FOLLOWING THE MAIZE:
REGULATION AND PRODUCTION IN THE AGRICULTURAL LANDSCAPE
IN TURKEY IN THE 2000S

A Dissertation in
Rural Sociology
by
Yetkin Borlu

© 2014 Yetkin Borlu

Submitted in Partial Fulfillment
of the Requirements
for the Degree of
Doctor of Philosophy

May 2014
The dissertation of Yetkin Borlu was reviewed and approved* by the following:

Leland Glenna
Associate Professor of Rural Sociology and Science, Technology, and Society
Dissertation Co-Advisor
Co-Chair of Committee

Anouk Patel-Campillo
Assistant Professor of Rural Sociology
Dissertation Co-Advisor
Co-Chair of Committee

Carolyn Sachs
Professor of Rural Sociology and Head of Women's Studies Department

Stephen A. Matthews
Associate Professor of Sociology, Anthropology, and Demography, Courtesy appointment in Geography, and Director of the Demography (Dual-Degree) Training Program

Clare Hinrichs
Professor of Rural Sociology
Rural Sociology Graduate Program Coordinator

*Signatures are on file in the Graduate School
ABSTRACT

The Turkish agricultural sector underwent significant transformations during the first decade of the 21st century with the implementation of economic restructuring policies. The share of agricultural employment, compared to other employment sectors, declined sharply, along with the production of traditional labor-intensive crops. In the same period, industrial maize production, as a crop supported by government incentives, nearly doubled, due to the increase in productivity and cultivation area. Through a commodity system analysis, this dissertation investigates the change in agricultural policies, social relations of commodity production and capital accumulation in the agricultural sector. First I examine the national regulatory framework and its interactions with actors at various levels that prepared the foundation for aforementioned developments. I show that actors influencing national regulatory framework are international organizations, agri-food industry, and maize farmers. Albeit national regulation in Turkey responds to maize producers’ demands, the main trajectory remains within the limits of a Post-Fordist mode of regulation, gearing the maize market to the needs of the agri-food industry. The combination of longitudinal and spatial statistics and qualitative in-depth interviews enables the dissertation to measure the impacts of the agri-food industry, commercialization in maize farming, state intervention, and the regional farming structure on the changing relations of production in the Turkish rural landscape. Although large maize farmers possess advantages in financing production and in securing profits, the importance of small-scale maize farmers continues within the agricultural system driven by agri-food businesses. The weak bargaining position of a large number of smallholders within the commodity chain renders them ideal raw material suppliers from
the perspective of the maize processing agri-industries. The changing relations of production in industrial maize production in Turkey highlight the need for nuanced perspectives on accumulation and exploitation. This dissertation develops the concept of “entrepreneurial exploitation” to redirect critical political economy studies from the analysis of absolute material benefit/loss through small investments at the household level to the subtle, yet exploitative, relationships between small investments and the larger sector in which the former are embedded.
# TABLE OF CONTENTS

LIST OF FIGURES ........................................................................................................... viii

LIST OF TABLES ................................................................................................................ ix

ACKNOWLEDGEMENTS ......................................................................................................... x

Introduction ............................................................................................................................. 1

Chapter 1: Literature Review............................................................................................... 9

- Post-Fordist Regime Accumulation and Mode of Regulation in Agriculture............................. 12
- Changing Relations of Production and Small Farmer Persistence in Post-Fordist Regime of Accumulation ............................................................................................................. 26
- A New Corporate Food Regime .......................................................................................... 31
- Industrial Maize as a Commodity System: Space, Communities and Relations of Production ......................................................................................................................... 35
- Neoliberal Financialization, Dispossession, and the Persistence of Small Farms through "Entrepreneurial Exploitation" ................................................................................................. 43
- Financialization and Accumulation by Dispossession ............................................................ 44
- Exploitation and Legitimation during the Belle Epoque of Financialization ................................ 52
- Summary .................................................................................................................................. 59

Chapter 2: Historical Background of Rural Development in Turkey, and the Place of Maize production in Policies of Economic Restructuring in the 2000s........................................ 63

- Introduction ........................................................................................................................... 63
- Fordist and Post-Fordist Modes of Regulation ....................................................................... 65
- Historical Development of Rural Policies and Fordist Regulation in Turkish Agriculture ................................................................................................................................. 68
- Post-Fordist Regime of Accumulation and Mode of Regulation in the Turkish Agriculture ................................................................................................................................. 73
- The Expansion of Maize Production as a Case of Post-Fordist Regime of Accumulation ................................................................................................................................. 78
- The Legitimation of Post-Fordist Accumulation in Maize Farming through Regulation .......... 84
- Conclusion .............................................................................................................................. 90
- Appendix A ............................................................................................................................ 94

Chapter 3: Spatial Analysis of the Industrial Maize Production in Turkey............................... 95

- Introduction ........................................................................................................................... 95
Background and Conceptual Framework.......................................................... 97
Hypotheses, Data and Methods................................................................. 103
  Data........................................................................................................ 105
  Variables............................................................................................. 107
  Methods............................................................................................. 109
Results........................................................................................................ 112
  Descriptive Results.............................................................................. 112
  Analytical Results.............................................................................. 116
Discussion.............................................................................................. 120
Conclusion.............................................................................................. 123
Appendix B.............................................................................................. 131

Chapter 4: A Longitudinal Study of the Industrial Maize Production in Turkey........... 133
  Introduction........................................................................................... 133
  The Historical Transformation of Relations of Production in Agriculture...... 135
Hypotheses, Data and Methods..................................................................... 139
  Data........................................................................................................ 141
  Methods............................................................................................. 142
  Variables............................................................................................. 144
Results........................................................................................................ 147
  Descriptive Analysis............................................................................ 147
  Longitudinal Analysis........................................................................ 147
Discussion.............................................................................................. 152
Conclusion.............................................................................................. 155
Appendix C.............................................................................................. 164

Chapter 5: Entrepreneurial Exploitation: The Role of Financialization in the Participation
of Small-Scale Maize Farmers as Simple-Commodity Producers in a Post-Fordist Regime
of Capital Accumulation............................................................................ 167
  Introduction........................................................................................... 167
  Survival of Small-Scale Farmers in a Post-Fordist Accumulation Regime
    through Entrepreneurial Exploitation.................................................. 170
    Entrepreneurial Exploitation.............................................................. 174
Field Research Site, Data and Methods....................................................... 176
  Field Research Sites............................................................................ 176
  In-Depth Interviews............................................................................ 177
  Method of Analysis............................................................................. 180
Findings.................................................................................................... 181
  Relations of Labor I: Decline in Traditional Crops.............................. 181
  Relations of Labor II: Market Structure for Maize.............................. 186
  Relations of Labor III: Differentiation in Farm-Gate Price and the
    Role of Production Credits............................................................... 189
Discussion and Conclusion....................................................................... 196
Appendix D.............................................................................................. 201
Conclusion................................................................................................................... 205

Overview of Findings.............................................................................................. 205
Limitations of the Study......................................................................................... 211
Follow-up Research................................................................................................. 212

Bibliography............................................................................................................... 215
LIST OF FIGURES

Figure 2.1. Area Change in Turkey for Maize Farming between 2001 and 2009, and Maize Yields in 2009................................................................. 92

Figure 3.1. Boxplots for Industrial Maize Production, Importance of Maize as Cash-Crop, and Share of Large Landholding in 2004, 2007 and 2009....... 127

Figure 3.2. Quartiles and Cluster Maps for Industrial Maize Production in Turkey, 2004, 2007 and 2009................................................................................. 128

Figure 3.3. Quartiles and Cluster Maps for Maize as Cash-Crop in Turkey, 2004, 2007 and 2009............................................................ 129

Figure 3.4. Quartiles and Cluster Maps for Large-Scale Farming in Turkey, 2001.... 130

Figure 3.5. Quartiles and Cluster Maps for Percentage Change in Industrial Maize Farming in Turkey, 2004-2009.................................................. 130

Figure 4.1. Growth Trend of Industrial Maize Production between 2001 and 2009 in Turkey........................................................................................................ 160

Figure 4.2. Growth Trends in Industrial Maize Production According to the Importance of Maize As Cash-Crop for Farmers in Turkey between 2001 and 2009................................................................. 161

Figure 4.3. Growth Trends in Industrial Maize Production According to the Revenues Extracted for Maize Farmers in Turkey between 2001 and 2009.... 162

Figure 4.4. Growth Trends in Industrial Maize Production According to the Proportion of Large Farm to Small Farms in Turkey's Provinces between 2001 and 2009.............................................................................. 163

Figure 5.1. Entrepreneurial Exploitation................................................................. 201
LIST OF TABLES

Table 2.1. The Change in Turkey's Maize Production in Relation to Market Regulation between 2001 and 2009................................................................. 93

Table 3.1. Descriptive Statistics for Dependent and Independent Variables in Spatial Models............................................................................................................. 124

Table 3.2 OLS and Spatial Lag Regression Models Predicting the Level of Industrial Maize Farming in 2004, 2007 and 2009................................................... 125

Table 4.1. Descriptive Statistics for Dependent and Independent Variables in Longitudinal Models......................................................................................... 157

Table 4.2. Longitudinal Mixed Models Explaining Industrial Maize Production in Turkey in the 2000s......................................................................................... 158

Table 5.1. Comparison of Maize Area, Yield, and Share of Large Farms in Land Coverage and Total Farms in Izmir, Manisa, and Sakarya between 1991 and 2009......................................................................................... 200
ACKNOWLEDGEMENTS

The preparation of this dissertation stretched over the past five years. In this period, I had the immeasurable opportunity to benefit from the supportive academic environment in the Rural Sociology Program. I would like to thank the Rural Sociology faculty for offering such generous support. In particular, Leland Glenna, my co-advisor, was always available whenever I needed his advice. I am grateful to him for his guidance through the challenges of graduate school. His experience and professionalism encouraged me to mature my thoughts creatively. Anouk Patel-Campillo, my co-advisor, whose knowledge in her field is admired by all of her students, provided valuable ideas adding to the overall framework of the dissertation. Also, working with Carolyn Sachs and Stephen Matthews whose careers are underlain by the excellence in their works, was certainly a privilege for me.

The field research for this dissertation would not be possible without the financial support of the Rural Sociological Society Dissertation Award and the Office of International Programs, College of Agriculture at Penn State, directed by Deanna Behring. These two funding sources greatly alleviated the difficulty of conducting international research, particularly for a foreign researcher like myself.

During my field research, I could not gain access to secondary data and farming communities without help. Although I cannot name individuals to protect the anonymity of participants' locations, I have to express my gratitude to the members of the Confederation of Farmers' Unions of Turkey, who directed me to key informants and provided important access to the field. As one of the most important platforms for farming communities to vocalize their concerns the Confederation's collaboration was
essential for this research. The staff at the local branches of Directorates of Agriculture in Izmir, Manisa, and Sakarya did not hesitate to share public data available at local branches and their knowledge about the farming communities. Their experience and valuable work is not only appreciated by researchers but also by farming communities.

My parents and my only sister have always encouraged me to pursue my passion in my career choices. I will be indebted to them throughout my life for their unconditional trust in my decision to earn a Ph.D. degree in a country outside of Turkey and the sacrifices they underwent to support me. My beloved wife, Kathryn Marie Barlow, who I met at Penn State, has shown no less trust. She reminded me of her unconditional love whenever I faced a challenge. She never hesitated to share and listen over the last four years. Therefore, I am also indebted to the Barlow family for their support and love during this period.

Finally, I would like to thank all individuals, who make a living from the land and were open to participate. Their contribution was crucial for the findings of this research. My sincere wish is that the findings of this study will be useful in improving the conditions under which they operate.
Introduction

In Turkey, between 2001 and 2009, the total area sown with maize increased by seven percent, and the production yield increased by 80 percent.\(^1\) Meanwhile, total employment in the agricultural sector fell from 38 percent in 2001 to 24 percent in 2008. This means that nearly 3,000,000 people withdrew from the agricultural sector in just seven years.\(^2\) The sweeping decline in agricultural employment and the contrasting steep rise in maize production point to the need to understand crucial transformations in the rural socioeconomic landscape of Turkey in the 2000s.

Support prices and government purchases for traditional crops\(^3\) (e.g. sugar beet, wheat, and tobacco) were primary policy tools of rural development in Turkey between the 1950s and 2000s, maintaining the large share of agriculture in total employment before the 2000s. Agricultural restructuring in the 2000s, within the framework of regulations by international organizations, concluded this era of state-supported rural development. After the 2001 financial crisis, Turkey was in a dire need of financial credits which was offered by the International Monetary Fund (IMF) with the condition of economic structuring in multiple economic sectors, agriculture being one of the largest in terms of employment. As a condition for participation in the global economy, the World Bank, the IMF, and the World Trade Organization required that the Turkish government eliminate price supports, purchases through state enterprises, parastatal agricultural cooperatives, and the Turkish Grain Board for conventional crops. In the


\(^3\) I use this term to describe conventional crops supported by the Turkish state between the 1950s and 2000s.
absence of purchases and price supports by the Turkish government, farmers had few options but to negotiate with private agri-food firms (Aydın 2010).

With the gradual elimination of government support for traditional crops, and declining numbers of farmers, the production of these crops declined in Turkey in the 2000s. Between 2001 and 2009, the area for sugar beet production dropped by 10 percent, tobacco by 40 percent, and wheat by 13 percent. Concomitantly, maize cultivation expanded in this period as an alternative crop to traditional conventional crops. Moreover, the Turkish government provided annual premiums for maize producers from 2003 onwards (Ege et al. 2009). Premiums differ from support prices for traditional conventional crops in the pre-2000 period, since premium-payments targeted the full integration of agricultural production within private agri-food industry (DPT 2000a). The steady decline of traditional conventional crops and the rise in maize cultivation, in the face of plunging numbers of farmers in the 2000s, highlights the importance of studying the socioeconomic implications of maize production in a country with predominantly small-scale farming households.4

This dissertation examines the changing socioeconomic dynamics in Turkey under agricultural restructuring through an analysis of industrial maize production. Focusing on maize production has two benefits. First, it enables me to explore how national regulatory institutions, transnational and national agri-food firms, and farmers interact, and influence each other. While the change in government policies in agriculture is underlain by the change in the overall economic structure of Turkey in the 2000s, it is important to consider how economic actors and social groups (e.g. agri-food businesses and farmers) react to these changes and attempt to change them. Therefore, the regulatory institutions

---

4 As of 2006, about eighty percent of farming operations in Turkey are below 25 acres (TurkStat 2008).
geared to transform the agricultural system might not always follow a prescribed policy track, but adapt itself to the reactions from social groups and economic actors.

Second, by focusing on maize, I reveal changing relations of production\textsuperscript{5} for farmers in the transition from a state-supported system to a global-market-based one with an increased operational capacity for the agri-food industry. Hybrid maize has been the most important driving commodity in the development of agri-food industry at the international level, as hybrid maize seed occupied half of the sales of U.S. seed firms in value at the international level as early as 1986 (Kloppenburg 2004: 93). As of 2009, seventy-five percent of commercial hybrid maize seeds were supplied by three transnational corporations in Turkey: Monsanto, DuPont, and Syngenta (TMMOB 2011: 512-3). Furthermore, the main consumers of the maize produced in Turkey are the agri-food businesses including transnational corporations like Cargill and the CP Group. In the 2000s, over 90 percent of maize production was absorbed by animal feed and sweetener industries (Bayraktar 2008). Therefore, the increase in maize production represents a shift in the agricultural structure in Turkey from a state-supported economy to an economy driven by private agri-food corporations. As the economic structure changed dramatically, it is crucial to study how socioeconomic dynamics in agricultural production were transformed.

In Chapter 1, I review the literature on how national regulatory institutions interact with socioeconomic dynamics in the post-WWII era to explain the influence of political institutions on the agricultural structure in Turkey in the 2000s. Regulation theory (e.g. Aglietta 1987) offers an important body of literature on how political institutions act

\textsuperscript{5} Relations of production should be understood here in Marxian terminology: social relations of production are based on the distribution of means of production and the bargaining power among various actors participating in the production process.
during different phases of capitalism to integrate various social groups in changing production practices. Based on regulation theory, the strategic relational approach (e.g. Jessop 2007), offers insights to build a consistent theoretical framework that accounts for spatial and temporal variation in the interaction of socioeconomic dynamics and political institutions. In this approach, political institutions, social groups and economic actors can shape and influence each other, rather than one of those having the control over the others. These conceptual frameworks are useful in explaining the interactions between state institutions, farmers and agri-food business in the case of industrial maize production in Turkey.

To conceptualize the transformation in the relations of production which was experienced by agricultural producers in Turkey, I draw from neo-Marxian theories. First, Friedmann (1978) proposes the category of simple-commodity producers which is useful to understand how small-scale farmers in Turkey might have adopted commercial practices and integrated in a market driven by agri-food businesses. Second, I use Mooney's (1988) approach explaining different rationalities (i.e. formal vs. substantive rationality) in agricultural production to understand how farmers might have been motivated to invest in maize farming in Turkey. Also, food regime theory (e.g. McMichael 2009) helps me to understand how the role of small-scale farmers might have changed in industrial maize farming. To analyze the relations of production in industrial maize farming, I use commodity systems analysis (e.g. Friedland 2001), which focuses on the relations of production in a commodity system, various communities who participate in that particular commodity system, and finally the scale of the commodity
system. The scale of a commodity system aims to explain the variation in the relations of production according to local conditions.

Finally, in Chapter 1, I draw from the literature on financialization (e.g. Krippner 2011) in my review to set up a conceptual framework on how the expansion of production credits might have influenced the relations of production of farmers participating in industrial maize farming. Traditional Marxist explanations (e.g. Harvey 2005; Araghi 2009) argue that the increasing dominance of finance capital after the 1970s led to the dispossession of socioeconomically disadvantaged groups (e.g. small-scale farmers in this case) across the globe. However, I draw attention in this dissertation to another aspect of this period: expanding production credits. More accessible production credits due to financialization enabled small-scale farmers in Turkey to participate in industrial maize farming, which requires expensive commercial inputs (e.g. seeds and fertilizers). By showing how the dependency on production credits put small-scale farmers at a disadvantage vis-à-vis the agri-food industry, I formulate the concept: entrepreneurial exploitation.

In Chapter 2, I review the history of rural development in Turkey in the post-WWII era. I show that during this era small-scale farmers were integrated in an agricultural economy that was supported through various support policies (Keyder 1987). In the latter section of the chapter, I show how the state-supported agricultural system in Turkey was drastically transformed after the 2001 financial crisis. Employing the strategic relational approach (Jessop 2007) I demonstrate that industrial maize farming was an important part of this transformation. Here I argue that political regulations were geared to sustaining the longevity of an economic structure driven by agri-food corporations by employing
different policy tools in combination with the long-term strategy of accommodating different social actors who might have had conflicting interests. Therefore, I draw attention to the strategies of policy institutions that did not bull-headedly pursue policies to protect the interests of the agri-food industry, but considered the reactions of farmers to integrate them in the emerging maize sector. To support this argument, I use secondary sources, newspaper articles, and official government documents.

In Chapter 3, I analyze how the relations of production explain the expansion of industrial maize farming over space. First I explore the changing relations of production within industrial agriculture. As I explain the spatial variation in the relations of production, I contribute to the commodity systems analysis literature (e.g. Friedland 2001) by showing the influence of local factors in the integration of farmers at the subnational level. Accounting for land distribution structure, traditional maize farming (as opposed to industrial maize farming), the importance of maize as a cash-crop, and the level of change in industrial maize farming I demonstrate how the relations of production vary over space in the 2000s. To conduct this analysis, I analyze the provincial level data on agriculture from the Turkish Statistical Institute with the help of spatial statistical methods.

In Chapter 4, I explore how changing relations of production influence industrial maize production over time. Spatial analysis in the previous chapter does not fully explain the change in industrial maize production over time due to the cross-sectional analysis design. In this chapter I focus on the change in relations of labor in Turkey over a decade, between 2000 and 2009. By conducting a longitudinal analysis, I explain the influence of changing relations of production on industrial maize farming. In this analysis
I account for the demand created by the agri-food industry, the importance of maize for farmers as a cash-crop, the revenues from maize farming, state support in the form of premiums, the level of mechanization, and land distribution structure.

Explanations based on longitudinal analysis pertains to changing relations of production in a transitioning agricultural structure. The influence of the agri-food industry, the importance of maize as a cash-crop, and the level of mechanization are related to the consolidation of the new economic configuration driven by agri-food corporations, as the food regime perspective (e.g. McMichael 2005) argues. Higher revenues from maize farming contribute to the increase in the level of industrial maize farming, explaining the commercial rationale of production, as Mooney (1988) suggests. Finally, the influence of land distribution on industrial maize production explains the level of participation of small-scale farmers in industrial maize production. In the longitudinal analysis of relations of production in maize farming I use the data on agricultural production from the Turkish Statistical Institute. Different from what food regime theory (e.g. McMichael 2009) would argue, I contend that small-scale farmers are not simply excluded from industrial maize production. Rather, the exclusion and integration of farmers proceed in a complex way. While agricultural employment in Turkey declined in this period, small-scale producers still represent the majority at the end of a decade of economic restructuring.

In the final chapter, I investigate how small-scale producers manage to participate in industrial maize production and how expanding production credits via financialization influence the participation of small-scale farmers in an environment of changing relations of production. Based on my field research in Turkey between September and
October, 2012, I conduct a qualitative analysis where I focus on two dynamics. First by exploring the changing relations of production for maize farmers, I cross-validate the findings in previous statistical chapters. Here, the focus of analysis is the farmers' decision to shift from traditional crops to maize farming, and the market structure for maize. Therefore, I explain how farmers decided to turn to maize farming by adopting commercial practices and how the increasing demand by the agri-food industry influences the market conditions.

In the latter section of Chapter 5, I argue that financialization enables small-scale farmers to participate in industrial maize farming as small-scale farmers benefit from expanding production credits. However, the dependence of small-scale farmers on production credits in industrial maize farming exposes their investment to the exploitation by the agri-food industry. Based on these hypotheses, I apply the concept of entrepreneurial exploitation to the case of industrial maize farming in Turkey. The findings related to the influence of financialization on small-scale farmers pertains to traditional Marxist theories (e.g. Harvey 2005; Araghi 2009) which suggests that financialization dispossesses socioeconomically disadvantaged groups. However in this dissertation I adopt a more nuanced perspective to explain how those groups might benefit financialization in the form of expanding production credits, but at a cost which is exploited by the larger industry.
Chapter 1: Literature Review

Introduction

In this chapter, I offer an extensive overview of theoretical frameworks that help me to analyze the intensification of industrial maize production in Turkey and the related transformation in relations of production in the 2000s under economic restructuring. The first theoretical framework I engage is regulation and the role of the state in economic restructuring. Explaining the role of state institutions in economic restructuring is crucial since the rationale of agricultural policies in Turkey was transformed from supporting socioeconomic welfare among rural communities to integrating farmers into agricultural production led by agri-food companies (Aydn 2010). To explore the agricultural development policies in Turkey in the 2000s (see Chapter 2), I review here the literature exploring the transformation in the role of the state in socioeconomic development from the post-WW II era (Fordism) and to the post-1970s (Post-Fordism). As I discuss Fordism and Post-Fordism, rationales of political regulation in these periods as defined by Regulation Theory (e.g. Agleitta 1987), I explain how they apply to rural development policies. To explain the socioeconomic transformations in the Post-Fordist era in Turkey, I adopt a strategic relational approach, formulated by Jessop (1990), that accounts for changes in policy implementation according to local conditions and historical development.

The second theoretical framework for this research is directed at explaining the persistence of small-scale farmers under new conditions brought by economic restructuring. As maize farming increased in the period of economic restructuring in Turkey in the 2000s, I review in this chapter how the sociology of agriculture literature
explains the socioeconomic conditions where small-scale farmers experience change. I elaborate on the socioeconomic class position of small-scale farmers in Turkey as simple commodity producers, that accounts for the persistence of small-scale farmers in a capitalist economy by partially adopting capitalist practices (e.g. purchasing off-farm commercial inputs for agriculture and hiring wage labor supplementary to household labor). To explain the motivation of farmers in participating in industrial maize farming, I use Mooney's (1988) categories on different rationalities for participating in farming that prioritize either the cultural embeddedness of farming or the profits extracted from agricultural production. The participation and persistence of Turkish small-scale farmers in industrial maize farming adopting certain commercial practices related to a rationale are themes that provide a theoretical framework for the findings in Chapters 3, 4, and 5. Also, the food regime theory (e.g. McMichael 2005; 2009) contributes to this dissertation as it lends a reference point on rural development under economic restructuring at the international level. Because food regime theory argues that small-scale farmers are excluded after the implementation of economic restructuring policies, I have the opportunity to compare the findings on the persistence of small-scale farmers in industrial maize farming to arguments made by the food regime theory, finding parallels and/or suggesting revisions.

To explore how the production practices changed after economic restructuring I apply a commodity systems analysis (e.g. Friedland 2001). Conceptualizing industrial maize production as a commodity system, I explore the spatial patterns that influence the level of participation. Furthermore, analyzing different communities active in industrial maize farming, I explain how the bargaining power in this sector is distributed among
different actors (e.g. farmers, merchants, and agribusiness). Approaching industrial maize farming from a commodity systems approach, I introduce the inner dynamics of changing socioeconomic conditions under economic restructuring.

In the final section of this chapter, I focus on the impacts of the increasing role of financial capital (Krippner 2011) since the 1970s. Critical political-economy studies (e.g. Harvey 2005, McMichael 2009) argue that socioeconomically disadvantaged groups were excluded from the emerging economic configuration with the increasing role of financial capital in several countries. With the influence of international financial organizations, the phase-out of national policies, that used to protect these social groups was the main cause of the marginalization of these groups.

The implication of this critical political-economy approach for sociology of agriculture (e.g. Araghi 2009) is that small-scale farmers were excluded from agricultural markets as national policies that secured a market and protection from international competition were phased-out. However, in this dissertation I underline an aspect of financialization that did not attract attention yet: the expansion of production credits and the related exploitative relationship between small-scale investors (i.e. farmers in this research) and the larger industry. I develop in the last section the concept of entrepreneurial exploitation to explain how small-scale investors depend on credits to participate in an economic sector as their investment is exploited by the larger industry controlling the demand and supply in the sector. In Chapter 5, I use this explanation to explain how small-scale farmers participate in industrial maize farming with the help of production credits as their investment is exploited by the maize processing industry due to the dependence on credits. However, to make this concept clearer I use the example of
the U.S. housing market and mortgage credits to show that entrepreneurial exploitation is a structural dynamic in the economic model that emerged after the 1970s.

1.1. Post-Fordist Regime of Accumulation and Mode of Regulation in Agriculture

In this section, I explain how state policies were influential in the political regulation of economic restructuring policies Turkey went through in the 2000s. By explaining Fordism and Post-Fordism as particular regimes of accumulation and modes of regulation, I aim to provide the theoretical background for the socio-political transformation agricultural producers experienced in this period. In this period, the rural welfare policies through agricultural production support gave way to economic restructuring that strengthened the position of agri-food corporations vis-à-vis agricultural producers in Turkey.

To explain the role of the state in policies of economic restructuring, the transformation of state institutions is crucial since they comprise the regulatory framework of the socio-economic change. Evans (1997) points to the pivotal role of the state in the implementation of neoliberal policies and export-promotion policies. As he stresses the role of the state mechanisms in the application of economic restructuring policies, he disapproves of approaches that deem the state power to be diminishing in the face of global forces (e.g. international financial organizations). Evans contends that the state persists in terms of its authority, because if it lost its authority it could not implement regulations of economic restructuring having impacts on social dynamics. In line with this perspective, Glenna (2003) argues that U.S. agricultural policies since the 1985 Food Security Act supported agri-food corporations over farmers. Although input
prices for agricultural production were rising more than prices for farmers’ products in this period, the U.S. government decided to repackage agricultural supports in line with agri-food corporations’ interests. As a result of diverting financial resources from the support to small-scale farming to agribusiness operations, Glenna reveals that U.S. imports and exports started to increase rapidly from the late 1980s onwards, while the number of farming households declined. This new configuration of labor and capital relations, where farmers are not supported through state subsidies and price controls, but agri-food corporations are engaging in production relations with farmers, is defined by Bonanno and Constance (2001) as Post-Fordism, to distinguish it from the previous Fordist regulations in agricultural production.

The approach suggested by Bonanno and Constance on the periodization of Fordist and Post-Fordist agricultural regulations has it theoretical roots in the Regulation School, starting with Aglietta’s (1987) pioneering work on the role of state policies in capitalist accumulation in the U.S. from the 1950s up to the 1980s. Aglietta defines the type of capital accumulation as the Fordist regime of accumulation. This model relies on the increase in productivity and a parallel development in wages, which in turn comprises the economic basis of effective demand. For the realization of the Fordist regime of accumulation, the Fordist mode of regulation sustained the juro-political legitimacy6 of wage relations and productionism through state policies, opening venues for strong labor unions and activism, welfare policies, and protectionist policies against foreign economic competition. I explain in Chapter 2 how Turkey's path of rural development overlapped

---

6 I refer to the legitimacy of a particular regime of accumulation as the wide-spread agreement depending on the consent of economic actors to adopt the new practices of production brought by the regime of accumulation, and to participate in that regime.
with a Fordist regime of accumulation and mode of regulation as the government policies were to increase the welfare of rural communities involved in agriculture.

While Aglietta’s (1987) description of the Fordist era of capital accumulation specifically in the U.S., Lipietz (1997) attempts to explain the period in the wake of economic crisis as post-Fordism, where collective labor rights melt down in the face of labor flexibility, manufacturing industries relocate in newly industrializing countries, and financial capital becomes dominant against productive capital. Lipietz defines the transformation in the regime of accumulation and mode of regulation as Post-Fordism in formerly Fordist economies of developed nations, and the industrialization process in newly industrializing countries as peripheral Fordism. I show how Post-Fordism in Turkey overlaps with the period when farmers started investing in maize farming as agri-food businesses drove the demand for industrial maize farming.

Main assumptions of regulation theory rely on the transformations in wage and labor relations (Jessop and Sum 2006: 85). However, Clarke (1988) makes a distinction between Aglietta (1987) and Lipietz (1997). According to Clarke, Aglietta emphasizes class struggle to explain the mode of regulation. On the other hand, Lipietz explains the mode of regulation based on economic balance between productivity and effective demand by wage. Therefore, Lipietz does not account for social dynamics in the consolidation of economic policies.

Two different strands of explanation in mode of regulation, explained by Clarke (1988), find their reflection in sociology of agriculture: one strand tends to explain the political regulation of agricultural production through economic developments, whereas the other places more importance on social dynamics in the regulation of the agriculture.
As Kenney et al. (1989) analyze the agricultural development in the Mid-West U.S. with the post-WWII boom, they adopt the Lipietzian interpretation of Regulation Theory in their explanation of Fordist accumulation in agriculture. They argue that government policies based on price supports for mass-produced crops succeeded in building a productionist agricultural structure, which bolstered economic welfare of farming households and agrifood industries supplying off-farm inputs for cultivation. High levels of agricultural production moved to newly industrializing countries where local crop production with U.S. grains could not compete. However, the petroleum crisis in 1974 prepared the end of the Fordist agriculture. Even though the petroleum crisis in 1974 increased land and crop prices which were beneficial for U.S. farmers for a short period, inflationary economic policies were not sustainable, rendering U.S. crops unfavorable for international markets in the face of increasing agricultural production in newly industrializing countries. The study by Kenney et al. (1989) uses an economic explanation of the Fordist mode of regulation in agriculture, which shares the similar shortcoming of Lipietz (1997) in explaining the role of social dynamics.

The second strand in the application of Regulation Theory to agricultural development is in line with Aglietta (1987) in that social dynamics play an important role in the formation of a mode of regulation supporting a particular type of regime of accumulation. This comprises the basis of the regulationist approach I adopt later in the analysis of regulations in industrial maize farming. In line with Aglietta, Marsden (1992) applies regulation theory to the crisis of the Fordist regime of accumulation as he draws attention to spatial variation in the implications of economic restructuring. He indicates that the attempt to explain one general type of global Post-Fodism (i.e. flexible
agricultural production relations) causes generalizations, which would ignore complex social dynamics. As the spatial complexity of social dynamics engenders different responses and adaptations to economic restructuring policies, social studies need to consider the intermeshed factors in analysis.

Banks and Marsden (1997) attempt to display the complexity in regulation in their analysis of organizational changes in the UK dairy sector with the 1994 abolishment of the Milk Marketing Board (MMB) that used to intervene in milk prices. They demonstrate the spatial differentiation of producer organizations (e.g. direct contractor dairy farmers vs. dairy farmers under a farmer cooperative) with the fragmentation of the market after the MMB, and they relate their findings to various manifestations of market reregulation based on local social factors. One important example in this study is how a processing firms' scale influences its supply strategies: firms with one processing facility tend to collect milk from their immediate surroundings, whereas larger companies have the organizational capacity to collect milk from relatively distant regions of milk production. Another important finding of their study is that the dairy industry is to a large extent shaped by consumer demands for hygiene and traceability of production processes. Underlining the complexity of local dynamics in the interplay with changes in regulation is an important aspect in this dissertation, enriching the explanations in the following empirical chapters about how regulation and production in industrial maize farming varied over time and space according to various actors in this sector (e.g. maize processing industry, producer communities, political decision-makers).

In exploring the influence of social groups and business interests in the Post-Fordist mode of regulation circumscribing industrial maize farming in Turkey, defining how
different actors influence regulatory frameworks gains importance. Bonanno (1994) contends that political power held by the state is an area of competition between capitalist development and citizen rights. Bonanno (1994: 259) argues that even though oppositional social groups are “motivated by opposing reasons, and more importantly, [...] they tend to undermine the objectives of the other group” they agree on preserving the state intervention as an important dynamic in their struggle for state power. Therefore, from this viewpoint, the political power held by the state is subject to the influence of competing groups, and the transition from Fordism to Post-Fordism is the contestation by transnational capital to the welfare state (Bonanno 1994: 258):

[T]he state is increasingly unable to assist the process of accumulation of capital in the redefined economic area, as the bourgeoisie’s need for organization finds its limit in the global range of its economic action and in it concomitant desire to avoid state action.

In this representation, the state is a locus of power, and whoever occupies that position is able to influence policies in their favor. Similarly, Bonanno and Costance (2008: 259-60) contend that state institutions based on national sovereignty (meaning policy preferences depending on democratic popular consensus) cannot function as they did under the Fordist mode of regulation. Under the Post-Fordist regime of accumulation, state mechanisms are more limited in their ability to intervene in economic dynamics in favor of citizens and regulate capital. In this environment, transnational agri-food businesses have a higher capacity of operation, and attempt to influence state policies, whereas the state structure is fragmented and consists of various institutions, some under capital influence and some influenced by social movements. At this stage, the state faces the contradiction of legitimacy which provides subordinate classes the opportunity to challenge capitalist development.
Bonanno (1994) and Bonanno and Constance (2008) consider the nation-state as the locus of struggle between actors: citizens were influencing the state structure more during the Fordist regime of accumulation, leading to welfare democracies, whereas Post-Fordism is the regime of transnational corporations transforming the state in their own interests, which is challenged by subordinate classes. However such a view of the state mechanisms has two critical drawbacks. First, the interpretation of Fordism and Post-Fordism as dualistic structures indicates an *a priori* understanding of the state structure as a source of power to be used by different actors for their interests.

Second, the dualistic conceptualization equates Fordism with democratic national sovereignty and legitimacy of state institutions. As the post-Fordist regime of accumulation undermines subordinate classes’ interests, it loses its legitimacy among social groups, opening venues for subordinate classes to reintroduce national sovereignty within the state of a contested nature. Such typification of state mechanisms, however, precludes the analysis of legitimization policies in Post-Fordist regime of accumulation: the Post-Fordist mode of regulation. This perspective on confrontational class positions cannot provide details on how state institutions support the legitimacy that is required by a specific regime of accumulation. Presuming that the Post-Fordist regime of accumulation cannot be socially legitimated means overlooking the socioeconomic and political dynamics that persistently evolved over the last thirty years in various regions of the world. I evaluate later how we can overcome this dualistic understanding of periodization for regimes of accumulation and modes of regulation after pointing to other criticisms of the regulation approach in the sociology of agriculture.
This political economy perspective, exemplified by the regulation approach, is criticized by Lockie and Kitto (2000: 4, 8) actor-network perspective: “underlain by modernist ontology, sociology theory has been beset by a tendency to dichotomize key concepts such as structure and agency” whereas the social researcher should “develop network accounts that make no a priori assumptions about to whom or what agency should be attributed.” Potter and Tilzey (2006) state that, on the one hand, political economy approaches (e.g. food regime perspective, explained below) have not been able to respond to criticisms due to their structuralist determinist tendency. On the other hand, the application of actor-network theory in socioeconomic studies of agriculture remained limited to micro-level studies and cannot explain power inequalities that come with actors into the network due to extra-network structures (Potter and Tilzey 2006: 583):

Power relations may well change in ‘translation’ but they are structured by a given distribution of authoritative and allocative resources and this given distribution and the struggle to retain or gain a greater share can tell us much about why actors come together as they do.

