturers have financialized R&D by establishing venture capital and private equity subsidiaries to capitalize on start-up firms that are seeking to develop new products and break into markets. Among the major food companies with separate venture capital funds are Nestlé, Kraft, Tyson Foods, Unilever, PepsiCo, and Coca-Cola. Through these investment arms, these firms are able to keep tabs on up-and-coming innovative developments and are poised to make an acquisition if they see market opportunities from the start-ups that they support (McDermott 2012). In 2015, for example, Coca-Cola's venture capital fund, Venturing and Emerging Brands (VEB), purchased Blue Sky Beverage Company, a small firm that had been producing all-natural craft soft drinks since the early 1970s. Coca-Cola's acquisition of the firm enabled it to capitalize on consumer demands for healthier products as well as to manage its competition (VEB n.d.).

Food processing companies have also engaged in investment, and some would say speculation, on food commodities that are key ingredients for their products. In 2015, for example, Kraft ran into trouble with the CFTC when it was accused of manipulating wheat prices back in 2011. At a time of high cash prices for wheat, Kraft made a massive US$90 million purchase of wheat futures contracts, which signalled to the market that Kraft had met its demand for at least six months (Meyer 2015a). Because Kraft utilizes around 10 percent of the U.S. soft wheat supply, this action drove down cash wheat prices near its Ohio processing mill, while at the same time driving up the price of wheat futures contracts (Sosland 2015). The company was able to close out its futures positions at a profit of US$5.4 million dollars and obtain the wheat it needed at a lower cash price. Kraft argued that the case should be thrown out of court because it is an end-user of wheat, rather than a speculator, and thus not subject to the same regulations as non-commercial operators. However, a U.S. judge rejected this request and the case is still before the U.S. courts with an expected trial date in 2019.

Food Retail and Fast Food

Food retailers have become particularly powerful actors within the food system in recent years (Burch and Lawrence 2013). Their *oligopolistic* (small number of sellers) power over downstream food consumers (and food service providers) amplifies the *oligopsonistic* (small number of buyers) influence they wield over food processors and other food actors across the agrifood sector. Specifically, by controlling the bottleneck between consumers and food producers and processors, they have enormous sway in determining not only what foods are produced but also where they are produced, how they are produced, and their price, quality, and channels of distribution (Busch and Bain 2004; Burch and Lawrence 2009). This position of power within the food system makes retailers especially interesting to financial investors. Food retail companies as well as fast food and institutional food companies, for example, are included in a number of index funds, such as those for consumer staples and general stock market indices, which gives investors an opportunity to capitalize on the power and profitability of these firms.

In addition to passive speculation on food retailers' stock values, some financial actors have taken a more interventionist approach. This was particularly evident in April 2017, when the activist hedge fund Jana Partners acquired a majority share in Whole Foods Market, an upscale North American food retailer. Citing poor returns to shareholders, Jana immediately sought to overhaul the company's board of directors and began pushing for its sale. A mere two months later, Whole Foods was acquired by the prominent online retailer Amazon. Jana subsequently sold its shares in the company, earning a profit of some US$300 million (Thomas 2017). The sale also contributed to a significant jump in the value of Amazon's shares while, according to a report by Barclay's Investment, Whole Foods' new owners have cut back on labour and the quality of both the produce and the service at stores has tanked (Bonazzo 2017).

Private equity groups have also sought financial returns from the food retailing sector. As Burch and Lawrence (2009, 2013) show, private equity takeovers of supermarkets have transformed the food retail sector. Based on the example of the takeover of the

U.K.-based Somerfield Supermarkets by a private equity consortium, Burch and Lawrence map out four strategies that financial actors utilize to maximize shareholder value. First, the sourcing process is streamlined and costs are reduced by narrowing the product line and reducing the number of suppliers. Second, the workforce is reduced in size while the workload of those who remain is increased. Third, previous commitments to ethical and sustainable sourcing are reduced, like when Somerfield withdrew from the Ethical Trading Initiative (ETI), which sets labour standards for developing country suppliers. Fourth, firms have de-bundled and repackaged assets, as exemplified by Somerfield's sale of its real estate properties to a newly created subsidiary of the firm that then leased the property right back to Somerfield.

The reconfiguration of food retailing along these lines has direct implications for the viability of small-scale agriculture and as such threatens the livelihoods of small-scale agricultural producers. When Somerfield withdrew from the ETI, for example, shareholder demands for profit took precedent over the welfare of food producers. The move raises the prospect that other supermarkets may consider doing the same, widening the impact to a larger number of producers. As food retailers wield growing influence over the agrifood system (Fuchs and Kalfagianni 2010), a broader pull-back from labour and environmental initiatives would have enormous implications for agricultural producers as well as ecosystem health. Similarly, as supermarkets reduce their costs through the streamlining of supply chains, they limit the number of buyers for agricultural produce, giving those that remain enhanced market power over farmers who produce on contract for retailers. These dynamics also disadvantage small-scale producers whose limited quantities of production may be deemed not worth the effort for buyers who seek to minimize transaction costs by buying in large quantities.

At the same time that financial actors are investing in food retailing, food retailers themselves have ventured into financial activities, including investment activities and the financial services industry (Burch and Lawrence 2009; Risso 2010). The financial deregulation that occurred in the 1980s and 1990s has enabled supermarkets to deepen their relationship with their customer base by offering a wide

and growing array of financial products. These include credit cards linked to loyalty programs, as well as pre-paid debit cards, savings and chequing accounts, insurance programs, travel services, and even home mortgages. Although credit has traditionally been offered to customers by general merchants through a trust relationship, these new types of arrangements are tied to global financial markets. The Canadian retailer Loblaws, for example, has partnered with the global credit card firm MasterCard in providing these types of services. Grocery retailers typically promote these initiatives as bringing important services to populations who are not fully served by the banking industry or who are skeptical of the big banks (Werdigier 2009; Risso 2010). Their customers' debt, then, becomes a profitable revenue stream for these retailers, which deepens customers' dependence on these firms both for their food supply and for their financial security.

In at least one case, a major grocery retailer in Canada ventured into financial derivatives trading through an offshore subsidiary "bank." In 1992 Loblaws established an offshore company in Barbados, which it renamed the Glenhuron Bank Ltd in 1993. Funded with money from its grocery profits, Glenhuron Bank invested in complex financial derivatives and generated a substantial profit in the hundreds of millions of dollars, but which escaped taxes due to Canadian laws that exempted Canadian-owned foreign banks from taxation on investment earnings. The case came to light when it became clear to the Canada Revenue Agency that the "bank" was not in fact a normal bank, as it did not offer any financial services to other customers. The Canadian government is taking the case to court, and Loblaws has denied any wrongdoing. If it is found guilty, the firm will be on the hook for upwards of C$400 million in back taxes (Dubinsky 2018). Whether other similar cases exist is difficult to say, as it is notoriously difficult to obtain details on offshore firms in countries that serve as tax havens.

Retailers in food insecure countries have also been able to capitalize on the growing trend of financialization of food assistance. The World Food Programme and many states have established partnerships with MasterCard to develop debit cards for the delivery of food assistance via approved retail outlets. Proponents of such "digital

food" schemes claim that the initiatives improve the efficiency of food assistance programs. Such arrangements can result in a more rapid disbursement of food and lower costs than delivery of in-kind food shipments. But at the same time, they also enable participating grocers and their financial partners to capture a share of food aid budgets even as the latter aim to leverage cardholders' improved "financial literacy" as a means to sell additional services to poor people (Fieser 2014; World Food Programme 2017). The requirement that food assistance be acquired from food outlets connected to global financial markets also suggests that the foodstuffs available as assistance by this means are likely industrially grown, processed, and packaged foods that are traded in large volumes, rather than locally produced foods supplied by small-scale farmers.

While financial benefits from these various financial activities have benefited food retailers, retail workers and food suppliers have suffered setbacks in their work conditions. As the global agrifood system has become more concentrated in recent decades, power has shifted from food processors to supermarkets (Burch and Lawrence 2009; Howard 2016). As firms in the sector increasingly engage in merger and acquisition activity, there are fewer retail firms that act as gatekeepers between food manufacturers and consumers. This concentrated power intensifies the oligopsonistic power retail firms hold and enables them to transfer costs onto suppliers at the same time that they demand those very suppliers deliver higher quality products at lower prices. Some retailers, for example, have adopted "just in time" inventory management and have made other changes in their supply chain management practices, which have the effect of reducing the amount of their financial assets that are "immobilized" by inventory and storage costs (Baud and Durand 2012: 256).

