

© 2016 Ahmad Gamal

URBANIZATION AS IF PEOPLE MATTERED:
WHY THE RURAL URBANIZATION-INDUSTRIALIZATION COMPLEX DOES NOT
BRING ITS PROMISED WELFARE IMPACT—THREE ALTERNATIVE EXPLANATIONS

BY

AHMAD GAMAL

DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Regional Planning
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2016

Urbana, Illinois

Doctoral Committee:

Professor Faranak Miraftab, Chair
Associate Professor Kathy Baylis
Assistant Professor Marc Doussard
Assistant Professor Hope Michelson
Professor Michael Leaf, University of British Columbia

ABSTRACT

This dissertation is a collection of three essays related to the urbanization-industrialization nexus and its welfare impact in Indonesia. In the *first* essay I evaluate the connection between access to productive farm lands and farming households' livelihood in rapidly urbanizing rural areas. Using data from Indonesian Family Livelihood Survey (IFLS), I test whether farming households who lose landholdings in urbanizing regions have significantly lower income and consumption change over time compared to their peer households who maintain land in a relatively unchanging region. Tested with double difference and propensity score matching techniques, I find that the event of losing land, especially under the circumstance of rapid urbanization, often leads to a shock in farming households' income and consumption. In the *second* essay, I evaluate the relationship between the spatial configuration of urbanization and poverty. I hypothesize that in the short term, corporatized type urban development—typified by more rapid and clustered conversions of rural farmlands—can predict the incidence of poverty. Through analysis of enhanced vegetation index (EVI), I classify land satellite imageries to evaluate land-cover changes in Salatiga, Indonesia and visualize the rural urbanization process. Using spatial regression techniques, I find that the rate of urbanization is not correlated to new poverty. However, the clustering of urban change is very positively correlated to the addition of new individuals to the list of poor people in the region. This research provides an empirical support for spatial policies with a social policy insight: protection of farmlands during rapid rural urbanization, protection of farming jobs and public/communitarian access to farming lands, and selective implementation to land use changes by major developers. The *third* essay concerns the discrepancy between bureaucratic planning's vision on the region's economic

future and the economic needs of their constituents. Using mixed-methods approach with interviews, focus group discussions, and reviews of planning documents and regional statistics, I explore the multidimensional mismatches between planning and the public's perspective. I argue that such mismatch is a result of required transformations demanded by the interest of capital—I call this “capital conditioning”. Planning plays a key role in making sure that the locality meets capital conditions through four processes: alteration of perceived future and vision, compression of time frame for expected change, restructuring of legal and perceptual definition of locality, and redefining the role(s) of the State.

Keywords: rural; urbanization; land-use; poverty; agriculture; capital; planning; public interest

To the displaced people around the globe.
I wish I could have done more.

ACKNOWLEDGEMENTS

I have received so much support from many people and organizations to finish my study and this dissertation. I will be forever intellectually indebted to my adviser Faranak Miraftab, who has been so generous with her time reading and commenting on numerous drafts of this dissertation. I would like to also recognize the important roles of Marc Doussard and Hope Michelson, who in addition to serving in my dissertation committee, have been great mentors throughout my education here at UIUC. Thank you to Kathy Baylis and Michael Leaf, who provided great insights to my research.

I would also like to recognize the generous financial support I have received for this project. My doctoral degree study at UIUC is supported by The United States' Agency for International Development (USAID) through the Support for Economic Analysis and Development in Indonesia (SEADI) Project. The Indonesian Endowment for Education (LPDP) provided financial support to conduct the research for this dissertation.

Finally, thanks to my parents, sister, and numerous friends whose continuous support and love helped me go through the challenging times studying, researching, and writing.

TABLE OF CONTENTS

CHAPTER 1	
INTRODUCTION.....	1
CHAPTER 2	
LAND MATTERS: RURAL URBANIZATION, PEASANT LANDHOLDINGS, AND HOUSEHOLD LIVELIHOOD IN INDONESIA.....	10
CHAPTER 3	
URBANIZATION RATE, CLUSTERING OF URBAN GROWTH AND POVERTY IN SALATIGA, CENTRAL JAVA, INDONESIA.....	51
CHAPTER 4	
CAPITAL CONDITIONING: URBAN LAND-USE PLANNING AS THE STATE'S INSTRUMENT TO ACCOMMODATE CAPITAL-DEMANDED RURAL-URBAN TRANSFORMATIONS.....	77
CHAPTER 5	
EPILOGUE.....	111
REFERENCES.....	115
APPENDIX A	
INCOME AND CONSUMPTION DIFFERENCE-IN-DIFFERENCE FOR LAND- LOSING VS LAND-MAINTAINING FARMERS, 2000&2007.....	124
APPENDIX B	
INCOME AND CONSUMPTION DIFFERENCE-IN-DIFFERENCE FOR FARMERS IN URBANIZING VS UNCHANGING REGIONS, 2000 & 2007.....	125
APPENDIX C	
SALATIGA'S SECTORAL GROWTH, 2005-2010.....	126

CHAPTER 1

INTRODUCTION

1.1 THE AGENDA

In 2009, hundreds of landless farmers in Salatiga, a small city in Central Java, Indonesia, organized a mass protest at the city's House of Representatives (DPRD). They showed their goats and cows, and intentionally let them feed on the DPRD garden's exotic grass. They paraded large banners, made of modest shroud fabrics with expressions of grief: "You want development, do not victimize us"; "Mr. Mayor, keep in mind we are still farmers"; "You evict farmers... for whose prosperity?"; "Land swap for whose profit?"; "My head aches thinking of (how I can afford) animal food (while) the DPRD is clogged up (for grassroots activism)"; "My cow is lanky, too difficult to find grass feed because of your land swap"; etc.

The root of the protest was the city's ambition to promote manufacturing industry establishments, constrained by what small area they have. The City of Salatiga is literally contained within the County of Semarang, which has a separate and independent authority over land use designations. For the city administration, every inch of land is a valuable resource that can be turned into monetary profits in corporate taxes and development/licensing fees. Thus the city has the incentives to incorporate surrounding villages and change their legal status from rural regions into urban administrative areas as part of the city.

The incorporation allows the city to legally determine the fate of a larger region, but does not directly give the city administration the property rights over those lands. The critical point comes when the city claims right over community-owned (*bengkok*) lands. The administrative shift, from rural to urban administration over incorporated regions, allows the city to claim ownership on what was previously owned by the community or the village. It also allows the city administration to transfer rights over those properties to real estate developers and factory owners, a plan that is largely justified by the narrative of job creation and poverty reduction.

But much of the existing open and contiguous plots of public lands are ex-community-owned lands that have been used for farming purposes for many generations. Many families are dependent on agricultural livelihood, either farming or cattle raising. A significant portion of agricultural families in the incorporated regions are landless. They are dependent on public provision of land (previously communally provided) to cultivate cassava and vegetables for household consumption or Napier grass for cattle fodder. Designating public lands for industrial purposes means displacing many landless farmers from the only land that they can use for cultivation purposes. For many families, displacing them from public farm lands means depriving them from agricultural livelihood altogether.

The story of Salatiga is an example of, not the exception to, the land use conflict that often happens on the path to large-scale, large-capital development projects. More and more often, administrators, mayors, and governors alike are pressed by the interest of capital to provide land concessions in return to capital investments in their locality. But most state apparatus do not have land of their own, or within their administration's ownership. Thus the

way they make these land concessions are by using their state-vested powers to displace (and sometimes dispossess) people from the land and the properties they live, settle, or work in. This practice is very similar to eminent domain in the US context of governance over land use designations.

The story of Salatiga is also an example of the sudden livelihood-related challenges during rural-urban transformation. Since we live in the era of global capitalism and planetary urbanization, the geographic and administrative boundaries of what is urban and rural slowly disappear. More physical development in the rural areas and city fringes speed up new waves of urban transformation. But the lives of the people who live in what was previously “rural” and what is becoming “urban” does not change as fast. It takes more than a lifetime to acquire a new job skill and be fit in a new job for people who have spent most of their time doing one particular type of work. This is especially true for agricultural workers.

Human beings are sluggish adapters, and rightfully so. It is unrealistic to expect that people who are displaced can change their life as fast as the movement of capital or the way state entities react to capital and its need for land resources. Capital owners have the great freedom to decide where to invest. But people have complicated life circumstances to make decisions on where to live or work. Thus displacement from land can create social problems of unemployment and poverty. This is especially true when that particular land is the sole factor to household production, such as when the household is dependent on agricultural livelihood.

I decided to address the problem of land use conflict during rural-urban transformation by exploring three modest topics. First, it is important to understand the magnitude of the problem. By focusing my analysis on the people who are displaced from farm land during rural-urban transformation, I try to understand how much in terms of income and consumption is lost for each household. This information is important not only because it helps policy makers to grasp the gravity of the issue. It also helps them create a measurable evaluation criteria to understand the real social cost of development policies that require land-based interventions, such as industrial land use designation on farm areas.