Besides criticisms coming from actor-network perspective on the structuralist tendencies of the political economy approach, critiques within the political economy approach come from the commodity systems approach (e.g. Friedland 1997; Pritchard and Burch 2003; Raynolds 1994) to the hypothesis that Post-Fordism is globally prevalent. However, these studies conceptualize Post-Fordism in terms of sectoral organization of different commodity systems, rather than the regime of accumulation which underlines changing relations of production. Following this perspective, Raynolds (1994) rejects a Post-Fordist postulation on the changing dynamics in agri-exports in her analysis of Dominican agri-exports. She contends that mass production and vertical integration within the sectoral organization of commodity chains did not perish and give
way to a Post-Fordist organization, which relies on horizontal integration of smaller production units, and the production for niche markets. Similarly, Friedland (1997) criticizes Boyd and Watts (1997) when they defined the broiler industry in the Southern U.S. as a model of flexible accumulation (resembling a Post-Fordist one). Friedland argues that broiler industry is not a niche market, but a mass production/consumption market, of which organizational structure is strictly vertical. Pritchard and Burch (2003) find different organizational structures in processing tomato industries depending on the spatial context internationally, and do not find evidence for a global Post-Fordist market and sector organization.

Distinct from the conceptualizations of Fordism/Post-Fordism as a distinction between major and specialty agricultural products, or between vertical or horizontal organization of the commodity chain, this research contributes to this debate on the grounds of the interaction between changing relations of production and political regulation, similar to Bonanno and Constance (2008). However, I diverge from Bonanno and Constance, as the state mechanism in this dissertation is not considered an a priori category, which is democratic under Fordism and less democratic under Post-Fordism, or consists of different institutions that are influenced by different lobbying groups, transnational corporations or social movements. Rather, this study is going to employ a strategic relational approach (SRA), proposed by Jessop (1990). By employing a strategic relational approach, I argue in Chapter 2 that a conglomeration of various policy tools are geared to ensure the longevity of the accumulation regime by adapting different social actors to the new socioeconomic configuration and gaining the sufficient socio-political legitimacy.
Jessop (1990: 219-21) argues that any regime of accumulation, Fordism or its successor Post-Fordism, necessitates a hegemonic project that represents national interests. Therefore, state, as a social relation of the hegemonic class structure in a country, applies its regulatory power to gain the consent of subordinate classes of the society with the vision that the accumulation regime benefits the society as a whole. Thus, it can be expected that the mode of regulation, the regulatory framework surrounding the regime of accumulation, might diverge from the policies towards capital accumulation, even sometimes to the degree of regulating against the interests of classes that support and benefit the specific regime of accumulation. The difference between the regime of accumulation and mode of regulation emerges from the characteristic of the state mechanism as a social relation underlain by strategic selectivity (Jessop 2007: 37):

The state is an ensemble of power centers that offer unequal chances to different forces within and outside the state to act for different political forces in specific purposes. How far and in what ways their powers (and any associated liabilities or weak points) are actualized depends on the action, reaction, and interaction of specific social forces located both within and beyond this complex ensemble. In short, the state does not exercise power: its powers (always in plural) are activated through the agency of definite political forces in specific conjunctures. It is not the state that acts; it is always specific sets of politicians and state officials located in specific parts and levels of the state system. It is they who activate specific powers and state capacities inscribed in particular institutions and agencies. In doing so, they may well take account of the prevailing and, perhaps, future balance of forces within and beyond the state (including beyond its territorial borders as well as its domestic juridico-political boundaries). Moreover, as in all social action, unacknowledged conditions influence the success or failure of their actions and there are always unanticipated effects.

Strategic selectivity introduced in SRA offers a novel understanding in the regulation approach and overrides the structural determinist tendency in Lipietzian interpretation of political economy (i.e. political transformation exclusively motivated by economic
dynamics). Instead of a polarized understanding on the role of structure and agency, Jessop proposes *dialectical duality* where the role of the state is explained by “structurally inscribed strategic selectivity,” and the role of social actors manifests “strategically calculated structurally oriented action” (Jessop 2007: 41). The dynamic interaction and mutual influence between such structures and agents “could lead through the usual evolutionary mechanisms of variation, selection, and retention to the formation of a configuration characterized by ‘structured coherence’” (Jessop 2007: 46). Thus, SRA gives me the opportunity to include critiques brought by actor-network theory to the dualistic structuralist understanding of political economy of agriculture (Lockie and Kitto 2000), as well as to integrate insights by Potter and Tilzey (2006) in conducting analysis beyond micro-level and with regard to structural power inequalities, unlike the actor-network approach. Furthermore, using SRA helps me to analyze the spatial and temporal variation in modes of regulation (state mechanisms) in the consolidation of a specific regime of accumulation.

In the framework of SRA, Fordism and Post-Fordism stand as regimes of accumulation and modes of regulation, and Keynesian welfare state and Schumpeterian workfare state stand as ideal types of the state referring to respective modes of regulation. The Keynesian state was designed to provide social security to every citizen, whereas the Schumpeterian state provides social security only to the ones who contribute to the competitiveness of economic sectors. As the main pillars for the Keynesian state were productivity and planning, the Schumpeterian state was founded on flexibility of production relations and entrepreneurialism. Within the Keynesian state, national currency was kept under control and mainly circulated within the national boundary.
However, with the Schumpeterian state, state's capacity to take financial flows declined. As an important feature of labor relations, wages functioned in creating demand and economic growth in the Keynesian state. However, in the Schumpeterian state, wages take the shape of an input of production, so that flexible rates of payment would indicate reducing production costs. The implication of this change in the mode of regulation is the shift in the accumulation regime, from a welfare based and social-policy-oriented one to a competitiveness-driven one that intervenes in supply. In this shift, collective bargaining has been weakened as a part of the Post-Fordist regime of accumulation. (Jessop 1993).

Within the ideal type of Keynesian regulation, Jessop and Sum (2006) demonstrate the strategic selectivity in four different types of state mechanisms across Europe and North America: 1) liberal welfare regimes where financial sectors are more developed than other developed countries; 2) social democratic welfare regimes with small and open economies where high skilled labor and export production are prominent; 3) conservative and corporativist welfare regimes where productive capital is prominent, and state mechanisms coordinate the coexistence of large and smaller industries; 4) the peripheral Fordist Southern European welfare states with developing economies which contains large shares of rural population and family-lead industries. To evaluate Turkey’s position (especially in rural development policies) before economic restructuring in the next chapter, I will start with the fourth category and add more nuance to it in terms of rural development policies.

In another demonstration of strategic selectivity in the explanation of spatio-temporal variation, Jessop and Sum (2006: 159-60) argue that peripheral Fordism as a mode of regulation (Lipietz 1997) is not suitable to reflect the specific development paths pursued
among newly industrializing countries. Peripheral Fordism might explain the development experience in Latin American newly industrializing countries, and South European countries as indicated above, as these countries pursued import substitution policies in their early stages of industrialization, later experiencing a growing middle class consumption with expanding domestic markets, and integrating export oriented industrialization in their last stage of development. Meanwhile, newly industrializing countries in East Asia adopted exportism as a development path in the 1960s, and production remained export dependent until a growing middle class started contributing to consumption in the early 1970s.

From the same perspective, Jessop and Sum (2006: 84-5) contend that the distinction between Fordism and post-Fordism as accumulation regimes and modes of regulation necessitates caution regarding continuities and discontinuities. They contend that a post-Fordist accumulation regime translates into different types of flexible relations of production, whereas the proposition of a post-Fordist mode of regulation would be most fruitful for studies that focus on different compartments of socioeconomic dynamics within political economy. Jessop and Sum argue that post-Fordism, as a mode of regulation, has not yet been able to sustain a hegemonic project encompassing all social aspects of contemporary societies as extensive as Fordism.

The implication of SRA on state regulation for this research is threefold. First, Post-Fordism will be evaluated in terms of relations of production (e.g. small-scale simple commodity production vs. large scale capitalist production) in maize production. The expansion of maize production in Turkey, its integration in agri-food industry, and the decline in state subsidies in agricultural production (an integral part of Fordist
agricultural policies), and increasing exchange between farmers and firms requires this research to explore the changing production conditions for farmers. These relations might have shifted from a market secured by state institutions to a market where the major buyers of maize are private agri-food businesses influenced by major transnational corporations. Second, this approach supports the analysis to utilize the term “Post-Fordism” as a broader regime of accumulation and mode of regulation rather than a simple shorthand definition of niche or mass production commodities or a dichotomous scale of vertical/horizontal integration, as commodity systems analysis conceptualizes (e.g. Friedland 1997). Jessop’s emphasis on continuities and discontinuities within the Post-Fordist regime of accumulation extending from the Fordist regime is preeminent for the purpose of this study, since maize is a commodity of mass production and a generic input for agri-food industry, yet its production increases in an environment of trade liberalization and withdrawal of government supports in agriculture, a situation that cannot be addressed by a dichotomous approach. Moreover, the specific focus of this research on agricultural development will contribute to discussions of an emergent Post-Fordist mode of regulation.

Third, Post-Fordism is not only a regime of accumulation but also related to a specific mode of regulation that seeks legitimacy among social dynamics.7 Thereby, this research identifies regulatory frameworks working towards the long-term consolidation of the Post-Fordist regime of accumulation, but employing different tools in various combinations when countered by social resistance. This way, I evaluate the impact of social responses on a regime of accumulation through the mode of regulation, keeping in

---

7In this research I will utilize Fordist/Post-Fordist mode of regulation instead of Keynesian state and Schumpeterian state, as proposed by Jessop (1993), since I prefer avoiding a crowd of terminology for the sake of fluency.
mind that the state is not an *a priori* category, but a set of social relations that has evolved, and is evolving, via the interaction of social dynamics. With this formulation, the role of state is quite different than Bonanno and Constance’s (2008) view of the state being composed of different loci of power over which social forces are competing. In this research I apply a strategic relational approach where the state is strategically selective, with a hegemonic project to socially legitimize the Post-Fordist regime of accumulation, while the response from social forces does not necessarily constitute an anti-hegemonic project, but strategically calculated and structurally oriented (not structurally determined) action open to unanticipated results.

**1.2. Changing Relations of Production and Small Farmer Persistence in Post-Fordist Regime of Accumulation**

Related with the discussion of the Post-Fordist regime of accumulation and mode of regulation, a discussion on the persistence of small-scale farming is necessary since small-scale farms in Turkey still comprise the majority in terms of land coverage and farm numbers (TurkStat 2008). In this section I discuss different approaches to the socioeconomic transformation of small-scale farmers under the Post-Fordist regime of accumulation. First, I elaborate on the class position of small-scale farmers within a capitalist mode of production and the ways in which they persist by adapting to a new political economic environment. Second, I explain how I use commodity systems analysis (e.g. Friedland 2001) of industrial maize farming to gain a deeper understanding of relations of production within the Post-Fordist regime.

Simple commodity production (Friedmann 1978) is a concept describing the penetration of capitalist production relations in small-scale farming. By using this
concept, I attempt to locate the class position of small-scale farmers participating in industrial maize production. Friedmann, in her study of wheat producers in North Dakota in 1920, finds that small scale farmers utilize the family labor combined with wage labor. However, wage labor is not essential, unlike the case in fully capitalist agriculture, but rather “ancillary” (Friedmann 1978: 96). She argues that market pressures on small-scale farmers and specialized production, in wheat, incited small-scale family farms to utilize market inputs, including wage labor, combined with household and extended family labor.

Friedman (1980) emphasizes that small-scale farming units in the form of simple commodity producers still aim the subsistence through the survival in market production. However, simple commodity producers are characterized by “low productivity of labor and land” when compared with fully capitalist agriculture (Friedmann 1980: 165). Comparing peasant farming with simple commodity producers, Friedmann elaborates their difference in that peasant farming produces for its immediate surroundings, but the simple commodity producer produces for national and international markets. The second difference is that the simple commodity production process is penetrated by capitalist relations at various stages, such as providing inputs, hiring wage-labor, providing products to markets. Moreover, Friedmann stresses that the utilization of the category of “simple commodity production” is methodologically more useful than the “peasant” category, because the "peasant" category does not capture the specific market penetration in the small-scale agricultural production. As an ambiguous category, "peasant" is historically contingent and geographically variant.
Goodman and Redclift (1985) criticize the "simple-commodity producer" category, as they assume that it is a non-systemic and transitionary position between landless agricultural worker or large-scale capitalist enterprise. They assume that the systemic inclination in capitalism will progress with expanded appropriation of production processes, and minimize the role of small farms in capitalist agriculture, as Kaustsky (1988) predicted in the early 20th century. Rather than rejecting the idea of simple commodity production, as Goodman and Redclift do, Marsden et al. (1986) constructively criticize the concept by pointing out that this concept should not remain structurally determined, but encompass demographic and structural variation because “[t]he dual processes of centralization and accumulation and the penetration of outside capital into agricultural production are […] not uniform over time or space” (Marsden et al. 1986: 511).

Simple-commodity production as a category is useful to explain how small-scale farmers in Turkey are integrated in industrial maize farming within a Post-Fordist accumulation regime. Contrary to Goodman and Redclift (1985), I argue that simple-commodity production is a category explaining the persistence of small-scale farmers in the case of rural development in Turkey. I show how small-scale farmers in Turkey became an important part of the industrial maize production over the last decade (see Chapters 4 and 5).

Mooney’s (1988) analysis of different rationalities in agricultural production is important as it differs from predominantly Marxist analyses (e.g. Mann and Dickinson, 1978; Friedmann 1978), and adds a Weberian perspective on the differentiation among persistent farmers. I use this approach in explaining the motivation for farmers of
different types to participate in industrial maize farming. Mooney's study among different farmer groups led him to differentiate formal rationality and substantive rationality. With the concept "formal rationality," Mooney refers to the capitalist type of farming where the main motivation in crop production is extracting profits. Therefore, the producer is not culturally attached to the crop she or he produces, unless it is lucrative. However, contrary to formal rationality, the craftsman farmer does not produce only for profit. The craftsman farmer is involved in the economic activity because the particular type of agricultural production is culturally embedded in her or his life (Mooney 1988: 67-9).

Based on 50 in-depth interviews with farmers in Wisconsin, Mooney (1988: 67-9) identifies four types of farmers according to their rationality and socioeconomic status: the marginalized family farmer, the poor farmer, the economic model farmer, and the successful family farmer. Although the marginalized and successful family farmers differ in their socioeconomic status, they produce with the same substantive rationality culturally embedded in their social context. The reliance on family labor in farming is one of the important aspects of substantive rationality. On the other hand, poor farmers and economic model farmers are conditioned by profits in their participation in agricultural production. Therefore, Mooney argues that farmers with profit motivation participate in agricultural production as long as they extract profits from farming. Comparing poor farmers and marginalized family farmers, Mooney contends that poor farmers are more likely to quit agricultural production if there is no profit involved in it. However, the marginalized family farmer might continue with the agricultural production despite its non-profitable financial returns, because farming is a cultural aspect of his/her life, consistent with substantive rationality. The comparison of formal and substantive
rationality emerges as an important aspect in demonstrating how small-scale farmers decided to participate in industrial maize farming as simple-commodity producers in Turkey (see Chapters 4 and 5). If small-scale producers were mainly driven by profits, one would expect that they would invest more in maize with increasing profits, and vice versa.

The role of the marginalized family farms within industrialized countries is the central theme for Bonanno (1987). Bonanno argues in his study on the persistence of small-scale farms in South Italy and Sicily that small-scale family farms function as a "sponge" for the reserve army of labor for industrial capital in the post-WWII era. Small scale farms absorb the unwanted surplus labor during systemic contractions of industrial production, relieving the political pressure on state institutions. Underemployed labor survives on small farms for the period of contraction in industrialization until the pressure on small farms abates with the increase in off-farm employment opportunities. Simultaneously, employment on farm and financial state support to small farms reduces the potential of social protest among rural households in cases of decline in industrial real wages and employment (Bonanno 1987: 144-5).

Using Gramscian concepts of hegemony and legitimation (Gramsci 2012), Bonanno (1987: 128, 146-9) contends that state policies underlined with agrarianism, as a hegemonic ideology upholding conservative values of farm life, legitimizes the persistence of small farms as preserving surplus labor. The construction of this hegemonic project does not occur independently within rural communities, but with the intellectual contributions of political elites and active state support under the Fordist regime. Small farms do not have the material capacity to compete with large farms which
obtain better access to markets, to financial aid, and to modern means of agricultural production. Therefore, lower productivity of small farms decreases the viability of agrarian policies in a Post-Fordist economic context where large-scale capitalist producers and non-agricultural economic actors would oppose government support to small farms.

Similar to different rationalities in farming (Mooney 1988), Bonanno (1987) explains the importance of cultural values in the persistence of small farms, while locating them within the larger context of hegemony, the ideology of agrarianism, legitimizing the Fordist regime. However, Bonanno's argument on the declining significance of small-scale farms as economic actors does not account for the integration of simple commodity producers into the Post-Fordist regime, which is one of the important themes in this dissertation. I argue in the case of industrial maize farming in Turkey that the Post-Fordist regime of accumulation was legitimized within farming communities through a combination of various policy tools (see Chapter 2) and I propose that an important portion of small-scale farmers were integrated into the new regime (cf. Chapters 3-5). However, before explaining how small-scale farms might still persist in a Post-Fordist regime I need to further explore the underlying historical dynamics involving the exclusion of small farms from agricultural production.

A New Corporate Food Regime

Food regimes theory (e.g. Friedmann and McMichael 1989) provides a comprehensive historical perspective underlying Bonanno's (1987) arguments on the exclusion of small-scale farmers from the Post-Fordist regime. I use food regime theory
as a historical background on the development of agricultural regimes at the international level, which provides me with the opportunity to compare the findings on maize farmers in Turkey to its hypotheses on the persistence (or exclusion) of small scale farmers.

Influenced by regulation theory (e.g. Aglietta 1987), food regime theory explains agricultural development at the international level within the context of economic history. Overlapping with the emergence of the Post-Fordist regime, the food crisis in the 1970s resulted in the rise in food prices (e.g. wheat, soy, and maize). The oil crisis in the same period increased the financial assets held by oil exporting countries (i.e. OPEC). These financial assets were channeled to developing countries through banks as financial credits, while governments in these countries welcomed this flow of money because of their need to finance their import deficits. However, this period did not last very long as borrowing countries started declaring financial defaults in the 1980s. At this critical point, international financial institutions gained leverage against countries in debt and required conditionalities to provide further credits. These conditionalities encompassed the elimination of import tariffs and cuts in public spending (Friedmann 1999).

The eradication of protectionist national regulation in developing and newly industrializing countries, beginning in the 1970s, rendered farming communities vulnerable to agricultural imports as industrialized countries artificially lowered the prices through export subsidies. Furthermore, the cut in public spending included the phase-out of production subsidies and support prices that helped the survival of small farms. As the number of farms declined, agricultural production came under the control of transnational corporations (Friedmann 1999). While the production of major crops continued in this new regime, the production of high value products (i.e. non-traditional
fresh fruits and vegetables, and meat) in new agricultural countries increased for markets controlled by transnational corporations (McMichael 2009). New agricultural countries occupy key positions in the development of high value agricultural products and agri-food industries (Rosset, Rice and Watts 1999). High value agricultural products were made available to consumers by these corporations regardless of the season by virtue of technological developments in storage and transportation (Friedland 1994).

The impacts of economic restructuring and the increasing control of agri-food business were not only felt in newly industrializing and new agricultural countries, but also in industrialized countries. The number of farm holdings fell sharply during the 1980s farm crisis in the U.S, at a rate of 17 percent over a decade. The U.S. livestock sector was also affected as the number of livestock farms fell. This trend resulted in a consolidation of farm size as in 1998 “the 122,000 largest farms in the United States, representing only 6 percent of the total number, receive[d] close to 60 percent of total farm receipts” and 30 percent of governmental support to agricultural crops (Magdoff et al. 2000: 7). Glenna (2003) contends that in the 1980s agricultural policies in the U.S. directed farm subsidies to protect profit rates of corporations active in agricultural input and processing industries. Thus, policies pursued in this period weakened the small-scale farming while bolstering the interests of agri-food capital.

McMichael (2009) proposes that the period, where the World Trade Organization and financial institutions emerge as pioneers of eliminating policies geared to support farmers, and where agri-food transnational corporations found precise opportunities to expand their economic activities, is the start of a new corporate food regime. Busch (2010) highlights the increased role of the international financial organizations (i.e. the
International Monetary Fund, and the World Bank) in the restructuring of national development strategies. In this framework, government policies were designed to encourage agricultural producers to invest in non-traditional crops to saturate the demand created by the agri-food business. Thus, the change in rural development policies represents “a recalibration of ‘development’ at the global, rather than the national, scale” (McMichael 2009: 152-3). McMichael argues that the result of Post-Fordist development policies under the corporate food regime is either the exclusion of small-scale farmers across the world or the emergence of social movements which challenge the legitimacy of the new soci-political configuration (e.g. La Via Campesina).

The transformation of government policies in Turkey might be similar to the international trajectory depicted by the corporate food regime (see Chapter 2). By comparing the international trajectory of agricultural development, described by food regime theory, to the historical development of regulation surrounding industrial maize farming in Turkey, I have the opportunity to point to the similar dynamics, as well as to dynamics that are endemic to Turkey's spatial and temporal conditions in development. Furthermore, I have the opportunity to compare the food regime theory's hypotheses on the changing relations of production under the Post-Fordist regime to the case of industrial maize farming in Turkey. The formulation of the corporate food regime, similar to Bonanno's (1987) argument, suggests that small-scale farmers are kept out of the Post-Fordist accumulation regime due to the lack of necessary government support. I compare this formulation to the findings in the following empirical chapters to observe how agricultural markets are driven by agri-food businesses, and how small-scale farmers are excluded or continue to persist in a new economic configuration.
1.3. Industrial Maize as a Commodity System: Space, Communities and Relations of Production

McMichael (2009) argues that food regime theory is useful as an analytical tool for studies that explain the periodization of political economic regulations and overall patterns of the change in agri-food systems. As he is proposing this analytical lens, commodity chains analysis is very crucial in studying the “internal' details [or dynamics] of food regimes” (McMichael 2009: 151).

The Global Commodity Chains approach (Gereffi 1994; 1999; Gereffi, Korzeniewicz and Korzeniewicz 1994) proposes that following the production and consumption chain of a commodity and its spatial distribution sheds light on the placement of different sections of the industry in different geographies, as well as the level of development of those geographies depending on their place in that commodity chain. This approach divides activities of industry (e.g. manufacturing, design, and research) within a chain and follows specific commodities through that process. Typically, the commodity chains approach outlines three sections in a commodity chain analysis: production process and value-adding activity, spatial distribution of different links within the chain, and intra-firm governance (Gereffi 1994).

This approach has been criticized for failing to consider political and statutory dynamics that surround and interact with a specific commodity chain. Since a commodity chains approach attempts to study different sections of a specific commodity chain, the unit of analysis is the “firm” that is the most visible actor and regulatory mechanism through the chain. This emphasis on firm activities tends to pay insufficient attention to regulations at the national and local level, which enable a specific commodity chain to
operate. Also a commodity chains approach pays too little attention to political power imbalances across space and time, since it merely focuses on the competitive capability of a specific sector along the chain.  

While the commodity chain approach attempts to construct a coherent theoretical approach for analyzing commodity chains of different industries, Commodity Systems Analysis (Friedland 1984) adopts a different method in analyzing commodity chains. The commodity chains approach theorizes the organization of economic actors within a chain and their power differentials. But commodity systems analysis differs from the commodity chains approach in that it aims to cover a wider sphere in its explanations, including relations of production, technology, the spatial dispersion of production, and trade. International agricultural development studies have been influenced from this tradition of commodity chains (Jackson et al. 2006). I am interested not only in the organizational mechanisms and power distribution at the firm level as the original global commodity chain suggests, but also in relations of production in agricultural production, and political regulation. Therefore adopting a commodity system method is more beneficial for this study. Through a comprehensive understanding of industrial maize farming in Turkey, I attempt to explain how political regulation influences farming communities and other market actors while the relations of production transform within a new socioeconomic configuration.

In his first conceptualization of this method, Friedland (1984) suggests studying production processes, farmer organizations, agricultural worker organizations, contributions of scientific innovation to production, and the organization of the

---

8 For a detailed account of GCC, its critique and suggestions for improvement, see Patel-Campillo (2010b).
commodity market. Nearly two decades later, Friedland (2001) suggests studying the circulation and extent of strategic commodities in the current political-economic environment and he proposes four other areas to consider in CSA: scale, communities, sectoral organization and state regulation, and commodity culture. Scale refers to the spatial aspect of commodity production and their distribution within a retailing chain. He explains that, within the traditional social context, commodities are produced and consumed within a short distance and contain personal interaction between the producer and consumer of that specific product. However, in modern societies we see that the chain between the producer and consumer is extended and depersonalized. Agricultural products travel longer distances with the introduction of multiple intermediaries, from merchants to retailer firms, to food processor firms.

I use the scale dimension of commodity systems analysis in exploring the spatial aspect of industrial maize production. In Chapter 3, I map the changes in maize farming that occurred over the last decade in Turkey, the period of economic restructuring in agriculture. Through an understanding of the changing geography of maize farming, I show how the spatial dynamics interact with the changing relations of production in maize farming (i.e. a transition from traditional maize farming to industrialize high-yield maize farming).

The second dimension of commodity systems analysis, communities, refers to the sociopolitical and socioeconomic dynamics surrounding the commodity chain. These communities include producers, workers, regulatory institutions and political actors, corporate economic actors, scientists, and consumers. Therefore, this aspect encompasses the research areas indicated in Friedland’s (1984) first formulation above. By analyzing
the influence of various communities in the shaping of industrial maize farming, I explore the changing relations of production with a transition from a Fordist regime to a Post-Fordist regime in Turkey.

The third dimension is the organization and regulation of commodity production. In Chapter 2, using the strategic relational approach (explained above), I describe the regulatory instruments employed by political decision-makers in Turkey to integrate agricultural producers in industrial maize farming. Finally, the cultural meanings surrounding the commodity, from production to consumption, is important to see what symbolic formulations are attached to the commodity in different social contexts. This dissertation research does not particularly explore the symbolic meanings attached to industrial maize farming by consumers or producers. Nevertheless, I explore the rationality of farmer participation in industrial maize farming in quantitative and qualitative empirical chapters to show how farmers decide to invest more in maize while withdrawing from the production of traditional crops.

A critique of commodity systems analysis derives from the actor-network approach (Busch and Juska 1997). Busch and Juska (1997) claim that commodity systems analysis falls into the trap of “reification.” Because it employs structural explanations, this approach cannot deliver a detailed account of the social dynamics in the study of agricultural production (Busch and Juska 1997: 691):

[The political economy of agriculture] simplifies explanations, and provides possibilities to visualize and quantify complicated social processes. The major drawback of such analyses is that in them the subjects of those actions, people, tend to disappear. Instead, structures, corporations, states, legislatures start to act, to function, to forbid, to promote, etc. However, such categories as ‘the state’ or ‘multinational corporation’ are metaphors, convenient shorthand, and cannot act ‘on their own.’
Bush and Juska (1997) use an actor-network analysis for their study of scientific network in rapeseed development in Canada. Through the application of this approach Bush and Juska intend to surmount the limitation of the political economy in explaining networks composed of actors and institutions. Friedland (2001: 91) contends that Bush and Juska’s application of actor-network approach as a method “works best at the micro level.” According to Friedland, with its focus on micro processes, this approach cannot analyze commodity systems that require a multi-level inquiry.

Lockie and Kitto (2000) argue that Busch and Juska (1997) only utilize the rhetoric of the actor-network method, but analyze macro-level institutions, similar to commodity systems analysis. Lockie and Kitto point to the lack of farmer and consumer participation that would reflect important social dynamics in a network. I agree with criticisms brought by actor-network method to commodity systems analysis as political economy studies often have structural deterministic explanations in macro-level analyses. However, I argue that it is possible to avoid the pitfall of structural determinism, and conduct a political economy study beyond micro-level network analysis. As I explain in the previous section, I adopt a strategic relational approach (Jessop 2007) which proposes dialectical duality, where the interaction of institutions representing "structures" and actors representing "agency" result in structured coherence. Using this approach, I explain how government policies adopt different policy tools in their strategies in accordance with the reaction of agricultural producers (see Chapter 2). With a research method going beyond the monolistic explanations on the Post-Fordist regime, I analyze how relations of production vary in maize farming over time and space (Chapters 3 and
Finally in Chapter 5, I explore how small-scale farmers are convinced to participate in industrial maize farming, and how agri-food industry benefit from their participation.

Although the commodity system method will contribute to this research’s analytical capacity, my study is different from most of the studies in commodity chain and commodity system studies that have tended to focus on traditional and nontraditional primary (unprocessed) crops. Some examples for these kinds of studies are on transnational agribusinesses active in fresh fruits and vegetables retailing (Friedland 1994), export crops production in Dominican Republic for niche markets in developed countries (Raynolds 1994), horticultural vegetables in various African countries for UK supermarkets (Dolan, Humphrey and Harris-Pascal 1999), cotton and fish as primary export-crops in Kenya (Gibbon 2001), organic vegetable production in Northern California (Buck, Getz and Guthman 1997), the global distribution of organic export-crop production and consumption (Raynolds 2004), and fresh fruit and vegetable production in Argentina under the organizational structure of transnational corporations (Bendini and Steimbreger 2005).

The above cases are valuable for emphasizing the intensification of agri-export flows, and the dynamics in these flows. However, they focus on specialty crops. There are very few studies which elaborate agricultural commodity systems of major crops, integrated with industrial agri-food processing, as it is the case with industrial maize farming in Turkey. An important study on a major commodity integrated with agri-food industry is processing tomatoes. Pritchard and Burch (2003) analyze processing tomato production in various countries from China to Italy and argue that the variation in economic restructuring experiences in different geographies stem from their specific
socioeconomic and cultural settings. Although they agree that restructuring at the international level had significant influences in tomato production and processing sectors, they claim that the reflections of this trend varied according to the sociopolitical and socioeconomic contexts. Thus they refrain from explanations that suggest the expansion of a unified corporate food regime at the global level (Pritchard and Burch 2003: 261-3).

In their analysis of cases of labor and capital relations, and the role of the state in Canada and Australia, Pritchard and Burch argue that these cases demonstrate different responses to economic restructuring. Canada recognizes collective bargaining rights between processors and growers, while Australia bans it due to its negative impacts on market competition and economic efficiency.

Despite this contrast between Canada and Australia, tomato production and processing sectors are economically well off in both countries (Pritchard and Burch 2003: 125-6, 139). However, Pritchard and Burch also state that the number of processing tomato growers in Canada declined significantly in the 1990s after trade agreements under the World Trade Organization and the North American Free Trade Agreement were established, leaving the sector with specialized large-scale processing tomato growers rather than small-scale family farms involved in diversified crops production. Although this is a strong indication of the exclusion of small-scale farming and consolidation of specialized large-scale production, they prefer to identify the Canadian case a contrasting one to the Australian.

The main insights of the study by Pritchard and Burch (2003) for this research is their analysis of the appropriation and substitution processes (Goodman, Sorj and Wilkinson 1987) in industrial mass agri-food production. As processing tomato growers
contracted processing companies, they were bound to these companies, because they provided their inputs and technologies from them. In other words, inputs (e.g. tomato seed) and technologies were appropriated by firms from the farming complex and commodified as off-farm activities. Also processing tomatoes became a part of the substitution in agri-food production as an input for various products (e.g. ketchup industry).

Industrial maize production, which is the subject of this research, is similar to processing tomato in this aspect. Industrial maize production, which constitutes the essential input for animal feed and artificial sweetener industries, depends on the provision of hybrid maize seed, that has to be purchased by growers every planting season, and on associated chemicals such as fertilizers, herbicides, and pesticides. Maize is a major crop that is a raw material in large-scale industrial processes, including animal feed, high-fructose corn sweetner, and ethanol (Kloppenburg 2004).

As Pritchard and Burch (2003) compare different organizational configurations and relations of production in different countries, they explain spatial variation at the national level. In Chapters 3, 4 and 5, I demonstrate the spatial variation in the changing relations of production in industrial maize farming as well. However, the focus of this dissertation is Turkey and I focus on the spatial variation at the subnational level. Patel-Campillo (2010a) draws attention to the importance of subnational level analysis as she shows the increasing food insecurity in Cundinamarca, Colombia, with the increasing cultivation of cut-flowers for export. In light of this I show the spatial variation at the subnational level which reflects the different local dynamics in relations of production that would not be captured by the national aggregate data.
1.4. Neoliberal Financialization, Dispossession, and the Persistence of Small Farms through "Entrepreneurial Exploitation"

In the analysis of changing relations of production in the Post-Fordist regime, the role of financialization is not negligible. Financialization represents the deregulation of financial markets and the increasing share of financial investment in total profits in an economy (Krippner 2011). Critical political-economy studies (e.g. Harvey 2005; McMichael 2009) argue that the increasing financialization in a Post-Fordist regime influences socioeconomically disadvantaged groups most as they theoretically frame this process "accumulation by dispossession."

However, another aspect of financialization did not attract as much attention: expanding financial credits due to financialization. In Chapter 5, I explore how small-scale farmers managed to participate in industrial maize farming by virtue of increasing production credits. At the same time, I explain whether the increasing use of financial credits by small-scale producers engenders an exploitative relationship between small farmers and the agro-food industry. To discuss the influence of production credits on small-scale producers, that has been neglected by contemporary critical studies, I first elaborate on the explanations of the critical political-economy perspective, and how they pertain to sociology of agriculture. I also explain how a neoliberal discourse framed the policies of financialization in a Post-Fordist regime at the international level. After explaining the shortcomings of the "accumulation by dispossession" perspective in financialization, I introduce the concept, entrepreneurial exploitation, which emphasizes the exploitative relationship between the larger industry and small-scale investors (small-scale maize farmers in this dissertation), who largely rely on credits to participate in a particular economic activity. Finally, before applying the concept of "entrepreneurial
exploitation" to industrial maize farming in Turkey in Chapter 5, I use the example of U.S. housing market and credits to clarify the application of this concept.

Financialization and Accumulation by Dispossession

As I noted earlier, food regime theory (McMichael 2009) suggests that financialization underlies the corporate food regime. In this regime, international financial institutions require the elimination of controls over corporate activity and financial movements, which lead to detrimental impacts on small-scale farming structures previously sheltered by national protectionist policies under variations of the Fordist mode of regulation.

According to food regime theory, policies formed around financialization result in accumulation by dispossession: traditional peasant agriculture is dispossessed by corporate capital under the framework of the World Trade Organization, which “as the material expression of the state/capital nexus, continues this process of subordination by capital on behalf of its member states” (McMichael 2005: 285). For McMichael, neoliberalism is a discourse for globalization in agriculture, of which policy implications dispossess rural populations and threaten them with food insecurity, as self-subsisting peasant production systems are dismantled. Beyond accumulation by dispossession, McMichael does not attempt to theorize how neoliberal financialization might support the consolidation of a Post-Fordist regime of accumulation via legitimation by a particular mode of regulation. The inclination in food regime theory to define neoliberal financialization only as a period of capitalism dispossessing disadvantaged social groups,
including peasantry across the globe, does not capture dynamics based on the socio-political legitimation that consolidates the Post-Fordist regime of accumulation. 

McMichael's conclusions are supported by other critical studies of political economy. Peet and Hartwick (1997: 49-53) contend that the dissolution of the Bretton Woods system in 1971 marked the emergence of financialization of capitalism under U.S. hegemony. The oil crisis of the 1970s and high inflation rates became symbolic for this period. The inception of export-oriented growth in the developing world (especially in East Asia and China) was the manifestation of the comparative advantage perspective, where developing countries had an advantage in cheap labor that can be used in manufacturing industries. The strategies related to export-oriented growth was accompanied by the reduction in import barriers and the increase in export subsidies. The Washington Consensus, which laid out the basic foundations of the neoliberal era, consisted of policies demanding the reduction in public spending to control budget deficit, reduction of taxes to support export industry, the free flow of financial capital with significantly decreased regulatory controls, the reduction of trade barriers, inciting foreign corporate investments, privatizing public owned investments to increase the competitive conditions in a free market, decreasing state regulation on the free flow of goods, and consolidating private property rights. Thus, neoliberalism, as a political project, constitutes the discourse of the Post-Fordist capitalist development in the post-1970 period (Harvey 2005: 2):

Neoliberalism is in the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices.
As experts and policy-makers from a neoliberal perspective occupy important positions in national and international institutions, neoliberalism became the hegemonic discourse (Harvey 2005: 3). The depiction of markets as the sole important mechanism distributing welfare within societies brought the monopolization of capital and the consolidation of corporate power. The definition of corporate bodies as individuals before law and massive tax cuts for corporate investments in the 1980s and 1990s in the U.S. bolstered this dynamic (Harvey 2005: 25-6).

As the class power has been consolidated in favor of corporate interests within the U.S. international organizations (e.g. the International Monetary Fund and the World Bank) became propagators of free market individualism (for corporations) abroad in the developing world. Within these international institutions, state power, that once meant the practice of popular consent in the Keynesian welfare system, is transformed into an agent of neoliberal policy applications at home. These policies encouraged the eradication of barriers against the free flow of goods and finance capital (Harvey 2005: 66).