Retailers have also extended by 50 percent the average amount of time between delivery of food items and payment to suppliers. This shift in payment schedules effectively frees up additional funds for their financial activities and/or to pay out shareholder dividends (Burch and Lawrence 2013; Baud and Durand 2012). Delay before payment for fresh fruits and vegetables has increased in some cases to ninety days, significantly more than the forty-five to sixty days it previously took to pay suppliers (Reardon and Berdegué 2002). For

small-scale producers, the delayed payments can contribute to cash flow problems and increased reliance on credit. As leading retailers such as Wal-Mart and Carrefour seek to cut out intermediaries and contract directly with farmers to provide fresh produce in their stores, these dynamics are likely to intensify. Likewise, food retail workers have been affected by financialization as major retail outlets seek to cut costs and automate services such as checkouts (Burch and Lawrence 2013). For food retail workers who have managed to keep their jobs, workloads have increased even as their compensation remains flat (Baud and Durand 2012; Rossman 2010).

Conclusion

Financial motives and actors have come to play new and more intense roles in agrifood supply chains in recent decades, in ways that have normalized abstract financial values as key indicators in the system. As this chapter shows, new financial investment tools have emerged across the entire agrifood sector, creating fresh opportunities for capital accumulation for both financial investors and agrifood companies. Large-scale financial investors have increasingly found food and agriculture to be a lucrative investment by increasing their ownership in agrifood firms across the sector. Agrifood companies have sought to satisfy shareholders by shoring up their profits through increased financial activity as well as engaging in mergers and acquisitions. Meanwhile, these trends only further feed into the financialization of the everyday in the agrifood sector, for example, by making farmers, food sector workers, and consumers more reliant on credit/debt to finance their day-to-day activities, through the issuing of credit cards by agrifood input and food retail firms, as well as through the growing investment of pension funds and other exchange-traded and over-the-counter funds that invest in firms across the entire sector.

The intensification of financialization across agrifood supply chains over recent decades has resulted in a range of tangible outcomes. Pressure from shareholders for agrifood input companies and food processing firms to engage in mergers and acquisitions has been linked to increased corporate concentration. Commodity price speculation among trading firms has been implicated as a contributor

to food price volatility. Food processing firms have used financial futures markets to influence the price of ingredients, while pushing high-profit but unhealthy foods as a means to satisfy shareholders. Meanwhile, private equity has invested heavily in food retail and fast food firms in ways that have been detrimental for both suppliers and workers, while the former have increasingly engaged in credit provision, which has led to growing indebtedness of both suppliers and consumers.

These more tangible effects of financialization in the food system collectively contribute to several broader trends in the sector that have long been emphasized by critics. First, the effects of financialization have further fuelled the concentration of power and wealth among elite actors at the same time that these impacts have disadvantaged more marginalized players. In other words, the financial owners of the big agrifood firms have become wealthier as the livelihoods of smallholders and workers have become more precarious. Second, the effects of financialization have encouraged a more high-tech industrial model as the dominant organizing principle for the mainstream food system. As financial motives and calculation have become normalized in the sector, food provisioning has become separated from the deeper values imbued in it. Rather than valuing the food system for providing healthy nourishment and secure and sustainable livelihoods, the system increasingly promotes unhealthy food and an industrial agriculture model that may generate short-term returns for shareholders but are ultimately damaging for society and the environment, undermining its resilience over the long term. A third trend, the dampening of collective calls for resistance, is discussed in the following chapter.

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6

Prospects for Governance and Re-Regulation

As financial investment in the agrifood sector has grown, so too have calls to mitigate the negative social and ecological effects of these investments. The debate over the impact of these investments has been deeply contested. Some make the case that financial investors play a positive role in enhancing efficiency and productivity in the sector. In the case of commodity derivatives, supporters argue that these financial markets provide liquidity and assist in price discovery (Sanders and Irwin 2010). In other areas, financial investment is seen by its promoters to provide much needed capital for the sector (Deininger et al. 2011; Hallam 2011). But as outlined in the previous chapters, critics argue that financial speculation in commodity derivatives markets has heightened food price volatility and as such undermines food security in the world's poorest countries (Ghosh 2010). Critics also decry the role of financial actors in large-scale land acquisitions, which have the potential to displace smallholders and cause ecologically damaging land clearing (McMichael 2010; White et al. 2012; Wise 2012), as well as the regressive impacts of financial investments across the value chain that result in insecure livelihoods, heightened levels of debt, and environmental stress (Isakson 2014; Burch and Lawrence 2009).

In recent years, and particularly since the 2007–08 food crisis, the criticisms of financial investment in the sector have become more widespread and more politically prominent. Even powerful policymakers and leading international organizations acknowledge the possible downsides of financialization in the food sector. For example, both the Bank for International Settlements and UNCTAD published reports that indicate the potential of financial investment in commodities to exacerbate food price volatility (BIS 2011; UNCTAD 2011). Similarly, the World Bank, in reviewing farmland

investments, recognizes widespread neglect of environmental and social norms in these operations (Deininger et al. 2011; World Bank and UNCTAD 2014). As these kinds of concerns have increased, a number of states and international organizations have begun to back governance reform to address them.

This chapter evaluates the prospects for effective governance reform of the financial processes that are embedded in the food system. A timeline of these various regulatory attempts to tame the markets is presented in Figure 6-1. In the wake of the 2008 financial crisis, there was considerable momentum to strengthen regulations on commodity derivative markets, including those for agricultural commodities, in both the U.S. and the E.U. In the U.S., a coalition of farm groups, financial regulators, and interests from other sectors sought to put more stringent rules into place. However, the proposed new rules were actively challenged by the financial industry and large agricultural interests active in speculative activities. A similar story unfolded in the E.U. around proposed financial regulations to curb agricultural commodity speculation by European financiers. At the same time, private interests along with a host of international organizations promoted new governance initiatives centred around voluntary principles for more responsible agricultural investment. These measures have focused on reducing the negative environmental and social impacts that may result from financial investment in farmland and across the agrifood sector. These various sets of voluntary governance arrangements, however, have been weak in both substance and practice, particularly with respect to their ability to change the behaviour of private financial investors in the agricultural sector.

As this chapter shows, the weaknesses of these policy efforts — both with respect to more stringent government regulation of commodity markets as well as voluntary initiatives for private investors — signal that it is unlikely that much will change in practice to curb the potential negative effects of financialization in the agrifood sector. More broadly, collective societal efforts to rein in finance and build more sustainable and just food systems have been undermined by powerful actors — which have only become more powerful through the financialization process — who are pushing in the other direction through extensive lobby efforts. The increasingly complex

Figure 6-1 Timeline of Regulatory Activity Regarding Financial Investment in Commodities

1922 – U.S. Grain Futures Act – requires trades occur on approved exchanges & requires exchanges to outlaw market manipulation

⬇

1936 – U.S. Commodity Exchange Act - establishes position limits

⬇

1974 – Commodity Futures Trading Commission (CFTC) made U.S. regulatory body

⬇

1986 – CFTC expands criteria for exemption from rules for non-commercial traders

⬇

1991 – First formal exemption for banks from position limits in the U.S.

⬇

2000 – U.S. Commodity Futures Modernization Act - exempts over-the-counter commodity derivatives from CFTC oversight

⬇

2010 – Dodd-Frank Wall Street Reform and Consumer Protection Act – sets new rules for regulation of commodity derivatives in the U.S.

⬇

2011– International Organization of Securities Commissions (IOSCO) adopts Principles for the Regulation and Supervision of Commodity Derivatives Markets

⬇

2011 – Proposed U.S. position limits rule approved by CFTC; CFTC sued over that rule

⬇

2011 – E.U. proposes new rules for commodity derivatives under Markets in Financial Instruments Directive II (MiFID II), including position limits rule

⬇

2013 – New U.S. position limit rule proposal unveiled by CFTC; by 2018 was still not formally adopted or implemented

⬇

2014 – MiFID II – position limits agreed to in E.U.; implementation (with some exceptions) began in 2018

and abstract nature of financial investments in the agrifood sector have contributed to the challenges of strengthening policy on this issue, as civil society groups require more specialized and detailed expertise in order to participate in public debates over regulation. In this way, the financialization process itself could be characterized as having an in-built defence mechanism that works to deflect and mute cooperative social initiatives to confront the most problematic outcomes associated with financial investment in the sector.

Commodity Derivatives Regulation and Industry Pushback in the U.S. and E.U.

Both the U.S. and E.U. have attempted to put stronger regulations into place to govern commodity derivatives trading. In both cases, putting new rules in place was much more difficult for regulators than originally anticipated. Financial industry lobbying and the complexity not just of the financial instruments, but also the rules that govern them, slowed and ultimately weakened these regulatory efforts.

Seeking Stronger Regulations in the U.S.