Second, I aim at providing policy makers with an instrument to identify the urban spatial configurations related to new poverty incidences. I focus my analysis on understanding the relationship between the spatial configuration of urbanization, the scale of urban development projects, and regional poverty incidence. Large-scale development projects, when observed from a bird's eye-view, will have a distinctly centralized, often contiguous spatial urban configuration. The scale of urban development projects is often closely associated to how much open land is required to accommodate it. Thus it will be very closely associated with how much farm land will need to be converted to urban uses and how many people to be displaced from the respective farm lands. Displacement from farm lands can create temporary and permanent loss of livelihood, and can throw many families into poverty. Understanding how well the spatial configuration of urban development predicts poverty incidence not only provides an insight for local governments to the social cost of urban development. Rather, it provides an insight to the social cost of urban development with permanent labor and livelihood dislocations.

Third, it is important to help policy makers to step back and think about what went wrong with these policies, beyond the technicality of policy analysis. It's important to ask reflective questions: Why do planning agencies create economic development projects that are against the economic needs of their constituents? This question needs to be treated as a policy question rather than a rhetorical statement. Therefore, it requires an empirical inquiry that evaluates planning through the looking glass. I argue that it is valuable to see planning for urban transformation using the lens of capital interest. Planning does not operate in a vacuum. By understanding what kinds of capital interests it serves, we can shed light on how planning plays a key role in ensuring the locality meets certain conditions necessary for wealth accumulation.

1.2 THE EMPIRICAL WORK

Covering the three agenda is challenging for two reasons: One challenge is that each agenda requires different (and diverging) methodology and research design. Each agenda requires separate data collection processes. Each of the data collected also requires completely different types of analysis, ranging from qualitative methods of content analysis to quantitative methods of semiparametric estimations and spatial regressions.

The other challenge is that working on these three agenda means engaging in three different discourses within separate academic and professional silos of knowledge. Trying to measure the impact of urban displacement means borrowing much of impact evaluation methods and research designs from development economics. Drawing the relationship between the spatiality of urbanization and poverty means engaging with economic geography using analytical methods developed in spatial statistics. Exposing the problem with the commonsensical belief of

trickling down economic growth to legitimize dispossession means launching a three way conversation between planning theory, postcolonial scholarship, and historic materialism. Although they are not impossible projects to undertake, I humbly admit that it is a tall order to cover these three agenda.

For the reasons above, I decided that it's best to address this issue in three different essays, rather than a regular format of a dissertation. The first essay in this document concerns the magnitude of the urbanization impact on displaced people. I chose to answer this question by looking at two separate events that happens at two levels. The event of losing landholding —the right to use farm land for a certain amount of time for cultivation purposes—happens at the household level. Urbanization—the event in which the surrounding area experience physical upgrading in the built environment—happens at the regional (municipal or sub-district) level. Using national panel data of over 8000 households, I study the impact of either losing landholding or living in an urbanizing region on income and consumption of households that are dependent on agricultural livelihood. Then, I study the combined impact of these two events to simulate what happens to households who maintain in" agriculture while the region they live in start to change and they have to lose authorized access to exclusively cultivate on their land.

The empirical challenge to the first essay is to justify the measure of the impact calculated in the analysis. To do so, a counterfactual—a “what if” situation where those households who actually lose land/live in urbanizing regions in the dataset does not lose land in hypothetical comparison groups—have to be created. I employ a simple difference-in difference (double-diff) design to measure the impact. A double-diff approach will separate the real impact

of losing land/urbanization on income/consumption change from the change that happens as a mere result of an unobserved trend.

I paid specific attention to the comparability of the “treated” and “control” groups, a common concern in a quasi-experimental study like this. A propensity score matching (PSM) method was used to make sure that each treated and control households are as similar as possible. PSM basically assigned a matching score—a single real number that measures aggregate comparability—for each household. Aggregate comparability was estimated based on the following pre-treatment variables: household size, gender of the household head, household head’s education, the area of cultivable land owned/held, total farming assets, migration opportunity, and the quality of soil in the region. Instead of doing the analysis on all households as if they were all homogenous, I estimated the double-diff impact on pairs (or subsets) of households with matching scores as similar as possible.

The second essay concerns the relationship between the spatial configuration of urbanization and regional poverty. The spatial configuration of urbanization speaks volumes about the fashion in which urban development takes place. A corporatized, capital intensive, large-scale physical development project, if observed from a bird’s eye view, will look like a huge spot on the ground. Meanwhile, urban development that happens as a result of family decisions to build on their own lands will look like small, dispersed spots. Studying the clustering or the dispersion of the urban fabric does not tell much about the urbanization trend. However, studying the clustering or the dispersion of changes in the urban fabric can provide an insight about the capital intensity of rural-urban transformation and the displacement that takes

place. Describing the correlation between quantitative measures of urban clustering or dispersion and regional poverty can be an intuitive guide for policy makers on which type of development is more economically inclusive and with less social cost.

The second essay descriptively explains which measure—either the rate at which physical change occurs or its spatial clustering—better predicts new regional poverty incidence. In layman's term, this essay tries to find out whether: a) how much land use change occurs, or b) if it happens as a corporatized, capital intensive, large-scale development that displaces people; is potentially creating new poverty. For this purpose, I generate two metrics to be used in regression analysis methods. Using publicly available satellite images I evaluate spatial changes to generate measures of urbanization rate and clustering level. The urbanization rate represents the proportional change of land cover from predominantly agricultural into more urban use over a period of time. The clustering level represents spatial dependence—how clustered (or even contiguous) or dispersed physical land use change happens over time. The two metrics are then regressed against the number of newly poor people in each region.

I pay specific attention to the possibility of regional spillovers. Displacement and poverty are social problems with spatial dimensions. Someone who is displaced from his/her land in one region may find agricultural work in an adjacent or nearby region—something that regional planners call a regional spillover effect. Therefore, the poverty impact in one region may reflect displacement in another region as well. To address this empirical challenge, I use two spatial regression methods (spatial lag and spatial error models) that will take into account regional spillover effects, in addition to the standard ordinary least square regression.

The third essay concerns the divergence between urban planning and the economic needs and interest of their local constituents. It presents the case study of Salatiga's rural urbanization-industrialization, and the incorporation of rural villages as the city's strategy to acquire more land for development purposes. In this essay I discuss why this process is a state-sponsored land grab, how that land grab disfranchises rural farmers from access to public farm lands, and reorganizes the entire rural land use and allocations.

In the third essay I focus in illuminating the role of the State in promoting rural-urban transformations to meet conditions demanded by the interest of capital. I argue that planning plays a key role in making sure that the locality meets capital conditions through four processes: First, planning alters the local perception of the region's economic future and supplants it with a modernist vision. Second, it works to compress the time-frame for and expected change. Third, planning helps the State in restructuring legal and perceptual definitions of locality. Third and most importantly, it provides the State with new powers over land use designations and property rights, completely redefining the role(s) of the State in the locality.

CHAPTER 2

LAND MATTERS: RURAL URBANIZATION, PEASANT LANDHOLDINGS, AND HOUSEHOLD LIVELIHOOD IN INDONESIA

2.1 ABSTRACT

In this research I evaluate whether farmers' loss of access to productive farm lands negatively affect their livelihood in rapidly urbanizing rural areas. I hypothesize that for farming households, the unfortunate event of losing farm landholding directly results in a medium term reduction in household income and consumption. The hypothesis comes from the observation that as the rural agricultural economy begins to shift to manufacturing, the rural environment will experience simultaneous changes, chief among them is land use conversion from farmlands to industrial, commercial, and residential functions. Much of the converted farmlands are community-trust or publicly-owned lands, that are either rented to industrialists or swapped with lower grade farming land in locations that are geographically further from existing farming communities. Such change often creates land pressures for agricultural communities, especially peasant households who suddenly lose access to community/publicly provided productive farm lands. Peasant farming households typically have limited job change opportunity because of their limited skills set. Using data from Indonesian Family Livelihood Survey (IFLS), I tested whether farming households who lose landholdings and live in urbanizing regions have significantly worse livelihood condition compared to their peers in similar situation. Tested with double difference and propensity score matching techniques, I found that the event of losing land, especially under the circumstance of rapid urbanization, often leads to a shock in farming

households' income and consumption. Those phenomenon have received very little attention because established literatures in development economics tend to focus more on the long-term impact of structural changes in the economy. Most of the time, the social costs of such structural change, such as income loss for a significant proportion of the population, occur in the short and medium terms. However, they can bring long-term negative consequences to the welfare of affected households. Findings of this research calls for the protection of landless farming households who are dependent on publicly, communally or commercially provided land and are more vulnerable to the rapid, speculative, land use changing urbanization in the rural and peripheral areas.