The social implications of neoliberal financialization were the economic exclusion of socially disadvantaged groups through the privatization of economic spheres previously reproduced by public spending and open to public use (e.g. education, health services, natural resources). De Angelis (2004) draws a parallel between the private enclosure of these economic spheres and primitive accumulation defined by Marx (1976) as a historical moment at the inception of capitalist accumulation. De Angelis argues that primitive accumulation is a constant dynamic reproduced with the expansion of capitalist relations. In Mexico, after the debt crisis in the 1980s, a process of privatization and
deindustrialization took place (Harvey 2005: 98-104). Neoliberal policies, prescribed by the International Monetary Fund and the World Bank, paved the way for privatization of recently nationalized banks in the 1990s, the privatization of common agricultural lands (ejido), and the weakening of organized labor rights. This process in Mexico resulted in the consolidation of class power: as of 2005, Mexico ranked ninth in the world for the countries with the highest number of billionaires.

In South Korea, the trend of increasing welfare via export-oriented development resulted in the consolidation of national industrial capital and worker rights. However, the East Asian financial crisis in 1997 resulted in the penetration of U.S. capital into Korean fixed assets. National industry saw a massive wave of U.S. purchases, as national protectionist measures for industry were eradicated. Furthermore, the flight of industry to China, as a solution by Korean industrial enterprises to sustain profit rates of production, Korean organized labor lost significant power (Harvey 2005: 106-12). Harvey (2005) uses the concept of “accumulation by dispossession,” which is later used by McMichael (2009) as well, to define the process of enclosure under neoliberal financialization.

Besides the deregulation in national commodity and labor markets as a consequence of neoliberal financialization, Krippner (2011) draws attention to the inclination of economic actors to rely more on financial instruments to extract profits in the contemporary economy. The ratio of financial profits to non-financial profits for U.S. non-financial firms more than doubled domestically and globally between 1977 and 1999 (Krippner 2011: 49). U.S. politicians and bureaucrats sought to solve the fiscal crisis of the 1970s by weakening the government grip over the credit supply, and thus to depoliticize the economic crisis by handing over the credit supply to markets. “Under the
policy regime that supported financialization, capital would no longer be scarce but available in abundant supply, with the result that incipient political conflicts over how to distribute limited resources between competing social priorities were effectively depoliticized” (Krippner 2011: 144; emphasis in original). One important consequence of the deregulated credit expansion was that the U.S. credit market debt as a percentage of GDP spiked up from about 150 percent to 300 percent between 1968 and 2001 (Krippner 2011: 53).

Financial expansion influences the socioeconomic dynamics in the economically developing countries as well as in the developed nations. In her ethnographic study on the impacts of the increasing use of microcredits in impoverished neighborhoods, Elyachar (2005) develops the term “empowerment debt.” Using Harvey’s terminology, she describes the neoliberal transformation experienced by the introduction of microcredits in Cairo as a process of accumulation by dispossession (Elyachar 2005: 29).

Funded by various international financial aid organizations, from the World Bank to the Ford Foundation, projects undertaken by small workshop owners could not compete with larger entrepreneurs who were benefitting from microcredits at higher rates. Instead of empowering the communities in poverty, these debt schemes led to the expropriation of small businesses by the creditor organizations, and the expansion of larger businesses. Recognizing the failure as a result of individual incapacity in utilizing credits, borrowers went on strikes asking for an additional release of credits, but not for social security lost a long time ago (Elyachar 2005: 197, 202, 211-7).

Elyachar (2005) depicts the high rates of business failure among microentrepreneurs in Cairo and the individualizing reasoning for the failure, but her theoretical explanations
only pertain to the consequent dispossession due to empowerment debt. Due to her exclusive focus on dispossession her analysis does not include two crucially interrelated dynamics: the creation of consent to participate in microcredit schemes, and the relations of production surrounding small businesses which paved the way to default on their debts. The concept “accumulation by dispossession” cannot elucidate why and how the increasing numbers of small business owners decided to borrow microcredits, and how the relations of production transformed with credits. Only focusing on the process of dispossession excludes a potential explanation about the survival of small businesses utilizing production credits, and it does not exactly explain the increasing demand for financial credits.

Accumulation by dispossession (or capitalist enclosure) is a theoretical concept used in the sociology of agriculture, as well, to explain the impacts of neoliberal politics on rural communities. Araghi (2009: 134) contends that neoliberal financialization led to a global debt regime dispossessing small-scale farmers as he describes this neoliberal food regime as the "enclosure food regime to emphasize the exclusionist and violent character of the agrarian programme of postcolonial neoliberal globalism." Within this enclosure food regime, agri-food corporations control the production chain from supplying commercial inputs to processing and retailing farmers' produce, where simple commodity producers default on debts, lose the means of production and join the ranks of the deproletarianized labor.

Although Araghi's analysis on the impacts of financialization on rural communities is structurally deterministic, since it refers to the inescapable and globally swaying process of depeasantization, Akram-Lodhi, Kay, and Borras (2009: 219) adopt a more nuanced
perspective maintaining that "neoliberal agrarian restructuring has generated a wide array of procedurally similar yet historically specific processes of differential incorporation into global capitalism." Unlike Araghi, Akram-Lodhi, Kay, and Borras argue that the neoliberal policies of the 1980s aimed to integrate peasant labor into the capitalist cycles of production by increasing their productivity on small farms through the adoption of corporate technologies and inputs, and by encouraging small farms to produce for markets. Consequently, dispossession is not the ultimate outcome of neoliberal policies for small farms, but the expansion of commercialized market relations. Similarly, Hall (2012) questions the accuracy of applying the concepts of accumulation by dispossession and enclosure as an overarching theoretical framework to explain the process of neoliberal expansion of capitalism. He supports his argument by showing the predominance of small-scale producers in Southeast Asian agricultural systems and their wide participation in neoliberal markets as producers of niche crops. Hall concludes that enclosure explaining forced dispossession (e.g. due to debts) of small-scale producers falls short of demonstrating how small-scale producers still manage, and are even willing, to participate in neoliberal markets.

Beyond the debate about whether expanding financialization is basically a form of primitive accumulation/dispossession, Mooney (1988: 124-9) describes credit as a social relation in agricultural production as the creditor has the capacity to influence the type of production as well as to choose the recipient of the credit. As the role of the mortgage and nonreal estate credits deepened in the U.S. agriculture since the 1950s, farmers became increasingly dependent on credits. The share of credits in agricultural production was one percent in 1940 and increased to six percent in 40 years. However, the share of credits in
production increased significantly during the periods of financial crisis, as it fluctuated between 19 and 12 percent in Wisconsin and North Dakota.

As borrowing farmers might reap the benefits of lucrative market conditions during price booms, they tend to suffer the consequences of indebtedness, varying from financial distress to foreclosure on mortgaged property, during the times of crises. Mooney parallels the creditor-borrower relationship to the tenant farmer-landowner, where the latter claims a certain share of the surplus value. Thus, Mooney (1988: 156) argues that tenancy and debt are "forms of capitalist exploitation." However, Marx (1976) describes exploitation as a specific relation between the wage laborer and the capitalist employer generating profits, whereas the tenant-absentee landlord relationship is based on rent which claims a share of the surplus value that is realized after the exploitation of the laborer (Ball 1980). Financial creditors claim a share of the surplus-value realized in farming, or any kind of production seeking surplus-value, in the form of interests as Marx (1981: 969) clearly distinguishes the interest share of profits from labor exploitation as the exploitation of wage labor, ground-rent, and capital-interest are the three separate components of the capitalist mode of production. Marx (1981: 968) uses this distinction in his explanation of the commodification of money in the form of interest-bearing capital, or credit:

The division of profit into profit of enterprise and interest [...] completes the autonomization of the form of surplus-value, the ossification of its form as against its substance, its essence. One portion of profit, in contrast to the other, separates itself completely from the capital-relation as such and presents itself as deriving not from the function of exploiting wage-labour of the worker but rather from the wage-labour of the capitalist himself. As against this, [financial] interest then seems independent both of the wage-labour of the worker and of the capitalist's own labour; it seems to derive from capital as its own independent source. If capital originally appeared on the surface of circulation as the capital fetish, value-creating value, so it now presents itself
once again in the figure of interest-bearing capital as its most estranged and peculiar form.

While Mooney (1988) conflates exploitation with rent and credit relations, I still argue that the expansion of credit relations with neoliberal financialization engenders a new form of exploitation between the investor/borrower and the larger industry the investor is participating. In the next subsection, I elaborate the concept of "exploitation" in the way Marx used and explain why critical political economy studies need a new concept in this era of neoliberal financialization.

**Exploitation and Legitimation during the Belle Epoque of Financialization**

Marx (1976: 193) proposes that each object possesses a use-value that depends on the utilization of that object by human agents. Every item is valorized with its usefulness to the individual. Therefore, the use-value of an object exists in the human relationship with nature that is transformed and used in congruence with human needs.

Different than the use-value, the exchange-value of an object is realized at the moment of exchanging a particular object for money (Marx 1976: 195-8). The transformation of the value of an object from its use-value to an exchange-value results in the commodification of the particular object. At the end of the transaction, the producer/seller of the object extracts profit, which, in turn, she or he utilizes in retrieving other objects that have use-value for that individual. The intrinsic use-value of an object is transformed into an exchange value for the person who sells that object. Furthermore, the object, of which value is transformed into exchange-value for the seller, gains another use-value for the person who obtains it. Marx states that the first stage of transformation, where the object turns into a commodity, is the commodity-money (C-M) stage. The
second transformation occurring for the value of the object is the money-commodity stage, where the exchange value gains the shape of the use-value. Marx summarizes the complete process for an object, which has an intrinsic use-value, gains an exchange-value, and revalorized for its use by the buyer, a commodity-money-commodity (C-M-C) process (Marx 1976: 200-9).

Marx (1976: 288-9) argues that human labor under capitalism undergoes a similar process to the one of a commodified object. Individuals, who sell their labor for wages, commodify their labor. Meanwhile, the capitalist entrepreneur utilizes the labor as an input of production that provides profit-extraction after the exchange of goods produced with commodified labor (Marx 1976: 292). According to Marx, the process of value transformation in human labor is the same as the value transformation in objects. Laborers sell their labor, thus transforming it from its use-value into exchange-value, which materializes in wages. This is the stage of C-M, where an object loses its use-value and gains an exchange-value. Furthermore, the capitalist entrepreneur utilizes the purchased labor in production, where the exchange value of labor transforms into use-value for the purchaser. At this point, the C-M-C process for the labor is the same as the one for an object.

As the laborer gives the command of her or his labor to the capitalist entrepreneur, who utilizes it as an input of production, the laborer loses the command of its labor, and she or he is alienated from it (Marx 1976: 301). The primitive accumulation by capitalist entrepreneurs, dispossessing landed peasants, turned agricultural producers, which were connected to nature through their labor, into agricultural and industrial workers, who had to sell their labor. Peasants became free, not because they became free from toil, but
because they became free from the means of production (Marx 1976: 874-5). The value transformation of labor in capitalist relations of production leads to the exploitation of labor, which is the proportion of the exchange value of labor to the surplus value which is necessary for the reproduction of productive capital (Marx 1976: 320-9).

Marx's approach on exploitation is from a standpoint that prioritizes the economic dimension of capitalist relations of production. Formulating the basic arguments of the later regulation school (e.g. Aglietta 1987), Gramsci (2012: 312) criticized the high-wage policies during the Fordist regime of accumulation by pointing out that capitalist accumulation requires the consent of laborers to manage the reproduction of labor and still extract surplus value:

This [the reproduction of skilled labor], however, cannot take place through coercion alone, but only through tempering compulsion (self-discipline) with persuasion. Persuasion should also take the form of high wages, which offer the possibility of a better standard of living, or more exactly perhaps, the possibility of realising a standard of living which is adequate to the new methods of production and work which demand a particular degree of expenditure of muscular and nervous energy.

Since Gramsci proposes that the sustained reproduction of labor and surplus value creation could not only depend on coercing laborers, his assertion indicates that a certain regime of capitalist accumulation requires the company of a mode of regulation creating legitimacy and consent in compliance with the accumulation. While the mode of regulation in the Fordist regime of accumulation depended on policies of high wages (Aglietta 1987), the regulation school still searches for an answer to the question about whether Post-Fordist practices of capital accumulation through flexible accumulation are supported by a coherent mode of regulation (Jessop and Sum 2006).
Krippner (2011) argues that the U.S. policy makers instrumentalized financialization to relieve the political system from the increasing burden of popular demands on the welfare state, which was losing its legitimacy in the face of increasing critiques. Krippner argues that, via deregulation, letting the finance markets respond to the increasing social demands with expanding credit supply, policy makers managed to depoliticize social demands. Following up on this argument I maintain that the regulatory framework based on the expanding credit supply establishes the mode of regulation for the Post-Fordist regime of accumulation. What Elyachar (2005) describes as "empowerment debt," enabling smallholder investors to participate in markets is a reflection of the financial expansion to socioeconomic development. It is not known how smallholder investors interact with the larger sector, since Elyachar only focuses on the relationship between the borrower and the creditor. Still, I agree with Elyachar that financial credits "enable" smallholders to operate within larger circles of economic activity. With this feature, the function of the expanding credit supply under the Post-Fordist regime of accumulation resembles that of high wages under the Fordist one, since both help the relevant regime of accumulation to sustain its legitimacy. This feature is also similar to the argument developed by Krippner (2011) that policies of financialization enabled policy makers to relieve the political system by manipulating the response to popular demands from the welfare system to financial markets.

I also argue that the regulation on financialization supports a new type of exploitation endogenous to the post-Fordist regime of accumulation, as the increasing credit supply has the potential to create consent within social dynamics. *Entrepreneurial exploitation* as a new type of exploitation derives not from the labor exploitation to create
surplus-value, or claimancy in the surplus-value as in credit or rent relations, but from the market conditions where smallholders extensively participate by the virtue of expanding credit supply. While smallholders obtain the opportunity to participate in lucrative economic investments in an environment of flourishing credits, as Mooney (1987) shows in his analysis of U.S. farming structure, entrepreneurial exploitation occurs when the widespread utilization of credits in a sector serves the interests of the larger industry in relation to smallholders/investors either as suppliers or buyers of goods and services.

While smallholders might experience absolute increases in their material status through their participation in a booming economic sphere through credits, which serve as a legitimizing sociopolitical instrument, the larger industry enjoys the increased number of suppliers in their exchange, creating a larger pool for goods and services. An industry sourcing its inputs from a large pool of small-scale investors has the opportunity to offer lower prices due to the fragmented structure of the supply market, decreasing the bargaining power of the supply side, and the larger amount of goods with increased participation. Similarly, an industry might experience an increase in the prices of the goods and services it offers with the increase in demand from small-scale investors mobilized by credits.

I conceptualize this phenomenon as entrepreneurial exploitation, which is not to be confused with labor exploitation defined by Marx because this exploitative relationship is not based on the exploitation of labor, but on the exploitation of small-scale investments expected to return profits to the investor. Therefore, I am not arguing that entrepreneurial exploitation is related to labor exploitation, primarily because of the qualitative difference in proprietary status between wage-laborers and small-scale investors. However, both
types of exploitation have three similar dynamics at different stages of the capitalist economy. First, just as the laborer participates in a capitalist production cycle and enjoys high wages under the Fordist regime of accumulation while being exploited, the small-scale investor, enabled by credits, might experience an increase in the socioeconomic status by investing in a particularly booming economic sphere while the returns on the investment are exploited by the larger industry. Second, the bargaining power of laborers and small-scale investors depend on the organization of the sector. A fragmented sector of labor or investors works to the advantage of the employer or large industry respectively, as much as an organized labor or supply sector might significantly increase the bargaining power against the latter group. Third, both types of exploitation are structurally inscribed in the process of surplus-value creation at different stages: labor exploitation stands as the underlying factor of profit extraction in capitalist production, as entrepreneurial exploitation is conditioned by the market structure comprised of small-scale suppliers/buyers in high numbers bolstered by an expanded credit supply.

In the empirical chapter based on my field study (Chapter 5), I demonstrate this social phenomenon in the case of small-scale maize producers in Turkey who rely on production credits to produce and negotiate with agri-food industry processing their produce. Nevertheless, giving a brief example from the housing market helps me to clarify how entrepreneurial exploitation can be operationalized. One of the results of financialization in housing markets was the expansion of subprime mortgage credits and the consequent crisis in the U.S. in 2007. Demyank and Van Hemert (2011) demonstrate in their study of the trends in subprime mortgage credits between 2001 and 2006 that the share of subprime mortgage market's share within the total mortgage market spiked from
eight percent to 20 percent. They further argue that even though the repayment of subprime mortgages was showing signs of significant deterioration as early as in 2005, the attractive appreciation in housing markets veiled this trend. Evaluating the factors which influence the appreciation in housing prices, Tsatsaronis and Zhu (2004) analyze yearly housing market data from 17 industrialized countries between 1970 and 2003, and conclude that countries with more flexible housing credit policies have experienced higher levels of appreciation in house prices, which in turn contributed to further expansion of credit supply, pointing to a mutually reinforcing relationship between these two factors. Goodhart and Hofmann (2008) use the data from the same 17 industrialized countries between 1970 and 2006, and find that money growth, expanding credits, and higher house prices mutually influence each other. These relationships are statistically stronger between 1985 and 2006.

The expansion of credit supply and more applications for mortgage credits, especially subprime mortgages, point to the necessity of conceptualizing the socioeconomic dynamics undergirding the Post-Fordist regime of accumulation. In this example, *entrepreneurial exploitation* carries the potential to demonstrate how the flexible credit conditions and their extended usage seems to benefit buyers, since they have the capacity buy property easier, but actually contribute to the appreciation of house prices and increasing the profits of the construction industry. Mian and Sufi (2009) find in their ZIP code level analysis in 166 U.S. counties between 1991 and 2007 that subprime neighborhoods increased their use of mortgage credits with the increasing supply in the 2001-2005 period despite the negative correlation between income and

---

9 The USA, Japan, Germany, France, Italy, the UK, Canada, Switzerland, Sweden, Norway, Finland, Denmark, Spain, the Netherlands, Belgium, Ireland, and Australia
mortgage credit supply. Mian and Sufi also indicate that the rapid value appreciation in these neighborhoods cannot be thought independent of the increase in credit supply. Low income neighborhoods who were able to make more investment by virtue of financial credits had to pay increasingly higher amounts than they would without the booming financial economic structure. This last evidence, taken together with the studies summarized above, demonstrates how small-scale/low income investors are more dependent on the use of financial credits while their participation is exploited by the housing development industry, which would benefit from this cycle most. However, in the case of maize production by small-scale producers this dynamics are demonstrated more explicitly, showing how entrepreneurial exploitation is a structural element of the Post-Fordist financialization epoch.

Summary

Regulation theory (e.g. Aglietta 1987), particularly studies the interaction between political regulation and capital accumulation, strategic relational approach (Jessop 2007), influenced by regulation theory and advancing it by proposing strategic selectivity, offers the most detailed framework to analyze the role of state regulation in industrial maize production in Turkey during the first decade of second millennium. With the conceptual framework outlined by SRA, I conceptualize state action as structurally inscribed strategic selectivity, where institutions comprising the state mechanism act strategically within a hegemonic project. Social dynamics reacting to state policies are interpreted as strategically calculated structurally oriented action, where social groups act with the aim of influencing state policies, but not necessarily challenging the structure.
For a strategic relational approach, structure is not an economic relation as in traditional Marxism, but the result of co-evolution of social dynamics over time demonstrating spatio-temporal variance. In other words, the impacts of economic restructuring in Turkish agriculture might show similar experiences in other newly industrializing and agricultural countries due to its similarities in social structure. However, these similarities cannot explain the particularities in social processes in the Turkish society due to specific political and cultural conditions that influence the adaptation to the Post-Fordist regime of accumulation. This structured coherence suggestion bolsters this dissertation in overcoming the economic determinist approach in critical political economy studies (e.g. Lipietz 1997).

To describe how small-scale farmers persisted within different accumulation regimes, I use simple-commodity producers (Friedmann 1978) as a class position, which explains the relative adoption of commercial production practiced in agriculture by small-scale farmers. Also by defining how farmers might be motivated by different rationalities in farming activity (Mooney 1988), I explain in empirical chapters how farmers are motivated to participate in industrial maize production. While the level of adoption of commercial practices by small-scale farmers reflects how market mechanisms penetrated farming practices, it has implications for the transformation in the relations of production, determining the bargaining power of different economic actors in the industrial maize sector. Food regime theory (McMichael 2009) argues that small-scale farmers cannot survive in a Post-Fordist regime of accumulation. I delve into the details of industrial maize farming to observe whether these hypotheses can be validated or need to be revised in the case of Turkey.
Commodity systems analysis (e.g. Friedland 2001) supports the analysis of maize production in Turkey in two important ways. First, by utilizing this method, this study focuses on different aspects of maize production: the regulations surrounding maize production, the spatial scale of maize farming in Turkey, and the communities involved in the production of maize. Second, by exploring industrial maize farming through the commodity systems framework in Turkey in the 2000s, I compare the findings to the main assumptions of sociology of agriculture on the persistence of small-scale farmers and the changing relations of production in agriculture, especially of the corporate food regime formulation by McMichael (2009).

In the final section of this chapter, I argue that critical studies in political-economy (e.g. Harvey 2005) largely focus on the process of dispossession due to the dominance of financial capital in the Post-Fordist regime. While the process of accumulation by dispossession is one result of the financialization phenomenon, the expansion of credits during financialization is another result that has been ignored by most critical studies. Formulating the concept, *entrepreneurial exploitation*, I intend to address how small-scale investors depend on credits to receive returns of their investment while their dependence on credits exposes their investments to exploitation by the larger industry. By giving the example from the U.S. housing markets, I attempted to demonstrate that this dynamic is a structural element in the Post-Fordist regime. In Chapter 5, I show in detail how this concept applies to industrial maize farming in Turkey.
Chapter 2: Historical Background of Rural Development in Turkey, and the Place of Maize Production in Policies of Economic Restructuring in the 2000s

Introduction

Maize production nearly doubled in Turkey from about two million tons to four million tons in the 2000s. While the current literature about the economic restructuring of agriculture in Turkey (e.g. Aydınlı 2010) argues dispossession of farmers due to the dissolution of the national protectionist state policies, it does not explain how political regulations support the new socioeconomic configuration. In this chapter, I argue that political regulations were geared to sustaining the longevity of the Post-Fordist accumulation regime by employing different policy tools in combination, with the long-term strategy of accommodating different social actors who might have conflicting interests. To support this argument, I use the case of political regulation in industrial maize farming in Turkey, which includes economic actors varying from farmers to agri-food industry, and political institutions (e.g. the Grain Board).

In this chapter I discuss new socioeconomic conditions emerging with economic restructuring and how they are regulated by political institutions. Political economy studies (e.g. Bonanno 1994; Bonanno and Constance 2008) tend to define this period as the Post-Fordist regime which is a phase of capitalist development with less state intervention compared to the Fordist phase. Because the state regulation does not protect social welfare through state intervention, the main argument of these studies is that the state is facing a crisis of political legitimacy and democracy. However, the Regulation School (e.g. Aglietta 1986) suggests that a the longevity of a regime of accumulation
requires a regulatory framework to legitimize the contemporary regime. In the next section, I compare a Strategic Relational Approach (SRA; Jessop 2007) built on the intellectual basis of the Regulation School to different formulations of Post-Fordist theories of capitalism, and explain how it can be used in the explanation of the expanding maize production in Turkey.

In the following section, I apply SRA to the history of rural development in Turkey, and show how it can be employed to explain the Fordist regime of accumulation and regulation framework (or mode of regulation) of rural welfare in a country with predominantly small-scale producers. To this aim I use political economy explanations (e.g. Keyder 1987) to position the role of the rural development within a larger development strategy that lasted about three decades.

In the final section, I provide a general framework on the neoliberal economic developments in Turkey after the 1980s before delving into the details of the political dynamics in maize production in Turkey. Industrial maize production developed over time as a sector epitomizing the integration of an agricultural system driven by agri-food corporations. After demonstrating the expansion of industrial maize production and the development of the agri-food sector to explain the capital accumulation regime, I show how state policies influence agricultural producers by employing different policy tools in a combination to respond to challenges raised by oppositional social groups, and political and economic actors. By examining the industrial maize production in this chapter, I aim to demonstrate that the consolidation and sociopolitical legitimation of the Post-Fordist regime of accumulation requires active state involvement which is motivated by strategic selectivity. Inherently, this hypothesis indicates that the state institutions have been
successful in devising political mechanisms to sustain the legitimacy of the Post-Fordist accumulation regime.

2.1. Fordist and Post-Fordist Modes of Regulation

Bonanno (1994) contends that the political power held by the state is influenced by the interests of the competing social groups, and the transition from Fordism to Post-Fordism stands for the challenge posed by the transnational financial capital to the developmentalist welfare state (Bonanno 1994). Bonanno and Constance (2001) define this new configuration of labor and capital relations as Post-Fordism, a socioeconomic and sociopolitical configuration of direct market relations between agri-food corporations and farmers, to distinguish it from the previous Fordist regulations in agricultural production, where state institutions actively intervene in markets to sustain rural welfare.

Bonanno and Costance (2008: 259-60) argue that Post-Fordist state mechanisms do not obtain the former capacity of economic intervention to regulate capital accumulation in favor of citizen welfare. While the scope of the corporate activity expanded within this regulatory framework, Bonanno and Constance argue that the fragmented institutional structure of the state is still responsive to citizen action. With this fragmented structure, citizen action favoring the interests of subordinated classes constantly challenge the legitimacy of the Post-Fordist regime of accumulation.

Bonanno (1994), and Bonanno and Constance (2008) see the state as the place of struggle between the citizens, who used to be represented by Fordist policies in welfare democracies, and the transnational corporations, which attempt to con the regulatory framework according to their economic interests. However, this dualism brings an
important limitation. With this dualism, one cannot study how the Post-Fordist regime of accumulation might gain support among social actors through political regulation. In the case of industrial maize farming in Turkey, this dualism cannot explain how more farmers decided to participate in industrial maize farming despite it supposedly is against their own interests. Here, I emphasize the importance of focusing on the Post-Fordist political regulation which incites farmers to participate in an economic sector driven by agri-food firms, as opposed to a Fordist regulation framework which aims to engender a certain level of socioeconomic welfare among rural households.

I stress in this study the differentiation of the Fordist and Post-Fordist regimes based on the change in relations of production. Also, Fordism and Post-Fordism as modes of regulation need to be contrasted and analyzed to observe how they bolster the social legitimation of the related regime. Therefore, considering the interplay of political authority and different economic actors is necessary, similar to the theoretical framework Bonanno and Constance (2008) provide. However, to tackle the limitation explained above, I employ the strategic relational approach (SRA), proposed by Jessop (1990).

The evolution of the interaction of the state institutions and various social groups in a specific capitalist regime of accumulation -be it Fordist or Post-Fordist- requires the consolidation of a hegemonic juro-political configuration, or mode of regulation, delivering the wide acceptance of the particular regime within the society (Jessop 1990: 219-21). This involves the constant bargaining of political institutions with social groups and actors constituting the economic stakeholders within a spatial and temporal context. In the process of sociopolitical consolidation, the mode of regulation might diverge from immediate interests of economic actors driving the regime of accumulation and rather
strategize on the long-term establishment of the regime of accumulation, as state institutions -the powerhouse of the mode of regulation- emerge as social relations underlain by strategic selectivity (Jessop 2008: 37).

Rather than resorting to a polarizing conceptualization between political and economic structures and agents, Jessop proposes a dialectical duality where political institutions act with “structurally inscribed strategic selectivity” while social actors commit “strategically calculated structurally oriented action” (Jessop 2008: 41). Instead of a static structure, the consequence of the interaction and mutual -but unequal- influence between the political institutions and social actors/groups generates a "structured coherence” which explains the variation according to the spatial and temporal context within a broader regime of accumulation (Jessop 2008: 46).

This chapter focuses on the sociopolitical transition from Fordism to Post-Fordism regarding the regime of accumulation and mode of regulation using maize production as a case exemplifying this process. One important point to consider in this effort is the continuities and discontinuities that can be observed in these two regimes and regulatory frameworks. Jessop and Sum (2006: 84-5) argue that the flexibilization of labor and production processes have been an extensive part of Post-Fordism as a regime of accumulation showing variation according to spatial and temporal conditions. However, they have reservations about proposing a Post-Fordist mode of regulation as encompassing as Fordism. At the current stage of capitalist development, their suggestion is focusing on specific spheres of socioeconomic activity to observe the regulation framework before reaching a premature formulation of Post-Fordist mode of regulation.
Implementing SRA has three important benefits for the analysis of the historical development of Fordist regime and the explanation of its successor, the Post-Fordist regime, in the case of industrial maize production. First, as I pointed in Chapter 1, the analysis of Fordism and Post-Fordism as modes of regulation goes beyond the narrow definition of these concepts as supply organization or type of consumer market. Second, the emphasis by Jessop and Sum (2006) on the continuities and discontinuities between these two regimes helps us to grasp how maize has become an attractive source of income for farmers. In this new environment, farmers interact with various political institutions and economic actors while the state support in its Fordist form phased out, and is replaced by a new set of political instruments to encourage farmers to participate in maize production and trade with agri-food processing firms. As I demonstrate in the last section of this chapter, farmers invest in industrial maize farming as long as there is government support that would not explicitly favor the agri-food industry and put farmers at a disadvantage via regulation (e.g. increase in maize imports).

Third, SRA in this chapter explains how Post-Fordist mode of regulation is a set of mechanisms to sustain the long-term consolidation of the flexible regime of accumulation. Insomuch as the state aims the long-term consolidation of capital accumulation by gaining the consent of social groups, whose participation is instrumental, and indissmissible in capital accumulation, the strategically selective action by state institutions might deviate from the short-term interests of industries controlling the productive capital. Therein, the SRA formulation of state powers and action differs from the depiction of social forces competing over the power centers within state devoid of intervention tools (Bonanno and Constance 2008). Concomitantly, responses to state
action from various social groups are not necessarily anti-hegemonic, but rather strategically calculated structurally oriented, underlining the continuities and discontinuities in the process of transition. Explaining how policy tools in Turkish agriculture have transformed in the transition from an accumulation regime to another one generates the appropriate theoretical ground for the case of expanding industrial maize production and its surrounding regulatory framework in Turkey.

2.2. The Historical Development of Rural Policies and Fordist Regulation in Turkish Agriculture

In the 19\textsuperscript{th} century, the ruling Ottoman elite distributed the rights of usufruct land to peasants in Anatolia which used to be state land under the traditional Ottoman law. Until this reform, private property in Asia Minor was strictly limited by the central Ottoman government, while this policy change did not include inheritance of land, demanding continuous cultivation on land from peasants. The distribution of usufruct rights emerged as a political mechanism to increase the revenue base of the central government, which otherwise used the medium of provincial elites who claimed a share of agricultural revenues (Arıcanlı 1986). The distribution of usufruct rights to small-scale peasants limited the concentration of land holding. One important exception to this policy was the settlement policy in the underpopulated Cukurova belt in Southern Anatolia, where Turcoman tribes were placed on arable land, reinforcing a tribal large-landholding system in the region.

The Public Debt Administration (PDA), whose officials were appointed by the foreign governments funding the Ottoman debt, was established in 1881 after the debt crisis in the Ottoman state. PDA then started collecting the majority of taxes, constituting
the largest department within the state (Arıcanlı 1986). PDA improved railroads to facilitate tax collection in Anatolia, leading to the expansion of market relations in farming regions via transportation networks in Northwestern and Western Anatolia. Despite the lack of evidence, Arıcanlı (1986) estimates that, at the turn of the 20th century, the landowning structures in Southeast and East Anatolia were large-scale due to tribal relations and low fertility, whereas land-ownership and agricultural revenues in West and Northwest Anatolia were under the strict surveillance of the central government in order to prevent the political challenge of provincial elites via the consolidation of resources in agricultural production. After the demise of the Ottoman rule and the establishment of the Republic, the Turkish government between the 1920s and 1950s sought to initiate land reform policies to distribute large landholdings in the East and the Southeast, but lacked the necessary political support at the national and local levels.

Between the 1930s and 1950s property relationships was encouraged by the government by production credit and land distribution policies in Turkey. In the 1940s, peasants were required to show the title of the land they had been farming to use agricultural credits demanded the land title while land distribution commissions between 1947 and 1960 distributed public land in villages in order to decrease the control of local notables in expropriating peasant production surplus (Arıcanlı 1986).

With the distribution of public land, the percentage of landless peasants declined from 16 percent to 10 percent (Keyder 1987: 13-8). The increasing mechanization in agriculture driven by the expansion of cheap credits by virtue of Marshall Aid in the 1950s did not result in the exodus of sharecroppers from land since land distribution policies expanded the proprietary relations among small and medium-sized peasantry
holdings. However, the Cukurova Belt was an exception in South Anatolia where prior tribal structures and large landholding were relevant. While only four percent of the village population at the national level withdrew from farming with the expansion of agricultural mechanization in the 1950s, this figure was about 12 percent in South Anatolia. In the same vein, large landholders benefitted more from price supports, due more to the absolute difference in production than to disproportional gains.

Keyder (1987: 158-9) contends that the combination of expanding proprietary relationships and active state intervention in agricultural production via input subsidies and price supports increased the welfare of rural communities in the following two decades. Increasing welfare resulted in the emergence of rural populations as an important source of demand for consumer goods varying from tractors to textiles, supplied by the emerging national bourgeoisie. While the majority of exports still consisted of agricultural crops -such as tobacco, figs, hazelnuts, cotton and raisins- by the late 1970s, import substitution industrialization (ISI) policies aimed the domestic growth of industrial capital while penalizing export industries due to overvalued exchange rates of the Turkish Lira (Keyder 1987: 173). Contrary to the implications of the agrarian question related to rural-urban migration trends, the majority of village populations remained as petty commodity producers while the ones migrating to cities did not lose their connection to their villages (Keyder 1987: 159):

[P]easants migrating to urban areas were not pushed out of the countryside because of landlessness and poverty. They did not arrive in cities destitute and without any belongings. The average migrant had a claim to some land in his village which he had rented out or left to a family member in exchange for some compensation. More often than not he came to the city with sufficient capital to start building a house in the shanty town area already colonised by his co-villagers. After this initial transfer, the migrant almost never lost contact with the village; he returned during annual leave, left his children with their
grandparents, and he regularly received supplies in kind. If he remained a landowner he also received rent, or his share of the produce. All this meant that the migrant became part of the consumer market the moment he set foot in the city. Starting with the construction of his dwelling, and as a result of the additional income available to him, he served to expand the internal market to a much greater extent than would have been possible in the case of an urbanization characterised by the migration of the landless poor.

Support policies through financial supports in input and crop markets, subsidized production credits, extension and technology improvement have been the main instruments of sustaining rural welfare (Somel 1986). Price supports constituted the largest portion of rural development policies. Cereals except maize and rice were given support prices by the government before the 1950s. With the 1950s, tobacco, opium poppies, and tea, sugar beets and cotton were crops for which farmers received support prices. Somel finds that between 1950 and 1980, support prices provided price stability in support receiving crops, however incomes of rural households were fluctuating. Despite fluctuating household income, the level of farmer household welfare increased over time, resulting in increasing levels of consumption by farmer households.

Somel (1986), in line with Keyder (1987), argues that the price supports in agriculture served multiple goals within the model of ISI. Governing political parties sought to consolidate their legitimacy within rural communities via price supports. Furthermore, price supports provided incentive for farmers of different scale to transition to from crops of subsistence to cash-crops facilitating their integration into market economy. Finally, national industrial capitalists benefitted from this process as the consumption scale of rural communities has expanded along with increasing welfare. Kasnakoglu (1986) investigates the argument that price supports are solely motivated by the political interests of governing parties to establish patronage relations between rural
populations and political parties. Analyzing price supports at election years Kasnakoglu cannot find support that price supports are solely motivated by political aims. Kasnakoglu argues that price supports were part of the larger ISI policy framework. However, Keyder (1985) emphasizes that the ISI policies were in place in Southern Europe, including Turkey in the post-WWII era by virtue of the U.S. economic and military aid. For Turkey, the U.S. aid was the most important source of foreign currency before 1969, and the Turkish government used aid to finance half of the trade deficit due to the ISI policies up to 1974.

Jessop and Sum (2006) categorize four different modes of regulation across Europe and North America: 1) liberal welfare regimes where financial sectors are more developed than other developed countries; 2) social democratic welfare regimes with small and open economies where high skilled labor and export production are prominent; 3) conservative and corporatist welfare regimes where productive capital is prominent, and state mechanisms coordinate the coexistence of large and smaller industries; 4) the peripheral Fordist Southern European welfare states with developing economies which contains large shares of rural population and family-lead industries. Jessop and Sum (2006: 159-60) also argue that peripheral Fordism might explain the development experience in South European and Latin American newly industrializing countries as these countries pursued ISI policies in their early stages of industrialization, as in contrast to Southeast Asian countries which adopted export-led growth models starting from their early stage of industrialization.

Turkey's Fordist path of development in mode of regulation and regime of accumulation can be explained with the South European model of peripheral Fordism
where the government seeks to bolster the development of infant industries via protectionist policies and domestic market creation. By actively supporting the agricultural production through input subsidies, agricultural credits and support prices, the Turkish government realized three important goals with the aid-dependent ISI model between 1950 and 1980. First, via increased revenues from agricultural production, rural communities constituted an important pillar in this long term strategy of ISI where they acted as consumers of goods produced by the national industrial capital, contributing to the Fordist regime of accumulation. Second, political parties in government broadened their political support from rural communities, consolidating the hegemony of the state mechanisms. Third, through supporting staple crops such as wheat, cotton, tobacco, and sugar-beets, the Turkish state managed to integrate rural communities in capitalist mode of production, for the most part as petty producers due to the dominance of small-scale farming structures.