The U.S. came out of the 2007–08 food and financial crises with significant momentum to reform its financial market regulations. Although the reform process was long and hard-fought, the resulting 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act endorsed strong measures to limit speculation in agricultural commodities (United States Government 2010). Among other things, it specifically called upon the Commodity Futures Trading Commission to put in place more stringent position limits and more rigorous and transparent reporting of over-the-counter trades (CFTC 2017). The rationale behind position limits — which restrict the number of commodity futures contracts and related financial swaps that a non-commercial (i.e., purely financial) investor can hold — is to reduce the opportunity for market manipulation. The purpose of more stringent reporting requirements is to allow regulators to spot and address disruptions to the market more easily. The implementation of these new rules since 2010, however, has been a protracted and difficult journey (Helleiner 2018; Baines 2017).

Pressure to adopt and implement regulation that includes position limits came from a range of actors in the wake of the food price spikes of 2007–08. Many mainstream economists defend the deregulation of commodity futures trading on the grounds that it improves efficiency. By contrast, groups associated with the end use of commodities have long been skeptical of speculation in futures markets because of its potential impact on food prices. As noted in Chapters 2 and 3, there was heightened concern about food price volatility in the wake of the food crisis, which had disrupted planning efforts for those directly engaged in the sector. Farmers in the U.S. were further motivated to call for regulatory strengthening when the increased speculation translated into higher federal crop insurance premiums, which are linked to prices on the futures market (United States Senate 2009: 158). While much of the financial regulatory debate has been dominated by financial actors, such as banking and investment lobbies, the structure of the CFTC means that agricultural interests have some influence because that institution must report to Congressional agricultural committees, rather than to financial services committees. This institutional feature of the CFTC created an opening for agricultural interests to influence the debates over policymaking on this issue (Clapp and Helleiner 2012).

At the same time that food price volatility encouraged a focus on derivatives regulation, there was also rising concern about the volatility in energy prices. Oil prices had spiked in mid-2008, alongside food prices, and the resulting higher energy costs encouraged some businesses to push for rules to rein in speculation. In this context, some agricultural interests — including certain producers, processors, distributors, retailers, and nongovernmental organizations — aligned with business interests, such as the airline and trucking industries, that were concerned about energy prices. Together these groups formed the Commodity Markets Oversight Coalition, a lobby group that pushed for tighter regulation of commodity markets. This diverse coalition was active in lobbying the U.S. Congress in the financial reform process that led up to the passage of the Dodd-Frank Act in 2010 (Clapp and Helleiner 2012). For their part, financial interests lobbied against strong rules and were able to weaken some provisions, but ultimately were not able to stop the passage of the

Act. As noted above, the Dodd-Frank Act called on the CFTC to strengthen commodity derivatives regulation, which included the establishment of position limits:

> The Commission shall by rule, regulation, or order establish limits on the amount of positions, as appropriate, other than bona fide hedge positions, that may be held by any person with respect to contracts of sale for future delivery or with respect to options on the contracts or commodities traded on or subject to the rules of a designated contract market. (U.S. Government 2010)

The position limits, in other words, were to apply to non-commercial operators (i.e., speculators), rather than producers and end-users of the commodities (i.e., traders, elevator operators, and food companies), who were considered to be bona fide hedgers because they had genuine market risks in the physical commodities market.

Following the passage of the Dodd-Frank Act, the CFTC began to draft specific rules to implement the new legislative commitment to strengthen position limits in relatively short order, proposing a position limits rule in January 2011. The rule was open for public comment at that time. It called for position limits on twenty-eight physical commodities as well as derivatives associated with those commodities. Bona fide hedgers such as producers and end-users were exempted from these limits. The rule garnered a great deal of attention, with 25,000 comments submitted, 15,000 of which were specifically about the position limits rule (Helleiner 2018). Many of these letters came from financial industry actors who asserted that there was no proof that commodity prices are affected by practices such as commodity index trading (Williams 2015). Indeed, there was heavy lobbying by the financial industry, with groups such as the International Swaps and Derivatives Association (ISDA), the Intercontinental Exchange (ICE), and the Chicago Mercantile Exchange (CME) pressing for weaker regulations. These groups, together with hedge funds and some commercial end-users who were heavily engaged in these markets, including the ABCD companies, formed the Commodity Markets Council (CMC) to lobby

for exemptions and to widen the definition of bona fide hedging to include financial risk (Meyer 2011; Baines 2017). ISDA set up a website — Commodity FACT — to promote its skepticism about position limits to the lay public, complete with pictures of cute farm animals and produce (ISDA n.d.).

Despite this lobbying, the CFTC approved the new position limits rule in October 2011. Within a month, however, the CFTC was faced with a legal challenge from ISDA and the Securities Industry and Financial Markets Association over the rule (Protess 2011). These groups — which represent a number of financial institutions, including JP Morgan, Goldman Sachs, and Morgan Stanley — made the case that position limits should not be implemented because the CFTC moved to impose position limits without first determining whether those limits were either "necessary" or "appropriate." In late September 2012, just weeks before the position limits rule was due to be implemented, a judge ruled against the CFTC, and the position limits rule was not promulgated (Protess 2012). The CFTC appealed the decision in November 2012, just as it came under attack from yet another lawsuit filed against it by the Chicago Mercantile Exchange over new rules on reporting requirements. The CME suit was later dropped, after the CFTC relaxed its expectations for these requirements (Foley 2012).

The CFTC immediately began drafting a new version of the regulations, which were finally approved in November 2013. In introducing the proposed regulations, the CFTC asserted that it already has Congressional power to impose position limits (which it has had since the Commodity Exchange Act was passed in 1936) and restated that the Dodd-Frank Act required it to put new position limits in place. But the new version was weaker, introducing exemptions and easing reporting requirements. And to ward against another potential lawsuit, the CFTC provided over 450 pages of rationale for the proposed regulations with detailed examples of past episodes of cornering the market (Clapp 2013). The CFTC also provided an extensive evaluation of over one hundred academic studies on the effect of commodity speculation on price volatility. The review revealed mixed views, but CFTC's then chair Gary Gensler noted: "It's better to err on the side of caution" (quoted in Michaels 2013).

The new proposed rule was approved for comment, but with some supportive commissioners leaving their posts around that time, the process of debating the rule became even more drawn out, continuing for three more years. In this period, a range of financial and agribusiness actors contested the idea that speculation disrupts commodity markets and sought to further weaken the proposed position limits rule (Baines 2017; Helleiner 2018).

Reflecting on the legal and political difficulties associated with implementing the Dodd-Frank position limits goals, Williams (2015) argues that the burden of proof for providing evidence of actual harm from speculation was imposed onto regulators in a way that broke with past practice. In the past, regulators were given more room to exercise reasoned judgment. Further, the "evidence" required has become increasingly statistical in nature, based on abstract mathematical methods available to only a few privileged academics, which overrides evidence based on the lived experiences of farmers themselves. As a result, regulators have been less able to strengthen rules as a precaution, but instead must first demonstrate statistical proof of harm. Under these constraints, the position limits rule was reworked in mid-2016, and then re-introduced in late 2016, again somewhat weakened, just before the change in U.S. administration. U.S. President Donald Trump pledged to repeal large parts of the Dodd-Frank Act, and it is as yet unclear whether the position limits rule will survive.

Regulatory Efforts in the E.U. and Beyond

Strengthening regulation in the U.S. alone would not be sufficient to curb speculation on food commodities, because financial investors could just flee to Europe, where there was relatively little regulation imposed on commodity derivatives. In the wake of the financial crisis, however, Europe took on the task of regulating commodity derivatives and announced plans for financial reform in 2009. The E.U. Parliament passed a resolution in June 2010 to consider position limits as well as a possible ban on speculative trading on agricultural commodities. By late 2010, the European Union committed to undertake reforms to its 2007 Markets in Financial Instruments Directive (MiFID) regulations, known as MiFID II. This resolution

included a requirement to consider position limits and by this time Europeans were keen to have rules that were as rigorous as those in the U.S. (Helleiner 2018).

These developments unfolded amidst growing pressure by European NGOs and civil society campaigns to end speculation on food commodities. For example, a prominent NGO campaign against "gambling on hunger" captured widespread attention and concern after 2010. Groups such as Global Justice Now, Oxfam, and Friends of the Earth Europe launched the campaign to provide research and public education on the role of financial speculation in exacerbating world hunger (see, e.g., WDM 2011; Foodwatch 2011; Oxfam 2011; Oxfam France 2013; FOEE 2012; GRAIN 2012). Investment banks were the primary target of this campaign, given their important role in facilitating large-scale financial investments in agricultural commodity derivatives, which NGOs argued were responsible for food price spikes and rising hunger in the world's poorest countries (Clapp 2012).