Keywords: rural, urbanization, land, landholdings, household income and consumption

2.2 CONCERNS REGARDING URBANIZATION

The rapid structural transformation in a developing country can be observed using two main indicators: the rates of change in economic structure and in population location. Data from Indonesia can be used as a prime example to demonstrate such transformation. In the last 15 years Indonesia's rural population has decreased from 49.7 to 39.4 percent, giving a rise to the new urban population. At the same period, the share of agriculture in GDP decreased from 20 percent to slightly below 10 percent following the country's growing manufacturing and services industry. These numbers illustrate that development occurs through two distinct but related processes: sectoral and spatial shift.

Such shifts resulted in dramatic changes in Indonesia's land resources. Between 1990 and 2010 Indonesia lost 24.1 million hectares of forest areas, mostly in Sumatera and Kalimantan. Some of these land lost could be attributed to rapid urbanization while some other was driven by new openings of palm plantations and logging (Wicke et al., 2011). While such change added 9.5 million hectares to Indonesia's agricultural land, only 8.3 million hectares were added to support permanent crops (FAO, 2014). Within this period, only 2.3 million hectares more land were developed to be equipped with irrigation. That development added to the 6.7 million hectares of already irrigated farm land, which is staggeringly small compared to the 24 million hectares of forest lost to urbanization.

These numbers lead to an important question: Do changes in the rural environment create pressures for rural agricultural communities? This question becomes even more important because almost 40 million of Indonesia's farmers are peasants—those who are landless and work in agricultural fields on small-scale operations (Partohardjono et al., 2005). Peasant households are hit harder and sooner than farmers with land tenure, because rapid urbanization in rural areas disproportionately increases their probability of losing access to publicly or communally provided productive farm land. Consequently, rural urbanization increases the likelihood of job and income loss for peasant households, an event which will further deteriorate their already meager livelihood.

2.3 LITERATURE REVIEW

2.3.1. Economic Models of Rural-Urban Transformation

A key component of the literature in development economics is its notion of urban-centered industrialization. In the traditional literature, industrialization is framed as the modernizing of the economy through substantial reallocation of human resources from a traditional, low-productivity, rural-centered to a modern, high-productivity, urban-centered production. The notion of dualism in the development economics' view of different forms of production sectors and their respective locations gives its famous name: the two sector model.

The model dates back to the Nobel Laureate Arthur Lewis's (1954, 1968) observation of a "labor surplus" in populous developing economies such as Egypt, India and Jamaica in the 1950s. Most of these laborers worked in rural agriculture and could be transferred to urban manufacturing industries to speed up economic growth. The consequence of such transfer is the increasing gross domestic products (GDP) share of the more modern manufacturing industries and the decreasing share of traditional agriculture industries. Such turning point in the developing economy was separately observed by Kuznets (1955) and dubbed as the "inter-sectoral shift".

The Lewisian notion of industrialization as structural change has aged really well. Many modern development economists have reiterated this notion of industrialization with slightly different approaches: emphasizing proportional changes in economic activity during such

“economic transformation” (Norton et al., 2010: 89); using the “two sector model” as the basis for analysis of migration and development patterns (e.g. Ranis & Fei, 1961; Harris & Todaro, 1970; Todaro & Smith, 2009: 115); illustrating the total transformation of the entire rural-urban livelihoods as the consequence of structural economic transformation (Ray, 1998: 345), reassessing the relevance of the dualistic economic model (agriculture vs manufacturing) and rethinking about the modern fragmentation of economic activities (Ranis, 2003; Fields, 2004), and; rethinking the notion of labor surplus in the increasingly open economy (Ranis, 2004).

In contrast, Krugman’s (1991) new economic geography (NEG) employs a core-periphery model. In NEG, there are not only two sectors, but also two regions. This distinction makes it very different from the two sector model, where essentially there are no physical cities, only a rather backward or modern sector. NEG views development as exogenously driven by improvement in rural-urban transportation. Consequently, the new economic geography model does not only capture the movement of labor from one economic sector to another. It also captures the population movement that will tend to create an urban concentration through migration.

More recent models of rural-urban transformation have focused on understanding growth as endogenously driven by the advancement of technology. Lucas (2004) has proposed that urbanization be viewed and modeled as the introduction of new technology, driven by human capital formation that will improve workers’ efficiency. This endogenous growth model has helped understanding both migration decisions of rural residents as well as their decision to invest in human capital (i.e. work skills) to catch up to the existing urban residents.

2.3.2. The Relationship between Urbanization, Welfare, and Poverty Reduction

Considerable empirical research supports the assumption that cities are associated with concentration of wealth, employment, knowledge and skills. For example, Eaton and Eckstein (1997: 443) concludes from their analysis of long range (>60 years) data on Japanese and French top 40 cities that larger cities have higher levels of human capital, higher rents and higher wages. This prediction holds even if workers are relatively homogeneous and inter-regional migration is not obstructed by any means. More importantly, this growth is endogenously driven by improvements in human capital. Migration-driven urbanization helps rural-urban migrants to acquire new skills as they arrive in the cities, and thus helps them to achieve higher wages than staying in the rural areas.

Rural-urban migration does not only help migrants to achieve better life in the new urban areas, but also helps their family members who never leave rural areas. Research documents not only how rural communities benefit from remittances paid by family members but also: how rural community projects often rely on remittances from rural-urban migrants (e.g. Ajaero, 2013; MirafTAB, 2016); how remittance income helps retains rural school enrolment (Edwards, 2003); and how remittances increase family savings (Osili, 2007), housing investments (Osili, 2004), and small firm capital (Woodruff & Zenteno, 2007).

Rapid urbanization of prime cities, however, could lead to congestion problems. Using demographic data from industrial Europe and some developing countries, Jedwab et al (2015)

demonstrated that the historic increase in concentration of urban population in the 19th and 20th century was not only driven by challenges in rural areas or opportunities in urban areas. Rather, it was driven by the rapid decrease in urban mortality. Combined effects of this demographic shift, agricultural modernization, rural poverty, and urban-centered industrialization generates unprecedented urban population growth which led to urban congestion.

Some researchers have suggested that the answer to urban congestion problems is the development of areas outside the primate cities (e.g. Christiaensen & Todo, 2009; Christiaensen et al, 2013). Research on this area confirmed that rural urban transformation that occurs through the diversification of rural economic sectors demonstrates more inclusive growth patterns compared to the transformation that occurs as the agglomeration in mega-cities. In fact, population growth in mega-cities is rather poverty-increasing rather than poverty-reducing (Imai et al, 2014). Migration out of agriculture, not migration out of rural areas, is the “missing middle” that is more closely associated to poverty reduction. They suggested that the focus of public investment should be on developing rural non-farm economies and secondary towns rather than concentrated in large cities.

The suggestion that developing economies promote growth in secondary towns is in line with the numerous research confirming that off-farm income sources can be a crucial support to people living in peri-urban areas. In developing countries such as Mexico, off-farm activities can contribute to up to half of the total farm household’s income, which helps to reduce poverty and reduce income inequality (Janvry & Sadoulet, 2001). Rural households can diversify their income sources through production of non-grain commodities within the farm, local off farm

activities, and migration, dependent on their land availability and asset positions (Démurger, Fournier, & Yang, 2010). The opportunity to diversify rural household incomes, however, is very dependent on levels of education, especially of the household head (Yúnez-Naude & Taylor, 2001), access to credits and public assets such as roads (Escobal, 2001).

2.3.3 Current Gap in the Literature on Economic Impact of Urbanization

Each and every model discussed above has put much emphasis on rural urban transformation that is driven by either labor or population movement. The phenomenon of urbanization has been widely discussed in the existing development economics and economic geography literature as the increasing concentration of the urban population. “Cities” and “hinterland” have been modeled as relatively static geographic objects, not experiencing much changes in boundaries, shapes or spatial configuration.

The existing models, therefore, do not help us much to understand rural-urban transformations that happen through induced spatial and geographic changes in the rural regions. Many models predict the economic benefits of migrating to urban areas for rural residents. Additionally, numerous research documents the process of land expropriation, the development of exurban spaces, and their consequential land-based rural economic conflicts (e.g. Guo, 2001; Zuhui & Hui, 2002; Swindell & Mamman, 1990; Sargeson, 2013). However, there is no single model or theory that can satisfactorily predict the economic outcome for people who stay where they live while the physical geography of the place is becoming more urban.

It is urgent to fill such theoretical gap in the literature and empirical research for two main reasons: First of all, as many geographers have well documented, the spatial configuration of 21st century urbanization is rather different. Relaxed, neoliberal regulatory land use policy often allows rural land use conversion (and the transfers of property ownership) in a sporadic, piece-meal fashion. The result is not contiguous urban land use, but rather many spots of urban land uses interspersed with rural land uses. McGee (1991) coined the term *desakota*, a neologism from the Indonesian words *desa* (village) and *kota* (city) to represent the functional ambiguity of such spaces. While having a substantial proportion of agricultural function, continual growth of nearby larger urban centers and improvements of transportation disperses some economic activities to *desakota*. Most of these activities are dispersed because they are labor and land intensive.