2.3. Post-Fordist Regime of Accumulation and Mode of Regulation in the Turkish Agriculture

The national protectionist policies in agricultural production pursued in Turkey between the 1950s and 1980s constituted the basis of Turkish rural development. Governmental supports in agriculture included subsidies in chemical inputs (e.g. fertilizer and chemical pesticide), seeds, and support prices for crops through the public procurement by the Turkish Grain Board and state-supported agricultural sales cooperatives. However, the oil crisis and increasing budgetary deficits in the 1970s, international financial organizations’ push for privatization of state owned enterprises, and the phase-out of input subsidies and support prices was felt heavily in Turkey in the
1980s. Although the state policies for protectionist policies persisted through the 1980s, the financial crisis in 1994, due to the increasing financial flows and budget deficits, started the beginning of a re-regulation period in agriculture in Turkey. In 1994, the guaranteed purchases by the state and the Union of Agricultural Sales Cooperatives, a structure subsidized by the government, were significantly limited to only cereals, sugar beet, and tobacco. Turkey’s signature in the Agreement on Agriculture within the World Trade Organization body in 1995 was another important step in the re-regulation of the rural economy. Agreement on Agriculture demanded the decoupling of government supports from agricultural production, and transform them into direct income supports, which cannot be based on production, but take the form of standard payments for farmer households (Aydn 2010).

Letters of intent given to the International Monetary Fund in 1999, and the Economic Restructuring Program in 2001 signed with the World Bank secured international financial credit flow into Turkey, as these commitments demanded the phase-out of subsidies, support prices, and privatization of the Union of Agricultural Sales Cooperatives and state-owned enterprises. The Agricultural Reform Implementation Project implemented between 2001 and 2005, was a monitoring program for the implementation of Economic Restructuring Program commitments. The Agricultural Reform Implementation Project had the same objectives as the Economic Restructuring Program, and provided financial means for direct income support (DIS), compensatory payments in the form of premiums for products that are claimed to be more competitive than oversupplied crops that increase the governmental budget deficit. Also, the European Union Common Agricultural Policy demanded restructuring in line with
the World Trade Organization regulations and World Bank projects. With the commitments made to financial institutions, in 2000 Union of Agricultural Sales Cooperatives were converted into joint stock companies, as private enterprises. Sugar Law, legislated in 2001, brought significant production limits to sugar beet farmers, and eradicated support prices for this crop. TEKEL, the state monopoly for alcoholic beverages and tobacco products, was stripped of its control in tobacco production in 2001, leaving tobacco producers alone with transnational tobacco corporations. As a result, the number of tobacco farmers declined more than one-half between 2000 and 2006 (Aydn 2010).

The process of agricultural restructuring has severe impacts in the structure of rural economy. The share of agricultural employment in total employment in 1988 was 46 percent. This figure dropped to 38 percent in 2001, and to 24 percent in 2007. Consistent with these figures, about three out of eight million individuals withdrew from the agricultural sector between 2001 and 2007. Even though the number of individuals employed in agriculture crept up to about 6 million from 2007 to 2012, the share of agricultural employment within Turkey did not change due to the expanding non-agricultural employment.¹⁰

While the production of traditional crops was declining along with Fordist mechanisms of welfare provisioning, DIS payments and deficiency payments in the form of premiums for alternative crops were the main mechanisms of state support. Güven (2009: 181-2) states that the depeasantization by economic restructuring in the Turkish agricultural landscape, the loss of around one-quarter of the total employment in

agricultural sector over one decade, was ameliorated by these rural transfers which "ensured that the inevitable decline of the sector stayed on a path of 'soft landing' for the mass interests involved" while "just as under import substitution, under neoliberalism as well, populist side payments and corporatist mechanisms of control blocked mass mobilization and genuine democratic participation in the Turkish countryside."

In contrast to Güven’s (2009) postulation of the existence of state intervention in agriculture (i.e. direct income support and premium payments) in a hybrid of populist corporatism and neoliberalism, Keyder and Yenal (2011: 65) argue that "the state no longer has the capacity or the willingness to be in full command of agricultural matters; it increasingly is in a position to complement market mechanisms." Keyder and Yenal, based on their field research in western and southern coastal regions of Turkey, argue that small-scale peasants, especially the ones in Middle and Eastern Anatolia who have scarce water resources for irrigation and/or unsuitable terrain for commercial cultivation, experienced high levels of stress in sustaining livelihoods by adapting to new market conditions and policies as massive numbers of them decided to withdraw from production. Despite the deteriorating conditions of small-scale farming, Keyder and Yenal argue that small-scale farms, especially with favorable geophysical conditions, will continue to exist through labor-intensive agriculture and contract-farming for retailers and agri-food industries while they emphasize the increased insecurity of credit resources and commodity markets for petty producers.

One side of the coin of economic restructuring is depeasantization and increasing insecurity for petty producers in agriculture in Turkey in the new millennium. The other side of the coin pertains to the change in the capital accumulation processes. The growing
role of supermarket chains in food provisioning has been one of the defining characteristics of the agricultural development in Turkey in this period. The share of perishable foods (i.e. meat, dairy products and fresh fruits and vegetables) within total supermarket retail sales increased from 30 percent in 2004 to 43 percent in 2009. With the increasing share of food retailing in supermarket chains, supermarkets controlled half of the food retailing sector in this varying from local small-scale chains, to national, and foreign-national joint venture chains (Atasoy 2013).

Atasoy (2013) demonstrates how the Post-Fordist regime of accumulation consolidated in Turkey in the 2000s as a result of increasing connections between retailing supermarket chains and small farmers supplying labor-intensive fresh fruits and vegetables. However, the political regulation that underlies these changes remains an understudied area. In the case of Turkey's agricultural development in the 21st century, the Post-Fordist mode of regulation is either understood as a vacuum of Fordist regulation where the state does not intervene as much as in the ISI era (e.g. Keyder and Yenal 2011), or is incomplete due to state's inability to shift from a populist economic policy framework to one conditioned by free-market competition (e.g. Güven 2009).

Neither of the perspectives above focuses on the dimensions of regulation that underlies the sociopolitical legitimation of the changing relations of production. Contributing to the SRA framework, I consider the Post-Fordist mode of regulation as neither absence of regulation (i.e. deregulation), nor incomplete and lagging regulation framework (i.e. hybrid). I argue that it is rather a long-term strategy based on the combined application of various policy tools to adapt different social actors to the new socioeconomic configuration through obtaining the sufficient level of legitimacy geared
to the longevity of the accumulation regime. This indicates that the state, as a regulatory institution, might not always act in accordance with the short-term interests of dominant economic actors (e.g. agri-food industry). Therefore, political decision-makers develop regulatory strategies towards the long-term adoption of the socioeconomic practices related to the new accumulation regime by subordinated social groups (e.g. small-scale farmers) to provide sociopolitical legitimacy for that particular regime.

Maize production holds an important place in this picture of agricultural restructuring as the new agricultural policy frame identified maize as a competitive crop to be supported and expanded in production. In the following subsection I elaborate how state policies have influenced the participation of farmers in maize production which is integrated with the agri-food industry complex. Furthermore I explain how policy makers diverged from a strict implementation of economic policies motivated by the short-term interests of the agri-food industry, but rather sought the long-term legitimation of the accumulation regime to accommodate the reactions from maize farmers and other social/political actors.

The Expansion of Maize Production as a Case of Post-Fordist Regime of Accumulation

The Five Year Development Plan for 2001-2005 notes that the agricultural policies in this period should be coherent with the Agreement on Agriculture and the EU Common Agricultural Policy. The Development Plan advises state policies aiming for higher productivity and expansion of cultivation in competitive products, including sunflower, soy, cotton and maize through the implementation of premium payment system (DPT 2000a). Also in the five year plan developed by the State Planning Organization
(Agriculture Strategy 2006-2010), the State Planning Organization recommends that premium payments for competitive products should continue. As agricultural subsidies decline, premium payments are shown as the main instrument to support agricultural crops with higher demand, such as cotton, sunflower, maize, soy bean, and other oil-seed products (YPK 2004).

In Turkey, the maize production quantity increased from around two million tons between 1990 and 2002, to about four million tons in 2008. Also, we can see an increase in the area harvested with maize at the national level: from around 500,000 hectares between 1990 and 2002, to around 600,000 hectares in 2008.\footnote{Data retrieved from the online database of the Food and Agriculture Organization of the United States (http://faostat.fao.org/). Last accessed on 5/12/2013.} This shows that there was a sudden increase in the yield of maize production, which is related to a more input-intensive industrial production type.

Çakmak and Eruygur (2006: 11) contend that the increase in maize productivity is “a perfect example of the technological changes on the supply side.” As the production of maize was based on household consumption in the 1960s and 1970s, in the 1980s the yield was increased through the adoption of hybrid maize varieties, providing input for fodder in the poultry industry. The International Maize and Wheat Improvement Center (CIMMYT) -a part of the Consultative Group on International Agricultural Research (CGIAR) and funded by the Rockerfeller Foundation- has been instrumental in the expansion of hybrid maize varieties across the world after its establishment in the 1960s and 1970s. The Center significantly contributed to the commercialization of the seed sector and the related dependence of farmers on corporate biotechnology industry, especially TNCs (Kloppenburg 2004). CIMMYT was the leading institution in the
adoption of hybrid maize varieties in Turkey with 60 trials between 1975 and 2003. More than half of the trials were conducted in the 1980s, and the trial sites were Izmir and Aydin in West Anatolia, Antalya and Adana in South Anatolia, and Samsun and Adapazari in North Anatolia. In 2009, the three fourths of hybrid maize seeds used by commercial farmers were supplied by five foreign firms, of which DuPont and Monsanto each hold 25 percent and Syngenta holds eight percent of the market (TMMOB 2011: 512-3).

The sites of maize trials conducted by the CIMMYT are the regions which experienced significant increases in yields with the expanding commercialization of maize farming. According to the report of CIHEAM (Çakmak and Eruygur 2006), South Anatolia in 2003 had the highest yields (around 7 tons/hectare) in maize production along with the largest size of land for maize production (around 200,000 hectares). Western and East Black Sea regions follow South Anatolia in terms of size of land (around 100,000 and 80,000 hectares respectively); however the productivity of maize production in these regions is significantly lower relative to South Anatolia (around 2 and 3 tons/hectare respectively). The land size for maize production after these three regions is largest in West and Northwest Anatolia (around 53,000 and 77,000 hectares), and these regions have higher productivity (around 5 tons/hectare) than West and East Black Sea regions, but lower than South Anatolia. We can see from this picture that the land size was large in West and East Black Sea regions, which are the regions of traditional maize

---


13 In the report by Çakmak and Eruygur (2006), the regional names are differently labelled than here. Authors use NUT2 regional labels in their study. Regions compared here are TR3, TR4, TR6, TR8, and TR9. Here, I named TR3 region as Western Anatolia, TR4 as Northwestern Anatolia, TR6 as Southern Anatolia, TR 8 as Western Anatolia, and TR9 as Eastern Anatolia.
production (Arıoğlu 2008) with low productivity. We can assume that the majority of the household consumption is located in these two regions. Also the high rates of productivity in Northwest, West and South Anatolia might be related to the increased utilization of maize in agri-food industry (i.e. fodder and HFCS industries) in 2003.

Considering the overwhelming growth in maize production in the face of a slight expansion in area, one can attribute this development to increasing yields with the adoption of hybrid varieties without a significant change in regions of production. Çakmak and Eruygur (2006) demonstrate the spatial distribution of cultivation areas and yields in 2003, however this descriptive analysis does not explain how the patterns of production change across regions and over time. The comparison of maize yields in 2009 and change in the area of maize production at the provincial level between 2001 and 2009 reveals that farm area in high yield industrial maize production increased over time in the South, Southeast, Middle and West Anatolia regions (see Figure 2.1). Attendantly, maize farming in North Anatolia where farmers practice traditional low yield maize farming experienced a decline in area. Mersin in South Anatolia and Sakarya in North Anatolia are two provinces which experienced a decline in maize cultivated area in this period when maize farmers were practicing high yield industrial maize farming. The picture of a decreasing maize-cultivation area in the regions of traditional farming and an increase in areas of industrial farming shows that the shift in the form of maize farming from traditional to industrial farming was accompanied by a spatial shift over time.  

-Insert Figure 2.1 here-

---

14 For the names of provinces in Turkey, see Figure A.1.
15 The spatial patterns and the longitudinal analysis of this shift are statistically studied more in depth in the following chapters (Chapter 3 and Chapter 4).
As the production of maize increased with increasing productivity in the 2000s, agri-food industry in animal feed and high fructose corn sweetener production benefited from this trend. In 2006 and 2007, the animal feed industry absorbed around 75 percent of the total maize produced while the starch and HFCS industry absorbed around 17 percent. The remaining eight percent was for direct human consumption. Before 2007 in the animal feed industry, maize was mainly used in feed varieties for broiler and egg industries, broiler industry absorbing most of the feed. Maize constitutes the main ingredient in industrial poultry feed, its share in the feed reaching up to 65 percent. Paralleling the increase in the maize production in the 2000s, the broiler-feed industry capacity increased from 2.5 million tons to 3.5 million tons between 2002 and 2007, bolstering the broiler industry (Bayraktar 2008).

Poultry meat production in Turkey started in 1970s at a small scale, but developed further during the 1980s. The poultry meat production quantity in 1995 was around 300,000 tons. It increased to around 700,000 tons in 2002, and to around 1,000,000 tons in 2007. The poultry meat industry is relatively concentrated: 41 firms represent 80 percent of total poultry meat production as biggest ten companies hold around the 68 percent of the total poultry meat production in 2006. CP Standart is a local firm, owned by CP group (a TNC which is based in Thailand), which holds 10 percent of the sector, being among the biggest three companies in the sector in 2006 (Çinar et al. 2009). From the same group, CP Feed is the leading feed company in Turkey's feed production, having eight percent of the national market with its six production facilities across the country since 1986 (CPT 2011). As of 2002, CP group is the world's largest animal feed producer and fourth largest poultry producer, after three U.S. firms: Tyson Foods, Perdue
Farms and Goldkist. Besides Turkey, CP group has investments, predominantly in poultry and/or animal feed production, in Thailand, China, Malaysia, Indonesia, the U.S., India and Vietnam (Burch 2005).

Compared to the poultry industry, the high-fructose carbon sweetener industry in Turkey is even more highly concentrated. There are only five companies active in this sector. Cargill, a U.S. based TNC, is the dominant producer in the sector: Its quota in HFCS production reached 51 percent of the total HFCS production quota regulated by the Sugar Institute in 2008.\textsuperscript{16} Amylium, another company whose 68 percent of the shares are owned by Tate & Lyle (a U.K. based TNC active in sweetener and sugar production), had 31 percent of the total quota. Therefore we see the dominance of TNC owned or shared HFCS companies in the HFCS production as they hold over 80 percent of the allowed HFCS production in Turkey (Borlu 2009: 20). While maize production increased in the 2000s, the HFSC industry increased its production from about 400,000 tons in 2003, to around 500,000 tons in 2010 (ŞK 2011).

With the significant increase in industrial maize production and related agricultural industries, we can postulate the consolidation of the Post-Fordist regime of accumulation in Turkey over the 2000s. The increasing agricultural output, supported by deficiency payments, has been supplying agri-food industries, which increased its production capacity, leading to an increased demand from farmers in return. The leading position of TNCs in HFCS, as well as in the broiler industry, point to the integration of Turkish agriculture in international networks of reproduction of capital, a determining characteristic of the Post-Fordist regime of accumulation. Nevertheless, this premature

\textsuperscript{16} Cargill owns a HFCS factory which holds the 43 percent of the quota. However, it purchased 50 percent of Pendik Nişasta in 2002, which increased its quota allowance to 51 percent calculated with the half of the quota belonging to Pendik Nişasta.
The Legitimation of Post-Fordist Accumulation in Maize Farming through Regulation

Without a focus on how various social actors react and adapt to the new regime of accumulation, we cannot gain the insight about how state institutions employ various tools to calibrate policies to appease social dissent due to the shift in the accumulation regime. The analysis of government support policies (e.g. public procurement, deficiency payments, and import taxation) and changes in maize production as a reaction to policies explain the consolidation of the Post-Fordist regime of accumulation underlain by mode of regulation. Table 2.1. shows the compiled information on yearly maize production, public procurement through the Grain Board, import taxes, import quantity, deficiency payments (premiums), and maize prices.

-Insert Table 2.1 here-

Between 2001 and 2009, maize prices have experienced a steady increase in Turkey. We could argue that maize prices have been the driving factor in the increase of maize farming in the same period, unless we recognize the changes over time in production patterns. In the Table 2.1, we can see that maize production quantity and area invested fluctuates over time: a steady increase from 2001 to 2005, a sudden decrease in 2006 and 2007, and a return to the quantity and area of production at the 2005 levels in 2008 and 2009. Refraining from establishing a strict causality, we can argue that the implementation of premium payments and their increasing rate between 2003 and 2005 (from about .03 to .07 TL) and increasing quantity in procurement between 2001 and
2005 (from 9 tons to 661,000 tons) might have provided an important incentive for farmers to increase the maize-cultivation area and production in this period. It is important to note that the increase in maize production has been accompanied by the spatial shift of maize production from traditional maize production regions to industrial farming regions (see Figure 2.1).

While maize production, supported by public procurement and premium payments, expanded in scale and space between 2001 and 2005, the level of maize imports and tariffs did not follow the same trend (see Table 2.1). We see high levels of importation between 2001 and 2004 with tariffs fluctuating between 10 percent and 80 percent. Tariff levels were lowered by government decrees right before harvest period in July until November as an effective tool to suppress domestic prices as well as satisfying the agri-food industry demand for raw materials.

The all-time high level of import in 2003 at 1.8 million tons and the following year's high amount attracted the attention of the contemporary president Sezer, who was the president of the Constitutional Court of Turkey before being elected to the presidency by the National Assembly in 2000. At the time of 2002 national elections, when the current ruling Justice and Development Party (JDP), first came to power, he was already known for his idealistic character favoring the strict implementation of the rule of law. Between 2002 and the end of his term in 2007, as the head of the government and state, he returned 55 of 800 bills which passed through parliament ratification, and the cabinet of ministers made of JDP members (Demirögen and Tuncer April 28, 2007). As an oppositional figure to the JDP cabinet, Sezer ordered the State Investigation Board in

---

17 Different than the presidential system, Turkey has a parliamentary system, where the cabinet of ministers led by the Prime Minister is voted in the National Assembly and endorsed by the President. President as the head of the government reserves the right to send legislation back to the National Assembly for revision.
2005 to prepare a report on the grain imports allowed by the JDP cabinet from 2002 to 2004. The conclusion of this report strongly recommends a legal investigation on the excessive maize imports from which the poultry firm owned by the contemporary Minister of Treasury Unakitan's son benefitted as well. Upon the increasing alertness on the exploitation of political position for personal economic gains, and the overstocking of maize due to excessive imports, the government raised the tariff on maize imports first to 100 percent and then to 130 percent (DDK 2006; Radikal 2006). However with the significant drop in imports, a slight increase in maize prices can be seen (see Table 2.1).

As the tariff levels stayed high, and the import quantity low, in 2006, the JDP government decided to hold public procurement through the Grain Board and dropped the level of premium payments from about .07 TL to .02 TL per kilogram (see Table 2.1). While the consequence of stopping public procurement in 2006 was a significant decline in the price of maize from .19 to .17 TL/kg, this strategic turn in policy might have been underlain by two potential dynamics. First, the Grain Board wanted to alleviate the overstock of maize that accumulated between 2002 and 2004 due to imports and public procurement. Second, the Grain Board did not want to interfere in prices through public procurement, and to cause further valuation of maize in an environment of high tariffs where the prices depend more on domestic supplies.

The policy change implemented by the Grain Board continued in 2007 as well. The significant change in 2007 however was the decision by the JDP government to lower tariffs again. In 2007, Sezer's presidential term ended and he was replaced by Gul, who was the Vice Prime Minister in the JDP cabinet. Concomitant with the decrease in tariff rates, the yearly import quantity returned back to its higher levels before 2005 (see Table

---

18 2001 prices.
The feed industry as well as the poultry industry are the main proponents of decreasing tariff rates and suppressing domestic maize prices with high levels of imports. The General-Secretary of the Union of Broiler Producers and Breeders complained in the Union report on the industry that the higher prices of domestic maize compared to international prices engenders a burden on the industry as the 55 percent of their expenses in sourcing feed consists of maize (BESD-BİR 2007). Similarly, before the planting season in April, the President of the Union of Feed Producers emphasized the need for more maize imports to secure agri-food industry from input shortage and high maize prices unless the domestic production meets the demand created by the industry (TÜRKİYEM-BİR 2007).

The position of the sweetener industry in terms of maize imports is very ambiguous compared to the broiler and feed industries. The CEO of Cargill Turkey, Sayinatac, claims that the sweetener sector is required by law to use domestically grown maize for the national market since 2002 (Çelebi 2009). Still the 2009 Activity Report of the Sugar Institute, which regulates production quotas in beet-sugar and maize-sweeteners, states that only with a recent change in the decree regulating the input and sugar prices companies are required to use domestic maize for the national market (ŞK 2010).

The farmer response to the hold on public procurement and decline in premiums in 2006, combined with the import explosion in 2007 occurred in the form of public protest and economic action. Between 2005 and 2007, the area used for maize cultivation dropped by 14 percent while the total production dropped by 16 percent (see Table 2.1). In parallel with the withdrawal from maize production as a reaction to the policy implementations geared to protect the agri-food industry, farmers' discontent with these
policies was growing. One thousand and five hundred maize farmers demonstrated in Kahramanmaras on April 13 of 2008 before the planting season. Their signs read "not importing, but exporting Turkey," "we do not want charity, but what's our right" (Bianet 2008). One of the important supporting organizations in this demonstration was the Chamber of Agricultural Engineers, whose previous president Gokhan GunAydın currently is a parliament member from the Republican People's Party, the main opposition party in the parliament. The Chamber of Agricultural Engineers is a part of the nation-wide Union of Chambers of Architects and Engineers of Turkey (TMMOB), which has a reputation of participating in anti-privatization and counter-neoliberalism campaigns.19

After two consecutive years of declining maize farming and farmer protests, the Grain Board decided in 2008 to purchase the highest amount in the 2000s, almost one fifth of the total maize harvest at the national level (see Table 2.1). Although the premium payments did not change from the previous year, the record amount of public procurement acted as an important incentive for farmers to participate in maize production again, bringing it back to the 2005 level. Concomitantly, low tariff rates and the continuation of large maize imports might have been employed as an instrument against the valuation of domestic prices due to the Grain Board purchases. With maize production catching up with previous levels, the JDP government decided in 2009 to scale back in public procurement and lower import levels as the domestic market price for maize was brought on the track of Post-Fordist regime of accumulation.

19 In July 2013, the JDP government passed an omnibus law which included an article to remove the rights of licensing and control of occupational activity from Chambers under the TMMOB. TMMOB members interpret this action as a retaliation on the JDP side against TMMOB's active participation and public support of mass Gezi Park protests across the country with millions of protesters over the last Summer (JMO 2013).
The structurally inscribed strategic selectivity towards the consolidation of a Post-Fordist regime of accumulation in maize production manifests itself in the implementation of support policies and the reaction of different social, economic, and political actors. The JDP government instrumentalized premium payments, public procurements, and tariffs as three main tools in order to stabilize maize production in favor of agri-food industries. The simultaneous employment of low tariffs with premium payments and large public procurement served to bolster domestic maize production while holding maize prices low. However, when met with resistance from within the state as President Sezer ordered the investigation of record levels of maize imports, the JDP government decided to stop imports. However, the government also stopped public procurement to prevent an increase in domestic maize prices after stopping imports.

When the government encountered protests from farmers, and the farmers began withdrawing from maize production, the JDP government utilized the available tools in a selective manner to bring the maize production to levels demanded by the industry through reactivating public procurement and premiums, coupled with low tariffs. And finally, when maize production reached the level in 2009, fulfilling the requirements of the agri-food industry to reproduce capital, the JDP government lowered public procurement raising tariffs, pointing to the consolidation of the Post-Fordist regime of accumulation. Coherent with the SRA perspective the JDP government did not only act according to the short-term interests of the economic actors, but the long-term consolidation of the accumulation regime.

**Conclusion**
Fordism and Post-Fordism as regimes of accumulation and modes of regulation are recognizable at different points in Turkey's path of agricultural development. While the consolidation of a regime of accumulation requires long-term planning through a strategic approach geared to managing social legitimacy by gaining the consent of different social groups. Turkey's agricultural structure, involved in different cycles of capitalist accumulation through commodification, presents a plenteous case to observe how the consolidation of a regime of accumulation takes place, and how it evolves into another regime when it is not sustainable due to its internal contradictions. The implementation of governmental policies in the shift to maize production and its interaction with agri-food industry, farmers and other political actors provides valuable insights about what a Post-Fordist mode of regulation might look like, which is a currently vibrant discussion in the political economy literature (e.g. Bonanno and Constance 2008; Jessop 2008).

From an SRA perspective, Turkey's agricultural development policies between the 1930s and 1980s show consistency with peripheral Fordism, seen in other South European and Latin American countries. Within the framework of the ISI policies, rural communities in Turkey reached a certain level of welfare through agricultural subsidies and price support policies as the rural landscape in Turkey was dominated by smallholdings due after land reforms. As rural communities had the opportunity to sustain higher living standards, they comprised an important customer base for national infant industries, supporting the industrial capital accumulation. Moreover, the political system preserved its legitimacy partly due to the political support among rural communities which were benefitting from rural welfare policies.
The unsustainable deficits in public accounts, which provided the welfare of rural communities through public procurement of crops and support prices, resulted in the crisis of the Fordist regime of accumulation in agricultural production in Turkey in the 1970s. The military coup in 1980 marked the beginning of the structural transformation leading to the Post-Fordist regime of accumulation and mode of regulation. National protectionist policies were replaced by market liberalization policies, and the role of rural communities in this new regime changed from constituting a consumer base to supplying necessary raw materials for agri-food industries, being integrated into markets as a factor of production process.

The focus on maize production illuminates the interaction of social, economic, and political dynamics in the consolidation of industrial maize production. The strategic selectivity of the JDP government in employing different tools available contributed to the consolidation of the Post-Fordist regime of accumulation. In line with a strategic relational approach, I argue that the mode of regulation is a necessary component in understanding the development of a regime of accumulation.
Figure 2.1. Area Change in Turkey for Maize Farming between 2001 and 2009, and Maize Yields in 2009

Legend:

Change in Maize Area

- Slight Decline in Maize Area (between -20 and -5 percent)
- No Significant Change in Maize Area (between -5 and 5 percent)
- Slight Increase in Maize Area (between 5 percent and 20 percent)
- Large increase in Maize Area (more than 20 percent)

Maize Yields in 2009

- Bottom 25 percent in Maize Yield
- Second 25 percent in Maize Yield
- Third 25 percent in Maize Yield
- Top 25 percent in Maize Yield

Striped=Missing data

Data Source: Turkish Statistical Institute (TurkStat).
Table 2.1. The Change in Turkey's Maize Production in Relation to Market Regulation between 2001 and 2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Maize Area(1)</th>
<th>Maize Production(2)</th>
<th>Grain Board Purchases(2)</th>
<th>Grain Board Purchases (%)</th>
<th>Premium (TL/kg)</th>
<th>Maize Price (TL/kg) (3)</th>
<th>Tariff (%)</th>
<th>Import Quantity (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>550,000</td>
<td>2,200,000</td>
<td>9</td>
<td>0</td>
<td>-</td>
<td>.170</td>
<td>10-50</td>
<td>537,481</td>
</tr>
<tr>
<td>2002</td>
<td>500,000</td>
<td>2,100,000</td>
<td>78,596</td>
<td>4</td>
<td>-</td>
<td>.197</td>
<td>10-35</td>
<td>1,177,660</td>
</tr>
<tr>
<td>2003</td>
<td>560,000</td>
<td>2,800,000</td>
<td>381,193</td>
<td>14</td>
<td>0.025</td>
<td>.190</td>
<td>20-80</td>
<td>1,818,130</td>
</tr>
<tr>
<td>2004</td>
<td>590,000</td>
<td>3,000,000</td>
<td>474,302</td>
<td>16</td>
<td>0.05</td>
<td>.185</td>
<td>25-80</td>
<td>1,049,740</td>
</tr>
<tr>
<td>2005</td>
<td>600,000</td>
<td>4,200,000</td>
<td>660,985</td>
<td>16</td>
<td>0.067</td>
<td>.193</td>
<td>100-130</td>
<td>218,059</td>
</tr>
<tr>
<td>2006</td>
<td>536,000</td>
<td>3,811,000</td>
<td>0</td>
<td>0</td>
<td>0.02</td>
<td>.168</td>
<td>130</td>
<td>30,579</td>
</tr>
<tr>
<td>2007</td>
<td>517,500</td>
<td>3,535,000</td>
<td>0</td>
<td>0</td>
<td>0.04</td>
<td>.171</td>
<td>35-130</td>
<td>1,128,460</td>
</tr>
<tr>
<td>2008</td>
<td>595,000</td>
<td>4,274,000</td>
<td>832,378</td>
<td>19</td>
<td>0.04</td>
<td>.165</td>
<td>20-130</td>
<td>1,151,410</td>
</tr>
<tr>
<td>2009</td>
<td>592,000</td>
<td>4,250,000</td>
<td>183,467</td>
<td>4</td>
<td>0.04</td>
<td>.160</td>
<td>130</td>
<td>485,131</td>
</tr>
</tbody>
</table>

Sources: Bayraktar 2008; FAOSTAT; Turkish Grain Board (TMO); Turkish Statistical Institute (TurkStat)
Notes: (1) hectare; (2) tons; (3) 2001 Prices
Appendix A

Figure A.1. Eighty-one Provinces in Turkey
Chapter 3: Spatial Analysis of the Industrial Maize Production in Turkey

Introduction

In Chapter 2, I show how industrial maize production expanded at the national level in Turkey over the 2000s. The total output in the beginning of the 2000s was about two million tons, doubling to about four million tons at the end of the same decade. The area cultivated with maize increased by ten percent, from 550,000 to about 600,000 hectares.20 Concomitant with the increase in total output, private agri-food industry, composed of animal feed and sweetener sectors, absorbed over 90 percent of the total output in the second half of the decade (Bayraktar 2008). With the declining role of the Turkish state as the primary buyer of major agricultural commodities and the emergence of agri-food corporations negotiating with farmers over their crops (Aydın 2010), the expansion of industrial maize farming represents a Post-Fordist transition in agricultural production.

The comparison of the increase in production and the increase in area is indicative of an increase in productivity (yields) through the adoption of high-yielding hybrid varieties geared for the use of agri-food industries. However, this increase in maize production did not occur in traditional maize production areas, but in areas where farmers shifted to maize over the last decade. Trabzon, a province by the Black Sea coast, the traditional maize growing area for low-yield subsistence farming, experienced a decline in maize cultivation area by eight percent between 2001 and 2009, similar to other provinces with similar climatic and territorial conditions lying along the Black Sea coast. In contrast to the decline in maize production in traditional maize regions, provinces emerging as high-yield maize production sites experienced a

growth in the area used for maize cultivation. Sanliurfa in Southeast Anatolia had an increase of forty-four percent in maize area while Izmir in West Anatolia had an increase of ten percent.\(^{21}\) While the quantitative expansion of maize productivity and its use by agri-food corporations gives clues about corporate industrialization of agriculture in Turkey what needs to be addressed is how Post-Fordist relations of production explain the expansion of industrial maize farming over space. Analyzing how relations of production\(^{22}\) in industrial maize farming vary over space provides me with the opportunity to explore local conditions influencing the adoption of the Post-Fordist production practices.

One socioeconomic consequence of industrialization of agricultural production has been the commercialization of the production process where farmers supply the means of production from the market with the expectation of increasing productivity (Goodman et al. 1987; Kloppenburg 2004). The spatial statistical analysis of productivity, as an indicator of industrial maize farming, and relations of production (e.g. commercial vs. subsistence farming) extends the horizons of political economy studies of agriculture. Food regime theory (e.g. Friedmann and McMichael 1989) emphasizes spatial variation as this perspective attempts to explain the international division of labor in agricultural production starting with the British colonialism in the 19th century. With the spatial analysis of industrial maize farming in Turkey, I test the food regime theory's hypotheses on the change in the relations of production within a Post-Fordist regime of accumulation.


\(^{22}\) Here relations of production in agricultural production should be understood as defined by Marx (1981: 1019): ”[Relations of production] are the foundation of particular social functions which are ascribed to specific agents of production within the relation of production itself, as distinct from the immediate producers. They give the actual conditions of production, and their representativeness, a specific social quality. They determine the whole character and movement of production.”
In addition to food regime theory, commodity systems analysis (e.g. Friedland 2001) contributes to the spatial analysis of the industrial maize production in Turkey, since this perspective delivers a comprehensive research agenda for political economy studies analyzing socioeconomic and political factors surrounding a commodity. The geographical scale and community impacts related to a commodity are the two of those socioeconomic and political factors of the maize commodity system that are evaluated in this chapter. Here, I study the geographical scale of the industrial maize production in Turkey through the statistical estimation of the spatial distribution. I also study communities involved in production across provinces by focusing on the variation in relations of production. In the next section, I explain how I integrate the food regime and commodity systems analysis. After I elaborate why a spatial analysis is necessary in this case and which analytical tools helps most to explain the spatial variation, I discuss how the findings relate to the main tenets of food regime theory.

3.1. Background and Conceptual Framework

The policies of economic restructuring in Turkey starting in the 1980s gave way to the phase-out of state intervention via price support and public procurement for major crops. While the protectionist policies in agriculture contributing to the welfare of rural communities were cast aside, successive politicians in government implemented new policies tailored to the needs of private agri-food corporations, especially within the framework of World Bank projects after the 2001 Turkish financial crisis. (Aydın 2010; Keyder and Yenal 2011).

Insomuch as the state downsized its capacity in public procurement in major traditional crops, farmers reoriented their production towards alternative crops demanded by the private agri-food industries. The share of perishable goods in
supermarket sales increased as supermarket chains held half of the food retailing sector in 2009 (Atasoy 2013). Similar to perishable goods, the growth in industrial maize production benefitted processing agri-food industries: animal feed and sweetener industries absorbed over 90 percent of the total maize output in 2006 and 2007 (Bayraktar 2008). As the role of private agri-food industries became substantial in food retailing and processing, the share of agriculture in total employment fell from 38 percent in the beginning of the decade to twenty-five percent in 2008, referring to a loss of jobs of three million individuals.23

If we only considered the decline in the number of farmers and the growth of the agri-food sector, one potential postulation on this process would be that the development of private corporations has detrimental impacts on farmers, especially on small-scale farmers (Aydın 2010). Yet, a significant increase in maize production can be seen indicating an increasing farmer participation in industrial maize farming. Unless how the relations of production for farmers vary in different regions with different levels of industrial maize production is investigated, the increasing participation in maize farming in a period also characterized by depeasantization cannot be explained. While farmers, who participate in industrial maize farming in regions with favorable conditions for maize farming (e.g. large-scale production vs. traditional farming methods), might benefit more than farmers in other regions who are more likely to be forced out of agricultural production.

The investigation of industrial maize production to understand the implications of economic restructuring for farmers in Turkey necessitates a larger conceptual framework that enables comparisons between the Turkey and other regions integrated in the global economy. Food regime theory is useful because it accounts for the

---

historical development of international agricultural regimes and the geographical variation in social dynamics within these regimes. McMichael and Buttel (1990) argue that traditional Marxist perspectives (e.g. Kautsky 1988) do not consider small-scale farming as a persistent category in contemporary capitalism, but rather a residual category from pre-capitalist social formations. As capital-intensive agricultural production becomes dominant, small-scale farmers lose their economic significance. However, McMichael and Buttel contend that food regime theory, with its historical approach reckoning with socio-spatial differences, overcomes the limitations of the traditional Marxist perspectives on agricultural development.

The periodization of different regimes of capitalist accumulation in food regime theory starts with the British hegemony over international trade in the 19th century (Friedmann and McMichael 1989). This first food regime was based on the international exchange between British colonies and settler states supplying agricultural raw materials and Britain providing manufactured goods. The second food regime, under the U.S. hegemony after the WWII, was characterized by agricultural protectionism in the U.S. and in Europe. In addition to protectionism domestically, the U.S. exported excess grain and cotton to newly independent countries in the Middle East and Africa following the development path in agriculture which started in its settler past.

In the period from the 1950s to the 1980s, defined as the second food regime, Turkey adopted protectionist policies, as other South European countries implemented import-substitution policies (Keyder 1985: 158-9). The policy instruments of this period were price supports, subsidized production credits, and public procurements for major crops, which provided a certain level of income security and welfare among rural communities (Somel 1986). However, the dependence on the U.S. financial aid
in financing the budget deficit (Keyder 1985), partly due to agricultural support policies, rendered import-substitution policies unsustainable, resulting in consecutive financial crises in the 1970s and 1980s.