In 2010, as France took on the presidency of the G20, French President Nicolas Sarkozy made no secret of his aim to use the G20 as a platform to address food price volatility with tough measures, including regulating speculation on agricultural commodity futures markets. As the first ever meeting of the G20 agriculture ministers began in 2011, he was optimistic about their efforts: "In adopting this plan you will change not only the lives of a billion farmers but the course of capitalism itself so capitalism once again contributes to the development and well-being of people" (quoted in AFP 2011). At their summit in November 2011, the G20 leaders endorsed principles that had been developed by the International Organization of Securities Commissions (IOSCO) for commodity derivatives regulation and supervision (IOSCO 2011). The IOSCO principles included the granting of authority to financial regulators to impose position limits on commodity derivatives as a means to prevent market manipulation.

In keeping with IOSCO's recommendations, the European Parliament voted in October 2012 to adopt amendments that would impose position limits on commodity derivatives, among other measures. Civil society groups expressed concern about potential

loopholes in the new rules that would allow national authorities to set alternative limits, which could weaken their effect. European NGOs wanted mandatory limits. The lobbyists from banks pushed back, however, and heavily pressured the E.U. to water down the regulations. MiFID II was finally adopted in May 2014 and came into force in July 2014. Detailed rules were subsequently developed and implemented in early 2018 (although some countries immediately granted some of the continent's largest futures exchanges extra time to implement the rules related to position limits and clearing). Although the new rules cover more commodity derivatives (some 1900 types of contracts) than the U.S. rule, European NGOs continue to highlight a number of weaknesses in the new European regulatory framework (Helleiner 2018).

In a context of difficult and complex negotiations to re-regulate commodity markets, NGOs have also worked to directly influence banks' investment decisions by sponsoring public campaigns that might damage the banks' reputations. At first, this strategy appeared to deliver some results. Deutsche Bank, for example, announced in early 2012 that it was suspending the introduction of new agricultural commodity-based financial investments while it investigated whether this type of investment contributed to food price volatility. Several other European banks also suspended commodity trading in 2012. The British banking giant, Barclays, also reviewed whether to suspend its agricultural commodity investments.

But while the banks initially appeared to take the critiques seriously, they did not fully exit the sector. In 2013, Deutsche Bank announced that after an extensive review of the literature on agricultural commodity speculation, it was reinstating its agricultural commodity investments (Suppan 2013). David Folkerts-Landau, head of research at Deutsche Bank, noted that there was "little empirical evidence" that financial speculation in agricultural commodity markets has driven up food prices or made them more volatile (quoted in Kelleher 2013). This view was expressed despite earlier Deutsche Bank studies concluding that speculation could be "distorting the normal functioning of the market" and that it "has also contributed to price increases" (Richter 2013). By 2014, many banks did scale back their commodities investments, but their motivation for this

divestment was likely the sharp fall in commodity prices after 2014 rather than a newfound concern for the social impacts of their speculative activities. As prices of agricultural commodities have crept back up somewhat after 2016, banks have begun to return to the sector (Hume and Sanderson 2016).

Throughout this period, investment banks have not publicly admitted any link between their financial activities and food prices. Deutsche Bank, for example, explains: "Agricultural derivatives markets remain a crucial tool in providing financing mechanisms across the agricultural value chain" (Deutsche Bank n.d.). The *Financial Times* also notes that the European banks only stepped out of the higher profile investment products that trade on exchanges and not "the far larger and more opaque world of over-the-counter swaps, notes and structured products" (Johnson 2012). Most financial institutions are in fact deeply involved in much more sophisticated financial products linked to the agricultural sector, and that reach deeper into agricultural commodity chains than the index funds that simply track commodity futures prices. They are also deep into equity index investments, which track the performance of agricultural commodity related firms, and are also directly invested in farmland, agricultural insurance, and enterprises along agrifood supply chains.

Voluntary Responsible Agricultural Investment?

In addition to the focus on commodity derivatives regulation, critics of financialization have called for initiatives to curb the negative impacts of financial investment in agriculture and farmland investments more generally. With formal regulation being painfully slow to come to fruition and with banks seeing continued profitability in certain agricultural investments, many critics have placed hope in the ability of voluntary initiatives to head off obviously harmful practices. In this context, voluntary international governance initiatives aimed at promoting "responsible" private financial investment in agriculture began to emerge.

The main aim of voluntary initiatives is to persuade firms and their investors that acting responsibly with respect to environmental and social issues is in their own best interest. These initiatives encour-

age firms to sign on not only to "do the right thing," but also because it should improve the bottom line (Schmidheiny 1992; Carroll and Shabana 2010). In the agricultural sector, responsible investment initiatives appeal to the long-term outlook of institutional investors by stressing that financial returns depend on the long-run ecological and social sustainability of land and farming operations. As noted in Chapters 4 and 5, pension funds typically have longer time horizons than other investor groups, employing more passive strategies, such as investment in financial vehicles that promise to deliver returns over long periods of time and that do not require much active maintenance. Promoters of responsible investment in the agricultural sector emphasize the importance of ensuring that investments in farmland, for example, are managed sustainably into the long future. Due to the illiquid nature of land, institutional investors holding farmland are likely to be tied to their investment for some time and are thus more likely to seek to protect their investment through stewardship activities (Scott 2013).

Following the 2007–08 food crisis, a number of responsible agricultural investment initiatives emerged in response to growing awareness of the potential for harmful outcomes associated with both agricultural commodity speculation and large-scale land acquisitions (see Figure 6-2). Support for such measures grew as their proponents argued that they could help to ensure that the potential benefits of agricultural investments outweigh their potential costs (Hallam 2011). Amidst public outcry over land grabbing and food speculation, a 2009 Group of Eight (G8) communiqué stressed that the body was committed to working toward the establishment of principles and best practices that would serve as a guide to improve the quality of international agricultural investment (G8 2009; Margulis and Porter 2013). A similar, voluntary approach was endorsed by the private financial industry around the same time that the United States and European Union sought to strengthen financial regulations to mitigate the negative effect of excessive speculation on commodity derivatives markets.

In September 2009, Japan responded to the G8's statement on responsible agricultural investment by co-hosting an international roundtable meeting co-sponsored with the World Bank, the FAO,

Figure 6-2 Major Voluntary Agricultural Investment Initiatives

Principles for Responsible Agricultural Investment (PRAI) – 2010
• Led by World Bank, FAO, IFAD, UNCTAD • Covers all agricultural investments • Set of basic principles • Voluntary and non-binding
Farmland Principles – Principles for Responsible Investment (PRI) – 2011
• Led by several members of the UN PRI • Focus is on institutional investment funds • Set of basic principles • Voluntary and non-binding
Voluntary Guidelines on Responsible Governance of Tenure of Land (VG) – 2012
• Led by Committee on World Food Security • Focus is on land tenure governance • Detailed guidance document • Voluntary and non-binding
Principles for Responsible Investments in Agriculture and Food Systems (CFS-RAI) – 2014
• Led by Committee on World Food Security • Covers all agricultural investments • Negotiated document • Voluntary and non-binding

Source: Based on Clapp 2017

the International Fund for Agricultural Development (IFAD), and UNCTAD. This meeting, which brought together representatives from thirty-one governments and thirteen organizations, launched discussions on creating a responsible agricultural investment guidance document to "create a 'win-win-win' situation" that would bring mutual benefits to countries, local communities, and investors (Japan, UNCTAD, FAO, World Bank, et al. 2009: 2). Participants at

the meeting encouraged the World Bank, FAO, IFAD, and UNCTAD, which were already doing work along these lines, to further develop their frameworks into a set of non-legally-binding principles. As this work continued, the World Bank effectively took the lead (Margulis and Porter 2013: 74).

Unveiled in early 2010, *The Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources* (PRAI) outlines seven key principles that agricultural investments should follow. Such investments should (1) recognize and respect existing rights to both land and natural resources; (2) strengthen food security; (3) require transparency and good governance when acquiring land; (4) ensure consultation with and participation of those affected by the investment; (5) ensure economic viability; (6) promote positive social impacts; and (7) support environmental sustainability (FAO, IFAD, UNCTAD, and World Bank 2010). The PRAI were endorsed by both the G8 and the G20 and are acknowledged by the G8's New Alliance for Food Security and Nutrition (Stephens 2013). Broad in their application, the PRAI seek to guide any and all agricultural investment — be it public, private, foreign, or domestic. Their coverage thus includes investments from private equity firms, private financial institutions, sovereign wealth funds, pension funds, agrifood companies, biofuel firms, and individual entrepreneurs (FAO et al. 2010). The feasibility of the PRAI was then field-tested on 45–50 investments that were already underway across Africa and Southeast Asia (GRAIN 2012; World Bank and UNCTAD 2014; World Bank, UNCTAD, and Government of Japan 2017).