Second, the 21st century national and transnational capitalists are driven to go directly to rural areas to capture cheap factor resources of land and labor instead of investing in established urban areas. The landscape of *desakota* thus intersperses between agriculture and small shops, warehouses, or factories. Some authors called this phenomenon as “rural urbanization” (Taubmann, 1993) or “rural agglomeration” (Marton, 2002). This leads to the sporadic agricultural land conversion to urban uses in spaces beyond the city border, often called the process of “peri-urbanization” (e.g. Lin, 2001; Cai & Sit, 2003; Firman, 2001; Zhao et al., 2009; Winarso, 2010). The combined effect of relaxed regulatory policy over farm land conversion and the increase of direct transnational capital involvement in rural development may lead to significant displacement for rural residents from productive farm lands.

2.4. MECHANISMS

2.4.1 Brief Classification of Rural Farmers

To determine the impact of urbanization on agricultural livelihood, it is important to discuss how land is used by different subgroups of rural agricultural households. There are two distinctions to consider: Not all rural people have land, and not all people who have land are directly involved in agricultural production. While many rural households have land for farming purposes, the reality is that many landowning rural households rent out their lands to other farmers who do not have land. Some peasant farmers would simply pay a rent for their right to cultivate in a planting period, while others would cultivate the land and share the harvest with the land owners. Most large landowning households cultivate their own land. They only rent part of the land when there is not enough family members to work on it.

There is a second class of farmers who do not have much land to cultivate or do not have land at all, but have landholdings through renting, sharecropping or some forms of socially acceptable occupation of public or community land. In Indonesian villages, farming land is not only supplied by landowning households. In some regions, the village administration (*desa*) owns *bengkok* (community trust) lands that can be rented to landless farmers at a significantly low price. Some public and community land are rented for as low as IDR 100,000 (USD 7.17) per 1,000 square meters per year, with the average small-scale farmers cultivating one half of a hectare (around 5,000 m²). For those who do not have the financial resources to rent land, the only mean to have landholding is to cultivate on unoccupied land, sometimes illegally, for

farming purposes. In reality, however, there is no practical difference between landowners and landholders because most rural villagers who have land do not have a proper documentation of their land ownership certificate.

A third category exists, where a rural household does not have land and does not have access to a rented, sharecropped or *bengkok* land, but is mostly dependent on farming work. These peasant households typically work as farm labors (*buruh tani*), and to some Indonesians they are not even categorized as “real” farmers (*petani*). If they wish to do agricultural production, they must rely on work provided by either a landowning or a land-renting/sharecropper farmer.

All landholders take the season’s agricultural profit as an income, but landowning and renter/occupier farmers receive their income from different sources. In most Indonesian rural areas, the land-owners’ share is around 50 percent of the season’s harvest. Therefore, renting farmers reap at most half of the season’s agricultural profit as their income. Meanwhile, landowning households can appropriate their crop share as a capital income. If they have family members working on un-rented land, they will also receive additional income from that particular plot’s agricultural profit, without having to share them with a renter farmer.

Peasant farm labors will not receive any crop share. Instead, they rely on daily or weekly wages from work provided by landholders, either the cultivating landowners themselves or renter farmers. Peasant farmers only receive labor income, and they cannot appropriate agricultural profits from the season’s harvest.

These differences in the use of land also create distinctions in the temporal dimension of rural agricultural work. Peasant farmers mainly do manual labor in the field. While they are commonly the poorest among the rural poor, time-wise they are less reliant on agricultural work. They will be involved in agricultural production during certain periods: land preparation, seed planting, and harvesting seasons. Because these jobs are not available throughout the year, some of them should do precarious work as construction workers around the village or neighboring cities to supplement their income in other months. Meanwhile, both landowning and renter farmer households maintain a relatively stable tenure of their agricultural work because they have landholdings. Some of them raise livestock, but it is not likely that they do construction work or other jobs to supplement their income.

The urbanization of rural land changes both the allocation of land resources and the distribution of rights over land. Much of the rural land is used for agricultural purposes but as a region urbanize some portion of the rural land will be reallocated for non-agricultural uses. Simultaneously, as more land is needed to accommodate non-agricultural uses, there will be an increased number of land rights transfers. The two related, but distinct processes are discussed below.

2.4.2. Urbanization of Rural Areas and Land Use Changes

There are two possible ways that the urbanization of rural agricultural land can affect farming households: through voluntary and involuntary changes of land use. The increased

demand for housing from nearby urban areas may persuade rural farming households to build rental buildings and rooms for rural-urban commuters. This voluntary action may reduce the area of that household's land that can be used for cultivation purposes.

Voluntary land use change is made possible by the fact that in the predominantly rural region, there is a substantial lack of state authority when it comes to the planning and regulation of land use. However, such voluntary change only happens to very select farming households with abundant wealth. Turning farm land into rental properties requires capital investment to cover construction expenses, utility installations and, in some cases, permit costs as well.

Land use change can occur involuntarily when the local administration creates a zoning change. In this case, the predominantly agricultural region is planned *and* encouraged to accommodate more residential, commercial or industrial complexes. When an area experiences a change of zoning, farming or any other existing use of that land is not automatically condemned. However, existing uses that are non-compliant to the new zoning will be greatly discouraged.

Cultivation can be discouraged by not planning any new construction or maintenance of existing irrigation services to an area that is zoned as non-agriculture. In many cases, however, land use change happens simply because a zoning change allows for the commercialization of land beyond farm-renting and sharecropping. Zoning change gives landowners the option to sell their land to developers for non-farming development.

Inevitably, urbanization will change the local allocation of land resources. As a region urbanize, more land will be required for development of urban uses such as public infrastructure, residential, commercial, and manufacturing industries. The amount of land is constant but the absolute number of people working in agriculture does not decrease very significantly over time. Therefore some farmers will have to leave agriculture because land becomes unavailable for their farming purposes. People who do not have other work opportunities have to either cultivate smaller parcels of land or work as a farm labor for farmers who have landholdings through renting or sharecropping.

2.4.3 Land Rights Transfers and Landholding Loss

While allocation of land resources is an important factor to consider at the regional level, land right transfers matter more at the household level. For rural farming households, land use changes in the rural region does not affect their livelihood until it directly affects the land parcel they work on.

Land rights transfer can occur through direct private-to-private agreement, private-to-private agreement with public mediation, or a direct public-to-private agreement. In private-to-private agreement developers can acquire land through land purchases or long-time renting. In both cases, private entities approach rural landowners to transfer developments rights of their land directly to the developers. However, in most cases developers need large, contiguous area of land parcel which makes them have to deal with numerous land owners with divergent interests over land and development. In these cases, the local/municipal government often step in, playing

an active mediation role. There is a full range of mediation practices: One extreme example is where the government simply exercise its eminent domain to take over private lands and transfer them to private developers. The other extreme is where the local government only provides a forum for the negotiation between the private developers and the local collective of rural landowners.

One land transfer mechanism that is increasingly common is where the local government directly enters into an agreement with private developers to utilize public lands. The Indonesian government is not allowed to grant property ownership of public land to private parties. Therefore the most common way to grant development rights over publicly owned land to private developers is through land swap—an indirect purchase of public land through exchange of land with similar market values.

Public farm land swap can create a displacement of some farmers from public farming land, although the amount of land allocated for farming in the region does not change after the land swap. This effect comes from a spatial mismatch that often happens after a land swap. Farming households tends to live strategically close to the land that they cultivate because they need to walk there on a daily basis. Even if the public farm land is exchanged with another land with the same quality, the dislocation of that land parcel will change its relative distance from farming homes. Moving a house can be very costly for rural households. Therefore once a public farm land parcel is swapped with another land at a distant location, it will be cost prohibitive for landless households to farm in publicly provided land.

2.4.4 Social and Economic Implications of Landholding Loss

Public farm land swap creates an involuntary class change for the rural agricultural population. Previously, public and community provision of farm land allows landless farmers to have cheap access to cultivable land. With such a low rent, public and community farm land provision allows landless farmers to earn agricultural profit which is comparable to those of landowning farmers. The event of public/communal land swap forces landless farmers into either land-renting farmers or farm labors to continue working on agriculture.

However, there is very little probability of a landholding farmer turning into land-renters for the following reasons. First, there is constant amount of cultivable land for an increasing number of farmers. While the share of Indonesia's agricultural population decreases, the absolute number of people and households working in agriculture increase over time. On the other hand, there has been very little addition to farming land by the opening of forest lands, with the exception of forest openings for large scale palm oil production in Sumatera. In most cases as the population grows and more land is allocated for non-agricultural uses, the amount of farming land decreases over time.

Second, farm land-renting and sharecropping is not an open market. Although land-renting contracts are renewed every year, the relationship between land owners and renters extends beyond the contracting periods. Both land owners and renters need to eliminate future uncertainty in terms of who will work on the land so that it will stay productive. It is a very common practice for the land owners to make a "promise" to rent the land to the same renter the

next year. Some renters and owners are even related by kinship. Therefore land is not simply rented to the highest bidder, and not every farmer can rent a land.