The economic restructuring period, which started in Turkey in the 1980s and accelerated after the 2001 financial crisis, was not an isolated process for Turkey, but an international phenomenon. McMichael (2005; 2009) argues that the period of economic restructuring from the 1980s on planted the seeds of a corporate food regime at the international level. In this new, third regime, developing as well as newly industrializing countries faced with deteriorating fiscal conditions were expected by financial institutions (i.e. the International Monetary Fund, and the World Bank) to restructure their economies for further credits. These new conditions of economic restructuring included phasing-out agricultural protection measures which sheltered small-scale farmers from international competition during the second food regime. With economic restructuring as “a set of rules institutionalizing corporate power” the corporate food regime represents “a recalibration of ‘development’ at the global, rather than the national, scale” (McMichael 2009: 152-3).

In this new regime of capital accumulation, commercialization in different stages of production deepens as agricultural producers' dependence on inputs produced by private corporations increases as farmers can only negotiate with processing or retailing agri-food corporations for the purchase of their crops (McMichael 2009). With the change in the relations of production via further commercialization, small-scale farmers either struggle to participate in this new accumulation regime, or cannot sustain the costs and withdraw from agricultural production (Friedmann 1999). McMichael (2005) argues that the corporate food regime, on the one hand, leads to the consolidation of large-scale capitalist farming, resulting in the exclusion of small-
scale farmers. On the other hand, producers who are excluded from the new regime of accumulation pursue alternative forms of organizations (e.g. La Via Campesina) for production relying on local sovereignty of farmers rather than anchoring agricultural production on transnational corporations.

The increase in industrial maize production might represent an expansion of corporate economic activity in Turkey's agriculture. Still, the expansion of industrial maize production does not specifically inform about how the relations of productions have changed in the 2000s. The comparison of findings in this analysis to the postulations of food regime theory on corporate food regime offers an important framework for the analysis of relations of labor, especially in terms of the influence of commercial farming and means of production (i.e. small-scale farming vs. large-scale farming).

Variation in production relations and space are important components of the analysis in this chapter locating industrial maize production in corporate food regime. Commodity systems analysis provides an analytical framework. Friedland (2001) suggests studying four aspects in the analysis of a commodity system: the scale of the commodity system, communities, political regulation and sectoral organization, and the culture surrounding the community. The analysis in this chapter focuses on two aspects of the industrial maize commodity system. The first aspect is the relations of production, which I define as the community and production process dimensions in both formulations of commodity systems. The second dimension is the spatial variation which refers to the scale dimension of commodity systems analysis.

Communities in a commodity systems analysis (Friedland 2001) include producers, workers, scientists improving production technologies, politicians lobbying for different interest groups, corporate actors, and consumers. Here, I focus on
producers as a community since the subject of interest is the changing relations of production for farmers. Also, the scale aspect helps us to understand the geographical scale of industrial maize production informing about the spatial differences among maize farming communities in Turkey.

Relations of production and space, which are the foci of analysis here, are not very often taken together in a study adopting commodity system analysis as a methodological framework. One group of studies descriptively analyzes the emerging relations of production in farming, but they do not touch on differences over space (e.g. Bendini and Steimbreger 2005; Boyd and Watts 1997; Buck et al. 1997; Gibbon 2001; Raynolds 1994). Another group of studies explores the geographical scale of a commodity system, but does not focus on the relations of production embedded in the system (e.g. Dolan et al. 1999; Friedland 1994; Raynolds 2004).

As a commodity system study emphasizing the interplay of space and production relations, Pritchard and Burch (2003) analyze the tomato farming and processing industry in various countries from China to Italy and argue that the variation in economic restructuring experiences in different geographies stem from their specific socioeconomic and cultural settings. Three studies by Patel-Campillo (2010a; 2010b; 2011) provide a comprehensive analysis of the cut flower commodity systems in Colombia, Netherlands, and the U.S. Patel-Campillo considers production relations, market organization, and political regulation while recognizing spatial and temporal variation. The spatial analysis of industrial maize production in this chapter is based on the spatial variation of production relations, similar to commodity system studies on processing tomatoes and cut-flowers.

However, the data used here provide the opportunity to analyze variation at the sub-national level, in contrast to commodity system analyses based on a single case -
country or region within a country- or on a cross-national study. Lobao and Hooks (2007), in their comparative review of social inequality studies based on space, argue that spatial comparison at the subnational level is an emerging area which differs from urban and cross-national studies of inequality. The subnational level spatial analysis is based on the data from multiple subnational regions to explore the variation beyond the aggregate national level to emphasize the importance of space and social structures that are embedded in space. With the comparative analysis of subnational level units, I show how relations of production vary among provinces within Turkey to address which regional socioeconomic factors influence industrial maize production.

3.2. Hypotheses, Data and Methods

To answer the research question of this chapter how Post-Fordist relations of production explain the expansion of industrial maize farming over space I formulate four hypothesis which relate to food regime theory and commodity systems analysis.

H1: The increase in the importance of maize as a cash-crop for farmers positively influences the increase in the level of industrial maize production at the provincial level in Turkey. Food regime theory proposes (McMichael 2005; 2009) that under the corporate food regime the industrial methods of farming expand with deepening commercialization. Commodity systems analysis (Friedland 2001) also pertains to the first hypothesis since the relationship between the level of industrial maize production and its importance as a cash-crop for farmers conveys information on the scale of the important maize production areas, as well as the relations of production which are embedded in the agri-industrial complex driven by private corporations.
H2: *The regions of traditional maize production along the Black Sea coast is more likely to have lower levels of industrial maize production than other provinces in Turkey.* This hypothesis is related to relations of production, controlling for the first hypothesis. Because farmers along the Black Sea coast might use more land for traditional maize farming for household consumption, the importance of maize production is different than farmers who are commercially involved in high-yield maize production for the private agri-industry. The test of this hypothesis, related to the community aspect of the commodity system, shows whether industrial maize production expanded to traditional maize farming regions.

H3: *The increase in the proportion of large farms to small farms in a province influences the industrial maize production positively.* In the corporate food regime, the closer integration of farmers with private agri-food corporations contributes to farmland consolidation, where small-scale producers are excluded and large-scale farms are the primary drivers of the agricultural production (McMichael 2009). Land size also relates to relations of production in terms of means of production where property is a factor situating the producer in the commodity system.

H4: *Provinces with high levels of industrial maize production are surrounded by other provinces with high levels of industrial maize production.* This hypothesis concerns the spatial scale of industrial maize production in which I explore whether the expansion of industrial maize production. The emergence of clusters provides information on the scale of industrial maize production.

H5: *The rate of increase in industrial maize farming between 2004 and 2009 is positively related with the level of industrial maize farming in 2009.* By testing this hypothesis, I aim to investigate how farmers in different provinces changed their investment in industrial maize farming over time, and how the rate of change
influenced the level of industrial maize farming. In accordance with this hypothesis, one would expect that provinces which had higher rates of increase would have higher levels of industrial maize farming. However, this approach on temporal change is not as precise as a longitudinal model in terms of assessing the trend in industrial maize farming. I explain more why this is the case in the operationalization of the indicator I use to test this hypothesis. Nevertheless it adds the aspect of temporal change in a cross-sectional spatial model, mainly serving to explain the spatial variation of the change over time at the provincial level.

Data

In this analysis I use data retrieved from the website of the Turkish Statistical Institute, which is Turkey’s official national statistical institute. I have gathered data about maize yield, the area of fields for maize production and the area of total agricultural fields at the provincial level for 2004, 2007 and 2009. Using these three years help to observe whether statistical models in later years demonstrate more consistency with food regime theory since policies of economic restructuring took place in the early 2000s (Aydın 2010). Deficit payments by the government in the form of premium for high-yield corn production started in 2003 (see Chapter 3). Therefore, by selecting 2004 as the starting year I can observe the spatial expansion of industrial maize farming over time within an economic policy framework encouraging a shift in agricultural production. 2007 is another important year as the public procurement by the Grain Board stopped in 2006, and the production decreased from 4.2 million tons in 2005 to 3.5 million tons in 2007. The change in the performance of the model in 2007 shows how the variables included change in an environment of declining agricultural production. Finally, 2009 is important to observe the regional
patterns of production which returned back to its 2005 level while this year signifies the end of the 2000s, the period of interest in this research. In addition to the yearly data on agricultural production, I use the data from the 2001 Agricultural Survey conducted by the TurkStat, which is the most recent data about the number of farms and land distribution according to farm size at the provincial level.

There are eighty-one provinces in Turkey, however 2004, 2007 and 2009 have different numbers of observations. The data available are seventy-eight in 2004, seventy-five in 2007 and 2009. Although replacing missing values with the mean of neighboring spatial units is one method of dealing with missing values (Brasier 2005), I avoid this method, because three provinces (Agri, Kars, and Van), that do not have data on maize production in either of the three years, are adjacent to each other in Eastern Anatolia (cf. Figure A.1, Figure 3.1, Figure 3.2). Besides these three provinces in Eastern Anatolia, Cankiri does not have data on maize production after 2004, Sivas after 2006, and Tunceli after 2005. These three provinces are also among the six provinces with the lowest share of maize farming within total agricultural acreage in 2004. Therefore, replacing the missing values with their regional mean would not be an appropriate method for these three provinces in 2007 and 2009 as they are consistently missing in the second half of the 2000s. To have consistency in the comparison of the models in 2007 and 2009 to the model in 2004, I have excluded these three provinces from the 2004 model. Thus, I can compare the three different models with the same number of observations and same variables. I have excluded Igdir from this analysis as this province becomes an disconnected island with its adjacent neighbors (Agri, Kars, and Van) missing. Finally I replaced the missing data for Siirt in 2007 with the mean of its values in 2006 and 2008.
Variables

The dependent variable for industrial maize production is measured by the yield (kg/decare) of maize production at the provincial level. Increasing yield is a proxy for increasing input-intensive industrial agriculture. While this is the first study utilizing maize yields as a quantitative proxy of industrial maize production, previous literature (Goodman, Sorj and Wilkinson 1987; Kloppenburg 2004) indicates that the preoccupation of industrialized agriculture is maximizing production through increasing yields.

The first independent variable is the importance of maize as a cash-crop for farmers. This variable is measured by the area used for maize cultivation in a province as a percentage of total agricultural land area. This variable is related to the first hypothesis on how the increasing importance of maize as a cash-crop might influence farmer participation in industrial maize production through higher maize yields.

The second independent variable (Black Sea Coast) is a dummy variable, where I coded 10 provinces along the Black Sea coast\(^2\) \(^1\) "1," since the rest of provinces is the omitted category of provinces where maize is commercially produced. This independent variable controls for provinces where traditional low-yield farming is the dominant form of maize production for household consumption. Related to the second hypothesis, it helps the statistical models to sort out the provinces where maize production might constitute an important part of field crops, not due to commercial production, but as a part of subsistence farming.

The third independent variable is the share of large landholdings -measured by the ratio of the total size of land under large-scale farms to the one under small-scale farms. Therefore this indicator is to determine whether provinces with a higher large-

\(^{24}\) These provinces are Artvin, Bartin, Giresun, Kastamonu, Ordu, Rize, Samsun, Sinop, Trabzon, and Zonguldak. For their locations, see Figure A.1.
scale landholding ratio are more likely to adopt practices of industrial maize production. The demarcation between large- and small-scale is going to be the threshold of twenty hectares. Sönmez (2008) utilized this demarcation between large and small farms. A farm of twenty hectares is the lower threshold for the survival conditions on a family farm under non-irrigated cultivation, as defined by the State Planning Organization of Turkey (DPT 2000b: 7). As the currency value of production could have been a better indicator of farming operation size (e.g. Bonanno 1987), the only available data in Turkey on farm size is the acreage size. A fruit orchard or field of 20 hectares (roughly 50 acres) or of smaller acreage would be difficult to register as a large-scale commercial farm in contemporary capitalist economies. It is important to note, this indicator does not differentiate between vegetable production and field crop or tree fruit production as a vegetable garden of 20 hectares could be considered as a large scale garden. However, the share of vegetable gardens in terms of acreage within all agricultural area was only three percent in 2001 and in 2009.25 Therefore the small-share of vegetable garden acreage in total agricultural area would not significantly distort the operationalization of this measure as a proxy of the share of large-scale farms at the provincial level.

The fourth independent variable that I only use in the spatial lag model in 2009 is the change of the dependent variable between 2004 and 2009. I include this variable to investigate if the increase in industrial maize farming between 2004 and 2009 across provinces contributes to the high levels of industrial maize farming, pertaining to the fifth hypothesis (H5) in this chapter. I measure it as the percentage change in industrial maize farming at the provincial level between 2004 and 2009. But this indicator might not explain the level of industrial maize farming in provinces where it

had been already high in 2004, and did not change over time - the high level of industrial maize farming stayed the same throughout the 2000s. This also means that some of the provinces, which have had very limited industrial maize farming and increased the level of industrial maize production over time but still being at a lower level compared to other provinces, might have a high value in this indicator. Including the traditional maize farming variable might help to separate provinces of traditional maize farming along the Black Sea coast, thereby to emphasize the influence of this variable in statistical models.

**Methods**

Darmofal (forthcoming) argues that every data are spatial data since social dynamics are geographically embedded. The spatial clustering of similar patterns among spatial units may be seen in several topics of social science, from economic development, to democratic values. “Ignoring these [spatial] dependencies imposes a substantial price on our ability to generate meaningful inferences about the processes we study” (Ward and Gleditsch 2008: 3).

Spatial dependence is based on the assumption that every spatial unit has a spatial relation to its neighboring spatial units. Ignoring spatial dependency reduces “the real variance in the data” (Ward and Gleditsch 2008: 8). However, the idea of spatial dependence violates one of the primary rules of traditional statistical analysis that every case is independent of other cases (Beck, Gleditsch and Beardsley 2006). Nevertheless, spatial statistical analysis in social sciences and econometrics aims to embed spatial dependency in traditional statistical methods.

The calculation of spatial lag, which is the weighted mean of values in neighboring units, is the first step in exploring spatial patterns. The global spatial
correlation between the unit value and its spatial land along cases can be measured with Moran's $I$, which is a test of global spatial autocorrelation. Positive and significant values in Moran’s $I$ suggest that units with high values are spatially surrounded by neighbors with high values, as units with low values are spatially surrounded by neighbors with low values. Similar to simple bivariate correlation, the spatial correlation slope visualizes the Moran’s $I$ statistic (Ward and Gleditsch 2008: 20-1).

As Moran’s $I$ is a measure of spatial correlation at the global level, Local Indicators of Spatial Association (LISA) is a local decomposition of the global spatial relation (Anselin 1995). LISA bolsters the spatial analysis in uncovering local correlations that cannot be seen at the global level. With the LISA statistic, a researcher can identify local values that are significantly higher or lower than the mean. This helps identify outliers that might have local leverage in the global statistic. It also helps to detect the location of spatial clusters of similar values. Using measures of global spatial dependency and local spatial association, Çelebioğlu and Dall’erba (2010) and Gezici and Hewig (2007) analyze socioeconomic inequalities in Turkey at the provincial level. In a similar way, I use Moran's $I$ and LISA statistics in exploring variables in the descriptive analysis section, which provides detailed information on the spatial patterns before building a statistical model.

Moran’s $I$ and LISA statistics are utilized in the spatial dependency of a variable. The analysis of spatial dependency in a multivariate regression model is possible in two models: spatial lag model and spatial error model. In the first model, spatial dependency is operationalized in the form of a spatially lagged dependent variable. The inclusion of a spatially lagged dependent variable in the ordinary least squares (OLS) regression model enables an explanation of spatial dependence. If the spatially
lagged dependent variable is significant and its inclusion increases the model fit, it is possible to argue that there is spatial dependence contributing to the regression model in its explanation of variation. Furthermore, a change in the spatial lag model in the significance levels and coefficients of independent variables might occur because of the spatial correction that is not accounted for in the OLS model. However, the spatial error model analyzes the spatial dependence in error terms. Thereby, a statistically significant spatial error term in the spatial error model informs us that there are omitted variables that have spatial dependence.

When the spatial lag model and spatial error models are compared, the spatial lag model includes the spatial dependence of the dependent variable, but the spatial error model only confirms that there is spatial correlation in an omitted variable. However, the application of a spatial lag model is theoretically more meaningful if the model seeks to test the significance of spatial clusters identified in univariate spatial analysis (measured by Moran's $I$) hold in a multivariate model (Ward and Gleditsch 2008: 58-9).

I use a spatial lag model in order to control for spatial clusters of industrial maize farming in the analysis of the influence of production relations in industrial maize farming. Therefore I am able to test the last hypothesis related to the scale of industrial maize commodity system. Furthermore, the comparison of models of three different years provides the opportunity to observe whether the spatial clusters increase over the years. However, this cross-sectional data for spatial analysis does not allow for the testing of the significance of observed differences in the increase of industrial maize farming over time, which is the subject of the Chapter 4.

Brasier (2005) uses spatial lag and spatial error models combined in order to prevent spatial dependency in residuals in spatial models. However, the Robust
Lagrange Multiplier (Robust LM) test for error specifically controls if the error terms contain potential spatial dependence in a spatial lag model. I control for a necessity of combining a spatial error model in my analysis by employing the Robust LM test for errors.

3.3. Results

Descriptive Results

The boxplot analysis of the dependent variable, industrial maize production, and three continuous independent variables, importance of maize as a cash-crop, share of large farms, and percentage change in industrial maize farming between 2004 and 2009 shows that these variables are skewed and/or have outliers (see Figure 3.1). Therefore, I transform all continuous variables by natural logarithm (LN) in statistical models due to skewness.

-Insert Figure 3.1 here-

When the means of the dependent variable across the years are compared, one can see that the mean level of industrial maize production increased over the years from about 460 to 550 (see Table 3.1). With the increase in the mean, gap between maximum and minimum values have increased over the years, as well as standard deviation. This might be indicative of the widening gap in maize yields between traditional production regions and industrial production regions. If this widening gap is statistically significant in spatial models, the impact of the traditional maize farming variable might be expected to increase.

-Insert Table 3.1 here-

The univariate spatial distribution of these values can be interpreted from Moran's I value, which shows an increase from .43 (p<.001) in 2004 and to .51 in
2007 and .49 in 2009. The increasing spatial clustering expressed by the increasing Moran's $I$ value can be observed in the locally significant clusters of provinces as well (see Figure 3.2). The comparison between the maps of quartiles and maps of significant clusters shows the distribution of values. The statistically significant cluster of high industrial maize production in South and Southeast Turkey slightly expands between 2004 and 2007. In 2009, the cluster of high industrial maize production in West Turkey expands across the region. This change in the spatial distribution in industrial maize farming might be indicative of the changing influence of factors over time.

Another important descriptive finding over the years is that significant regional clusters of low industrial maize farming are the same provinces in North Turkey along the Black Sea coast, the traditional maize farming regions, and Northeast Turkey. Comparing quartile maps, it can be seen that the majority of the provinces along the Black Sea coast are consistently in the bottom quartile. Keeping this descriptive finding in mind, I expect to find in spatial models that the level of maize productivity did not increase in these provinces due to traditional farming, while other regions invested in industrial maize farming over the years, increasing the mean level of industrial maize farming.

Another important descriptive finding over the years is that significant regional clusters of low industrial maize farming are the same provinces in North Turkey along the Black Sea coast, the traditional maize farming regions, and Northeast Turkey. Comparing quartile maps, it can be seen that the majority of the provinces along the Black Sea coast are consistently in the bottom quartile. Keeping this descriptive finding in mind, I expect to find in spatial models that the level of maize productivity did not increase in these provinces due to traditional farming, while other regions invested in industrial maize farming over the years, increasing the mean level of industrial maize farming.

The importance of maize as a cash crop demonstrates a fluctuation between 2004 and 2009 (see Table 3.1). Even though the level of importance in the importance

---

26 I use the first order Queen's matrix as the spatial weight. This weight matrix includes all contiguous spatial units.
27 It is important to remember that the distribution of high and low values is different in each year, with different mean, maximum, and minimum values. The quartiles and spatial clusters in different years depend on the particular distribution of those cross-sectional data. Therefore, the analysis of trends in industrial maize farming depends on a longitudinal study, as the comparison presented here is rather descriptive and aimed to explain spatial variance rather than temporal variance.
of maize farming seems to increase from 2004 to 2009, the mean importance of maize as a cash-crop is the lowest in 2007. This might be related with the radical decrease in public procurement in 2006 and 2007 when farmers might have decided to decrease maize production as a source of income. At least, it might be expected that the importance of maize as cash-crop might have impacts over the years. One important descriptive finding here is that the univariate Moran's $I$ decreases from .34 to .33 and .29 in 2007 and 2009 respectively. This trend can be explained in the comparison of quartile and local LISA maps of statistical significance (see Figure 3.3). The importance of maize as a cash crop in 2004 shows higher spatial clustering along the Black Sea coast. While the share of maize as a cash-crop stays consistently low over the years in Central Turkey, the clusters of low values in Southeast Turkey in 2004 disappear in later years, explaining the decrease in the statistic for the global spatial dependence, Moran's $I$. While provinces in this region do not form statistically significant clusters of high values for this variable, the increase in the values can be visually seen in the quartile maps for 2007 and 2009. As the provinces in North Turkey are involved in traditional maize production, this variable does not yet differentiate the provinces of traditional farming from provinces of commercial farming. In the multivariate analysis, in the next section, traditional maize production regions are sorted out with the dummy variable, explaining traditional maize provinces with large maize area coverage from provinces of commercial maize farming.

-Insert Figure 3.3 here-

Large farms is the ratio of total acreage under large farms to total acreage under small farms in a province times hundred. Therefore in every province, the total acreage of small-scale farms equals to 100. The only year available for this variable is
2001. The spatial distribution of this variable is significantly clustered (Moran's $I = .419; p<.001$) as the local cluster map shows that provinces with high values are clustered in Central Turkey and Southeast Turkey (see Figure 3.4). For Eskisehir, Sirnak and Sanliurfa this ratio is equal to or higher than two, meaning that the total acreage held under large-farm operations is double the total acreage. On the contrary, most of the provinces along the Black Sea coast fall into the category of bottom quartile for this ratio. For Rize and Trabzon this ratio is zero, indicating these provinces have no farms above 20 hectares. Also for Sakarya, which has one of the highest levels of industrial maize production in all years, the ratio of large farms is less than .01. The majority of provinces in West Turkey are in the second bottom quartile for this variable.

-Insert Figure 3.4 here-

The last variable, the percentage change in industrial maize farming between 2004 and 2009, seems to have a distribution close to normal (see Figure 3.1). However, Bingol is a significant outlier with a rate of 220 percent increase in industrial maize farming, followed by Amasya and Karaman, which experienced increases around 120 percent. These three outliers cause skewness in this variable, which I transform by the natural log to normalize its distribution in OLS and spatial lag models. The rest of provinces experienced a change between -36 percent and +93 percent. In the descriptive univariate analysis of spatial patterns, the global spatial dependence is not significant. One local cluster of high rates of change is present in North Turkey, while Artvin, Bingol, and Bitlis are provinces which had a high rate of change and surrounded by provinces with lower rates (see Figure 3.5). However all these provinces experiencing high rates of increase in statistically significant clusters have low levels of industrial maize farming compared to other provinces (see Figure
3.2), pointing to the limitation of this variable to which I pointed above in the operationalization of this variable.

-Insert Figure 3.5 here-

**Analytical Results**

The OLS regression model in 2004 (OLS1) regressing industrial maize production on importance of maize as cash-crop, traditional maize farming, and large farmholding is significant at the .001 level, and independent variables account for the 39 percent of the total variation in the dependent variable (see Table 3.2).\(^{28}\) The Lagrange Multiplier test for spatial lag is significant at the .05 level, pointing to spatial dependence in the model accounting for these three independent variables. However, the statistically significant Robust LM test for spatial error indicates that error terms (residuals) in spatial lag models might be spatially dependent. Therefore even after testing a spatial lag model, further spatial inquiry of error terms is necessary. In the scatter plot of residuals for Moran's I (see Figure A3.2) in the spatial lag model for 2004 (SL1) residuals do not demonstrate spatial dependence, therefore, not requiring a combination of spatial error model.

Comparing OLS 1 and SL1 in 2004, the Akaike Information Criterion (AIC) value declines from 84 in OLS1 to 81 in SL1, which informs a better model fit. However, this difference is not statistically significant.\(^{29}\) In both models, the ratio of large farms positively and significantly (p<.01) contributes to the increase in industrial maize farming across provinces. Also, provinces of traditional maize farming are more likely to have lower levels of industrial maize farming (p<.001). The spatially-weighted dependent variable in SL1, is positive and significant (p<.01).

---

\(^{28}\) There is no multicollinearity problem in this and the following statistical models. See Table B.1 for multicollinearity condition numbers of OLS models.

\(^{29}\) Chi-square (3.48; df=1)
Provinces, which have adjacent provinces with high values in industrial maize farming, are more likely to have higher values in industrial maize farming. Also, with the inclusion of this variable in SL1, the influence of all three variables in the model shrank, as the level of significance of importance of maize as cash-crop declined from .01 to .05.

-Insert Table 3.2 here-

In 2007, the OLS regression model (OLS2) has a higher adjusted R-square value than OLS1 as it accounts for the 58 percent of the total variation in industrial maize farming. This indicates a better model fit using the same independent variables. Also, the magnitude and the level of significance have increased for all variables. Finally, the Lagrange Multiplier for spatial lag in the OLS2, which needs to be addressed by a spatial model. Robust LM for errors is not significant which indicates there is no spatial dependency that needs to be addressed in a spatial lag regression model. The spatial lag model in 2007 (SL2) demonstrates a better model fit (AIC=67.2) than OLS2 as the difference between the models is significant at the .05 level. Similar to 2004, the coefficient values of importance of maize as cash-crop, traditional maize farming, and large farms were inflated in the OLS2.

Comparing SL2 to SL1, the influence of the spatially-weighted independent variable is not different from SL1. However, the AIC value in SL2 is 13.4 points lower than the one in SL1, pointing to a significantly better model fit in 2007 (p.<.001). The increase in the goodness of fit can be explained with the increase in the level of significance and the coefficients of influence of maize as cash-crop and large farms. The coefficient of importance of maize as cash-crop increased from .07 to .13 (p<.05 and p<.001, respectively). Similarly the coefficient of the ratio of large farms

---

30 Chi-square (5.03; df=1)
increased from .12 to .16 (p<.01 and p<.001, respectively). The level of significance for traditional maize farming did not change (p<.001), but the magnitude of the coefficient increased from -.58 to -.82.

In 2009, the OLS model (OLS3) accounts for the 53 percent of the variation in the dependent variable. The coefficients and their levels of significance does not display a significant difference from OLS2. However, in the spatial lag model in 2009 (SL3), the statistical significance of the spatially dependent variable is the highest among all years as the coefficient of this variable demonstrates a significant increase (p<.001). This indicates that provinces with high values in industrial maize farming positively influence neighboring provinces in industrial maize farming. Comparing 2009 to 2004 and 2007, the influence of adjacent provinces in industrial maize farming increased over time. However, in SL3, the influence of large farms has decreased as the coefficient declined from .19 in OLS 3 to .13 in SL3, as well as the significance level from .001 in OLS 3 to .01 in SL3. Moreover, SL3 demonstrates a better model fit than OLS3 as the AIC value decreased from 79 to 70 (p<.01).

In the model OLS4, I add the percentage change between 2004 and 2009 as an additional variable. With this change, OLS4 explain 57 percent of the total variation in the dependent variable. This variable is significant at the .01 level and positively related to the dependent variable: controlling for other variables, high rates of increase significantly contribute to high levels in industrial maize farming. Accounting for spatial dependence in the final spatial lag model (SL4), the spatially-weighted dependent variable is almost the same with SL3 in terms of coefficient magnitude and significance level.

31 Chi-square (8.55; df=1).
Comparing SL4 to OLS4, the percentage change in industrial maize farming between 2004 and 2009 does not display a significant difference in the final spatial lag model. However, the level of significance and the magnitude of the coefficient of large farms are lower in SL4 than they are in OLS4, while only the magnitude of coefficients shrinks for the importance of maize as cash-crop and traditional maize farming. Therefore, the differences between OLS4 and SL4 are similar to the differences between OLS3 and SL3. The addition of percentage change in industrial maize farming between 2004 and 2009, does not change the main dynamics observed in OLS3 and SL3, but contributes to the variation explained in the dependent variable, slightly reducing the influence of other three variables. Furthermore, SL4 has the lowest AIC, demonstrating the best model fit among all models.

Making an overall comparison of the influence of independent variables, it can be observed in OLS and Spatial Lag models that the influence of importance of maize as cash-crop, and that of traditional maize farming have increased from 2004 to 2007 and 2009. The increasing influence of traditional farming also overlaps with the descriptive finding of the widening gap between the maximum and minimum values in the dependent variable, as traditional maize farming provinces are more likely to have the lowest values across the years. Different from the increasing trend in these two aforementioned variables, the influence of large farms on industrial maize farming increased from 2004 to 2007, but declined from 2007 to 2009. On the other hand, the influence of neighboring provinces on industrial maize farming, measured by the spatially-weighted dependent variable, stayed at the same level in 2004 and 2007, but significantly increased in 2009.
3.4. Discussion

Using the commodity systems analysis (Friedland 2001), I frame this spatial analysis to examine the scale and production-relations aspects of Turkish maize production. This approach reveals that relations of production patterns vary over space. The increase in the importance of maize as cash-crop for farmers is a factor influencing the level of industrial maize production in a positive direction. The influence of this variable increased considerably from 2004 to 2007 and 2009. As the importance of maize as cash-crop for farmers increased in the latter half of the 2000s, farmers along the Black Sea coast consistently had lowest levels of maize yields since those are the regions of traditional maize farming. Consistent with the increasing maize yields in provinces West, South, and Southeast Turkey, the gap between traditional maize farming provinces and industrial maize farming provinces widened in the 2000s.

The increase in the proportion of large-scale farming operations is another factor contributing to the increase in industrial maize farming. The spatial expansion of high industrial maize farming, the significant role of large-farms together and the increasing importance of maize as a cash-crop point to the consolidation of a corporate food regime where relations of production adjust to the demands of private agri-food corporations, as suggested by McMichael (2005; 2009). However, the data does not support the exclusion of small-scale farms from industrial maize farming, as the influence of large farms on industrial maize farming increased from 2004 to 2007, but in 2009 it declined to the 2004 level.

There are two mutually supportive explanations for the fluctuation in the role of large farms over the years. First, there was no public procurement by the Grain Board for maize in 2006 and 2007. This sudden decline in public procurement might have
deterred agricultural producers from maize farming: the mean importance of maize as cash-crop was the lowest in 2007 (see Table 3.1). While large-scale farmers might not have been influenced by the decline in public procurement because of their wider access to markets, small-scale farmers might have been negatively affected by the change in regulation due to their higher dependence on state support. This displays itself as large farms' role was most influential on industrial maize farming in 2007. However, with the historic record of public procurement for maize in 2008, small-scale producers might have increased their participation in industrial maize farming, reducing the influence of large farms in 2009.

The second finding explaining the fluctuation of the influence of large farms is the change in the spatial patterns of industrial maize farming. The spatial clusters of high industrial maize farming are located in South and Southeast Turkey in 2004 and 2007, as the spatial cluster in West Turkey centers on Izmir (see Figure 3.2). However, the spatial cluster in West Turkey stretches from Balikesir to Aydin in 2009, forming a large cluster in the region compared to previous years. The level of industrial maize farming is high in western provinces, where the share of small-scale farms is high as well. The preliminary finding on increased participation of small-scale farmers in industrial maize farming might explain how the influence of large farms is lower in 2009 than in 2007. Here, it is important to note that the distribution of values (e.g. mean, maximum, and minimum) vary in different years, and the comparison of these years in terms of spatial distribution is descriptive, rather than analytical as in a longitudinal design.

The increase in the model fit over the three years observed indicates a consolidation of the corporate food regime in Turkey. One can argue that the combined impact of the factors tested in these models were higher in the latter half of
the 2000s. Comparing spatial lag regression models, the geographically expanding spatial clusters of industrial maize farming can be seen in the comparison of the models in 2004 and 2007 to the models in 2009. From an angle of spatial variation, the data in 2009 offer strong evidence for spatial expansion of high yield industrial maize farming regions.

While the cross-sectional design of spatial statistical analysis offers a descriptive comparison of the same models in different years, including the percentage change of industrial maize farming in the 2009 models adds an analytical dimension of change over time to spatial analysis. The results support the hypothesis that high rates of increase in industrial maize farming are associated with high levels of maize farming. However, the amount of variation explained by this variable is not as high as that explained by importance of maize as cash-crop or traditional maize farming. While this is not an ideal measure to assess trends, it provides preliminary insights on how the patterns of industrial maize farming have changed over time. Controlling for other variables, increasing investment over time is a reinforcing factor for achieving a higher level in industrial maize farming.

Another potential implication of percentage change in industrial maize farming is that provinces, which have had lower levels of industrial maize farming in 2004, but invested at a fast rate in this sector, participated in higher levels in 2009, besides provinces, which already have had high levels in 2004. However, this is only a preliminary finding due to the simplistic measurement and the relatively lower level of significance in the model. The significance of the change in trends and influencing factors cannot be fully explored without a longitudinal design.
Conclusion

Focusing on scale communities, organization, and commodity culture, Friedland’s (2001) commodity systems approach is a useful analytical method that helps to expose internal dynamics within a commodity chain, and contribute to explanations delivered by Food Regime perspective. In this chapter I focused on the industrial maize commodity system in Turkey in the 2000s to explore whether maize production developed in concert with McMichael’s (2009) formulation of corporate food regime, where international financial organizations influence the restructuring of the national agricultural system, and where agri-food corporations expand their space of action.

Based on the findings of this study, I argue that maize production in Turkey developed in the 2000s along the tenets of food regime theory relating to the transformation of relations of labor according to demands by agri-food corporations. With the implementation of policies of economic restructuring, over time the corporate model of agricultural production seems to expand over space while large farms have an advantage in adopting the new form of production. Still, the findings in the spatial analysis do not support the food regime postulation that small-scale farmers are excluded. Furthermore, regional production patterns need to be considered important, since low-yield traditional maize farming maize persisted in some provinces as an important field crop for household consumption.

The spatial analysis helped to identify whether specific regions formed spatial clusters, bringing detailed analysis of the factors related to relations of production under economic restructuring. While the spatial data analysis from different years indicates change over time, the cross-sectional design due to spatial analysis does not fully explore whether this change is statistically significant. Therefore, in the next
chapter, I explore longitudinal trends in industrial maize production, and the factors influencing these trends.