The negotiations for the PRAI ran parallel to a separate FAO initiative to ensure responsible investment in land. In 2006, the FAO sponsored the International Conference on Agrarian Reform and Rural Development, the final declaration of which highlights the importance of establishing guidelines on tenure issues. A process to establish formal guidelines was launched by the FAO in 2009, resulting in the adoption of the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (FAO 2012; see also Seufert 2013). The Voluntary Guidelines (VG) were put in place to guide investment in land, fisheries, and forests, so as to protect land and resource tenure

rights, especially customary land rights for Indigenous Peoples and smallholders, and to safeguard the environment. The VG call on national governments to protect tenure rights and ask all stakeholders, including private financial investors, to be respectful of those rights. The FAO coordinated the negotiation of the VG, which were developed in a broadly inclusive and consultative process overseen by the Committee on World Food Security (CFS), which included private sector and civil society participation (McKeon 2013). Because of the wide consultation and participation in their development, the VG are widely viewed as being more legitimate than the PRAI (Margulis and Porter 2013).

Tensions emerged at the Committee on World Food Security over the PRAI and VG when they were being developed over the 2009–2012 period (McKeon 2013: 110). Representatives from civil society were reluctant to endorse the PRAI because it was being spearheaded by the World Bank and was not the product of a consultative process. Instead, civil society organizations focused on promoting the VG (McKeon 2013). In this context, the CFS launched yet another process in 2012 to develop a set of responsible agricultural investment guidelines that included land, but also encompassed broader aspects of agricultural investment (Stephens 2013: 190). *The Principles for Responsible Investment in Agriculture and Food Systems* (PRIAFS, also referred to as the CFS-RAI) (FAO 2014) were adopted in 2014 and go further than either the PRAI or VG to underline the role of small farmers as agricultural investors alongside corporate and financial investors. This document places heavy emphasis on food security and the right to food and also contains more explicit language about the need to hold investors accountable (FAO 2013).

Alongside these intergovernmental and international organization efforts to develop frameworks for responsible agricultural investment, private sector investors also stepped into this space. In 2011, a group of signatories to the U.N. Principles for Responsible Investment (PRI) (a set of principles covering investment in general) launched the *Principles for Responsible Investment in Farmland* (also referred to as the Farmland Principles), as a private sector voluntary guideline. The Farmland Principles are directed at large-scale institutional investors, such as pension funds, and focus on five key

areas to foster more responsible farmland investment: (1) respect for environmental sustainability; (2) human and labour rights; (3) land and resource rights; (4) ethical business standards; and (5) transparency. The Farmland Principles were independently agreed to by a handful of institutional investors, but have since been incorporated into the PRI's general guidance (GRAIN 2015). Among the initial signatories were eight investment funds, including large-scale institutional investors TIAA (a U.S. teachers' pension fund), AP2 (a Swedish government pension scheme), and APB (a Dutch government pension scheme), among others. Among the largest institutional owners of farmland (with US$6 billion invested in 1.7 million acres of farmland), TIAA is has been a leading advocate of the Farmland Principles, posting them prominently on its website and in its investor reports (TIAA-CREF Asset Management 2012; Nuveen-TIAA 2017). Yet, as discussed in Chapter 4, there is some question as to whether TIAA-CREF has been a responsible investor in land (GRAIN et al. 2015).

Additional sets of guidelines continue to emerge to address large-scale land acquisition and agricultural investments. These include the G8 New Alliance for Food Security and Nutrition's *Analytical Framework for Responsible Land-Based Agricultural Investments*, the U.N. Land Policy Initiative's *Guiding Principles on Large Scale Land Based Investments in Africa*, the Global Compact's *Food and Agriculture Business Principles*, the OECD-FAO *Guidance for Responsible Agricultural Supply Chains,* and a variety of commodity-based standards for soy, sugar, cotton, biofuels, etc. (GRAIN 2015; OECD and FAO 2016; World Bank et al. 2017).

The rapid emergence of multiple diverse initiatives promoting responsible investment in agricultural commodities and farmland was in some ways remarkable as it demonstrated that a number of actors, across a range of interests, sought to improve social justice and environmental outcomes associated with international agricultural investment. However, despite the promise of voluntary initiatives to provide responsible investment, such efforts generally suffer from significant shortcomings in practice (Vogel 2010; Dauvergne 2017). Among the weaknesses of voluntary measures are that (1) they tend to be broad in scope and vague in what they are calling for, such

that they are easy to claim adherence to without changing much by way of practice; (2) they typically have somewhat low participation rates, weakening their prospects for widespread change; and (3) the number of initiatives has proliferated, such that it is easy for firms to pick and choose what measures they follow, usually opting for the ones that are least stringent (Clapp and Thistlethwaite 2012).

The responsible investment initiatives for agriculture share a number of the weaknesses found at the broader level. Some are very general in scope and incorporate vague language and do not impose specific requirements on those that sign them. The PRAI, for example, is only one page long, although the FAO's Voluntary Guidelines are much more detailed and specific. The PRAI, the VG, and the CFS-RAI function only as guidance frameworks for stakeholders. They do not have signatories *per se*, making it difficult to ascertain how many investors actually abide by them. The number of voluntary initiatives in the agricultural investment space has multiplied rapidly, leading to confusion as they cover overlapping themes, as outlined in Figure 6-2. To anyone not following these developments closely, the differences between the PRAI, VG, CFS-RAI, and Farmland Principles are not readily apparent (Margulis and Porter 2013).

Complexity and Governance Challenges

In addition to the general weaknesses of voluntary corporate sustainability initiatives, financial investments in agricultural commodities and farmland have unique features that make them even more difficult to govern with nonbinding voluntary guidance frameworks. The complexity and diversity of financial investments in the sector make it especially difficult to draw specific connections between cause and effect and to hold individual investors responsible for outcomes on the ground. In other words, if it is impossible to attribute negative outcomes, such as food price volatility, loss of land rights, or environmental degradation arising from financial investment in the sector to specific investors or even groups of investors, then it is unlikely those investors will be convinced to voluntarily change their investment behaviour. There are four key reasons why investors are unlikely to alter their conduct in this arena.

First, the fungible nature of money — meaning that money is mutually interchangeable with other money and viewed as equally valuable — makes it difficult to determine *whose* money is responsible for outcomes in the sector, especially in the case of agricultural commodity derivatives and index fund trading. Bulk commodities traded on futures markets are also interchangeable. One bushel of corn of a certain type and grade is much like another bushel of corn of that type and grade, and separating out a bushel of corn that might be sustainably produced is nearly impossible, at least at this point in time. The interchangeable quality of both money and commodities means that it is not possible to trace specific investments in abstract derivatives instruments by certain individuals to specific concrete outcomes on the ground. The impact of index investments is even more difficult to trace back to specific investors, as these instruments are purely financial in nature, making it much less clear whose money is responsible for which outcomes. Getting financial investors to take responsibility for outcomes in this context is challenging, to say the least.

Second, the myriad relations among different investor groups also makes it difficult to know which investors and groups are responsible for a particular investment trend and its effects. Multiple actors — including pension funds, sovereign wealth funds, hedge funds, investment banks, private equity funds, and agribusiness firms — engage in financial investment in the sector, and they do so via multiple types of agricultural-linked investment products. Due to a lack of full transparency, it is extremely difficult to track the activity of these investors, even for industry analysts (McNellis 2009). For example, there is no requirement that hedge funds publicly disclose their investments. Moreover, there is lack of clarity between these investor groups, which tend to invest in each other. McNellis (2009: 2) notes: "For example, a sovereign wealth fund could be investing in a private equity fund which in turn invests in a specialized hedge fund that is buying agricultural land while at the same time investing in the various commodity markets." With this degree of complexity, it is difficult to tease out which specific investor groups are driving particular trends and their outcomes in specific locations, making it even more challenging to hold them accountable.

Third, there is a fundamental mismatch between the inherently short-term nature of global finance and the long-term needs of sustainable agriculture. This disjuncture weakens incentives to invest responsibly. Analysts point out that financial markets tend to prioritize short-run returns, which is antithetical to the long-term consideration required for ensuring environmental sustainability (Helleiner 2011). Although pension funds tend to have a longer-term outlook, the business case for environmentally sustainable financial investment for this type of investor is also weak. According to Harmes (2011), most pension funds employ external managers who are evaluated on short-term performance criteria even though the investors whose money is in the fund want positive returns over the long run. Evaluating money managers based on short-term criteria translates into investment decisions that prioritize immediate returns over longer-term stewardship goals. At the same time, shareholder pressure on agrifood firms results in similar dynamics, where agrifood firms undertake corporate responsibility measures, which bolster the firm's global brand at the expense of job security and social capital within local communities where those firms are located (Jones and Nisbet 2011).