For the two reasons above, a farmer losing landholding will have to work in agriculture as a farm labor, or quit farming all at once. Rural farming jobs are typically the ones with the lowest skill sets required. Therefore the probability of a farmer quitting agriculture and finding another employment with a higher degree of skill and education requirement is very slim. When a farmer loses landholding, staying in agriculture by working as a farm labor is an inevitable option to maintain family-supporting livelihood.

2.5 RESEARCH QUESTIONS

In this research I evaluate whether farmers' loss of access to farm lands negatively affect their livelihood in rapidly urbanizing rural areas. To operationalize that research purpose, I evaluate the relationships between different causal events and their outcome livelihood changes. The main events at interest here are the loss of farm landholdings, urbanization, and the loss of landholdings under the circumstance of urbanization. The impact of landholding loss and urbanization on household livelihood change will be determined independently from each other before they are tested as a simultaneous event. The outcome at interest is livelihood change, mainly operationalized by evaluating changes on farming household income and consumption before and after the occurrence of each of the above.

Specifically, in this research I test whether the following hypotheses are true:

1. Farming households who lost their landholding have worse income & consumption change over time compared to farming households who maintain their landholdings
2. Farming households in urbanizing regions have worse income & consumption change over time compared to farming households in relatively unchanging regions
3. If evaluated jointly, losing landholdings in an urbanizing regions predict worse income and consumption change for farming households compared to all other farming households in a similar regional and household situation.

2.6. METHODOLOGY

2.6.1 Data

This research uses the Indonesian Family Life Survey (*Sakerti*) wave 3 (year 2000) and 4 (year 2007). *Sakerti* is an on-going longitudinal survey which was first conducted in 1993 and repeated in 1997, 2000, 2007, and 2016. The sample covers about 83 percent of the Indonesian population (around 191 million out of 231 million Indonesians) who live in 13 most populous provinces in the country. Most of *Sakerti*'s covered provinces are in the islands of Java, Sumatera, and Bali, with the addition of South Kalimantan (Borneo) and South Sulawesi (Celebes). As many as 10,255 and 12,955 households were surveyed in 2000 and 2007, respectively. However, some families surveyed in 2000 could not be found for re-surveying purpose in 2007, reducing the sample size to 8,785 households if it is treated as a time series instead of a cross-sectional data.

Sakerti reports both landholding and landownership. While landownership is reported in a simple binary category (owning or not owning a land), landholding is reported in a slightly more complicated way. Sakerti wave 3 reports three areas of landholding: (1) the total area of land owned by the household; (2) the total area of cultivated land, out of the total landholding, and; (3) the area of land that is rented/sharecropped to other households, out of the total cultivated land. Many households do not report the total area of their landholding but report the total area of their cultivated land. It is very likely that those households rent or sharecrop land for farming purposes. On the other hand, some households do not report either the total area of their cultivated land or the total area of landholdings, but report their area of rented/sharecropped land. These households are very likely the ones who have land but do not have a family member who is able or willing to do the farm work.

In addition to rented and sharecropped land, Sakerti wave 4 also reports the total area of *bengkok* (community-trust land) being held by the household. This reporting is a significant advancement of Sakerti wave 3, which does not differentiate *bengkok* from sharecropped land. *Bengkok* belongs to the village and should not be transferred to individuals through sales. However, they can be rented for agricultural purposes. Although renters must renew their rent contract every season, most village land renters are repeat contractors of the same plot of the land. In reality, the households who rent a *bengkok* land can have a semi-tenured holding of the particular land plot.

Sakerti records consumption by grouping them into food and non-food items, measures in kind consumption based on the type of goods, then monetizes each consumption item based on a

locally standardized price index. For food items, it records food from different groups: staple foods; vegetables; dried foods; protein sources; dairy; spices, and beverages. In addition to food items purchased in the market, Sakerti recognizes the non-monetary economic exchanges prevalent in rural societies by recording food given/received from other households. After the monetary crisis in 1997, Sakerti records households' consumption of government-sponsored food items such as subsidized rice, protein (beef, chicken, and fish), vegetables and cooking oil. Non-food items are grouped into monthly expenditures (electricity, water, communication, household and personal items, domestic services, recreation, and transportation) and annual expenditures (clothing, household supplies, medical costs, and taxes). It also records common "social" expenses such as *arisan* (a social gathering with a group saving involved) and ritual ceremonies.

Income is reported based on two big groups of income source: farming and non-farming, recognizing that one household can have more than one type of work and more than one person as a source of income. Aside of farmland, Sakerti records different types of farming assets including hard stem plants, farm buildings, livestock/poultry/fish pond, farming vehicles, tractors, heavy equipment and small tools. Farming revenues, expenses, and profits are recorded separately from capital income received from the rental of those farm-related assets. In 2007, the farming expenditure section details the type of crops grown within different seasons. Non-farming income uses very similar approach. Sakerti also records non-labor income sources such as scholarship, insurance money, lottery winnings, and government cash transfers, in addition to non-income type of household financing such as debt and borrowings.

2.6.2 Trends

In general, households who live in changing regions experienced more pressures to agricultural livelihood. Table # demonstrates that in urbanizing regions between 2000 and 2007 there were fewer households staying in agriculture and more households leaving farming to work in any other type of economic activity. Only one in five households in urbanizing regions could be found doing farming in both 2000 and 2007, compared to one in three households in unchanging regions. In a similar trend, one in nine households in urbanizing regions left agriculture, while only one in ten households did so in 2007. This reduction to the number of households in agriculture was slightly counterbalanced by the relatively similar proportion of households joining agricultural work in 2007. Ultimately, in urbanizing regions there was a higher proportion of households who end up not being in agriculture, compared to their peers in the unchanging regions (see table 1).

Table 2.1 Changes in Economic Activity in the Full Sample, 2000 & 2007

Changes in Economic Activity	Urbanizing Region		Non-Urbanizing		Total
	#	%	#	%	
Stay Farming	162	22.1	2,480	30.8	2,642
<i>Decreased Landholdings</i>	138	18.8	1,891	23.5	2,029
<i>No Change in Landholdings</i>	8	1.1	237	2.9	245
<i>Increased Landholdings</i>	16	2.2	352	4.4	368
Quit Farming	85	11.6	783	9.7	868
Enter Farming	70	9.5	666	8.3	736
Not Farming	416	56.8	4,122	51.2	4,538
Total	733	100	8,051	100	8,784

However, the most important trend to evaluate is the prevalence of households experiencing a decrease in the size of their landholdings. In both urbanizing and unchanging regions, most households who stayed in farming had access to much smaller cultivation land in 2007 compared to what they had in 2000. To illustrate, as many as one in five households had smaller landholdings while only one in thirty households have the same or larger land in any urbanizing region in 2007. That means that eight out of ten households who stayed in farming in urbanizing regions had smaller land in 2007 compared to their land in 2000. For comparison, only seven out of ten households experienced a decrease in landholdings in unchanging regions.

2.6.3 Identification Strategy

One of the main challenge of answering each of the research questions is to consider the possibility that the groups of farmers compared are characteristically different from one another. For example, it is possible that the group of farming households who lost landholdings had been marginally poor compared to other farming households to begin with. If they have smaller wealth, savings, or asset, it is likely that they can only rent small amount of land to cultivate, leading to a smaller income regardless of their tenure on land.

If this is the case, livelihood comparisons drawn after the event of landholding loss will be meaningless. It is very likely that such comparison will show that the land-losing group have inferior income and consumption compared to their land-maintaining group. However, it is difficult to determine how much of that lower income and consumption level is associated with

the event of losing landholding, and how much of the discrepancy actually represents their difference in capacity to generate income in general.

The solution to this challenge is to use the double difference (DD) research design to answer the *first* question. Instead of comparing income/consumption between land-losing and land-maintaining groups after the event of land-loss, I compare the trajectories of their income/consumption change over time. Assuming that it is very unlikely that poor households become suddenly rich over a short period of time, even if the two groups have very different initial income/consumption levels, the rate of change for their income/consumption should be somewhat similar. If the two groups do not demonstrate parallel trajectories in either their income or consumption change, the difference between the two changes (essentially the difference-in-difference) can be used to determine the real impact of the event of landholding loss (see figure 2.1 below for illustration).

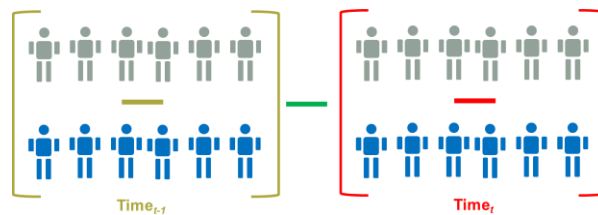


Figure 2.1 Difference-in-difference research design

A similar challenge—the characteristic difference between two farmer groups—may occur to households in different locations. Farmers in urbanizing regions face different market conditions compared to their peers in rural areas that are untouched by urbanization. Regions that are urbanizing are most likely located very close to existing urbanized areas. Farmers in areas

closer to the city do not have to bear the high transportation cost to bring their produce to the market so that they can sell their product without the help of a middleman. Even if two farming households produce the same amount of harvest in each year, such locational advantage benefit farmers who are closer to the city so that they may have significantly higher initial income/consumption level.