Table 3.1. Descriptive Statistics for Dependent and Independent Variables in Spatial Models

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min.</th>
<th>Max.</th>
<th>Moran’s I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Industrial Maize Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>74</td>
<td>460</td>
<td>212</td>
<td>135</td>
<td>966</td>
<td>.426***</td>
</tr>
<tr>
<td>2007</td>
<td>74</td>
<td>540</td>
<td>252</td>
<td>138</td>
<td>958</td>
<td>.507***</td>
</tr>
<tr>
<td>2009</td>
<td>74</td>
<td>555</td>
<td>261</td>
<td>125</td>
<td>979</td>
<td>.486***</td>
</tr>
<tr>
<td>Maize as Cash-Crop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>74</td>
<td>8.07</td>
<td>15.67</td>
<td>0</td>
<td>68.76</td>
<td>.335***</td>
</tr>
<tr>
<td>2007</td>
<td>74</td>
<td>7.31</td>
<td>14.32</td>
<td>.01</td>
<td>67.20</td>
<td>.327***</td>
</tr>
<tr>
<td>2009</td>
<td>74</td>
<td>8.26</td>
<td>16.23</td>
<td>.01</td>
<td>90.27</td>
<td>.291**</td>
</tr>
<tr>
<td>Large Farms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>74</td>
<td>46.25</td>
<td>52.55</td>
<td>0</td>
<td>241</td>
<td>.419***</td>
</tr>
<tr>
<td>% Change from 2004</td>
<td>74</td>
<td>23.96</td>
<td>41.34</td>
<td>-36.74</td>
<td>220.29</td>
<td>.002</td>
</tr>
</tbody>
</table>

Notes: *p<.05; **p<.01; ***p<.001
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>OLS1 Coeff. (Std. Error)</th>
<th>OLS1 Coeff. (Std. Error)</th>
<th>OLS2 Coeff. (Std. Error)</th>
<th>OLS2 Coeff. (Std. Error)</th>
<th>OLS3 Coeff. (Std. Error)</th>
<th>OLS3 Coeff. (Std. Error)</th>
<th>OLS4 Coeff. (Std. Error)</th>
<th>SL4 Coeff. (Std. Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>5.60 (3.64)</td>
<td>5.64 (3.67)</td>
<td>5.71 (3.27)</td>
<td>5.21 (2.82)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize as Cash-Crop</td>
<td>.09** (.03)</td>
<td>.15*** (.02)</td>
<td>.15*** (.02)</td>
<td>.15*** (.02)</td>
<td>.12*** (.02)</td>
<td>.13*** (.02)</td>
<td>.13*** (.02)</td>
<td>.10*** (.02)</td>
</tr>
<tr>
<td>Traditional Maize Farming</td>
<td>-.82*** (.18)</td>
<td>-1.07*** (.16)</td>
<td>1.00*** (.17)</td>
<td>1.20*** (.16)</td>
<td>-.70*** (.16)</td>
<td>-1.00*** (.17)</td>
<td>-1.00*** (.17)</td>
<td>-1.00*** (.17)</td>
</tr>
<tr>
<td>Large Farms</td>
<td>.17** (.05)</td>
<td>.21*** (.04)</td>
<td>.19*** (.04)</td>
<td>.17*** (.04)</td>
<td>.13*** (.04)</td>
<td>.12*** (.04)</td>
<td>.12*** (.04)</td>
<td>.12*** (.04)</td>
</tr>
<tr>
<td>% Change from 2004</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.14*** (.05)</td>
</tr>
<tr>
<td>Spatially-Weighted</td>
<td>-</td>
<td>.34** (.13)</td>
<td>-</td>
<td>.34** (.11)</td>
<td>-</td>
<td>.41*** (.10)</td>
<td>-</td>
<td>.41*** (.10)</td>
</tr>
<tr>
<td>Dependent Variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>2007</td>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OLS1</strong></td>
<td><strong>SL1</strong></td>
<td><strong>OLS2</strong></td>
<td><strong>SL2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Stat</td>
<td>16.29***</td>
<td>-</td>
<td>34.18***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-38.04</td>
<td>-35.30</td>
<td>-32.10</td>
<td>-28.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>84.07</td>
<td>80.59</td>
<td>72.20</td>
<td>67.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breusch-Pagan test</td>
<td>6.81</td>
<td>4.95</td>
<td>5.24</td>
<td>4.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lagrange Multiplier (lag)</td>
<td>4.71*</td>
<td>-</td>
<td>5.84*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust LM (error)</td>
<td>6.86**</td>
<td>-</td>
<td>.47</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>74</td>
<td>-</td>
<td>74</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2009</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OLS3</strong></td>
<td><strong>SL3</strong></td>
<td><strong>OLS4</strong></td>
<td><strong>SL4</strong></td>
</tr>
<tr>
<td>F-Stat</td>
<td>-</td>
<td>-</td>
<td>28.53***</td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-35.39</td>
<td>-30.11</td>
<td>-31.81</td>
</tr>
<tr>
<td>AIC</td>
<td>78.77</td>
<td>70.22</td>
<td>73.62</td>
</tr>
<tr>
<td>Breusch-Pagan test</td>
<td>3.43</td>
<td>2.80</td>
<td>8.03</td>
</tr>
<tr>
<td>Lagrange Multiplier (lag)</td>
<td>8.74**</td>
<td>-</td>
<td>9.44**</td>
</tr>
<tr>
<td>Robust LM (error)</td>
<td>2.03</td>
<td>-</td>
<td>.04</td>
</tr>
<tr>
<td>N</td>
<td>74</td>
<td>-</td>
<td>74</td>
</tr>
</tbody>
</table>

Notes: *p<.05; **p<.01; ***p<.00
Figure 3.1. Boxplots for Industrial Maize Production, Importance of Maize as Cash-Crop, and Share of Large Landholding in 2004, 2007 and 2009

2004

<table>
<thead>
<tr>
<th>Industrial Maize Production</th>
<th>Importance of Maize as Cash-Crop</th>
<th>Share of Large Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level of Industrial Maize Production</td>
<td>Importance of Maize as Cash-Crop</td>
</tr>
<tr>
<td></td>
<td>1000.00</td>
<td>400.00</td>
</tr>
</tbody>
</table>

2007

<table>
<thead>
<tr>
<th>Industrial Maize Production</th>
<th>Importance of Maize as Cash-Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level of Industrial Maize Production</td>
</tr>
<tr>
<td></td>
<td>1000.00</td>
</tr>
</tbody>
</table>

2009

<table>
<thead>
<tr>
<th>Industrial Maize Production</th>
<th>Importance of Maize as Cash-Crop</th>
<th>% Change between 2004 and 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level of Industrial Maize Production</td>
<td>Importance of Maize as Cash-Crop</td>
</tr>
<tr>
<td></td>
<td>1000.00</td>
<td>400.00</td>
</tr>
</tbody>
</table>

Notes: Share of Large Farms is the same variable in all models, therefore now shown in other years.
Figure 3.2. Quartiles and Cluster Maps for Industrial Maize Production in Turkey, 2004, 2007 and 2009

Legend:

Quartiles
- Bottom 25 Percent
- Second 25 Percent
- Third 25 Percent
- Top 25 Percent

Clusters
- Not Significant
- High-High
- Low-Low
- Low-High
- High-Low
Figure 3.3. Quartiles and Cluster Maps for Importance of Maize as a Cash-Crop in Turkey, 2004, 2007 and 2009

Legend:

Quartiles
- Bottom 25 Percent
- Second 25 Percent
- Third 25 Percent
- Top 25 Percent

Clusters
- Not Significant
- High-High
- Low-Low
- Low-High
- High-Low
Figure 3.4. Quartiles and Cluster Maps for Share of Large Farms in Turkey, 2001

Figure 3.5. Quartiles and Cluster Maps for Percentage of Change in Industrial Maize Farming in Turkey, 2004-2009

Legend:
Quartiles
- Bottom 25 Percent
- Second 25 Percent
- Third 25 Percent
- Top 25 Percent

Clusters
- Not Significant
- High-High
- Low-Low
- Low-High
- High-Low
### Appendix B

**Table A3.1. Multicollinearity Condition Numbers for OLS models**

<table>
<thead>
<tr>
<th>Models</th>
<th>Multicollinearity condition number</th>
</tr>
</thead>
<tbody>
<tr>
<td>$OLS_1$</td>
<td>6.74</td>
</tr>
<tr>
<td>$OLS_2$</td>
<td>6.45</td>
</tr>
<tr>
<td>$OLS_3$</td>
<td>6.35</td>
</tr>
<tr>
<td>$OLS_4$</td>
<td>11.74</td>
</tr>
</tbody>
</table>
Figure A3.2 Moran's I Scatterplots of residuals in Spatial Lag Models 1-3 in 2004, 2007 and 2009

Spatial Lag Model 1

Moran's I: -.07

Spatial Lag Model 2

Moran's I: .06

Spatial Lag Model 3

Moran's I: .09
Chapter 4: A Longitudinal Study of the Industrial Maize Production in Turkey

Introduction

The doubling of maize production in Turkey over the first decade of the 20th century was related to a shift in the regime of accumulation where farmers changed from crops they had traditionally grown to alternative crops, where maize has an important share. The shift from the Fordist regime of accumulation, where agricultural producers served as consumers of industrial inputs for a variety of crops and livestocks, to the Post-Fordist one, where farmers also became suppliers of a few crops that serve as raw materials for industrial processing, occurred insomuch as the various stages agricultural commodity chain were controlled by private agri-food and retailing corporations (see Chapter 2). On one end of industrial maize production in Turkey, more than half of the seed market was under the control of three large transnational biotech corporations: Monsanto, DuPont-Pioneer, and Syngenta (TMMOB 2011: 152-3). On the other end of maize production, 90 percent of the total production was absorbed by a small number of feed and sweetener processing corporations (Bayraktar 2008).

I demonstrated why increasing industrial maize production indicates the consolidation of a Post-Fordist regime of accumulation in agriculture from seed to farm-gate and that the spatial patterns of maize production changed in the 2000s (see Chapter 3). With the introduction of maize as an alternative to declining traditional crops, farmers in South, Southeast, and West Turkey participated in high-yield industrial maize production. In contrast, farmers along the Black Sea coast, the traditional maize growing region for household consumption, had consistently lower levels of industrial maize production. The comparison of spatial distribution of industrial maize production may
help to explain how the relations of production within the Post-Fordist regime of accumulation vary spatially, and how spatial patterns expand in the latter years of the 2000s. In the spatial analysis I integrated a simplistic measure to have a preliminary analysis on change over time in industrial maize production (percentage change in industrial maize production between 2004 and 2009). While the change over time was significant in the cross-sectional model, the descriptive comparison of different years does not provide detailed explanations on how the influence of different variables changed over time, and whether these changes are statistically significant. To explain how changing relations of production influence industrial maize production over time, the data in different years need to be analyzed in a longitudinal model to reveal the trends in industrial maize production, and the factors which influence these trends.

Explaining the trends of industrial maize production and relations of production within the Post-Fordist regime of accumulation contributes to contemporary discussions on how different modes of production (e.g. small-scale family farms vs. large-scale capitalist farms) interact with a new regime of accumulation emerging out of economic restructuring in developing, emerging, and industrialized economies. Contemporary approaches based on Marxian, Weberian, Chayanovian, and Kautskian explanations focus on different dimensions of how capitalism permeates agricultural production in different geographies. The participation of small-scale family farms in simple commodity production in the 20th century denotes a partial adoption of commercial production practices where farmers produce for national markets rather than for subsistence (e.g. Friedmann 1978). Using a Weberian perspective, Mooney (1988) develops a taxonomy which differentiates and combines the variation in scale and rationale of farming to
explain different forms of agricultural production. Bonanno (1987), from a traditional Marxist perspective, argues that, although small farms were not competitive compared to large-scale farms in terms of economic value of production in post-war Italy, those small-scale farms had a "sponge effect" of balancing the oversupply labor in industry. More recent traditional Marxian approaches (e.g. McMichael 2009; Araghi 2009) argue that small-scale agriculture is excluded by the practices of agri-food corporations which consider large-scale farms to be more efficient in cost and scale.

Although each of these perspectives on the role of small farmers in a market economy have different theoretical starting points, they all offer insights for understanding the longitudinal analysis of industrial maize production in Turkey. Each contributes to exploring the rationale of production, socioeconomic factors related to relations of production, and political intervention in an environment of Post-Fordist regime of accumulation.

4.1. The Historical Transformation of Relations of Production in Agriculture

Marx (1976: 910-3) argued that the peasant mode of production, as a type of subsistence farming, would disappear in the face of the expanding capitalist mode of production, which would be based on large-scale, input-intensive farming methods. Small scale-farming would be only a "subsidiary occupation" and people in rural communities would be integrated into capitalism as a cheap source of labor. Building on Marx’s prediction, Kautsky (1988) stated that small-scale farms would lose their importance as economically productive units, but he also hypothesized that small-scale farming
households would persist as long as they supplied the necessary wage-labor on large-scale capitalist farms.

While Kautsky based his hypotheses on late 19th century Prussia, Weber (1946) compared eastern and western regions of Germany on how small-scale farmers were integrated into or excluded from the capitalist mode of production. Weber concluded that the variation in the integration of small-scale farmers depended on the historical development of different regional socioeconomic structures. Chayanov (1986), contrary to Kautsky, argued that the self-exploitation of family labor makes the small-scale farm households more resilient, since they do not rely on the markets for wage-labor, as in the case of large-scale capitalist farms. The farming household as a production unit has the capacity to adjust the level of self-exploitation according to varying conditions, which makes their survival and efficiency in capitalist farming more likely than Kautsky or Marx predicted.

Classical social theory on the persistence of small-scale farms, or the agrarian question, is useful understanding the persistence of smallholder farmers during the expansion of industrial maize farming in Turkey, however, these theories need to be refined. As industrial maize production increased in Turkey, small-scale farms still represented the majority in terms of area coverage and farm numbers. In 2006, small-scale farms under 50 acres comprised 91 percent of the total number of farms. They also controlled 51 percent of the total arable land (TurkStat 2008). This points to the continuing importance of small-scale farms in Turkish agriculture in the 2000s, contrary to what Kautsky (1988) predicted. The category of simple-commodity producer, proposed by Friedman (1978), is useful in explaining the potential integration of small-
scale farmers in industrial maize production. Friedmann argues that simple-commodity producers are small-scale farmers who produce for national or international markets and use commercial inputs in order to meet the demands of these markets. These small-scale farmers may manage less land than the large-scale ones, but they may rely on some wage-labor to subsidize family labor, adding greater flexibility to the production unit.

However, Friedmann (1980) notes that simple-commodity production is characterized by lower levels of productivity in labor and land. Friedmann's approach to persistence of small-scale farms accounts for historical development of regional socioeconomic conditions, as Weber (1946) does. Furthermore, she considers the inclusion of family labor by small farms as a way of survival, as Chayanov (1986) did.

The small-scale farms in Turkey experienced a relative level of economic welfare and persisted as simple-commodity producers between the 1950s and 1980s by virtue of Fordist state policies (Keyder 1987: 158-9; Somel 1986). The longitudinal analysis in this chapter is designed to explore whether small-scale maize farmers, as simple commodity producers, continue to persist under a Post-Fordist regime.

While small-scale farmers were adopting practices of commercial agriculture in their production practices, the rationality of production is an influential factor. Mooney (1988) distinguishes the rationale of production and the scale of production in his taxonomy of farmer types. Using the concept of rationality defined by Weber (1947), Mooney argues that large scale capitalist farmers and poor farmers follow a formal rationality invest in agricultural production as long as they receive financial return from farming. Formal rationality followed by poor farmers (or simple commodity producers), as Mooney suggests, is important in this analysis to observe the investment decisions of
small-scale farmers in industrial maize production. Commercial interests of farmers might influence the scale of industrial maize farming in a region.

As one of the explanations for the persistence of simple-commodity producers in agricultural production might be high profit rates, unless they follow a substantive rationality, another reason for their persistence might be ideological legitimation based on traditional values assumed to be protected by small-scale family farms. Bonanno (1987) explains that the major role of small-scale farms in the post-WWII era Italy was that they had the capacity to manage the reserve army of labor during economic crises when industrial production shrank. During periods of expansion in industrial production, small farms containing reserve labor could supply the labor market. While the role of small-scale farms, especially in Southern Italy, was this sponge effect to relieve economy in times of high unemployment, small-scale farms were legitimized with a combination of ideological reinforcement and welfare payments, both designed and implemented by political elites. Similar to Kautsky (1988), Bonanno argues that small-scale farms have a small economic significance within capitalist agriculture, which is dominated by large-scale producers. According to Bonanno, the main function of small-scale farms is preserving the surplus labor needed by the industrial capital.

The Bonanno's (1987) approach on the role of small-scale farms is shared by more recent studies as well. The proponents of a third food regime argue that small-scale farmers who were protected under national agrarian policies are now exposed to the detrimental impacts of increasing corporate activity and financialization (e.g. Araghi 2009; McMichael 2005; 2009). The withdrawal of the state intervention to protect national agricultural systems gave way to private corporations' sway over farming
households. Small-scale farmers are dispossessed under the debt-burden, and excluded from a Post-Fordist regime of accumulation unlike large-scale capitalist farmers. However, contrary to the food regime theory, Akram-Lodhi (2009) argues that development plans of international financial institutions in the 1980s sought ways to integrate small-scale farmers in global commodity markets. Hall (2012) recognizes that the majority of commercial farming is undertaken by small-scale farmers in Southeast Asian countries.

The discussion on the persistence -or the demise- of small-scale farms in a Post-Fordist regime is crucial in the case of industrial maize production in Turkey. The dominant majority of farm households are small-scale, as they control a significant portion of the total arable land. Through the longitudinal analysis in this chapter, I explore the socioeconomic dynamics in the increase of industrial maize farming in Turkey in the 2000s, and the level of participation of small-scale farmers as simple-commodity producers, related to the discussions on the persistence of small farms in a Post-Fordist regime.

4.2. Hypotheses, Data and Methods

To answer the question how changing relations of production influence industrial maize production over time I formulate hypotheses that are consistent with a longitudinal analysis since this type of inquiry has the potential to observe not only the influence of factors, but also the influence of factors on growth rates.

H1: The level of industrial maize production increased over time in the 2000s. This hypothesis is related to the expansion of the Post-Fordist regime of accumulation in
Turkey as industrial maize was an alternative crop to traditional crops in the 2000s. Exploring the trend in maize production helps to decide whether the increase in industrial maize production has been significant over time.

**H2:** *The demand from agri-food industry has a positive influence on the level of industrial maize production.* This hypothesis pertains to the changes in agricultural production consistent with the demands of private agri-food corporations, contrary to an agricultural system where state institutions are the main factor influencing production.

**H3:** *The increase in the importance of maize as cash-crop for farmers contributes to the expansion of industrial maize production.* Related to this influence, I argue that *provinces which had low importance of maize as cash-crop in 2004 had a faster rate of increase in industrial maize production over time, catching up with provinces which had higher importance.* This also indicates that high values in importance of maize as cash-crop did not contribute to the rate of increase in industrial maize production as much as low importance in the beginning. This hypothesis explains how more farmers over time participate in high-yield maize farming, contributing to the consolidation of the Post-Fordist regime of accumulation.

**H4:** *Higher revenues from maize farming contributes positively to the increase in the level of industrial maize farming.* Also, *over time, higher values in revenues contribute to the growth rate of industrial maize production,* implying that farmers extracting higher revenues increase their level of industrial maize farming faster than others. This hypothesis especially relates to the increasing commercialization, and to the related formal rationality in agricultural production. If the Post-Fordist regime of accumulation
consolidated in the 2000s, farmers would be more motivated by increasing material gains in making decisions in production.

H5: *Provinces that receive higher state support invest more in industrial maize farming.* This hypothesis is to measure whether commercialization is a better indicator than state support for agricultural production.

H6: *The increase in mechanized farming is related with the increase in industrial maize production.* This is important because simple-commodity production involves lower efficiency in labor, while mechanized agriculture relates to increased labor efficiency in production.

H7: *Provinces with a higher share of large landholdings had higher levels of industrial maize farming, and that the difference in industrial maize farming relevant to large landholdings did not change over time.* Therefore, even though provinces with more large-scale farms had higher levels, provinces with more simple-commodity producers increased the level of maize production. This hypothesis is relevant to the integration/exclusion discussion in a Post-Fordist economy. Contrary to the food regime theory, I argue that small-scale commodity producers have been an important part of this new socioeconomic configuration.

**Data**

I use data from 2000 through 2009 to document whether maize production and maize yields in Turkey increased during the economic restructuring period in agriculture. In 1999, the government of Turkey presented its preliminary letters of intent for the neoliberal transformation of agriculture to the IMF for financial credits (Aydın 2010).
Thus 2000, as the starting year, has importance in this study. The data for all quantitative variables, except for state support, are available at the website of the Turkish Statistical Institute.\textsuperscript{32} Yearly figures for the state support in the form of premium payments have been retrieved from Bayraktar (2008). Data is available each year at the provincial level, except for the Agricultural Census, which was conducted only in 2001.

Methods

The longitudinal analysis pertains to the research question about the impacts of relations of production and policy changes on expanding maize production. This analysis tests the impact of independent variables on the development of industrial maize production over time at the provincial level. Hence, this analysis provides information about how trends of growth differed at the provincial level, and how independent variables explain differences among provinces in their growth patterns. Concomitantly, this analysis explores how the change in the impact of independent variables influenced the growth in industrial maize production, referring to the expansion of the Post-Fordist regime of accumulation.

Because I use provincial data over ten years, totaling to 810 potential cases (81 provinces x 10 years), the nature of the data violates the assumption of Generalized Linear Models (GLM), including ordinary least square regression models, on the independence of each case in a model. Due to the repeated measuring of each individual unit (or provinces) over time, which is the nature of panel data, statistical models need to account for the dependency of cases over time. If I fail to account for dependency of cases over time, GLM will inflate the significance levels of factors in the analysis.

\textsuperscript{32} http://www.turkstat.gov.tr
leading to biased results. To account for within-individual-dependency (or intraclass correlation) and obtain more conservative results, Hierarchical Linear Models (HLM) are more appropriate than GLM for a longitudinal study based on panel data, described as individual growth curve (IGC) models (Raudenbush and Bryk 2002; Shek and Ma 2011).

In IGC, which is a variation of HLM, each province over time is identified as an individual growth curve, accounting for intraclass correlation. IGC models can compare individual growth curves of provinces, and determine which factors of interest explain the difference among individual growth trajectories, besides their influence across provinces. Therefore IGC enables the researcher to interpret the influence of predictors in two dimensions: 1) across individuals at the reference point of time; 2) across time-points. When time and a predictor interact in these models, the interaction terms explain how the influence of the predictor on the outcome variable changes over time while the non-interacting (intercept) term of the predictor explains the difference across individuals at the reference time-point.

IGC models can include time-constant and time-varying variables. Time-varying variables change over time, providing a different value for each case at a time-point. These variables are first level variables because they have different values for each case. However, time-constant variables do not change over time, and are related to non-changing characteristics of the individual. Time-constant variables are treated as second level variables, which are included with their time interaction in the model to observe the change of growth trends for time-constant variables (Raudenbush and Bryk 2002: 163). I add the province mean of predictors over time as second level variables to separate the influence of the difference among provinces and the influence of the change within a...
province over time, as recommended by Raudenbush and Bryk (2002: 183). In the final model, I drop the mean predictors, which are statistically not significant, to have a succinct model that is easier to interpret. The mean predictors are denoted by group mean (GM) next to the name of each indicator. Finally, because interactions between time and predictor might increase multicollinearity in models, I center all predictors, which is a common method to capture the influence of factors at the time of reference (Balli and Sørensen 2013).

Variables

The dependent variable in this analysis measures the level of industrialization of maize production by the yield of maize production. The utilization of commercial inputs (e.g. patented seeds, synthetic fertilizers, and chemicals) and mechanization in industrialized farming methods promise higher yields in production (Goodman, Sorj and Wilkinson 1987; Kloppenburg 2004). Thus, independent variables on the relations of production below predict the level of industrial maize production as an indicator of the Post-Fordist regime of accumulation.

The first independent variable concerns the longitudinal analysis of 81 provinces over 10 years. Econometrics methods utilize dummy variables for observations of trends (Cameron and Trivedi 2005: 699). For the yearly change in maize production, I created a continuous variable where every consecutive year increases by one (2000=-4; 2009=5). Taking the year 2004 as the reference serves two purposes. The first is to decrease the multicollinearity within models that contain time interaction. The second purpose of taking the year 2004 as the reference time point is to observe how the growth trends
differed in 2004, which is the first year after the start of premium payments to maize growers, a government policy instrumental to encouraging maize production. In the model, I also control for a curvilinear growth trend via a squared-time term to detect potential deceleration, or even decline in the growth trend. Growth trend demonstrates the change of industrial maize production in quantity over time since it enables the comparison of growth curves of individual provinces.

The first variable is related to the second hypothesis on the influence of agri-food industry. This variable measuring the impact of the agri-food industry on maize production is the number of meat-hens in each province. This indicator is a proxy for the size of the poultry industry, which absorbs about 70 percent of maize production at the national level.

The second independent variable is the importance of maize as cash-crop for farmers, measured by the ratio of land for corn production to total agricultural land in a province, relating to the third hypothesis on the expansion of Post-Fordist regime of accumulation. The third independent variable is the maize revenue per decare\(^{33}\) of the past year, as farmers plan for the next year according to the revenues of the past. The maize revenue in each province is the product of yield and prices received by farmers (including premium payments from 2003 onwards). Revenues serve as a proxy for the commercial market value of maize produced for private agri-food firms in the 2000s, related to the fourth hypothesis on formal rationality in agricultural production. The fourth variable, assessing the fifth hypothesis, is the state support for maize production measured by the premiums received per decare (yield per decare x premiums) for each province in the previous year.

\(^{33}\) 1 decare = .247 acres
Last two variables involve the change in the relations of production in terms of mechanization and land consolidation. The level of mechanization is measured by the number of tractors in a province. A high level of mechanization in farming is crucial in industrial maize production since it - on the one hand - delivers the standardization of production processes, and the predictability of the total produce. On the other hand, increased mechanization might have enduring impacts on the decrease of rural labor force with the replacement of agricultural workers with modern machinery. Finally, the level of mechanization relates to the low levels of productivity in labor and land, as Friedmann (1980) has argued. If simple commodity producers have lower levels of mechanization, it is expected that they have lower levels of industrial maize production.

The last variable used in longitudinal models is the proportion of large landholdings to small landholdings in a province. It is the same variable used in the spatial analyses in Chapter 3. However because the only available data for this variable is from the 2001 Agricultural Household Survey conducted by the TurkStat, this variable is used as a time-constant variable characterizing the landholding structure of provinces. In the models, I am using this variable as a second level variable of which influence can be observed on the growth trend, and provide information whether small-scale producers were able to participate in industrial maize farming.

I transformed all variables, except the trend variables, by taking their natural logarithm to standardize of variables that are skewed.
3. Results

Descriptive Analysis

The data for four provinces (Agri, Igdir, Kars and Van) out of 81 are not available in one or more variables over 10 years. The total of cases which include all the items used in the models is 636 (see Table 4.1). Using a Hierarchical Linear Model (HLM) approach in this longitudinal analysis, explained below, is useful to deal with missing data to predict trends since the maximum likelihood method used in HLM makes best fitting predictions based on the available data (Raudenbush and Bryk 2002: 199). Therefore, I can include provinces in the analysis which do not have complete data in every item each year. The average number of years for available data per province included in the analysis is 8.2. Ninety-six percent of cases belong to provinces which have six or more years available for analysis as provinces with 10 years of data comprise 61 percent of total cases analyzed.

Due to heteroscedasticity and skewness problems I transformed all variables, except for the trend variable, by natural logarithm (ln). Some of the variables still imply heteroscedasticity or skewness after the natural logarithm transformation. As I use the maximum likelihood model in HLM which assumes normal distribution, I plot the residuals after running the final model in a histogram to determine whether they fit in a normal distribution.

-Insert Table 4.1 here-

Longitudinal Analysis

Model 1 is an empty model without any of the variables and accounts for dependency of cases (provinces) in the panel data (see Table 4.2). In this model the
Intraclass correlation can be calculated to show how much of the variation inter-case differences explain. This is calculated by the division of intercept coefficient under random effects by the total variation, which is the sum of residual and intercept. The intraclass correlation is 55 percent (.259 / (.259+.212)), which indicates that in the empty model inter-case (inter-province) differences account for 55 percent of the total variation. This indicates that we can continue with adding variables that might explain differences across provinces.

-Table 4.2 here-

In Model 2, linear trend (Trend) and curvilinear trend (TrendSq) variables as fixed effects show significance (p<.001), pointing to a secular increase in the level of maize production, but later to a slowing down or flattening (p<.001). This curvilinear trend cannot be interpreted as a clear decline, but rather as a slowdown, because the coefficient of the curvilinear trend (-.015) is relatively small compared to the increase (.099). Furthermore, in Model 2, I add the trend variable to random effects. In Linear Mixed Models, variables of interest can be set as a random effect to see how these variables differ across cases (Albright and Marinova 2010). The intercept as a random effect is significant, indicating that there is still significant variation to be explained at the province level. Trend as a random effect is significant as well, pointing to the need of an explanation for the change over time. The interaction between trend and intercept as random effects (Trend*Intercept) is the correlation between the value in the beginning for provinces, and their growth rates, which is not significant in this model.

I add indicators measuring the influence of the agri-food industry, commercial maize farming, and the level of state support in Model 3, and the regional structure variables in
Model 4. In Model 3, the linear and curvilinear growth trends are still statistically significant. The poultry-meat industry and revenues from maize farming have a significant (p<.01) and positive influence on the level of industrial maize farming as well as state support (p<.05). With the addition of indicators pertaining to regional farming structures in Model 4, the indicator of maize importance as a cash-crop shows a similar relation to industrial maize farming as revenues and agri-food industry shown in Model 3.

The mean mechanization and change in the level of mechanization have positive and significant relationships to the dependent variable indicating that the significant overall difference in mechanization among provinces (p<.05) contribute positively to industrial farming, as the increase in the level of mechanization has a positive influence as well, but at a higher level of significance (p<.01). Provinces with a higher level of large landholdings have significantly higher levels of industrial maize farming in 2004. The positive and significant coefficient related to the interaction of large landholding and linear trend indicates that provinces with a larger share of large farms experienced faster growth in industrial maize farming (.024), while the curvilinear trend interaction (-.006) demonstrates a faster deceleration in the level of industrial farming for large landholding provinces than for others.

Model 5 does not include the mean province indicators (GM), which were not significant in Model 4. Furthermore, this model includes the trend interaction of revenues and importance of maize as a cash-crop to see how these variables influence growth trends over time. In this final model, linear and curvilinear trend coefficients do not change their relationship to the dependent variable, while the agri-food industry is positive and significant at the .05 level. The difference in the importance of maize as
cash-crop does not show a significant influence on the level of industrial maize farming in 2004. However the negative sign of the interaction coefficient with linear trend demonstrates that as the values in importance of maize as a cash-crop increased, the growth rate in industrial maize production slowed down. Also these values are related to a slower deceleration in growth, which is indicated in the interaction term with the curvilinear trend (.004). However, provinces with higher revenues had significantly higher levels of maize farming in 2004, while higher values contributed to an increase in the pace of linear growth (.038) and significantly slower deceleration (.019) in maize farming. The level of industrial maize production increases with increasing levels of the agri-food industry, state support, and mechanization. However, when compared to Model 4, we see that the influence of large landholdings on the linear growth loses its significance and that the curvilinear growth becomes less significant (p<.05), while the influence on the difference in 2004 among provinces is significant. Looking at the random effects, the significant negative correlation (-.006; p<.05) between the trend and the intercept indicates that maize production in provinces having lower levels of industrial maize farming in 2004 increased at a faster rate than the provinces which already had high levels.

The final model (Model 5) has the lowest Akaike Information Criterion (AIC; 432) and the Bayesian Information Criterion (BIC; 521) among all models, which indicates that it has the best model fit. Comparing the residuals in the empty model (Model 1) and the final model, we see that the final model explains 63 ((212-78)/212) percent of the total variation in the dependent variable.
Plotting the residuals from the final model in a histogram helps to understand if the residuals follow a normal distribution or if they are affected by the skewness and kurtosis in the variables, as I discussed above in the descriptive analysis. The histogram shows that the distribution of the residuals almost fit a normal distribution, but there are extreme cases, especially on the left side of the distribution, pointing to extreme negative values (see Figure C.2). To analyze the distribution of residuals in a clearer manner, plotting the residuals on a Q-Q plot to see how much they diverge from a theoretical normal distribution is a common method (Ryu 2011). On the Q-Q plot, residuals seem to follow a very slight "S" shape around the theoretical normal distribution line. However, this trend is not very pronounced as the residuals mainly follow the normal distribution line, not extremely diverging from it. If the residuals drew a more pronounced "S" shape it would indicate that there are extreme cases on both sides. However, in both histogram and Q-Q plot it is clear that there are more extreme cases on the negative side of the distribution. One option for dealing with this would be to exclude these negative cases and rerun the models. However, there is no theoretical justification to do so, as the coefficients in the limited model are not different enough in their signs or significance levels to exclude extreme cases.34

Because the variables used in this analysis are based on panel data, it is useful to present the change of the dependent variable over time according to independent variables. The representation of the data descriptively on graphs is useful to obtain the visual representation on the trends to help with the interpretation. To display the growth

---

34 There were nine cases that I identified in the data that seem to be beyond the normal distribution plot on both ends in the histogram (Figure C.2). Eight of these cases have negative residuals. After running the same model without these nine cases, only Trend*Revenue and TrendSq*Large Farm interactions become marginally insignificant with p-values .077 and .065, respectively.
trend in relation to indicators that might influence the level of industrial maize farming, I break down the trend into two groups for each variable, and use fitted values from the final model, Model 5. For all continuous variables, except for large farms which is time-constant, I created two groups of provinces, one for below average value of the related indicator in 2004, and one for above. Using values in 2004, the reference point, enables me to follow how provinces differed over time. Described relationships in Model 5 can be seen in Figures 4.1-4.4. Figure 1 shows the curvilinear growth curve of the industrial maize production while Figures 4.2-4.4 show the growth curves of maize production in regard to importance of maize as a cash crop, revenues extracted from maize farming, and the share of large farms respectively.

4.4. Discussion

Results in longitudinal models indicate that the mean level of industrial maize production has increased over time across provinces. However, we see a curvilinear slowdown which shows a relative stabilization at higher levels of maize production, rather than a decline. Furthermore, provinces that had low levels of industrial maize production in the 2004 had a faster growth than others. The implication of this growth trend for the relations of production is that over one decade provinces that had lower levels of industrial maize production (or no maize production) joined this Post-Fordist regime of accumulation in the areas where the influence of the agri-food industry is significant.

Besides the influence of the agri-food industry, revenues made by farmers play a significant role in the increase of industrial maize farming. Figure 3 shows that provinces
which receive higher revenues have a secular trend of increase in maize production: farmers who sustain higher levels of revenues increase their investment in maize over time, pointing to the increasing commercialization of farming practices around maize. This finding is consistent with the hypothesis that farmers who participate in industrial agriculture are motivated by a formal rationality which prioritizes material gains in agricultural production (see Mooney 1988).

Farmers in provinces where maize did not represent a large share of cash-crops invested faster in industrial maize production and caught up over time with other provinces which have had maize as an important cash crop (see Figure 2). However, controlling for the slowdown trend of industrial maize production, the final model shows a more robust growth trend for provinces where farmers already had been producing maize, compared to growth trends of provinces where farmers who started participating in maize production later. This might indicate that the latecomers are experiencing a higher level of volatility related to market conditions, whereas provinces with a longer history of maize production have already established market relations. This might indicate the exclusion of small-scale farmers from the Post-Fordist regime of accumulation, as the traditional Marxist approaches (e.g. Bonanno 1987, McMichael 2009) suggest. Nevertheless the influence of large landholdings, explained below, seems to contradict this preliminary conclusion.

Agri-food industry, state support in the form of premiums, and mechanization indicators contribute to higher levels of industrial maize farming. Agri-food industry's significant influence shows that the demands of the private corporations in this new economic context is an influential factor while state policies bolster this agricultural
structure, working to the benefit of agri-food corporations (for the policy analysis see Chapter 2). The contribution of mechanization to industrial maize farming stresses the industrial practices aiming for increased labor efficiency. Furthermore, different from all indicators in the model, the mean level of mechanization shows that higher levels of mechanized farming influence an uncompromising difference in industrial maize farming. Mechanization is one of the important pillars of industrial maize farming, as traditional Marxist approaches indicate.

Controlling for the presence of large landholdings provides important insights on the case of industrial maize farming in Turkey, and how it relates to the exclusion of simple-commodity producers from the Post-Fordist regime of accumulation. The final model based on the data over a decade shows that industrial maize production is higher in provinces with a larger share of large farms, compared to other provinces (Figure 4). However, this difference does not change with the increasing level of industrial maize farming over time. While the difference between provinces of scattered farms and consolidated ones does not significantly change over time, this difference shows that provinces of small-scale farming invested in maize farming over time, even though it did not reach the level of large farms. This finding implies that a nuanced perspective needs to be employed before postulating the exclusion of simple-commodity producers from Post-Fordist markets with lower levels of state support. This also indicates that arguments about the potential ways for the persistence of simple-commodity producers need more attention as Akram-Lodhi (2009) and Hall (2012) suggest.

There are several potential explanations of simple-commodity producers participating and persisting in industrial maize farming. They might not possess the
financial means for higher levels of production with fully commercialized inputs. This also might be related to their access to production credits. Small-scale farmers also might not have enough market access to supply higher levels of maize production. However all these factors do not point to the elimination of small-scale farming structures, but to a relatively limited integration while still being a part of the market. How they are integrated in markets controlled by agri-food corporations, which instruments and skills they employ for survival, and which political and economic instruments are vital in their decision to participate in this market are questions demanding more detailed inquiry. Without the finding on the impact of farming scale on industrial farming in this study, however, I would not be able to pose these questions.

Conclusion

There are several theoretical implications of these findings. The longitudinal study demonstrates that numbers of provinces adopting high-yield industrial maize farming increased over time, expanding the geographical scale of maize production. Changing relations of productions have significant consequences in the industrial maize farming as well. Industrial maize farming expanded within other provinces via increasing commercialization, mechanization, and an agri-food industry influence, in line with food regime theory's hypotheses on the consolidation of a Post-Fordist regime of accumulation.

The political regulation emerges as an important factor influencing the expansion of industrial maize production. The significant role of state regulation in the form of premiums is that it occurs in a configuration where policies diverge from sustaining rural
socioeconomic welfare to inducing producers to work for agri-business companies. The final finding is that large-scale farming relates to higher levels of industrial maize production in a country, where the dominant majority of farms still operates at small-scale. Nevertheless, provinces, where small-scale farmers comprise the dominant majority, experienced significant increases in industrial maize farming at a rate similar to provinces where large farms have a larger share. This finding strongly suggests that, not all but a significant portion of small-scale farmers in provinces, where maize is an important cash-crop, were invested in a mode of agricultural production geared to the needs of private agri-food corporations.