Finally, while corporate actors may have a brand name or a public image that encourages them to sign up for voluntary sustainability initiatives, in many cases financial investors do not have a public image or brand to protect. As such, the business case for responsible agricultural investment is weak at best. According to de Man (2013), only a few financial investor types see benefits in adhering to responsible investment initiatives. Farmland investors with a strong public profile, for example, may have some incentive to invest responsibly. Such investors might include agrifood companies that have strong brands and high visibility, development finance institutions, publicly held pension funds, and biofuel firms seeking to enter publicly regulated markets (de Man 2013: 17). For other investors, however, such as large agricultural commodity traders, sovereign wealth funds, and private equity funds, the business case for investing responsibly is much more difficult to make. These firms tend to act in ways that are not transparent to the public and they do not have large public profiles or prominent brands. As de Man (2013: 19) notes, there is

actually a "business case for opacity" rather than transparency when it comes to wealthy individuals and pure financial speculators. The business case for responsible investment is even more unclear with investors in derivatives such as commodity futures and index products because the link to land rights infringements and food prices is only indirect. In these cases, the connections between specific investors and outcomes on the ground is barely discernable. Yet commodity futures and index investment products are one of the most common ways investors gain exposure to the agricultural sector (Imbert and Knoepfel 2011: 15).

Conclusion

Although the food and financial crises of 2007–08 created an opening to potentially strengthen regulation, they also opened avenues for a deepening of agrifood financialization because they fed incentives for further financial investment in the sector. This intensification of financialization has contributed to power and wealth inequities across the food system, which has bolstered the lobby power of financial elites to shape the rules in their own interest. The complexity of financial investments in the sector has also worked against civil society efforts to tame those markets. Indeed, as the analysis in this chapter shows, collective public action to affect financial investment in the agrifood sector in ways that promote more just and sustainable food systems has been extremely challenging.

Efforts to regulate commodity derivatives markets were undertaken as part of a broader financial sector reform in the U.S. and Europe, but the new rules have faced constant challenges from both the financial industry and large-scale agricultural interests who have lobbied hard against them. While several international civil society organizations have targeted banks and investors directly in campaigns to name and shame financial institutions that are profiting from food price volatility, their work is made more challenging by the intricate complexity of the markets and rules that guide them. As such, the lobby power of the food system stakeholders that benefit from financialization has thus far been able to block the adoption of the most stringent regulations that would affect their bottom line.

Alongside more formal regulatory efforts, voluntary initiatives for agricultural investment and land investment have been advocated for by both private and intergovernmental agencies. Although several of these voluntary initiatives, such as the VG and the CFS-RAI, have included broad participation, including civil society, overall, they have been relatively weak in terms of changing investment practices. As the analysis in this chapter shows, financialization has only worked to undermine the ability of these measures to effect positive change, in large part because the complexity and abstract nature of the financial investment tools involved make it extremely difficult to tie responsibility to any particular financial actor or group of actors.

Without much change to practices from these regulatory efforts, investments that undermine the social and ecological foundations of food and agriculture are able to continue. Although the efforts at re-regulation and voluntary restraint have been hard fought and not terribly successful, they nonetheless illustrate how important it is for civil society and progressive policymakers to be ready for the next possible political opening to put regulatory measures into effect.

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7

The Prospects for Change

Throughout this book, we make the case that finance and financialization matter for the food system, including in ways that we see as problematic. We outline the broader shifts in the global economy that have taken place in recent decades that work to prioritize financial actors, motivations, and profits in the food system. As we outline in Table 1-2 of our introductory chapter and explain throughout this book, important shifts within the food system were required for financialization to unfold in the way that it has, and as it unfolded, the process has resulted in very real effects, both direct and indirect. Our analysis shows that financialization in the food system has in many respects mirrored the ways in which this process has unfolded in other sectors. Specifically, the financial transformation of the food system has taken three broad forms: (1) it is being reconfigured as a new arena for capital accumulation for financial actors; (2) it has been reshaped in ways that prioritize shareholder value; and (3) financial motivations and mechanisms have been normalized as elements of everyday life.

In this chapter, we briefly summarize how each of these three interrelated dimensions of financialization have progressed within the food system and link these to their direct impacts, as discussed in previous chapters. Stepping back to view the bigger picture, we argue that, in combination, these specific and direct effects of financialization collectively contribute to three broader consequences of profound importance. First, they have exacerbated inequalities of wealth and power in the food system. Second, they have heightened food system vulnerability to economic and environmental stresses. And third, they have introduced new challenges to resistance from civil society. These broader impacts, although indirect at times, influence food systems in ways that are self-reinforcing. Nonetheless, socially just and sustainable food economies are possible. We conclude this chapter by pointing to some potential strategies to these ends.

The Financialization of Food and Agriculture in 3D

As the financialization of accumulation has taken root, profit-making in the agrifood sector increasingly occurs through related financial activities rather than the actual provisioning of food. Two broad transformations have enabled this reconfiguration. First, neoliberal rollbacks of state activities and market regulations, as outlined in Chapters 2 and 3 in particular, have allowed for the expansion of existing financial activities in the sector and the development of new channels for financial accumulation. Second, the practice of abstraction has occluded the various economic, cultural, social, and ecological values associated with food and agriculture, often reducing them to simplistic metrics of expected risk and returns that are prioritized by financial logics. This combination of deregulation and abstraction has facilitated the development of a number of financial products, many of which we discuss in previous chapters, including commodity index funds (CIFs) and food and agriculture-linked exchange traded funds (ETFs) (Chapters 2 and 5); farmland real estate investment trusts (REITs) (Chapters 4 and 5); index-based agricultural insurance (IBAI) (Chapter 3); and credit and other financial services made available by food retailers, agricultural inputs suppliers, and commodity traders (Chapter 5). These new products work to redistribute value in the food system, most notably from ordinary agricultural producers and food consumers (who are becoming increasingly vulnerable and indebted), to financial actors and corporate elites (who are becoming more secure and earning greater profits). Relatedly, the opening of these new channels for financial accumulation has played a direct role in the growing volatility of food prices and the contemporary land rush (Chapters 2, 3, and 4).

Alongside the financialization of accumulation, the dominant food system is being reshaped by the so-called "shareholder revolution." As we outline in Chapter 5, corporations across the agrifood sector—most notably food retailers, agricultural input suppliers, and food processors—are increasingly prioritizing financial returns to their shareholders over the welfare of their workers and the development of their products. This transformation has been

facilitated by the relatively recent practice of tying the compensation of firm executives to equity values and can be directly linked to the expanding pay gap between CEOs and workers in agrifood corporations. The prioritization of shareholder value has given tremendous power to a handful of institutional investors who own significant shares in multiple corporations that are purportedly competitors. In the face of stagnant sales, which are undoubtedly linked to decreased investment, these shareholders increasingly pressure for mergers with — or acquisitions of — complementary and competing firms, such as in the case of the recent mega-mergers in the agricultural input industry and the Whole Foods–Amazon merger, discussed in Chapter 5. While the practice generates short-term returns for financial investors, it is also a primary driver of corporate concentration in the agrifood sector. The result is less innovation and fewer product lines, be it the food on supermarket shelves or seeds and agrochemicals at the local dealer. Moreover, in their efforts to reduce expenses, which cut into shareholder returns, corporate executives externalize social and ecological costs, which are often borne by other actors within the supply chain, including their workers and agricultural producers.

Third, the financialization of daily life is part and parcel with the previous two dimensions of financialization. Understood as the growing reliance of ordinary individuals upon financial services to fulfill their most basic needs, the financialization of daily life has been fuelled by two related processes. First, the neoliberal rollback of state supports and protections heightened the insecurity of various populations, including many agricultural producers, food workers, and consumers (Chapters 2 and 3). Second, the contemporary campaign of financial inclusion has promoted the individual purchase of financial services as the solution to a host of social problems, such as agricultural producers' limited access to resources and their exposure to price-based and environmental risks (Chapters 3 and 4), and food workers' and consumers' challenges in accessing food (Chapter 5). Combined, these processes help to normalize notions that security, including day-to-day living, is an individual responsibility that is best fulfilled through savvy participation in financial markets. In the food and agricultural sectors, this has helped to fuel

demand for many of the new financial products described in this book — e.g., mass-marketed agricultural investment funds, such as CIFs, land funds, and ETFs for retirement security (Chapters 2, 4, and 5); credit and other financial services offered by food retailers and agricultural input suppliers to facilitate buyers' access to their products (Chapters 3 and 5); debit cards as a means for insecure populations to access food assistance (Chapter 5); and derivatives as a means for managing the risks of agricultural production (Chapter 3). Ironically, as ordinary citizens become dependent upon these mechanisms in their daily lives, they develop a vested interest in the viability of financialization (Chapter 6).