Therefore, DD research design can also be used to answer the *second* question. In this case, I evaluate the difference between income/consumption change of farmers in urbanizing region and those in relatively unchanging regions. The double difference is used to determine the impact of urbanization on farming household's livelihood.

The *third* research question requires a more rigorous research design, given the complexity of its operationalization. Essentially, the question aims at determining the impact of urbanization on farming households' livelihood, but only through the mechanism of land use change that create involuntary landholding loss.

My approach to this inquiry is to conceptualize the event of landholding loss as a physical disposition of a certain propensity to lose land, driven by some regional and household factors. Consider a farming household with the following characteristics: large number of dependent in family members, are female headed, have a household head with low education attainment, only have very small land to cultivate and few tools to help cultivation effort, live in infertile area of the country without the opportunity to migrate, and maintain work in agriculture in a region that is slowly changing into a more urban environment. Such household is more

likely to experience financial hurdles. During the difficult times, those households are the ones more likely to sell their land, if they have any, or lose the opportunity to rent land for next year/season's cultivation period for the lack of income savings.

Reversing the logic, all of the characteristics above—size, household head's gender and education, the amount of cultivable land owned/held, the total amount of farming assets, migration opportunity, and some dummy variables representing regional characteristics—can be used to estimate each farming household's propensity to lose their landholdings. Each of the household in the sample can then be assigned a score, which represents their propensity to lose land.

The third question can then be answered using a combination of a DD and a propensity score matching (PSM) research design. Each farming household is not aggregated to two comparable groups. Instead, each household is compared to a set of households with very similar propensity scores. This method allows me to evaluate the income/consumption DD at the household level DD for a very particular household situation: experiencing landholding loss under the circumstance of urbanization (see figure 2.2 for illustration).

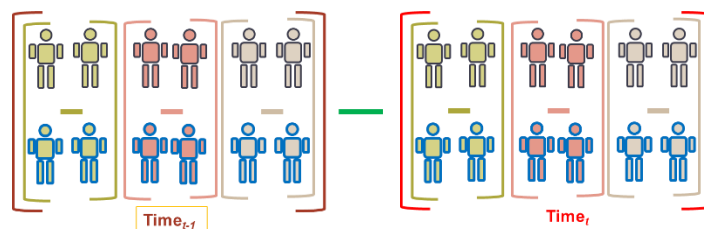


Figure 2.2 Difference-in-difference with propensity score matching

For further robustness, PSM can be applied using four different matching methods. The simplest way to match a household is by finding another household with the nearest propensity score (*nearest neighbor* matching). This simple method is limited because it will only generate the same or less number of households as controls. More sophisticated methods include the use of a *radius*, a *kernel*, or a *stratification* for matching purpose. In those following methods, all households within a certain bandwidth will be included as controls for a particular household of interest. More explanation on matching methods can be found on Becker and Ichino (2002).

To increase measures of accuracy in variance and confidence intervals, and to avoid bias, I perform resampling techniques using bootstrapping method. From 100 replication a hypothesis testing can then be performed to test statistical significance.

2.6.4 Variables

All variables for this research are summarized in the table 2.2 below. For the purpose of this research, only households with at least one family member working in agriculture both in 2000 and 2007 are used, further reducing the sample size to 2,642.

The variable “landholdings” reports whether the surveyed household owned/rented/sharecropped land in either 2000 or 2007. A household is considered to experience a “landholding loss” if it had/rented/shared a land in 2000 but not in 2007.

“Region type” reports the administrative designation for each region. A *kelurahan* is considered an urban sub-district while a *desa* is considered rural. A region is considered “urbanizing” if it was a *desa* in 2000 and became a *kelurahan* in 2007, or if the surveyor designated the area as urban despite the *desa* status.

All income, consumption, and asset changes are calculated by subtracting the amount in 2000 from the amount in 2007. All such monetary variables have been converted using consumer’s price index to be comparable to Indonesia’s national account in 2013, when the last CPI data was available. Some statistical outliers in income and consumption data are taken care by excluding all income changes more than IDR 45 million IDR (\pm USD 3,200).

Migration opportunity reports the history of a particular household’s movements across region between 1997 and 2000 (between wave 2 and wave 3 of the survey). The data range from 0 to 5, with 0 = the household did not move; 1 = the household moved within the sub-district (*kelurahan/desa*); 2 = the household moved within the district (*kecamatan*); 3 = the household moved within the county (*kabupaten*); 4 = the household moved within the province, and; 5 = the household moved to another province or abroad. Because Indonesia is an archipelago, movements across administrative regions sometimes involves movements across islands. Even when these movements happen within the island, it is relatively expensive and labor intensive for farming households to move to a different *kabupaten* or province. Therefore, while it is not a perfect measure, movements across administrative regions represent relative distance in cultural attributes and economic opportunities.

Table 2.2 Summary Statistics

Variables	N=0	N=1	N	Mean	SD	Min	Max
Independent Variables							
Landholdings 2000 (1=Yes; 0=No)	549	2,093	2,642	0.79	0.41	0	1
Landholdings 2007 (1=Yes; 0=No)	618	2,024	2,642	0.77	0.42	0	1
Region Type 2000 (1=Urban; 0=Rural)	2,347	295	2,642	0.11	0.32	0	1
Region Type 2007 (1=Urban; 0=Rural)	2,241	401	2,642	0.15	0.36	0	1
Dependent Variables							
Total Income Change, 2000-2007	N/A	N/A	2,553	2.62	10.78	-44.84	44.90
Farming Income Change, 2000-2007	N/A	N/A	2,606	1.67	8.15	-43.91	44.82
Total Consumption Change, 2000-2007	N/A	N/A	2,430	3.89	13.76	-44.79	44.92
Food Consumption Change, 2000-2007	N/A	N/A	2,582	1.52	9.74	-41.66	44.54
Non-food Consumption Change, 2000-2007	N/A	N/A	2,516	2.92	9.85	-44.37	44.92
Propensity Score Estimation Variables (2000)							
Household Size	N/A	N/A	2,642	5.65	2.45	1	37
Female Household Head (1=Yes; 0=No)	2,384	258	2,642	0.10	0.30	0	1
Household Head's Year of Schooling	N/A	N/A	2,642	4.48	3.78	0	18
Area of Cultivable Land Owned/Held	N/A	N/A	2,079	7.09	50.46	0	800
Total Farming Assets	N/A	N/A	2,642	3.81	19.10	0	707
Migration Opportunity	N/A	N/A	2,635	0.22	0.74	0	5
Kecamatan Dummy Variable	N/A	N/A	2,642	N/A	N/A	N/A	N/A
Propensity Score Matching Variables (2000-2007)							
Landholding Loss (1=Yes; 0=No)	2,372	270	2,642	0.10	0.30	0	1
Urbanizing Region (1=Yes; 0=No)	2,480	162	2,642	0.06	0.24	0	1
Total Farming Asset Change, 2000-2007	N/A	N/A	2,642	6.80	47.80	-703	1,020

Note: All income, consumption, and asset data are reported in million Indonesian Rupiah (IDR). All income/consumption change data ≥ 45 million & ≤ -45 million IDR are considered as outliers and not reported. Area of Land is reported in one hectare (10,000 square meters). SD = Standard Deviation.

To ensure that the control and treatment group are as similar as possible, I conducted a simple T-test on the difference between the means of control and treatment groups in each variables. The results of those T-test are summarized below on Table 2.3. The p -values of these tests do not show any statistical significance on the hypothesis that the two means (control and

treatment groups) are statistically different. This result indicates that all of the variables that will be used for matching purposes to be balanced between the control and treatment groups.

Table 2.3 Sample Balance for Propensity Score Matching Purpose

Variables	N	Control		Group Treatment - Control	
		Mean	SD	Coeff.	<i>p-value</i>
Propensity Score Estimation Variables (2000)					
Household Size	2,642	5.65	2.45	-0.04	0.01
Female Household Head (1=Yes; 0=No)	2,642	0.10	0.30	-0.07	0.57
Household Head's Year of Schooling	2,642	4.48	3.78	-0.01	0.20
Area of Cultivable Land Owned/Held	2,079	7.09	50.46	0.00	0.89
Total Farming Assets	2,642	3.81	19.10	0.00	0.46
Migration Opportunity	2,635	0.22	0.74	0.12	0.01
Kecamatan Dummy Variable	2,642	<i>N/A</i>	<i>N/A</i>	0.00	0.16

2.7 FINDINGS

2.7.1 Do land-losing farming households have worse livelihood?

The following series of figures 2.3 and 2.4 illustrates why the DD approach is appropriate in this type of research. In 2007, land-maintaining farming households have an average household income of IDR 11.3 million while the land-losing households' average income sits at 6.6 million. There is substantially and statistically significant difference between total income of land-losing and land-maintaining farming household groups in 2007. However, the land-losing group have been historically low-incomed to be begin with. In 2000, their average income was a meager 5.1 million, while their land-maintaining peer households were at 8.3 million.