The last finding is a preliminary finding on the differentiation of small and large-scale producers, informing about a significant portion of small scale producers in high level of industrial maize farming regions adapted to Post-Fordist regime. Therefore this finding needs to be taken with caution as there is a significant difference between small- and large-scale producers that remains constant over the years. This constant difference might be due to different socioeconomic conditions faced by small-scale producers, as I discussed previously. How small-scale producers and large-scale producers participate in industrial maize farming under different conditions is to be studied within the framework of contract farming as well as the differential impacts of state regulations on producers in the following empirical chapter.
Table 4.1. Descriptive Statistics for Dependent and Independent Variables in Longitudinal Models

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Industrial Maize Farming</td>
<td>740</td>
<td>20.00</td>
<td>1111.00</td>
<td>455.99</td>
<td>254.04</td>
</tr>
<tr>
<td>Trend</td>
<td>810</td>
<td>0</td>
<td>9</td>
<td>4.50</td>
<td>2.874</td>
</tr>
<tr>
<td>Poultry-Meat Industry</td>
<td>721</td>
<td>0</td>
<td>134002644.47</td>
<td>2907674.97</td>
<td>9767321.47</td>
</tr>
<tr>
<td>Maize as Cash-Crop</td>
<td>761</td>
<td>0</td>
<td>90.27</td>
<td>7.47</td>
<td>15.12</td>
</tr>
<tr>
<td>Revenue</td>
<td>702</td>
<td>0</td>
<td>6608452.76</td>
<td>14756.59</td>
<td>250703.42</td>
</tr>
<tr>
<td>State Support</td>
<td>741</td>
<td>0</td>
<td>1616.90</td>
<td>266.71</td>
<td>311.27</td>
</tr>
<tr>
<td>Mechanization</td>
<td>810</td>
<td>0</td>
<td>62929.00</td>
<td>12502.69</td>
<td>11338.13</td>
</tr>
<tr>
<td>Large Farms</td>
<td>810</td>
<td>0</td>
<td>241.51</td>
<td>46.29</td>
<td>50.23</td>
</tr>
</tbody>
</table>

Notes: Listwise Valid N = 636
Table 4.2. Longitudinal Mixed Models Explaining Industrial Maize Production in Turkey in the 2000s

<table>
<thead>
<tr>
<th>Variables</th>
<th>Fixed Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td>Intercept</td>
<td>5.93</td>
</tr>
<tr>
<td></td>
<td>(.062)</td>
</tr>
<tr>
<td>Trend</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(.009)</td>
</tr>
<tr>
<td>TrendSq</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
</tr>
<tr>
<td>Poultry-Meat Industry GM</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry-Meat Industry</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize as Cash-Crop GM</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize as Cash-Crop</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize as Cash-Crop*Trend</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize as Cash-Crop*TrendSq</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue GM</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue*Trend</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue*TrendSq</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>State Support GM</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>State Support</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanization GM</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanization</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.2. Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Farms</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.191***</td>
<td>.167***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.040)</td>
<td>(.037)</td>
</tr>
<tr>
<td>Large Farms*Trend</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.024***</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.006)</td>
<td>(.005)</td>
</tr>
<tr>
<td>Large Farms*TrendSq</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.006***</td>
<td>-.003*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.001)</td>
<td>(.002)</td>
</tr>
</tbody>
</table>

Random Effects

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>.259***</td>
<td>.262***</td>
<td>.189***</td>
<td>.133***</td>
<td>.107***</td>
</tr>
<tr>
<td></td>
<td>(.047)</td>
<td>(.045)</td>
<td>(.034)</td>
<td>(.026)</td>
<td>(.022)</td>
</tr>
<tr>
<td>Trend</td>
<td>-.004***</td>
<td>.003***</td>
<td>.002**</td>
<td>.001*</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.001)</td>
<td>(.001)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td>Trend*Intercept</td>
<td>-.001</td>
<td>.001</td>
<td>-.004</td>
<td>-.006*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td>(.004)</td>
<td>(.003)</td>
<td>(.002)</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>.212</td>
<td>.087</td>
<td>.084</td>
<td>.079</td>
<td>.078</td>
</tr>
</tbody>
</table>

AIC

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIC</td>
<td>1002</td>
</tr>
<tr>
<td></td>
<td>608</td>
</tr>
<tr>
<td></td>
<td>538</td>
</tr>
<tr>
<td></td>
<td>483</td>
</tr>
<tr>
<td></td>
<td>432</td>
</tr>
</tbody>
</table>

BIC

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIC</td>
<td>1016</td>
</tr>
<tr>
<td></td>
<td>639</td>
</tr>
<tr>
<td></td>
<td>604</td>
</tr>
<tr>
<td></td>
<td>571</td>
</tr>
<tr>
<td></td>
<td>521</td>
</tr>
</tbody>
</table>

Notes: *p<.05; **p<.01; ***p<.001
All standard errors are in parentheses.
Figure 4.1. Growth Trend of Industrial Maize Production between 2001 and 2009 in Turkey
Figure 4.2. Growth Trends in Industrial Maize Production According to the Importance of Maize As Cash-Crop for Farmers in Turkey between 2001 and 2009

Importance of Maize as Cash Crop
- Provinces with below average importance of Maize as Cash Crop in 2004
- Provinces with above average importance of Maize as Cash Crop

Level of Industrial Maize Production

Year
Figure 4.3. Growth Trends in Industrial Maize Production According to the Revenues Extracted for Maize Farmers in Turkey between 2001 and 2009
Figure 4.4. Growth Trends in Industrial Maize Production According to the Proportion of Large Farm to Small Farms in Turkey's Provinces between 2001 and 2009

[Diagram showing growth trends over years]
Appendix C

**Table C.1. Correlation of Traditional Farming with Independent Variables**

<table>
<thead>
<tr>
<th>Importance of Maize as Cash Crop</th>
<th>Revenue from Maize Farming</th>
<th>State Support</th>
<th>Mechanization</th>
<th>Large Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>.494***</td>
<td>-.185***</td>
<td>-.092*</td>
<td>-.375***</td>
<td>-.462****</td>
</tr>
</tbody>
</table>

Notes: *p<.05; **p<.01; ***p<.001
Figure C.1. Time-Points per Province between 2000 and 2009 in Turkey

Note: Agri, Igdir, Kars, and Van are excluded from the analysis because neither of them has a complete list of items between 2000 and 2009.
Figure C.2. Histogram and Q-Q Plot of Residuals from Model 5
Chapter 5: 
Entrepreneurial Exploitation: The Role of Financialization in the Participation of Small-Scale Maize Farmers as Simple-Commodity Producers in a Post-Fordist Regime of Capital Accumulation

*Debt is the scourge for the valiant.*\(^{35}\)

Turkish Proverb.

**Introduction**

Maize farming for agri-food industries long has been an important economic activity for farmers in Turkey in search of an alternative crop to traditional crops. In Chapter 4, I showed how the investment by farmers in industrial maize production increased over the last decade in Turkey as the importance of maize as a source of income for farming households increased. Besides the importance as a source of income, the longitudinal analysis demonstrated that the demand from the agri-food industry was influential in the increase of maize farming across provinces. High levels of mechanization in agriculture, revenues extracted from maize farming, and state support in the form of premiums were other factors that demonstrated association with the increase in industrial maize farming. The findings on the spatial distribution analysis pointed to a spatial expansion of industrial maize farming (see Chapter 3). However, the regions of traditional low-yield maize farming for household consumption had consistently low levels of industrialization despite the large coverage of maize as a field crop in these regions.

Considering the spatial expansion of industrial maize farming and the changing relations of production over time, one can propose that farmers in Turkey experienced the shift from a Fordist regime of capital accumulation to a Post-Fordist regime of accumulation (see Chapter 2). The traditional Marxist perspective, which does not regard

\(^{35}\) Its meaning is that debt encourages people to work harder.
small-scale farms to have an economically significant role in capitalist agricultural production (e.g. Araghi 2009; Bonanno 1987; McMichael 2009), proposes that small-scale farms are excluded from economic activities underlain by a Post-Fordist regime of accumulation. However, small-scale farmers in Turkey continue to hold a significant share in agricultural production since they hold half of the arable land (TurkStat 2008). I also demonstrate in this chapter that small-scale farmers have an important share in industrial maize farming. The longitudinal analysis in Chapter 4 showed that, accounting for other factors, large-scale farmers can sustain higher levels of industrial maize production. Yet, small-scale farmers invested in industrial maize farming over the years at a similar rate as large-scale farmers, pointing to an increasing participation of small-scale farmers in this economic activity. Based on findings in previous chapters, this chapter seeks to explore how small-scale producers manage to participate in industrial maize production, and how expanding production credits via financialization influence the participation of small-scale farmers in an environment of changing relations of production.

Financialization under the Post-Fordist regime of accumulation refers to the erosion of state control over capital accumulation as well as the shift from industrial investment towards financial investment as a means of profit-making (Krippner 2011). The implication of financialization for agricultural producers in the era of economic restructuring is conceptualized by the traditional Marxist perspective as dispossession of small-scale farmers (e.g. Araghi 2009). According to this perspective, small-scale farmers are trapped in debt in their pursuit of substituting the declining state support to agricultural production.
Krippner (2011: 114) argues that the availability of capital in the form of financial credits expanded in the U.S. with the deregulation of financial credit markets from the 1970s onwards, supporting the Post-Fordist regime of accumulation. Similarly, with the policies of economic restructuring after the 2001 financial crisis in Turkey, financial capital became more accessible, as the production credits in agriculture spiked from 770 million Turkish Liras in 2003 to 15 billion Turkish Liras in 2009 (Tarım ve Mühendislik 2011; Yıldırım 2013). In this chapter, I draw attention to the aspect of financialization related the phenomenon of credit expansion, an aspect that is not captured by the traditional Marxist approach (e.g. Araghi 2009) due to its exclusive interest in the process of dispossession. I argue that, in the case of Turkish maize production, financialization enables small-scale farmers to participate in the Post-Fordist regime of accumulation as small-scale farmers benefit from expanding production credits.

I also propose that the dependence of small-scale farmers on production credits in industrial maize farming exposes their investment to the exploitation by the agri-food industry. I call this socioeconomic process entrepreneurial exploitation to explain a new type of exploitation endogenous to the Post-Fordist regime of accumulation backed by financial credit expansion. To clarify this new concept, I draw from the Marxian concept of exploitation and the Gramscian concept of consent. In my discussion on how small-scale farmers benefit from the expansion of production credits in their participation in maize farming, I use data from in-depth interviews with farmers, merchants, agri-food industry representatives and state officials, as well as contextual data from secondary resources on the sites of field research.

5.1. Survival of Small-Scale Farmers in a Post-Fordist Accumulation Regime through Entrepreneurial Exploitation
Financialization and the relevant expanding credit volume in the Post-Fordist regime of accumulation helps explain the persistence of small-scale farmers in industrial maize farming that grew over the last decade in Turkey. Krippner (2011) describes financialization as the deregulation of financial markets and the increase in the employment of financial instruments by economic actors to create profits. The other consequence of the expansion of financial markets, which is the subject of interest for this study, is the increase in the credit supply offered by private market actors. Krippner (2011: 144) argues that the expansion of credit supply via financialization was a strategy employed by the U.S. political elite to placate the popular demands which could not be met by the welfare state in fiscal crisis 1970s. Accordingly, the credit debt in the U.S. as a percentage of Gross Domestic Product (GDP) increased from 150 percent to 300 percent between 1968 and 2001 (Krippner 2011: 53).

Similar to the trend of expanding credit markets, the total credit market as a percentage of GDP in Turkey increased from 57 percent in 2002 to 76 percent in 2007 (Ergüneş 2012). In terms of agricultural production loans, the credit supply was already growing in the 1980s and 1990s, but the expansion in the first decade of the 21st century was unprecedented. The annual average of agricultural credits given by the public Bank of Agriculture, the largest credit supplier for agricultural production, was $230 million in the 1980s, which increased to $1.6 billion in the 1990s (Güven 2009). The total agricultural credit stock declined in 2002 to about $180 million after the 2001 financial crisis, however, the total stock spiked to $10 billion in 2009 where the Bank of Agriculture supplied annually about 70 percent of credits (Tarım ve Mühendislik 2011; Yıldırım 2013). Another source of formal credits for agricultural production, especially
for small-scale farmers, is the farmer-owned Agricultural Credit Cooperative, which increased its credit stock nine-fold between 2002 and 2010, from $180 million to about $1.8 billion (Dünya 2013).

By arguing that small-scale farmers benefit from expanding production credits, at least for the 2000s, I diverge from other studies on the impacts of financialization on small-scale farmers. Food regime theorists (e.g. Araghi 2009; McMichael 2005, 2009) contend that financialization within the framework of a Post-Fordist regime of accumulation, or third food regime, leads to dispossession of small-scale producers. McMichael (2009) argues that the international financial institutions, i.e. the International Monetary Fund and the World Bank, assumed the leading role in policy prescriptions for economic development in return for credits to emerging and developing economies. In exchange for financial credits, these countries eliminated protectionist policies in agriculture, which led to the decreasing numbers of small-scale farms across countries. Araghi (2009), on the other hand, focuses on the increasing financial debt of small-scale farms in the third food regime, which he describes as the "enclosure regime." According to Araghi, the deepening of financialization worsens the economic conditions of small-scale farmers whose property is appropriated by the financing institutions.

McMichael's (2009) hypothesis on the impacts of financialization is in line with the concept "accumulation by dispossession" (Harvey 2005) which focuses on the eradication of protectionist economic policies, one of the most important pillars of the Fordist regime of accumulation. While McMichael's analytical focus is the policy change at the national level, Araghi (2009) defines dispossession of small-scale farmers due to

---

36 While McMichael (2009) employs "accumulation by dispossession" in the analysis of changes in national policies, Elyachar (2005) offers the application of this concept in her ethnographic analysis of small-scale workshops relying on microcredits offered by international development agencies.
financialization as an endogenous dynamic of the Post-Fordist regime of accumulation. Araghi's definition of dispossession in financialization is influenced by De Angelis (2004) who argues that social actors within a capitalist economy constantly attempt to privatize public resources. Therefore, Araghi's unit of analysis is the overall capitalist mode of economic production.

While Araghi (2009) and McMichael (2009) use different levels of analysis on the impacts of financialization on small-scale farmers, their conclusions are similar: the declining economic importance and the consequent exclusion of small-scale farmers, or simple commodity producers, from the Post-Fordist regime of accumulation. According to this reasoning, without the political measures of the Fordist welfare state, small-scale farms are subject to the economic laws of capitalism where the consolidation of production units through enlargement is one of the essential elements of capital accumulation. However, this traditional Marxist approach does not have the capacity to explain how some small-scale producers in Turkey managed to survive after a decade of economic restructuring and even adapt to the new economic conditions in agricultural production.

In the Turkish case, the dynamics of dispossession cannot be ignored in the transition from a Fordist regime of accumulation to a Post-Fordist regime as the share of agricultural employment fell from 38 percent to 25 percent in the 2000s, referring to the loss of two and a half million jobs in the 2000s (see Chapter 2). Still in 2006, the year with the lowest agricultural employment, the small-scale farms consisted of more than the 90 percent of total farms, holding more than the half of total arable land in Turkey. Therefore, the socioeconomic transformation in the rural landscape of Turkey requires a
more nuanced approach than the traditional Marxist proposals to explain how smallholders can adapt and preserve their significant role in agricultural production.

Recent studies emphasize that smallholder farms can adapt to new conditions brought by economic restructuring. Akram-Lodhi, Kay, and Borras (2009) criticize the traditional Marxist perspective of food regime theory as they emphasize that policies designed by international development agencies sought the integration of smallholders in deregulated markets. Small-scale farmers were encouraged to adapt new technologies and produce for private agri-food industries and retailers in these new markets. Hall (2012) draws attention to the expansion of commercial agriculture, as opposed to subsistence farming, in Southeast Asia where the dominant majority of producers operate at a small scale.

In a recent study on the integration of small-scale farmers in deregulated markets, Keyder and Yenal (2011) argue that small-scale farmers in regions of Turkey with favorable climatic conditions and irrigation opportunities continue to survive by employing multiple strategies. One strategy is diversifying the sources of household income with jobs outside of agriculture. Another strategy is offering their labor in large-scale farms, as Kautsky (1988) described in German in the early 1900s. The final strategy is participating in labor-intensive agriculture, such as vegetable farming where the small-scale farmers can rely on household labor with less dependence on wage-labor. Although, Keyder and Yenal do not consider mechanized industrial farming, e.g. maize farming, as a viable option for small-scale producers, I pointed to the increasing participation of small-scale farmers in industrial maize production in the longitudinal analysis in Chapter 4. The important question raised by this finding was how small-scale farmers managed to
participate. In this chapter, accounting for the expansion of production credits, I argue that small-scale farmers can benefit from industrial maize farming. But, the dependence of small-scale farmers on production credits in industrial maize farming exposes their investment to the exploitation by the agri-food industry.

**Entrepreneurial Exploitation**

I formulate the concept of "entrepreneurial exploitation" to explain how the dependence of small-scale farmers on production credits engenders an exploitative relationship with the larger industry. It is an exploitative relationship that is different than the labor exploitation described by Marx (1976). In labor exploitation, laborer commercializes (or sells) her or his labor in return for wages from the capitalist who owns the means of production and extracts the surplus value created by the laborer. However, the subject of exploitation in entrepreneurial exploitation is not the laborer, but the enterprise itself due to its dependence on financial credits.

Here, it is important to make a distinction between exploitation and credit relations. Mooney (1988: 156) argues that credit and tenancy are exploitative relations, since he finds similarities in the farmer-creditor and farmer–landlord relationships, as both claim a portion of the profit of an enterprise. However, it is important to clarify that Marx’ definition of rent is the portion of profits claimed by the landlord after labor exploitation takes place, and is not to be confused with exploitation (Ball 1980). Similarly, interests from credits, i.e. interest bearing capital, is not the result of labor exploitation but a claim on a certain share of profit -the surplus value created after labor exploitation (Marx 1981: 968). When the owner is a primary laborer in an enterprise, as in small-scale farming, that

---

37 See Chapter 1 for the more detailed explanation of labor exploitation.
rent and credit relationship might be a more direct one than what Marx was describing. Still, this relationship is not to be confused with labor exploitation due to the nature of the relationship. Categorically, the concept of *entrepreneurial exploitation* does not refer to this claimant relationship between a creditor or landlord and an investor. Rather, with this concept, I explain the relationship between the entrepreneur/investor and the larger industry creating the demand or supply, in this case maize farmers and agri-food corporations, respectively.

The hypothesis I intend to explore here is that the abundance of financial credits in the Post-Fordist regime of accumulation increased the participation of small-scale farmers and helped the accumulation regime to sustain its legitimacy, just as relatively higher wages for workers did in the Fordist regime. I refer to the legitimacy of a particular regime of accumulation as the wide-spread agreement depending on the consent of economic actors to adopt the new practices of production brought by the regime of accumulation and to participate in that regime. Gramsci (2012: 312) underlines the role of high wages in the legitimation of the Fordist regime. In the Fordist regime, workers gave consent to sell their labor under intensified production conditions in return of high wage levels.

Similar to high wages, easily accessible credit sources bolster the legitimation of the Post-Fordist regime of accumulation as economic actors adopt practices of the Post-Fordist economy geared to the needs of agri-food corporations. Just as high wages legitimized labor exploitation in the Fordist regime, agricultural production credits seem to legitimize the exploitation of investments in the Post-Fordist regime. Entrepreneurial exploitation is underlain by the participation of small-scale investors supported by
credits, who comprise a significant portion of the market in higher numbers (see Figure 5.1). This market condition can be seen in Turkey's agricultural sector where the majority of producers are small-scale and own a significant portion of arable land. While small-scale investors are dependent on the use of credits, to obtain an absolute increase in economic status, they have low bargaining power vis-à-vis the larger industry, which economically benefits from the cheap surplus production of their raw material source. On the other hand large-scale investors have the capacity to transcend the credit dependency in their access to markets by virtue of a wider access to resources and have high bargaining power vis-à-vis the industry. I demonstrate in this chapter how the difference in bargaining power between small-scale and large-scale maize farmers plays out in their relationship with the agri-food industry.

-Insert Figure 5.1 here-

5.2. Field Research Site, Data and Methods

Field Research Sites

I conducted the field research between September and October 2012 in Manisa, Izmir, and Sakarya. Izmir and Manisa are adjacent provinces in West Turkey (see Figure A2.1). Sakarya is a province in Northwest Turkey, by the Black Sea Coast. The selection of these provinces for the field research was based on purposive sampling strategy for maximum variation, which is the selection of cases to document "diverse variations" and identify "important common patterns" (Creswell 2007: 127).

In the strategy of maximizing variation I used two indicators: the past trends in industrial maize production and the land distribution structure in provinces. In Izmir and
Manisa, high-yield industrial maize farming started in the 2000s (see Table 5.1). As compared to this, maize farmers in Sakarya were already involved in high-yield maize production in the 1990s. I chose these three regions with high maize yields in the 2000s, because the difference in the past experience of maize farming may offer insights on how the area for high-yield industrial maize production increased in Izmir and Manisa in the 2000s, while it relatively decreased in Sakarya over time, while all three provinces had high-yields in maize production (cf. Figure 2.1).

-S-Insert Table 5.1 here-

Sakarya and Izmir-Manisa regions differ in their farm size structures. According to the Agricultural Census by the Turkish Statistical Institute conducted in 2001, Izmir and Manisa had similar farm-size structures with only 2 percent of total farms above 200 decares (see Table 5.1). However, small-scale farmers in Sakarya make up the majority in terms of numbers and area coverage. Because of this distribution of farms, I decided to interview more large-scale producers in Izmir-Manisa region, while I targeted interviews in Sakarya to emphasize the concerns of small-scale farmers.

In-Depth Interviews

I conducted thirty in-depth interviews. I recorded and transcribed 18 of the interviews, lasting six hours total. During twelve interviews, where participants did not give consent to audio recording, I took field notes. Immediately after every interview, I reviewed field notes and added details that I could not write down during the interview.

---

38 I am using the 200 deacre treshhold for the demarcation of large and small-scale farms which is the Turkey State Planning Organization's definition for the survival conditions in non-irrigated agriculture (DPT 2000b: 7) used by Sönmez (2008) as well.
I followed Friedland’s (2001) approach to studying various communities that are participating in the relations of production surrounding a particular commodity. I interviewed small- and large-scale maize farmers, intermediary merchants, state officials, and industry representatives. Farmers of different scales provided information on how large and small farms operate under different conditions. Merchants participate in the maize commodity system by provisioning seed, fertilizer, and other chemicals for production to farmers, and by providing raw materials from farmers to agri-food corporations. Since agri-food corporations are the last link in the chain from production to consumption of industrial maize, they have a crucial role over the industrial maize production markets, creating the necessary demand for production. Finally, state officials occupy positions which influence the whole commodity system by regulation, especially through public procurement and payment supports. Friedland (2001) emphasizes the importance of regulation surrounding a commodity system, which forms the rules of operation for economic actors.

Twenty of the interviews were with farmers, fourteen of which are small-scale. Two of my interviews were with ex-maize farmers in Sakarya who provided important insights on the decline of maize cultivation in Sakarya.\(^{39}\) Besides farmers, I conducted five interviews with merchants, two interviews with agri-food industry representatives, and two state officials. I interviewed one industry representative and one state official in Ankara, the capital city of Turkey.\(^{40}\)

\(^{39}\) Because all farmers who I interviewed were male, this research does not inform the gender dynamics that might influence industrial maize farming. Olhan (2011) documents that the majority of women employed in agriculture are informal family laborers as men comprise the majority of farm owners.

\(^{40}\) For further details on the distribution of participants according to their category and site, see Table D.1.
While interviewing different actors within the maize commodity system is necessary to understand different communities in the system, it is important for sampling purposes as well. I used the purposive sampling strategy in selecting participants to capture maximum variation, the same sampling method I used for selecting sites. Furthermore, this strategy is more important for in-depth interviews with a small number of cases, as small number of cases might be considered as a limitation for random sampling design which targets a proportional representation of the population (Weiss 1994: 23):

We are particularly likely to want a sample chosen to maximize range rather than a probability sample if our sample will be small. If we plan to work with samples much smaller than 60 (samples of 30, say) we may not trust random selection to provide us with instances of significant developments that occur infrequently. [...] Random sampling will provide us with a picture of the population as well as of particular instances, and sampling for range will ensure that our sample includes instances displaying significant variation.

I used a semi-structured interview guide (see D.1) where I ask standardized open-ended questions to participants. In the construction of the interview guide, I included the themes raised by İslamoğlu et al. (2008) and by Wolf et al. (2001). In their project, İslamoğlu et al. study seven strategic crops and their production patterns in Turkey, one of them being maize. They focus on several themes varying from use of credits to farm-size using close-ended questions. However they do not analyze the relations of production formed in the interaction between farmers and the agri-food industry, especially in an environment of expanding production credits.

İslamoğlu et al. (2008) do not examine formal contracts in maize production between farmers and firms. However, I would argue that approaching the relations of production within the maize commodity system from a contract farming framework is useful to grasp how farmers interact with the agri-food industry. Wolf et al. (2001) argue that contract
farming practices have four different components which vary according to sector. These components are described by Wolf et al. as input control, monitoring, quality measurement, and residual claimancy. Input control involves the standardization of inputs for expected yields of that particular staple, while monitoring and quality measurement is related to the cultivation methods and determining the compatibility of the product with the standards demanded by contractor firms. Finally, residual claimancy refers to the reliability of the grower for the quality of the product as the grower can be paid less than the contracted amount if the standards are not met by the grower. I have used these four components as themes in interview guides to understand how the relations of production among farmers, merchants, and agri-food corporations are shaped within the industrial maize commodity system in a Post-Fordist regime of accumulation.

**Method of Analysis**

In this chapter, I use a case study design where I interpret the data from in-depth interviews and secondary sources. The case study design here is based on a *holistic analysis* strategy where cases are examined in several interrelated aspects to depict a complete picture of the cases, as opposed to an *embedded analysis* strategy where the study focuses on only one theme across cases. Issues are presented in a *cross-case analysis* to underline important common themes and differences in dynamics due to the variation in contexts (Creswell 2007: 75). To provide a holistic understanding of the industrial maize production in Turkey, I use multiple cases for a comparison of different contexts (e.g. Sakarya vs. Izmir-Manisa) for a deeper understanding of the dynamics underlying the industrial maize production.
Weiss (1994: 153-4) refers to this strategy in analyzing qualitative interview data as "issue-focused analysis" where issues connected to each other are presented in a logical order. Coherent with the issue-focused analysis, first I discuss the changing relations of production with the increase in industrial maize production. This discussion serves two purposes. First it serves to validate the findings in previous empirical chapters (Chapters 2-4) in terms of the changing relations of labor in a Post-Fordist regime of accumulation. Second it provides a background for the discussion of the impacts of expanding production credits on the participation of small-scale farmers in industrial maize farming.

5.3. Findings

Relations of Labor I: Decline in Traditional Crops

The traditional cash-crop for farmers in West Turkey, where Izmir and Manisa are located, was cotton. This region was one of the most important regions for Turkey's cotton production during the Fordist period. Cotton production experienced a secular increase in area coverage alongside an emerging textile industry and state support policies between the 1930s and 1990s (Gencer et al. 2005). As a result of support policies within the framework of rural development policies in this era, Turkey was one of the ten most important producers of cotton in the world, increasing its production in cotton lint from 200 tonnes in 1961 to 900 tonnes in 2001.41

With the economic restructuring in the 2000s the number of cotton farmers started declining, although the production amount did not decline by virtue of increasing productivity. The area cultivated with cotton in Turkey declined from 654 thousand hectares in 2000 to 438 hectares in 2007, a decline by one third. However, the decline in

41 Data retrieved from TurkStat.
West Turkey has been sharper than the decline in general, as small farms comprise a larger share of farms compared to other cotton growing regions (i.e. South and Southeast Turkey). The area cultivated declined in West Turkey from 200 thousand hectares in 2001 to 75 thousand hectares in 2008, referring to a decline of 63 percent (Nacak 2008). Izmir and Manisa provinces being two of the largest producers in the region were no exceptions.

Osman, a large-scale maize farmer in Manisa was one of the farmers who shifted from cotton to maize farming about 10 years ago. "[We left cotton production] due to the economic conditions. The state support is very scarce. Previously [state support] was higher. Now they are importing [cotton] because it is cheaper for them." Small-scale farmer, Mahmut, had been farming maize for 20 years, but irregularly in combination with cotton and wheat. For the last two years, he told me that he invested only in maize, as he could not reach the "productivity" he desired from cotton. Ahmet, another small farmer told me: "For example, you could make a very decent amount of money from cotton production. In older days, about 20 years ago, you could make a lot of money."

Mehmet added:

If we had drip irrigation back in the days, we would have even made a lot more money. We did not know many things. So many things we learned afterwards... But now cotton does not bring money. Who would harvest it anyways? Cotton is about 1,100 Turkish Lira (TL). Labor cost is 700 TL. You are left with 400 TL. Then you have to pay for seeds. You have to pay for diesel, for pesticides. You cannot do anything [with the money left]. That is why cotton is not cultivated anymore.

Besides the decline in state support and market prices, labor costs were a deterrent for cotton farming not only for Mehmet, but for all farmers in Izmir and Manisa provinces. Harun, a large-scale farmer in Izmir explained his gradual transition from
cotton to maize over the years. He used to produce only cotton on about 300 hectares between the 1980s and 1998. In that period he did not prefer maize farming because the labor process in maize farming in the 1980s was too laborious, since there was limited availability of mechanization in separating the kernel from the cob. However, in 1998 he could not sell his cotton produce due to the deregulation in the cotton market. That was the year he decided to plant maize. In 2001 he increased his maize production from 40 hectares to 80 hectares, whereas the market volatility in cotton was not ensuring. After another failure to sell his cotton produce in 2003, he decided to completely shift to maize farming, which he describes as a "secure crop." With the development of the agri-food industry, there was a constant demand for his maize, and with the mechanization in harvesting in the 2000s Harun could cut down his labor expenses. Zihni, a small-scale farmer from Manisa told me: "I call this `lazy agriculture.' Maize is widely produced because its cultivation is so easy. Maize is the easiest crop for farmers to grow. You only sit in the coffee house [of the village]. There is no [manual] labor costs. You only pay for planting in the beginning, and for harvesting at the harvest time. It is the crop with the lowest labor expenses."

While, the prices in deregulated markets with low import protection and labor costs rendered cotton production not attractive for farmers in Izmir and Manisa, farmers in Sakarya faced different dynamics in their decision to give more weight to industrial maize farming. Sakarya is one of the provinces in Turkey where hybrid seed maize farming first started. Because of its subtropical climate along the Black Sea coast,
favorable for non-irrigated maize farming, Sakarya was one of the first two provinces where field experiments for hybrid maize were conducted as early as 1976.\textsuperscript{42}

Although industrial maize farming in Sakarya started earlier than Izmir and Manisa, as maize yields were already considerably higher at the beginning of the 1990s (see Table 5.1), farmers in Sakarya did not solely rely on maize as a cash-crop before economic restructuring took place in the early 2000s. Sugar-beet farming was another important source of income for farming households. The sugar-beet factory in Adapazari, the central district of the Sakarya province, was built in 1953 and, until 1999, it operated within the body of Turkiye Seker Fabrikalari A.S., a state-owned enterprise which currently accounts for 70 percent of the beet-sugar industry.\textsuperscript{43} However, the Izmit earthquake in 1999 considerably damaged the sugar-beet factory, which stayed inactive for 6 years. In 2004, within the framework of economic restructuring, the factory was on the agenda of privatization, regulated by the Board of Privatization. In 2005, the factory was sold to the Adapazari Sugar-Beet Producers' Cooperative, a producer cooperative with 65,000 members (Hürriyet 2013). Although the factory started operating after 6 years, the production levels were significantly lower, since the Sugar Law, passed in 2001, lowered production quotas for every beet-sugar factory (Aydın 2010).

As the level of sugar production declined, the amount of production contracts signed between farmers and the Adapazari Sugar factory declined. The area cultivated with sugar-beets was about 8,000 hectares in 1999, which declined to about 4,200 hectares in 2009.\textsuperscript{44} With the decrease in production capacity, the Adapazari Sugar-Beet Producers' Cooperative

\textsuperscript{44} Data retrieved from TurkStat.
Cooperative defaulted in 2012 on its credit debt to a private bank, which the Cooperative used to purchase the factory in 2005 (Hürriyet 2013).

The decrease in quotas and the factory’s financial instability influenced farmers I interviewed in Sakarya. As sugar-beet production was restricted with decreasing production quotas, it lost its attraction for farmers as a source of income. When I asked Zekeriya, a small-scale farmer, whether the beet price was adequate he told me: "It is not because the sugar-beet price is low. It has nothing to do with it. The issues with the factory caused people to withdraw. When the factory got privatized, it did not pay regularly or provide other necessary services. It was not worth it anymore after they tortured us for the past four-five years." Still, Cengiz, another small-scale maize farmer who started farming four years ago after he inherited his father's property, invested his whole three hectares into sugar-beet in the year he started farming:

It is not really because I am an experienced farmer. I am only farming for the last four years. When I planted sugar-beet in my first year, people around laughed at me. They called me "stupid," "for sure he cannot manage to make any money from 3 hectares." Everyone laughed at me. There is a man, called Oktay. He is a senior farmer. He is really good in sugar-beet farming as well. [When he saw the sugar-beets on my field] he jumped down his tractor and started kissing the leaves! He has his field on the other side, his leaves are tiny. And I cannot even walk through the beet leaves in my field. He asked me: "Son, how have you done?" I told him "I have not done anything special." I waited to spread the fertilizer until it started raining, and spread it during the rain. Then, I did not let any weed grow. [...] Others took out the weeds with machines, that choked the beets. Every day, I weeded the field with my hands. Others’ beets were tiny, I could not even lift one of mine by myself. Had I not done so I would have a deficit of at least 10,000 TL for sure. One friend planted on 15 hectares, he had a deficit of 9,000 TL. He had to sell his tractor to cover his debt. On the other hand, I just covered my expenses. How did I do that? I did not get anything from the Cooperative [that owns the factory]. I only borrowed 7,500 TL [for the inputs]. I bought a portable weed trimmer. In return, I received between eight and nine sacks of sugar and about 10,000 TL. At the end, I did not have any debts.
Cengiz invested more manual labor to grow sugar-beets than other beet farmers. Yet, he barely made any money from sugar-beet farming. The deteriorating market conditions and infrastructure deterred farmers from sugar-beet production in the 2000s. On the other hand, maize farming involved no drudgery for farmers in Sakarya, similar to farmers in Izmir and Manisa. Zekeriya summarized how easy maize farming was: "When the harvesting machine arrives we go to the field stepping on the back of the shoes. The machine operator does the harvesting, loading to the trucks, and takes off as you enjoy your cigarette in the shade."

Relations of Labor II: Market Structure for Maize

The common practice for the agri-food industry to supply maize is using merchants as intermediaries as they do not approach producers directly. Memnun, a merchant in Izmir, told me: "Now we are right in the middle. One is producing, the other one is processing. I am the intermediary. We can call it commission as well. Or merchant. We buy from farmers and sell to factories. We provide the transportation."

Two merchants I interviewed in Manisa and Sakarya, Emin and Engin respectively, were rather large-scale merchants who travelled outside of their region after the harvest season was over. One of their important destinations outside of their regions was South and Southeast Turkey where there are more large-scale farms. Emin told me that when he travels to Southeast Turkey, he does not deal with farmers who own a maize farm smaller than 100 hectares. Engin explained that the yields were rather lower in the Southeast, that is why he did not prioritize sourcing maize from that region. He would travel only to "add

45 “Stepping on the back of the shoes” is a Turkish phrase used to describe an extreme lack of effort, even to put the shoes on properly, and instead pressing down the back of the shoes. The act of stepping on the back of the leather shoes is also a stereotype affiliated with the traditional Turkish machismo identity.
some extra business." However, all four merchants I interviewed, two in Sakarya, one in Izmir, and another in Manisa emphasized that they did not have a lower threshold in terms of production size in their own regions to buy farmers' produce. Engin elaborated: "You cannot select the farmer whose produce you are buying. You do not have the luxury to say 'your produce is small, your produce is moist.' You buy from whomever brings his produce." Emin made clear why they do not have the "luxury" of turning away small-scale producers:

[In my region] the landholding structure is not consolidated. Yesterday, [a farmer] came, he has 400 hectares, and then brother Osman [the large-scale farmer respondent from Manisa]. I mean there is not even ten farmers with large farms. The rest has very small farms. 2 hectares, 3 hectares, 20 hectares... Maybe there are 20 farms with 30 hectares. In terms of [this region], if there are ten large-producers, I do business with six of them. May Allah watch over them [large-scale farmers who do business with me]! Nevertheless I buy from small-scale farmers as well.

The terms of exchange between merchants and the agri-food industry varied according to the size of merchants. Emin and Engin, two large-scale merchants sent the majority of the maize to one firm, a firm that is a large purchaser in the region. In the cases of Engin and Emin, these firms were active in the feed-processing sector. However, small-scale merchants interviewed, Memnun in Izmir and Nuri in Sakarya, received orders of limited amounts from various firms, but did not have a major customer as Engin and Emin have.

The major buyers from merchants interviewed were in the feed-processing sectors. The starch-production industry comprised only a small-fraction of their total sales, and firms from this industry were not regular customers. They all mentioned Cargill as the buyer from this industry using merchants as intermediaries as well. While merchants underlined that there was no formal agreement between the merchants and farmers in the
maize exchange, Engin told me that he had heard of contract farming practices in Southeast Turkey. Also, Veli, a veteran maize farmer in Sakarya implied that Cargill, the transnational agro-food giant, sources a portion of its raw materials by contracting farmers. During the whole duration of my field research, I made multiple attempts to get into contact with Cargill, using different channels, to find out about their supply mechanisms. However all my attempts remained unanswered. Still, according to the indirect information I received from multiple respondents, Cargill was a major buyer of maize produced in different regions in Turkey, using merchants as intermediaries in West and Northwest Turkey. However, the use of contracts in South and Southeast by Cargill in the supply chain remains unclear in this study as the firm decided to keep its secrecy about its operations.