These three modes of financialization are not mutually exclusive and reinforce one another in a variety of ways. For example, the creation of new arenas of capital accumulation through the development of new financial investment tools linked to food and agriculture requires the reconfiguration of agricultural and food activities in ways that fall in line with financial metrics. The abstraction of food and agriculture along these lines also facilitates the ability of shareholders to evaluate agricultural activities in terms that are purely financial, often encouraging rationalization at the level of the firm that makes employment conditions for workers more precarious and threatens producer livelihoods. Similarly, the reconfiguration of food and agriculture according to financial calculations has also infiltrated everyday life, as the abstract conceptualization of food and agriculture in financial terms has become normalized and unquestioned at the individual level through mundane investment and credit transactions that are presented to food producers, workers, and consumers as ways to manage their increasingly elevated risks. The financial products offered to these individuals, in turn, serve as new channels for financial accumulation.

Broader Implications of a Financialized Food System

The direct effects arising from these aspects of financialization may appear discrete and separate from one another. For example, on the surface it is not immediately obvious how rising food price volatility is linked to corporate concentration in the agricultural input or food

retailing sector. Consequently, activists and other detractors tend to focus on each of these problems independently, with different organizations campaigning against specific issues while not always targeting the underlying causes. A key message of this book is that these direct impacts, as disparate as they may seem, are deeply connected with the same causal underpinning: financialization. One of our primary motivations is to connect the dots between the specific outcomes and show the ways in which these various outcomes are linked through the financialized transformation of the food system. To be sure, financialization alone is not the only source of problems in the system. Nonetheless, it is an important driver of many of these issues. Throughout this book, we argue that while each of the direct impacts is noteworthy in its own right, they collectively point to three broader implications about the functioning and potential transformation of the financialized food system.

First, the combined effects of financialization within the food system contribute to greater inequality, whereby financial elites and agrifood companies garner the lion's share of power and wealth, while other stakeholders in the system are made more vulnerable, albeit to varying degrees. The processes of financialization have opened up new channels for accumulation within the food system, which serve as conduits for a redistribution of value that favours wealthier and more powerful actors, both within and across different sets of food system actors. It appears that this process has intensified in recent years. As we outline in Chapter 2, for example, the dramatic increase of financial investment in agricultural commodity markets not only generated direct and substantial returns for investors, but it also exacerbated the volatility of food prices, which had devastating impacts on the world's poorest and most vulnerable people. Unstable food prices, in turn, created further opportunities for financial gain for the wealthy, including new instruments to speculate on changing food prices and appreciating land values, such as CIFs and REITs (Chapters 2, 3, and 4). As we also note in those chapters, relatively well-off actors like wealthier farmers and larger buyers of agricultural commodities are better positioned than their smaller and poorer counterparts to take advantage of many of the new financial products and expanded financial markets. Examples include index-

based agricultural insurance, new commodity derivative markets, and farmland investments.

Similarly, the growing prioritization of shareholder value also contributes to the consolidation of power and wealth as agrifood corporations are restructured in order to meet investor demands for higher returns. These dynamics contribute to growing corporate concentration through mergers and acquisitions across the entire agrifood sector, which often leads to job losses and less autonomy for both producers and consumers. In turn, agrifood corporations have teamed-up with financial service providers to capitalize on the growing precarity of food workers, consumers, and agricultural producers by developing new financial products like retail credit and insurance (Chapters 3 and 5). While these financial instruments may help vulnerable populations to satisfy their immediate needs, they ultimately intensify the concentration of wealth and power in the food system.

Second, the processes of financialization compromise the socio-ecological resiliency of food systems. As financial activities have become more speculative and fickle shareholders more powerful, political and economic elites have come to prioritize short-term returns over long-term investments. In the agrifood sector this translates into a growing emphasis upon the generation of short-term profits over the long-term objective of sustainability. As we illustrated through various examples in Chapters 2 through 5, new instruments of finance, such as CIFs, IBAI, and land-based investment products, have rendered food systems more prone to instability and more vulnerable to economic and environmental shocks. This vulnerability was front and centre during the 2007–08 food and financial crises, where food and farmland markets became highly unstable as prices for both rose sharply and priced both producers and consumers out of the market. Financial processes that encourage the onward march of high-tech industrial models of agriculture and food system organization (outlined in particular in Chapters 3, 4, and 5), further compromise the resiliency of the food system. This trend has led to a catastrophic loss of diversity within food systems, including the erosion of agricultural biodiversity and associated knowledge and practices. It also contributes to climate change through its voracious

use of fossil fuels and associated carbon emissions. This push for the adoption of "one size fits all" technologies has the paradoxical effect of heightening the vulnerability of farming systems to ecological shocks while simultaneously — through contributing to climate change — increasing the probability of drought, hurricanes, and other extreme weather events.

Although new financial tools to mitigate such risks have emerged, such as IBAI (Chapter 3), they do not address the underlying causes of vulnerability, and they only provide compensation to help some actors cope with the effects. Yet these limited protections are rarely available to the most vulnerable agricultural producers, and, paradoxically, the products are often deployed in a manner that encourages the adoption of agricultural practices and economic activities that further undermine the socio-ecological resiliency of food systems. The abstraction of food and agriculture into financial values has facilitated these shifts, as a short-sighted focus on anticipated monetary returns discourages an appreciation for the broader function of food and agriculture in our everyday lives, including its enduring and vital role in providing nourishment and ecological services.

The third implication of a financialized food system is the challenge it poses to resistance. Part of the reason why the negative impacts of food system transformation have not been checked is that the process of financialization itself discourages collective efforts to cultivate more just and sustainable food economies. The highly complex and opaque nature of new financial tools (described in Chapters 2 through 5), has made it extremely difficult to follow and understand the ways in which financialization is affecting food systems on the ground. This complexity presents challenges for social movements and civil society actors who are seeking progressive social change.

At the same time, the enhanced power and wealth of financial and corporate actors translates into significant lobbying power, which they wield behind closed doors to ensure that governance outcomes serve their interests (Chapter 6). Meanwhile, financialization has rendered the food system "apolitical" for ordinary citizens, as finance and financial inclusion are framed as the solutions to their own needs; examples include index-based insurance

for producers and supermarket credit schemes for consumers. As food and livelihood security become dependent upon the purchase of financial services — for example, investments in farmland and agricultural commodities become part of retirement savings; the procurement of agribusiness-sponsored financial services become necessities for securing food and productive inputs; and the purchase of derivatives become the most available means for mitigating risks — individuals become blinded to the role of financialization in producing their insecurity, and their efforts to challenge it become more complicated.

Prospects for Change

As the above summary of our key arguments makes clear, the analysis in this book presents a sobering and admittedly pessimistic view of the impact of financialization on the food system. In particular, if the key implications include an in-built capacity to dampen collective calls for resistance, what are the prospects for progressive change? We end this book with a brief outline of three interrelated approaches, which we see as fundamental for confronting and addressing the negative impacts of financialization in the food system.

We begin by stressing the importance of having a broader public conversation about the impacts of financialization in the food system, which we see as imperative if we are to work effectively toward addressing the root causes of those problems. In order to have this conversation, it is essential to identify and understand the linkages between food and finance. However, the role of finance in the food system is often obscured by its growing complexity, as well as the technical jargon that tends to accompany it, particularly among practitioners and experts in the field. Our motivation in writing this book is to spark a broader conversation among a wider audience, including not just academics and practitioners, but also civil society actors and social movements, about the appropriate role of finance in the food system.

Any attempt to translate complex processes into ordinary language requires a careful balance between excessive detail and oversimplification. We hope we have succeeded at least somewhat in our

attempt to untangle the effects of financialization in the food system in a way that explains its underlying processes and its associated implications in a clear and understandable manner. In the absence of a greater understanding of the ways in which finance interacts with the food system, political pressure to change the policies and practices that govern that relationship will likely miss its target or fail to address the underlying causes. In other words, finance and financialization need to be re-politicized and evaluated not simply in terms of how they affect each of us personally, but also in terms of their broader impacts on society.

Our second proposition is that it is essential for civil society and social movements to strategize about how best to engage with state and international governance actors regarding appropriate regulation of the relationship between finance and the food system. These groups were caught off guard during the 2007–08 food and financial crises, when it became clear that financial actors played a role in exacerbating food price volatility and in encouraging land grabs. These crises provided a political opening for regulatory and policy change "from above" to address some aspects of financialization, as seen by the attempts to curb agricultural commodity speculation and render land and other investments in the sector more "responsible." Some analysts and social movement actors are skeptical about whether states and international institutions can be relied upon to play a role in taming the negative effects of finance in the food system, especially when states themselves have played a role in paving the way for financialization to occur in the first place.