The impact of losing land on total income can be determined by creating a comparable control group as if both land-losing and land-maintaining household groups have the same lower average income of 5.1 million in 2000 (see figure 2.3.1). Projecting that income to the future using the land-maintaining group's income change trajectory, that comparable control group would have 8.1 million in 2007. The real impact of losing land on farming households' total income is the difference between 6.6 and 8.1 million. In another words, on average each farming household lose IDR 1.5 million (\pm USD 1,066) of their annual income when they lose hold on cultivable land.

Using the same method of creating a comparable control group, the difference in farming income as an impact of losing land can be determined. Figure 2.3.2 shows that such impact is the difference between the comparable control group and the land-losing group's farming income in 2007, which is 5.1 and 3.5 million, respectively. That means that on average each farming household lose IDR 1.6 million in their annual farming income when they lose hold of a cultivable land.

It is unnecessary to create a comparable control group to evaluate change difference in consumption. In all measures (food, non-food, and total consumption), there is no statistically significant evidence that land-losing and land-maintaining had different levels of consumption in 2000. There is no statistically significant evidence that land-losing households eat less compared to their land-maintaining peer households, even after they lost landholding sometime between 2000 and 2007 (2.3.4). However, their average total consumption (2.3.3) and non-food

consumption (2.3.5) substantially diverged in 2007. On average, land-losing farmer households consume IDR 1.7 million less in total, 1.5 million of which is a smaller non-food consumption compared to their land-maintaining peers. Statistical significance for each of these tests can be found on Appendix A.

It is worth noting that T-tests on the treatment and control groups do not indicate statistical significance for the difference between the two means on year 1993 and 1997. Hence we can conclude a parallel path for control and treatment groups prior to treatment (losing land).

2.7.2 Do farmers in urbanizing regions have worse livelihood?

Farming households in urbanizing regions historically have enjoyed higher total income compared to their peers in relatively unchanging rural regions. Figure 2.4.1 shows that in 2000, farmers in urbanizing regions had 15.2 million in annual income while their peers in relatively rural regions only had 7.5 million. However, the growth of total income in urbanizing regions are not as fast as in relatively rural regions, at least for farming households. Projecting the trajectory of total income in the rural regions on a comparable control group, the average of that control's total income would sit at 18.1 million annually. That is IDR 1 million more than the average total income of farming households in urbanizing regions.

Even though they received much higher farming income in 2000, households in urbanizing regions experience a great shock in 2007 when their farming income falls below the amount that their peers in rural regions make from agricultural production (2.4.2). While a

comparable control group could hypothetically make 10.2 million from farming, those in urbanizing regions only make 3.5 million from farming in 2007. On average, urbanization can be associated to a whopping IDR 6.7 million flop in annual farming income.

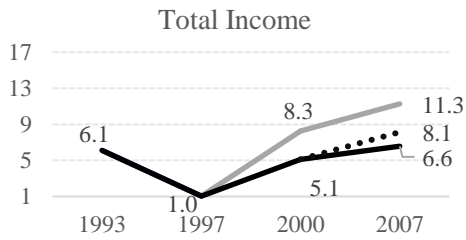
However, the value of farming households' consumption in urbanizing regions are more compared to their peers in relatively unchanging regions, at least in terms of food consumption. On average, their total consumption is worth 27 million, compared to 24.7 million for their peers in rural regions in 2007 (2.4.3). The value of their food consumption was initially lower at 12.9 million, compared to 14.1 million in the relatively unchanging regions. This account soared to 17.8 million for households in urbanizing regions, much higher than 15.7 million in relatively unchanging rural areas (2.4.4).

A reversing trend is actually shown by non-food consumption, in which households in relatively unchanging rural regions are catching up with their peers in urbanizing regions. Initially in 2000, households in rural regions only consumed 7.2 million of non-food commodities, while their peers in urbanizing regions consumed 8.9 million worth of them annually. In 2007, they consumed the somewhat similar amount of 10.7 million worth of non-food commodities (2.4.5). Statistical significance for each of these tests can be found on Appendix B.

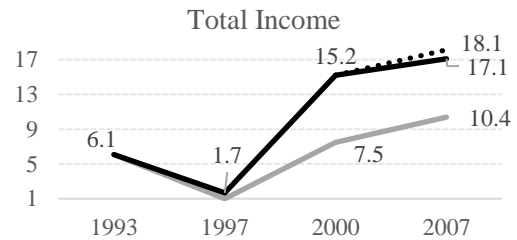
Again, here pre-treatment T-tests do not indicate statistical significance for the difference between the control and treatment groups' means. Hence we can assume that the two groups were not statistically different prior to losing land.

Figures 2.3 & 2.4 Effect of Landholding Loss (2.3) and Urbanization (2.4) on Income and Consumption Change for Households Staying in Agriculture, 2000 & 2007 (in million IDR)

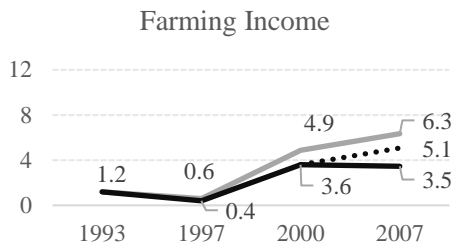
2.3.1



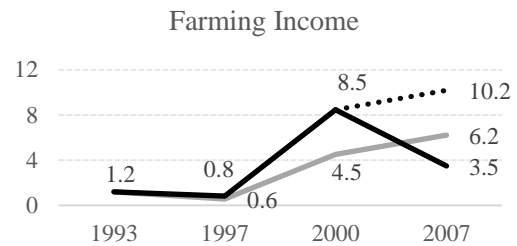
2.4.1



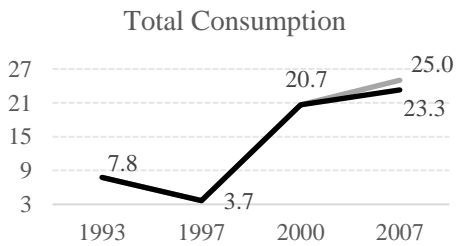
2.3.2



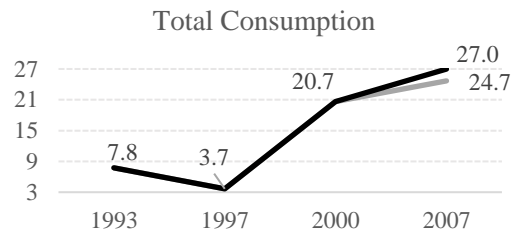
2.4.2



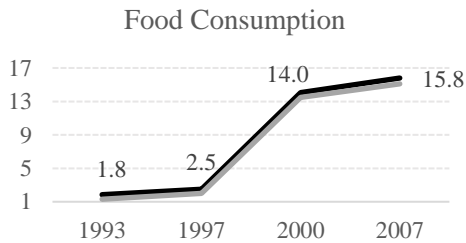
2.3.3



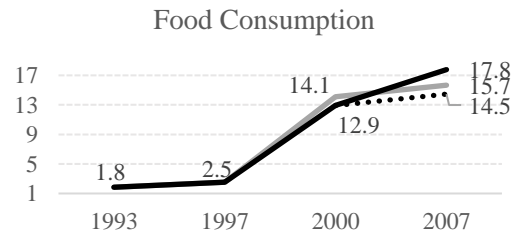
2.4.3



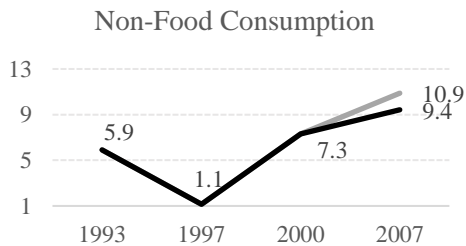
2.3.4



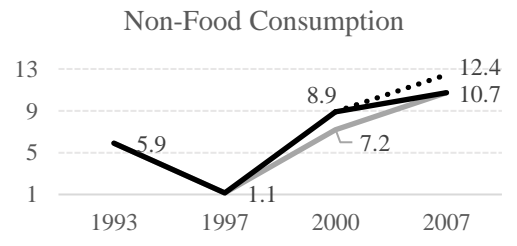
2.4.4



2.3.5



2.4.5



Note:

- Group experiencing “treatment” (landholding loss / living in an urbanized region)
- Group not experiencing “treatment” (control group)
- - - Comparable control group for visualization purpose

Number of observations: $N(T=0) = 2,372$; $N(T=1) = 270$. Refer to Appendix A for detailed statistics.

2.7.3 Do land-losing farming households in urbanizing regions have worse livelihood?

All four propensity score matching tests demonstrate that farming households who lost land under the circumstance of urbanization experience a reduction in their farming income. Nearest neighbor matching test indicate that on average, farming household lose IDR 2.73 million in annual farming income when they lose land due to urbanization. Radius, kernel and stratification matching tests give more moderate estimates, which is IDR 1.87, 1.56, and 1.70 million in lost annual farming income. All of these estimates are very statistically significant at 5 percent level (see table 2.4).