Coinciding with a growing demand by the agri-food industry for maize, the maize market expanded in the 2000s. Memnun, the small-scale merchant from Izmir told me: "If [the farmer] wants to sell [his maize produce] he would find customers. I would not know why if he does not want to. Of course there is always demand." Therefore, the maize market is a securer market for farmers, compared to cotton or sugar-beet markets after economic restructuring. When I asked about how farmers decided to expand their maize production, Cemal, a representative of a farmer organization in Sakarya, responded:

  We do not have any problems on the side of expansion of production, everyone is producing maize. I mean, farmers produce this [maize]. Why? [Because] the farmer has nothing else to do. Also, because there is this constant mechanization [of agriculture], the farmer is relieved. Does he not make any money? Of course he makes money! But with every passing year we think more about the money we are making. That's where the problem is.
Cemal’s perspective on the expansion of maize farming in Sakarya pointed to another dynamic of maize farming than the growing demand by the industry. As indicated in the previous subsection, farmers did not have alternative crops to maize in the region. However, he emphasizes the convenience of mechanization for farmers. Finally, he underlines the financial returns from maize farming that made it attractive to farmers. However, with further analysis, I found out that the financial returns received from maize farming is not the same for every farmer.

Relations of Labor III: Differentiation in Farm-Gate Price and the Role of Production Credits

Following Cemal’s recommendation, I explored how maize prices were determined in the market. When I asked farmers and merchants about any potential disagreements about the quality of the produce, all respondents answered that the moisture of the crop is an important factor in the prices farmers receive. Above a certain level of moisture, maize cannot be stored for extended periods and processed without the use of an expensive drying process. Emin, the large-scale merchant from Manisa, helped me to understand how the negotiation over the price of the crop worked:

We tell the farmers the price for one kilogram of maize with 14 percent moisture. If the produce has a higher moisture level, we discount 7 TL per percent of moisture, accounting for the loss after drying. The system is already set. We send [the trucks], get the produce, measure [the moisture of] the sample. If it is at the right moisture level we ship it right away [to the feed factory]. If it is not, we put it in the dehydrator. [...] The system is already set, everyone knows the rules. There would not be any problem [in bargaining].

The base price of fourteen percent humidity, to which Emin referred, forms around the intervention price if the Grain Board decides to buy maize. Necla, a state official who
had broad knowledge on maize markets explained to me that the Grain Board emerges as an actor that intervenes when necessary to keep the balance between supply and demand. Decisions about public procurement and maize imports are made according to market balances. She told me the producers and consumers (agri-food firms in this case) should be balanced to avoid a supply shortage. She added: "We are not in a position to protect the producers all the time."

The precarious balance Necla mentioned is pursued by the Grain Board based on the costs of production and international prices. However, the decisions for public procurement to keep the market balanced might not always be as precise as Necla explained. When the Grain Board decided to stop purchases in 2006 and 2007, farmers reacted by significantly decreasing maize production. In 2008, to boost maize farming, the Grain Board distributed the highest amount of public procurement in the 2000s, nearly one fifth of total production (see Chapter 2). In the following years, the Grain Board continued with public procurements, but at lower rates, below five percent of the yearly supply. Emin, the large-scale merchant in Manisa explained: "The Board only makes interventions. It does not buy. It does everything not to buy. It only says 'I am in the market as well!' [...] In our surroundings we do not leave anything for the Board [to purchase]. Our prices are better. We provide better services to farmers."

Savas, a large-scale maize farmer in Izmir, verified what Emin told me about the Board purchases. Until seven years ago he sold maize to the Board, but later the prices they are offering were not as attractive considering the transportation costs of the crop undertaken by farmers. Unlike the Board, merchants internalize transportation costs of the produce bought from farmers. Kemal, a small-scale maize farmer in the same region,
who also does vegetable farming, had been farming for seven years. He went to the Board's local office to sell his produce only once. After that he avoided selling to the Board due to the costs of transportation and long waiting lines, whereas dealing with merchants is more efficient in terms of transportation and timing. In Manisa, all farmers I interviewed complained about the logistical difficulties of bringing their produce to a local Board office. Also they mentioned that experts in Board offices had more standards in terms of moisture and bad harvest. For farmers in Sakarya the situation was more difficult as the local Board office was closed, and the ground was rented to merchants as grain storage. When I asked Necla, the state official, about Sakarya, she told me that the agri-food firms had been buying all the maize produce in Sakarya, and the Grain Board had not been purchasing maize in the region.

Declaring a reference price or importing maize were the means of market intervention for the Grain Board (also see Chapter 2). The calculations by the Grain Board in deciding to intervene in the maize market and the pricing by the merchant according to the moisture in maize produce seem to be standardized procedures, or, as Emin expressed, a set system where everyone knows the rules.

Although the negotiation process and the determination of the price at the farm gate seems to be standardized, I noticed during interviews with farmers a significant difference in bargaining power between small- and large-scale maize farmers. Large-scale farmers had the capacity to store a portion of their crop for sale after the harvest season when prices were higher. However, small-scale farmers could not endure waiting until after the harvest season. Cengiz, the small-scale farmer who cultivated sugar-beets in his first year of farming made clear why small-scale farmers cannot endure: "You have
no options. Of course you have debt. You have to sell it to the merchant. You bought the fertilizer, you bought the seed [from the merchant]. But if you pay in advance, you can put [the crop] somewhere and wait to sell it later." The small-scale farmers’ need to sell the produce during the harvest period due to their debts is a well-known phenomenon (Street and Sullivan 1983). However, I want to emphasize that the financialization phenomenon represents something more profound than the need to sell during because of debt. I am arguing here that with financialization becomes a structural dynamic of the Post-Fordist regime of accumulation whereby the small-scale farmers’ investment becomes the mechanism for exploitation.

All small-scale farmers I interviewed had to use credits frequently since they did not always own the material resources for advance payment of production inputs.⁴⁶ They sourced credits from formal or informal sources to buy the necessary inputs for production. The common formal sources for production credits are the Agricultural Credit Cooperative and the Bank of Agriculture. Kemal, the small-scale farmer from Izmir, told me that he was able to access production credits for inputs easier for the last six years. Also in Sakarya, another alternative source of input credits was that the Sugar-Beet Producers’ Cooperative farmers receive inputs and pay back their debt to the Cooperative at the harvest time with interest.

However, if the farmer has difficulty in paying back his debt to the formal creditor institution, he resorts to the informal source: the merchant who also sells maize seeds and

⁴⁶ Here I am focusing on the basic and fundamental investments in participating in industrial maize farming: mainly commercial hybrid seeds, pesticides, and fertilizers. All small-scale farmers expressed their flexibility in sharing specialized equipment (e.g. seed drill, sprayer) so that they did not need financial credits to capitalize such high-cost equipment.
fertilizers. Some farmers I interviewed trusted in their relationship with the merchant at a degree that they do not use any formal credit institution. Zekeriya, the small-scale farmer from Sakarya explained to me this relation based on trust:

We buy [the inputs] from the merchant. With the condition to pay at the end of the year... Whether or no, after our financial situation declined... [If I had cash] I would buy in advance from the store. In our surrounding, when you trust a merchant you buy from him. May Allah protect, if you are in need one day in future, you can tell him "give me 500 TL." He discounts [from the sale] that at the end of the year. OK, you can go and sell it for 50 kurus more [to another merchant]. But if you are in need tomorrow... If I tell the merchant "I have maize to harvest in one month, give me 1,000 TL" he would discount 1,000 TL [later]. But if you trust the extra 10 kurus you will make [by selling to another merchant than the one you bought the inputs from], you would shut the door between him and yourself. It is really important to keep the relation. If you cut off the relation, you would face difficulties. You would not have money to buy fertilizer. He [the merchant] would tell you "the other day you did not sell your maize to me, but went to another one." Those are important.

While the relation based on trust was important for Zekeriya, Veli, the veteran maize farmer in Sakarya quit maize farming about 15 years ago. He was one of the pioneers in his region using commercial hybrid seeds early in the 1980s, however, he stopped commercial maize farming due to this very relation based on trust and instead focused on animal husbandry:

Unfortunately, the majority [of farmers] buy with credits, and the farmers are crushed under the weight of interests. At the end of the year, the seeds cost more by 25-30 percent. Here or in the East [Turkey], only ten percent of the farmers can buy fuel used in production in advance. The rest buys all via credits. [...] Farmers face two challenges. First, they face the challenge of not being able to buy by paying in advance, but by via credits. Second, it is dependent on the merchant's personality.

As Veli emphasized, this trust relation between the farmer and the merchant is not formal, and it is open to abuse by the merchant. If the merchant was dishonest and

---

47 I call this an informal source of credit because merchants fulfill the same role of supplying credits to farmers for production even though they are not a formal credit institution.

48 100 kurus = 1 TL
violated the terms of the informal agreement, the farmer would not have leverage against him. Adnan, a large-scale farmer in Sakarya, had been the victim of a swindling merchant. Although, Adnan knew this merchant for 33 years, one day he disappeared with Adnan's produce worth fifty hectares. Nineteen more producers from Adnan's village were swindled by the same merchant.

While being swindled by a merchant is not common, it is not unheard of. The more common feature of this trust relationship between the farmer and the merchant is that the farmer returns his produce to the same merchant from whom he is receiving credits. Because there is no formal contract between farmers and merchants, this expectation is based on an informal agreement. Memnun, the small-scale merchant in Izmir explained to me that farmers who received input credits from him also "preferred" him as the primary buyer. Emin, the large-scale merchant in Manisa explained how this "preference" of farmers worked:

It is sort of a controlled cultivation. The farmer, to whom you gave his seed, fertilizer, chemicals, has to sell to you... Or [in other words] his first preference is selling to you. It is similar to what you mentioned [contract farming], but we do not define it in the beginning. The farmer can sell somewhere else, and bring my money back. But my real dream is financing thousands of tons of seeds and fertilizers and buy all the produce by setting a system. You can make all this region cultivate maize, I wish we could shift to this system.

As Emin mentioned, there is no legal obligations for the farmer to sell his produce to his creditor merchant. However, it is clearly not a matter of a "preference" either, since this action would have consequences. In the quotation from Zekeriya above, Zekeriya mentioned that if you lost your relation to your creditor merchant you would face difficulties in receiving inputs in future. This happened to Cengiz, the small-scale farmer in Sakarya.
This merchant is my friend from the military service.\textsuperscript{49} His son is working at the store as well. I got the fertilizer and the seed from him, and planted maize. About ten days before the Feast of the Sacrifice\textsuperscript{50} we were really short on money. I thought it was time to harvest, the maize was already ripe. It could not wait anymore, the stalk was about to collapse [because of the weight of the maize]. I called the merchant and told him that I needed to harvest it. He told me "brother Cengiz, we cannot buy it before ten days after the holidays." So, that means he cannot harvest it in 25 days! I cannot endure 25 days! Anyways, I went on and sold the maize to his cousin's company. Then I went to [the creditor merchant] and paid my debt. He asked me why I did not sell to him, but he already knew that I sold to his cousin. As I told you, there are spies in the village [telling merchants about farmers]. Do you know why he wants to get it from me? Because he will make extra money by discounting due the moisture of the crop. This year, I went to his cousin to buy fertilizer, he refused to sell fertilizer to me! See... I went to the Sugar-Beet Producers' Cooperative to buy fertilizer.

Cengiz's relationship with the merchant was an informal one but his informal relationship with the merchant, based on "trust" and "preference" worked against Cengiz when he violated the terms of the informal agreement. Saffet, an ex-maize farmer in Sakarya, gave another example about how this informal relation between the merchant and the farmer could work against the farmer. One year, his financial situation worsened due to another credit debt in his family, and his creditor merchant found out about this through an "informant" in the village. His merchant assumed that he would not be able to pay his debt for inputs. Before the maize was ripe, he harvested Saffet's produce to secure his money. Saffet continued:

He called me, telling "I am sending the harvester tomorrow." I told him that the maize is still bright green. You cannot even measure its moisture. I told him that all my produce [of 7-8 hectares] will be yours. It is a sin to harvest this maize right now! You could not even find harvester operators out in the market yet.

\textsuperscript{49} The military service in Turkey is mandatory for every male citizen, currently varying between 6 and 15 months according to your education level and your military rank for which you qualify. Therefore, people met during the military service go through similar challenges and form a special bond even after the military service.

\textsuperscript{50} Feast of the Sacrifice is a religious holiday in Islam when animals are sacrificed. In Turkey it is customary for families to expend on food and clothes over religious holidays more than usual. In Turkey, over the last decade private banks started special credit programs for expenditures for religious holidays.
Yetkin, then I had enough! He brought the moisture tester; of course it did not work. Because of my debt, I lost my maize produce for nothing! That is why I am not growing maize anymore.

Saffet's experience is an of a severer example for the enforcement of the unequal bargaining power that is held by crediting merchants. As soon as the merchant decided to harvest the maize to secure the amount of the loan, he caused a serious financial loss for Saffet, who later quit maize farming and began to grow vegetables and raise animals.

**Discussion and Conclusion**

Small-scale farmers play an important role in maize production in Turkey since they began adopting the new technological and trading practices over the last decade. In the regions I conducted the field study, small-scale farmers comprised the majority in maize farming. In the district of Sakarya, where the merchant Engin operated,51 large-scale maize producers above 20 hectares accounted for .01 percent of maize producers, as of 2010. In Emin's district in Manisa, as of 2009, small-scale farmers below 20 hectares represented 96 percent of total maize farms, and occupied 79 percent of the field coverage of maize farms. In Memnun's district in Izmir, farmers below 20 hectares accounted for 95 percent of all maize farmers, and they occupied 76 percent of the total land coverage invested in maize cultivation.52 While small-scale producers in these regions represent the majority of production, the study of the differential relations of production they establish with the agri-food industry is crucial to understand how small-

---

51 I do not disclose the names of the districts within provinces to keep anonymity of participants.
52 These records have been retrieved from the Farmer Registry System data available at the local branches of Directorates of Agriculture, the state institution providing public assistance to farmers and keeping records of agricultural production.
scale producers (i.e. simple commodity producers) persist in a new political economic configuration.

The importance of the persistence of small-scale farmers relates to the contemporary discussion between the traditional Marxian perspective (e.g. Araghi 2009; McMichael 2009), precluding the analysis of persistence, and more nuanced perspectives (e.g. Akhram Lodhi et al. 2009; Hall 2012) which consider the potential integration of small-scale farmers into the Post-Fordist regime of accumulation. This study also has implications for policy discussions involving small businesses and their adaptation to new economic conditions after structural adjustment in an age of financialization. In framing the changing relations of production within the context of the Post-Fordist regime, I used commodity system method (Friedland 2001) to study the role of different communities involved in industrial maize farming.

The first two sets of findings in my field research provide cross-validation of findings in previous three chapters. The first set of findings pertained to the transition from traditional crops to high-yield maize epitomizing the shift from a Fordist regime of accumulation to a Post-Fordist regime of accumulation. While the traditional crops, which were supported by various government institutions, helped farming communities to sustain a certain level of welfare, the instability in these markets after economic restructuring schemes, prescribed by international financial organizations, rendered these crops unattractive for farmers in Turkey. The cases of cotton farming in the Izmir-Manisa region and sugar-beet production in Sakarya demonstrated this. The dynamics underlying these two cases differed in their patterns, as cotton production became unprofitable, while the privatization of the state-owned sugar factory combined with reduced production
quotas destabilized the sugar-beet market in the region. However, in both cases farmers, small and large, resorted to maize farming for two main reasons. First, farmers were able to cut back on labor expenses with mechanized farming technologies. Second, market prices and the constant demand by the agri-food industry made high-yield maize farming profitable for farmers at least for the time being (cf. findings on the commercialization of industrial maize farming in Chapters 3 and 4).

The second set of findings relate to the importance of political regulation in the Post-Fordist regime of accumulation. The role of the state in agricultural production shifted from that of welfare provider among rural communities to a significant catalyzer of the integration of farming communities into commodity systems underlain by the demand created by agri-food corporations (cf. Chapter 2). The role of public procurement by the Grain Board was not supporting the welfare of rural communities, but instead served to encourage farmers to participate in industrial maize farming for feed and sweetener corporations.

The last set of findings helps to explain how simple-commodity producers (small-scale maize farmers in this case) managed to survive in an economic environment where the political institutions protecting them from international competition were absent. Based on the example of industrial maize production in Turkey, I would argue that the expanding supply of production credits enables small-scale producers to participate in this new economic setting. However, their investments in their farm operations through debts expose them to exploitation by the agribusinesses selling the inputs and purchasing the outputs. Small-scale farmers I interviewed did not have the capacity to store their produce and sell it at a later time. Instead they had to sell their produce at harvest time
when the prices offered from merchants were at the lowest level during the year. Because of the number of small-scale farmers in relation to the number of agribusinesses, the small-scale farmers are at a structural disadvantage in terms of market power. This is structural dimension of the Post-Fordist regime of accumulation which has been largely ignored by more traditional Marxian approaches, due to their focus on processes of dispossession.

Small-scale maize farmers, who participated in industrial maize farming because of higher revenues and relatively lower production costs via mechanization, were able to generate enough profits from maize farming to continue farming, just as wage-laborers might be able to generate enough income to sustain themselves. But just as surplus value is extracted from the wage-labor process, the small-scale farmers who invest in the production of raw materials for agribusinesses are exploited by those agribusinesses because the agribusinesses have unfair market power. And whether the sources of credits were formal or informal, the debt undertaken by small-scale farmers was the influential factor in the process. It is that process that I call entrepreneurial exploitation.

It is important to note that when farmers depended on informal credit sources to support their production, the exploitation of their investment deepened. If farmers sourced the inputs from merchants to be paid at harvest time, they were restricted in their options of buyers. If they did not sell their produce to their creditor merchant, they faced difficulties supplying inputs in the future from the same merchant, thus limiting farmers' future marketing options. This also indicates that small-scale farmers' already limited bargaining power, due to using production credits, is further eroded with a dependence on merchants as creditors. As one feed factory manager I interviewed told me: "Dealing with
large-scale farmers is difficult. Small-scale farmers are easier. You send the trucks, pay
them, receive the produce." It is likely the case that all agribusinesses prefer dealing with
customers that have little bargaining capacity.

Table 5.1. Comparison of Maize Area, Yield, and Share of Large Farms in Land
Coverage and Total Farms in Izmir, Manisa, and Sakarya between 1991 and 2009

<table>
<thead>
<tr>
<th>Province</th>
<th>Year</th>
<th>Sown area (decare)</th>
<th>Yield (kg/decare)</th>
<th>Share of Large Farms in Land Coverage in 2001 (1)</th>
<th>Share of Large Farms in Total Farms in 2001 (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Izmir</td>
<td>1991</td>
<td>24,990</td>
<td>486</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>61,100</td>
<td>196</td>
<td>16%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>75,930</td>
<td>854</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>158,721</td>
<td>979</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manisa</td>
<td>1991</td>
<td>24,290</td>
<td>567</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>92,700</td>
<td>501</td>
<td>12%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>222,710</td>
<td>1,111</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>310,237</td>
<td>962</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sakarya</td>
<td>1991</td>
<td>573,020</td>
<td>790</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001</td>
<td>535,790</td>
<td>592</td>
<td>1%</td>
<td>0.05%</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>445,640</td>
<td>966</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>447,218</td>
<td>830</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: (1) Percentages are calculated by the author.
Source: Turkish Statistical Institute, Agricultural Census 2001

Figure 5.1. Entrepreneurial Exploitation
Appendix D

Table D.1. Distribution of Participants According to Category and Site

<table>
<thead>
<tr>
<th>Category</th>
<th>Izmir-Manisa</th>
<th>Sakarya</th>
<th>Ankara</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small-Scale Maize Farmer</td>
<td>7</td>
<td>6</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>Large-Scale Maize Farmer</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Ex-Maize Farmer</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Merchant/Cooperative Store</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Industry Representative</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>State Official</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>13</strong></td>
<td><strong>2</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

D.1. Guides for Interviews

Guide for Semi-Structured Interviews with Farmers

Questions for Type and Scale of Farming

1) For how long have you been growing maize?

2) What other crops do you grow besides maize? How much hectarage in maize do you grow? What proportion maize in comparison to your other crops?

3) What portion of your farm income comes from maize production?
4) If farmer grows more maize now than in the past: What crops did you produce more before shifting to maize?

5) How often do you use workers on your field?

6) How large is the area you grow maize on, including the land you own and you rent?

7) How do you provide machines that you need in maize farming, such as tractor, and maize harvester?

Questions on the Conditions of Industrial Maize Production

1) How do you source your inputs, including seeds, fertilizers, and chemicals?

2) How do you source your financial credits for maize production?

3) How often do field experts visit your land to advise you on production? Are they from Agricultural Directorates or specific agribusiness firms?

4) Which sector is the primary buyer of your maize produce?

5) How do you negotiate with merchants about the quality and price of your produce? Is there a formal contract, or is it informal?

6) How do you deal with merchants in case of a disagreement over the produce quality?

7) How do you decide to expand or shrink the land for maize production every year?

Questions on Government Supports and Regulations

1) How did premium payments influence your decision to grow maize?

2) How did direct payments based on land size influence your decision to grow maize?
3) How do state purchases through the Grain Board influence your decision to grow maize?

4) Besides premium payments and direct payments, what kind of legal regulations would you expect to profit more on maize?

Guide for Semi-Structured Interviews with Intermediaries and Firm Representatives

1) What are the policies and practices for providing inputs, including seeds, fertilizers, and chemicals to maize farmers?

2) How do you provide financial credits for maize production to farmers?

3) How often do you send field experts to visit farms to advise on maize production?

4) How do you select farmers for production contracts?

5) How do you negotiate with farmers about the quality and price of your produce? Is there a written contract, or is it verbal?

6) How do you deal with farmers in case of a disagreement over the produce quality?

Guide for Semi-Structured Interviews with Officials from the Grain Board of Turkey and Ministry of Agriculture

1) How does your institution decide on purchasing maize from farmers?

2) How do you decide on the type of maize for purchase from farmers?

3) How does your institution decide on importing maize from abroad?

4) How do you select the country to import maize from?

5) How do you determine the amount of production premiums for maize?
6) How does your institution evaluate premiums and support prices as different policy tools for agricultural development?
Conclusion

Overview of Findings

Rural communities in Turkey experienced drastic changes related to the economic restructuring after the 2001 financial crisis. The policies of economic restructuring, initiated by the International Monetary Fund and the World Bank, opened a new era in rural development based on the changes in the agricultural system. The parastatal organization in the Union of Agricultural Sales Cooperatives was abolished, transforming the cooperatives under the Union into joint-stock companies. Subsidies in production credits and support prices were phased out. The state-owned enterprises in tobacco, cotton, tea, and sugar industries were put on the agenda of privatization. Related to the decrease in state support to these traditional crops, which constituted the main pillars of the Fordist rural development policies in Turkey, production in these crops declined significantly in the 2000s (Aydın 2010).

Coinciding with the erosion in the production of traditional crops, employment in the agricultural sector fell from eight to five million jobs between 2001 and 2007. However, this figure crept up to six million by 2012. Güven (2009: 181), referring to new instruments of direct income payments and premiums, argues that "rural transfers ensured that the inevitable decline of the sector stayed on a path of 'soft landing' for the mass interests involved." Güven contends that the JDP government could not completely liberalize agricultural markets because this sector still represented one-quarter of the jobs available in Turkey at the end of the 2000s.

However, in Chapter 2, I argue that the transformation in the role of the state institutions is underlain by the long-term target: integrating farmers in the Post-Fordist
regime of accumulation. Using, what Jessop (2007) calls, the strategic relational approach, state institutions used various tools in different combinations to accommodate Turkish farmers to industrial maize farming, which is a sector driven by the demand for animal feed and sweetener industries. Using public procurement through the Grain Board, and compensatory payments in the form of premiums as incentives, the JDP government managed to increase maize production in the 2000s. Also, maize imports were used as an efficient policy tool to suppress domestic prices. However, when President Sezer, who was elected by the National Assembly before the 2001 financial crisis, ordered the investigation of maize imports, the JDP government stopped maize imports in 2006 and 2007. To prevent an increase in domestic prices, the Grain Board stopped making purchases and providing a base price. When farmers reacted to the halt in public procurement and the amount of premiums by reducing maize production in 2006 and 2007, the Grain Board purchased maize at record levels and the government increased the rate of premiums in 2008.

Based on the findings in Chapter 2, I contend that the state institutions acted within **structurally inscribed strategic selectivity** in the employment of different policy tools to adapt farmers to the emerging Post-Fordist regime of accumulation, in this case, industrial maize farming. The strategic relational approach, that I adopt here, differs from Bonanno and Constance (2008) who argue that the state institutions neglect the interests of socioeconomically disadvantaged groups in a Post-Fordist regime. Also, from a critical policy perspective, my point of view is different from Güven (2009), who argues that government support to agricultural production continued in the 2000s to sustain political support from rural communities within a patronage relationship. However, similar to
Glenna (2003), I argue that the government support was not designed to sustain the welfare of farming communities, but to consolidate an economic structure where the interests of agri-food industry is primary. Nevertheless this does not indicate that the interests of farmers are ignored by political decision-makers.

In Chapter 3, I explore how Post-Fordist relations of production explain the expansion of industrial maize farming over space. Based on the spatial statistical analysis, I find that industrial maize farming expanded geographically in the West, South, and Southeast Turkey. Provinces along the Black Sea coast had lower maize yields compared to other provinces, since this region was the traditional maize farming area mainly for household consumption. I also find that the importance of maize as a cash-crop for farmers increased with the increasing level of industrial maize farming. Provinces where large-scale farms were more prominent had higher levels of industrial maize farming. However, large farms in industrial maize farming were less important in 2009 than they were in 2007, when there was no public procurement by the Grain Board. Finally, I conduct a preliminary analysis of change over time in this spatial analysis and find that provinces with higher levels of increase in the 2000s had higher levels of industrial maize farming in 2009. These findings overlap with the food regime theory's (e.g. McMichael 2009) postulations on the expansion of corporate farming practices in a Post-Fordist regime, where agri-food businesses significantly influence agricultural systems. However, they do not support sufficient evidence for the food regime theory's hypothesis on the exclusion of small-scale farmers from the Post-Fordist regime. While the provinces with large-scale farms were more likely to have higher levels of industrial maize farming, the models used in this chapter, due to their cross-sectional design, do not
fully explain the regional expansion in the western provinces where the majority of farms operate at a small scale.

The comparison of regions with small-scale farm structures to the ones with large-scale farm structures in their development trends calls for a longitudinal design, which I conduct in Chapter 4. Yet, the spatial statistical analysis is crucial to explain the spatial expansion of industrial maize farming in Turkey. Therefore, this analysis contributes to the commodity systems analysis (e.g. Friedland 1984; 2001) as it shows how the relations of production varied over space at the subnational level. By explaining the spatial features of the maize commodity system, I demonstrate how the relations of production adjusted depending on regional dynamics.

In Chapter 4, I explore how changing relations of production influence industrial maize production over time. The longitudinal study revealed the trend of higher industrial maize production over time. Results show that steadily increasing industrial maize production accompanied greater integration with agri-food industries, which was supported by government policies through premium payments. Provinces, where the importance of maize as a cash-crop for farmers was low in 2000, had a higher rate of increase in industrial maize production, catching up with the provinces, which had a higher importance of maize as a cash-crop in 2000. This indicates that in the 2000s the importance of maize as a source of farm income across provinces has increased over time. Consistent with this finding, revenues received from maize farming was an important factor for farmers to increase their investments in maize farming. Provinces with higher mechanization in agriculture had a higher level of maize farming than the ones with lower mechanization. Finally, large-scale farming regions had a higher level of
maize production than that of the small-scale farming regions. However the difference between large-scale farming regions and small-scale farming regions did not change over time, as farmers in small-scale farming regions increased their investments in maize production as well.

The findings in the longitudinal analysis pertain to critical studies in sociology of agriculture (e.g. Araghi 2009; McMichael 2005; 2009) as they argue that small-scale farmers are excluded from a Post-Fordist agricultural system due to the change in the relations of production. However, the finding on the influence of land distribution does not support this argument. Instead, it indicates that small-scale farmers, as simple commodity producers with lower productivity (Friedmann 1978; 1980), increased their investment in industrial maize farming. Therefore, results in the longitudinal analysis of the relations of production in maize farming support studies which suggest the integration of small-scale farmers in a Post-Fordist regime with changing production practices (Akram-Lodhi, Kay, and Borras 2009; Hall 2012).

In Chapter 5, the first set of findings based on interviews in Izmir, Manisa, and Sakarya indicate that maize farming depends on agri-food firms at all stages; from providing inputs, to harvesting and selling the produce. Therefore, the findings from the qualitative data support the previous statistical findings on the change in the relations of production within a Post-Fordist regime. I also find that the dependence of small-scale farmers on production credits in industrial maize farming exposes their investment to the exploitation by the agri-food industry. Small-scale producers are under the pressure of debt due to production credits when they sell their produce, unlike large-scale farmers. Nonetheless, small-scale farmers in the regions, where I conducted the field research,
comprise the majority of maize producers, and perceive benefit in corn farming as it generates higher income for the household than traditional crops. Furthermore, the agri-food industry and merchants benefit from the geographically wide structure of small-scale farming as they can source maize at lower costs during the harvest season, when the repayment of production credits is most pressing for small-scale farmers. This study finds that small-scale farmers became a substantial part of the industrial maize farming, and it calls for a revision in traditional Marxist studies (e.g. Araghi 2009) on the changing relations of production within the Post-Fordist regime. As the focus of these studies is the dispossession of socioeconomically disadvantaged groups via financialization, they do not pay sufficient attention to how expansion in credits by virtue of financialization might engender an economic incentive for these groups of which participation, in return, is open to exploitation by the larger industry. I call this process entrepreneurial exploitation.

Besides the theoretical contributions, findings in Chapter 5 relate to the contemporary political and socioeconomic issues at an international level. There is growing public awareness on the consequences of debt and credits on household welfare. Recently, the Strike Debt Group, formed after the Occupy Wall Street demonstrations, organized a project named "Rolling Jubilee" which aims to alleviate the financial burden of individuals defaulted on their debts. By collecting $400,000, the group was able to buy $14.7 million worth of defaulted medical debt to raise awareness of the inner workings of the secondary debt markets. The next target of the project is buying student loan debt in secondary debt markets (Reuters 2013). I also attempted to demonstrate in the last section of Chapter 1 that the increase in the subprime mortgage credits might influence a faster appreciation in housing markets, putting small-scale investors at a disadvantage vis-à-vis
the construction industry (Demyank and Van Hemert 2011; Tsatsaronis and Zhu 2004; Goodhart and Hofmann 2008; Mian and Sufi 2009). I believe that focusing on the intricate dynamics created by the credit expansion more in detail has the potential to expose the exploitative relationships which ostensibly benefit socioeconomically disadvantaged groups in contemporary societies.

**Limitations of the Study**

The first limitation faced in this dissertation is the quantitative data on land distribution. The only available quantitative data on land distribution in agriculture is the 2001 Agricultural Survey. Regarding the fact that land distribution might most likely have changed over a decade, the quantitative analyses in this dissertation cannot account for the change in land distribution. However, the inclusion of land distribution as a second level time-constant variable in the longitudinal analysis helped me to interpret the results in terms of a provincial characteristic, as opposed to a time-variant variable. Therefore, the analysis was limited in terms of changes that might have occurred in land distribution. Also, I have been able to partially address this limitation by comparing the quantitative findings on the influence of land distribution to the findings in my qualitative analysis. As I found in the quantitative analysis that small-scale farmers increasingly participated in industrial maize production, I found in my qualitative analysis that the majority of maize producers were small-scale farmers.

The second limitation I encountered in statistical analyses was about the absence of the geophysical data which might have improved the explanatory capacity of spatial and longitudinal statistical models. During my field research I learned from interview
respondents that irrigation and climate are key factors in industrial maize production, influencing yields. Also, Keyder and Yenal (2011) indicate that small-scale farmers in the western and southern regions of Turkey have advantages in climatic conditions and water resources compared to central and eastern regions. However, despite the lack of geophysical data, I can still argue that this limitation is addressed in the spatial analysis showing the spatial expansion of industrial maize farming in western and southern regions, which can be partially attributed to climatic conditions and irrigation opportunities from which farmers benefit.

Finally, I encountered time limitations during my field research. As I tried to get into contact with several major companies in order to gather data on their supply mechanisms, I was not able to receive primary data on Cargill, a major transnational corporation operating in Turkey. Despite my multiple attempts to reach representatives through different channels, all of my efforts remained unanswered. To address this limitation, I collected indirect information from merchants who had prior business relations with this corporation, but these data are inconclusive on issues such as contract farming practices in industrial maize farming.

**Follow-up Research**

My dissertation does not include the analysis of the changing rationale for farming within the context of a ideological hegemony surrounding the Post-Fordist regime. Bonanno (1987) focuses on the hegemonic values that surround the persistence of small farms. As small-scale farmers identified themselves with a set of traditional agrarian values, this ideological hegemony legitimized their persistence. Similarly, in my first
follow-up project, I will answer *how the shift from a state-supported agricultural system to a market-oriented one influences the ideological hegemony surrounding farmers.* Although I address in the longitudinal statistical analysis that farmers were motivated by revenues to participate in industrial production, this limited approach does not identify the values that underly the hegemonic ideology. I will conduct a qualitative discourse analysis based on the data I collected in Fall 2012 for this dissertation project. The preliminary analysis of the qualitative data indicates that participants perceive the increasing operations of private firms (i.e. commodification) in the inputs of maize farming, especially seed, as modern and the most efficient means of cultivation. Farmers, regardless of their operational size, consider themselves becoming more "conscious" as the deregulated markets offer them multiple varieties of inputs to be used in maize cultivation. The full analysis of the data will reveal how the language of Post-Fordist market dynamics are constructed, become hegemonic, and is internalized by actors.

My second follow-up and medium-term research project is related to agricultural labor and increasing maize cultivation in Turkey. *How does the increase in maize production influence agricultural employment?* Since I found during my dissertation research that maize farming does not require as much manual labor as do traditional crops, I expect a decline in agricultural employment in regions of high industrial maize production. To explore, I will conduct a longitudinal statistical analysis based on the data from 26 regions (cluster of adjacent provinces) between 2004 and 2012, which are the available data on the website of the Turkish Statistical Institute. I will analyze the influence of some variables I used in my dissertation: the level of industrial maize production, the importance of maize as a cash-crop, the level of mechanization, and the
level of large-scale farming. Additionally, I will map the distribution of these variables for a descriptive analysis. After conducting the spatial and longitudinal analyses, I am planning to revisit Izmir and Manisa provinces for one month. When I visited these provinces in September 2012, I found that most of the farmers had shifted from the labor-intensive cotton production to capital-intensive maize production over the last decade. I will conduct in-depth interviews with cotton workers and inquire how they sustained their household welfare after the decline in cotton production. I am planning to interview at least 15 laborers, and I will use my already established contacts in the region, who previously helped me with the access to villages. These contacts include academicians, farmers, and agricultural engineers working at the State Department of Agriculture.

In the final project I envision addressing *how production credits influence agricultural production over space and time*. Following the literature on financialization used in the final chapter, I aim to analyze the spatial patterns of the use of agricultural production credits through a spatial statistical analysis. I also intend to explain the temporal changes that occurred over time through a longitudinal statistical analysis. In this project, I will use the provincial level data from the Turkish Statistical Institute and the Institute of Banking Regulation and Supervision Agency. Since agricultural production credits significantly expanded from the mid-2000s onwards (Tarım ve Mühendislik 2011; Yıldırım 2013), the spatial and longitudinal analysis will explain how financialization as an important pillar of the Post-Fordist regime influenced the relations of production in the Turkish agricultural landscape. Moreover, I will further study how the concept *entrepreneurial exploitation* might apply to the Turkish case.
Bibliography


Olhan, Emine. 2011. "Türkiye'de Kırsal İstihdamın Yapısı [The Structure of Rural Employment in Turkey]." Retrieved from


Yıldırım, Ali Ekber. 2013. "Bankalar Tarım Sektörüne 32.6 Milyar Lira Kredi Verdi [Banks Have Supplied the Agricultural Sector with Credits Worth 32.6 Billion Liras]." Dünya, February 20.

VITA

Yetkin Borlu

EDUCATION
2014 Ph.D., Rural Sociology, The Pennsylvania State University, University Park, PA
2009 M.A., Comparative Studies in History and Society, Koc University, Istanbul
2007 B.A. Department of Political Science and International Relations, Marmara University, Istanbul

GRANTS, FELLOWSHIPS, AND AWARDS
2013 Graduate Exhibition Poster Competition, 2nd place, The Pennsylvania State University
2012 Dissertation Research Award, The Rural Sociological Society
2011 Research Grant, The Office of International Programs, the College of Agriculture, The Pennsylvania State University
2009 Graham Endowed Fellowship, The Graduate School, The Pennsylvania State University

PUBLICATIONS


SELECT TEACHING EXPERIENCE
Fall, 2013, Teaching Assistant, Introduction to International Agriculture (International Agriculture 100), The Pennsylvania State University, University Park, PA
Spring, 2013, Teaching Assistant, Society and Natural Resources (Community, Environment, and Development 427), The Pennsylvania State University

RECENT RESEARCH EXPERIENCE
2009-2014 Research Assistant, Department of Agricultural Economics, Sociology and Education, The Pennsylvania State University

PROFESSIONAL ORGANIZATIONS
2009-Present, Rural Sociological Association,
   Development Committee Graduate Student Representative (2013-14)
2013-Present, American Sociological Association