This skepticism is certainly well-placed in many instances, as we outlined in Chapter 6. But if it can be encouraged to stand strong against lobby pressure, the state is a unique political actor that can implement and enforce rules and regulations — at both the domestic and international levels — in ways that support producers and consumers while holding financial actors and agrifood corporations to account. For this reason, we urge those concerned about this issue not to discount the potential role of the state and international governance mechanisms and instead to engage with these bodies critically to work toward more progressive policy change. More appropriate governance, strongly enforced, can help to open up space for more

equitable and sustainable food *and* financial systems to emerge and to thrive "from below."

It is possible, for example, to imagine a banking system where the returns from loans and other forms of money creation are controlled by the state (rather than private financial actors) and invested in socially desirable projects like equitable and sustainable food systems (rather than appropriated as private profits). Such an arrangement would have the added benefits of fostering economic stability and countering economic inequality (Fisher 1935; Jackson and Dyson 2014) while encouraging more environmentally sustainable economies (Daly and Farley 2011). It is also possible to imagine stronger international legal frameworks that address the impacts of financialization on the ground. Negotiations have recently begun, for example, on an international, legally binding transnational corporate accountability treaty that seeks to hold business enterprises accountable for human rights violations and environmental crimes (Steg 2017). But to get such initiatives and favourable forms of governance in place requires continued civil society and social movement engagement and pressure to take advantage of political openings to strengthen policy.

Finally, we stress that it is vital to continue the ongoing work to foster and scale out alternative food systems that are shielded from the operation and effects of today's extensive financialization. The development and success of alternative food systems, including efforts to support small-scale and ecological producers and small- to medium-scale market and distribution systems, and wider consumer access to those systems, can demonstrate that "big finance" is not required for food systems to thrive and achieve their goals. It is encouraging that small-scale producers still feed around 70 percent of the world's population and do so in diverse ways that are essential for the long-term resilience of food systems (ETC Group 2017). But as we argue throughout this book, the onward march of financialization, particularly the variety of it we have witnessed in recent decades, has encouraged the concentration of farmland and the further expansion of the industrial, high-tech agricultural model, which its proponents say is the only way to feed a growing world population.

The current trajectory of finance-supported displacement and

industrial agriculture puts the lives and livelihoods of many small-scale producers, local distributors, and consumers at risk. For this reason, it is crucial that alternative food systems receive support. At present, small-scale producers, numbering some 2.5 billion people and making up around 40 percent of the world's labour force, receive less than a third of all agricultural resources and occupy less than 25 percent of the world's agricultural land (IFAD and UNEP 2013: 8; ETC Group 2017; GRAIN 2014). Greater support for small-scale producers and the alternative food systems through which they operate can help to foster more ecologically and socially sustainable and food secure communities that are safeguarded from the pressures of the financialized, high-tech food system models promoted by financial elites.

Part of the support for more socially and environmentally sound food systems can entail the development of alternative financial models that better serve producers and consumers. As we note at the beginning of this book, agricultural production is an especially challenging economic endeavour characterized by uneven and uncertain income flows and subject to losses from any number of environmental risks, including inclement weather, pests, and disease. Access to finance can help farmers to better manage these dynamics so that they are able to afford the necessary inputs and cover losses when disaster strikes. But farmers need not rely on global financial markets and speculative investors to manage these unique features of the sector.

Community supported agriculture schemes, for example, provide a mechanism for risk sharing that sees consumers pledge funds to farmers at the start of the agricultural season to enable them to cover the cost of inputs and risk of crop failure. In return for this financial service consumers receive "equity" in the form of regular food baskets throughout the harvest season (e.g., Bloemmen, Bobulescu, Tuyen Le, et al. 2015). Longer-term arrangements where food consumers purchase shares in a farm that entitle them to a portion of agricultural output over several years are also an option for farmers seeking to finance major investments in land and other forms of working capital (Nabhan and Mars 2016). Local currencies are another avenue that, to date at least, have remained locally grounded and not captured

by large-scale financial markets. These types of place-based money systems enable communities to keep finance and investment within local economies, and such schemes can be structured in ways that support sustainable food and agricultural systems while discouraging harmful speculative activities (e.g., Dittmer 2013). These are just a few examples of the ways that finance can potentially be reconfigured to better support producers, consumers, and the environment. Much more research is needed on these types of alternative financial systems and their articulation with food and agricultural systems.

"Social banking," where investors seek to put their savings in investment tools that promote positive change in society, is promoted by some as a possible avenue by which farmers can raise funds to cover the cost of a shift to more sustainable agricultural production methods (e.g., Weber 2014). Lang, Humphreys, and Rodinciuc (2017), for example, identify a number of channels through which socially conscious investors can support more just and environmentally sustainable food systems, including making deposits in mission-driven banks and credit cooperatives rather than large mega-banks, and purchasing bonds in relevant public and private investment initiatives (e.g., Iroquois Valley Farms, which provides mortgage financing to young organic farmers in the U.S.). Such initiatives, when grounded within local communities and focused on smaller-scale and agroecological farming enterprises, can work to push back against the power of big finance in the sector. But like the responsible investment initiatives that were discussed in Chapter 6, market-based approaches along these lines, especially those geared to large-scale investors and based on complex financial tools, risk deepening many of the problems that we discuss in this book. If not implemented with care, such initiatives could reinforce the normalization of new tools of big finance as a solution to problems in the food and agriculture sector, reconfigure socially just and environmentally sustainable agriculture as an arena for financial accumulation, and work to diffuse collective demands for meaningful change. Such an outcome could paradoxically further undermine the socio-ecological resiliency of food systems.

The stranglehold that finance has on agriculture can also be broken by reducing farmers' dependence on high-cost inputs and

their unfavourable insertion into globalized commodity chains. Van der Ploeg (2009) writes about the growth of "new peasantries" who actively challenge the ability of unregulated capital to control the practices and processes of food provisioning. In part, they do so by shifting to low-input technologies that reduce their dependence upon purchased inputs and the associated debt, but also by campaigning for the decommodification of farmland and for pro-poor redistributive land reform. In addition to reducing farmers' need for credit, the new peasantries' embrace of agroecological practices also improve the resiliency of their agricultural operations, thereby reducing their need for insurance. Of course, the need for financial services is not entirely eliminated, but van der Ploeg and his colleagues highlight the potential for them to be provisioned in "nested markets" that are actively instituted by alternative food and economy movements (van der Ploeg et al. 2012).

Rural savings and credit cooperatives have the potential improve farmer autonomy and could play a prominent role in the nested markets envisioned by van der Ploeg et al. (2012). Sometimes referred to as credit unions, savings cooperatives have long been recognized as an effective means for farmers to collectively pool their resources for the provisioning of low cost credit, including for large purchases like farmland and equipment (Guinnane 2011). World Bank economists note that savings cooperatives have the potential to operate more efficiently than private banks when servicing agricultural producers (Huppi and Feder 1990). They also foster the group solidarity and independence from exploitative market relations that can serve as the foundation for socially just agrifood economies (Vakulabharanam and Motiram 2007).

Each of these areas for action on their own is important, but they are much more powerful when approached together. Without a broader awareness and understanding of the linkages between food and finance, it is much harder to press for progressive policy changes that provide space for alternative food systems to thrive. Without support for alternative food systems, the creation of policy space may fail. And support for alternative food systems is bolstered by a broader understanding of the ways in which financialization contributes to problems in the industrial food system, including

in ways that infringe on the rights and livelihoods of those seeking to stay outside of it, and that damage the very ecological base on which food and agriculture systems depend. In short, resistance to the growing role of finance and financialization in the food system requires coordinated action on multiple fronts. For this reason, it is imperative that scholars and activists join forces to bring about that change. We hope that this book contributes to this effort.

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In *Speculative Harvests*, Clapp and Isakson investigate the evolving relationship between the agrifood and financial sectors and pay particular attention to how the process of financialization is reshaping agrarian development and food systems. In a clear and accessible manner, Clapp and Isakson explain the character and ramifications of these changes for the world food economy and detail how different elements of agrifood provisioning — including commodity trading, farmland tenure, the management of agricultural risk, food processing, and retailing — have been reconfigured for financial purposes.

Highlighting the importance of confronting the financialization of food and agriculture, Clapp and Isakson identify the challenges of conventional approaches to food system reform and point to the need for innovative alternatives. *Speculative Harvests* is essential reading for food scholars and activists who not only seek a better understanding of the problems inherent to the contemporary food system, but also are in search of effective interventions towards its positive transformation.

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ISBN 978-1-85339-993-0