With the exception of radius matching, all tests finds very statistically significant evidence of similar results on total income. On average, losing land due to urbanization will cause farming households lose between IDR 1.43 and 2.86 million in total income.

There is less statistical significance that land loss due to urbanization leads to a reduction in consumption levels, but all tests demonstrate that such reduction exists. On average, when a household lose land in an urbanizing region, they will consume between IDR 1.37 and 1.55 less than their peer households in a very similar regional and household characteristics.

Table 2.4 Effect of Landholding Loss under Urbanization on Income and Consumption Change for Households Staying in Agriculture, 2000&2007

	NN		R		K		S	
	w/o BS	w/ BS	w/o BS	w/ BS	w/o BS	w/ BS	w/o BS	w/ BS
Total Income								
<i>N (T=1/T=0)</i>	266 / 233		264 / 1,780		266 / 1,788		266 / 1,788	
<i>ATT</i>	-2.86 ***	-2.86 *	-1.40	-1.40	-1.48 N/A	-1.44 ***	-1.43 ***	-1.43 ***
<i>Standard Error</i>	(1.60)	(1.64)	(1.79)	(1.70)	N/A	(0.68)	(0.59)	(0.57)
Farming Income								
<i>N (T=1/T=0)</i>	266 / 235		264 / 1,780		266 / 1,788		266 / 1,788	
<i>ATT</i>	-2.73 ***	-2.73 ***	-1.87 ***	-1.87 ***	-1.56 N/A	-1.56 ***	-1.70 ***	-1.70 ***
<i>Standard Error</i>	(0.76)	(1.55)	(0.74)	(0.61)	N/A	(0.77)	(0.68)	(0.62)
Total Consumption								
<i>N (T=1/T=0)</i>	249 / 221		247 / 1,684		249 / 1,691		249 / 1,691	
<i>ATT</i>	-0.52	-0.52	-1.55 **	-1.55 **	-1.48 N/A	-1.48 **	-1.37 *	-1.37 *
<i>Standard Error</i>	(1.71)	(2.02)	(1.16)	(1.05)	N/A	(1.17)	(1.14)	(1.15)

*Matching Methods: NN=Nearest Neighbor; R=Radius (bandwidth 0.005); K=Kernel; S=Stratification. BS=Boot Strap with 100 replications. N=Number of Observations. T=1 is the group of farmers who experience landholding loss; T= 0 is the control group. ATT = Average Treatment on the treated, in this case treatment is defined as landholding loss. All values are reported in IDR 1 million (USD 73). Standard errors are reported in parentheses below the average treatment effect estimates. Statistical significances are noted by: * < 15%; ** < 10%; *** < 5%. ATT with Kernel matching does not produce a standard error estimate, hence no statistical significance recorded.*

2.8 TESTING FOR AN ALTERNATIVE STORY

The following exercise uses the sample of all households who work in agriculture in 2000 instead of only households who work in agriculture in both 2000 and 2007. This exercise takes into account the possibility that some farming households leaves the agriculture sector (instead of maintaining farm-based work) once they lose land. Failing to consider this possibility can result in over or under-estimation of the impacts of losing landholdings. If the household quit agricultural work because they can no longer afford the land rent or no longer have access to public land, then the estimates will be lower than the actual impact. On the contrary, if the household leave agriculture because they find better opportunities outside agriculture, then the estimates produced by considering only those who stays in agriculture will overestimate the impact of losing land.

The following T-test results in table 2.5 indicate that households who lose land and maintaining land have statistically different total and farming incomes in both 2000 and 2007. On average, households who has a family member working in agriculture in 2000 and lose land in 2007 receives 3.09 million IDR less in total income and 3.84 million IDR less in farm income in 2007, compared to their peers who do not lose land. These findings are statistically significant at 5 and 1 percent level, respectively. In year 2000, those households above-mentioned receives 1.43 million IDR less in total income and .98 million IDR less in farm income, a finding which are both statistically significant at 10 percent level.

It is worth noting that the total income difference between the two groups (households who lose and maintain land) is consistently smaller than the farm income difference in both periods. What it signals is that the households who lose land have smaller farm income than those who maintain land. However, those who lose land seem to have other income sources. Unfortunately, the amount of all alternative income sources for land-losing households does not exceed the reduction of their farming income, which results in lower total income in general.

Table 2.5 Effect of Landholding Loss on Total and Farming Income Change for Households Working in Agriculture in Year 2000.

Variables	Mean (Std. Error)			Difference	
	Losing Land	Maintaining Land			
Total Income 2007	3.93	7.02	-3.09	**	
	2.16	0.71	1.81		
Farm Income 2007	1.43	5.27	-3.84	***	
	0.17	0.19	0.41		
Total Income 2000	5.24	6.67	-1.43	*	
	0.72	0.53	1.17		
Farm Income 2000	3.69	4.67	-0.98	*	
	0.68	0.34	0.79		
D/D Total Income	-1.31	0.35	-1.66		
	2.28	0.88	2.13		
D/D Farm Income	-2.26	0.61	-2.87	***	
	0.69	0.38	0.85		

*Note: N = 2855 households maintaining land, 655 households losing land. Statistical significance: * = <10%; ** = <5%; *** = <1%. D/D = Difference-in-Difference.*

The difference-in-difference (DD) estimate can be used to estimate the impact of losing land to total and farm incomes for the land-losing household group. It is worth noting that statistical significance can only be found for the DD estimate for farming income and not for total income. On average, land-losing households receive 2.87 million IDR less of farming income, compared to their land-maintaining peer households, a finding which is statistically significant at 1 percent level.

2.9 CONCLUSIONS

2.9.1 Lessons learned

There are three important takeaways from the previous findings in this research. First, this study provides a strong evidence that securing landholding can help maintaining farming households' income and consumption, while taking away land will unequivocally create a livelihood shock for affected farming households. There is a remarkable similarity between the estimates of loss in annual total income (IDR 1.5 million) and farming income (IDR 1.6 million) for households losing landholding during the survey period. That finding suggests that most households who maintain work in agriculture could not find alternative income sources to weather an income shock that is caused by losing landholding.

More importantly is what that income reduction means to the quality of life. There is another remarkable similarity between the loss amount of annual income and the loss in consumption (IDR 1.7 million). Almost all of those loss are experienced through a reduction in

non-food consumption. What that generally means is that when a farming household loses income from losing their landholdings, they would do one of the following: not having money to buy enough clothing and personal expenditures, stop sending their children to school, not buying electricity and clean water, or not seeing the medical doctor when they are ill.

Second, it provides evidence of an economic pressure for people who choose to remain working in agriculture when their surrounding environment is becoming more urbanized. It is true that the total income of farming households in urbanizing regions are not falling like their income from agriculture. However, the growth of their total income is smaller than the one enjoyed by their peers in relatively unchanging rural regions. This finding suggests that even if urban farmers are able to find alternative income sources, the amount made from those other incomes will not sufficiently cover the loss of income from agriculture.

There are some explanations to why such economic pressure during the time of urbanization is not demonstrated in the data for consumption. First of all, Indonesian consumer price index (CPI) is calculated based on a survey of commodity prices conducted in the largest city of each province. Consequently, CPI can show the level of affordability in different provinces in Indonesia. However, it does not reflect price differences between urban and rural regions within each provinces. Despite consuming less (monetary) value of food, people in rural regions actually face cheaper prices for most food commodities. If this price difference is taken into account, it is very likely that the difference of food consumed by people in urbanizing areas and unchanging rural regions would disappear.

Third, and most importantly, the negative effects of urbanization, such as income loss experienced by farming households, occur through some forms of loss in rights to use land for cultivation purposes. This finding supports a reasonable assumption that urbanization leads to some levels of land use changes that are hostile to agricultural households.

2.9.2 Limitations of This Research

This research has three main limitations: First, it treats the household as a unified decision-making entity, thus is limited in its understanding of intergenerational change and intra-household dynamics. It uncovers the many aspects of livelihood impacts on households who members stay in agriculture. However, this research does not inform readers on what happens to the household whose first generation stays in agriculture but their children works in another sectors of the economy. Second, this research is limited in its ability to inform readers about occupational choices which extends beyond the categories of staying in and moving out of agriculture. There is a complex array of possibilities of people working in other sectors without entirely leaving agriculture. Some people complement their agricultural incomes with other non-farm sources, such as working as seasonal construction labor. These occupational choices are related to changes in preference and other economic motives, such as cross-sectoral differences in wages and income potentials, which is not discussed in great detail in this research. Third, this research does not directly measure the impact of macroeconomic shocks on household income and consumption.

2.9.3 Future Research Recommendation

This research is designed to focus on the livelihood impact of landholding loss and urbanization for farmers who maintain work in agriculture. There are some questions that this study is not designed to answer. The most important question, among others, is whether urbanization leads to a better or worse livelihood outcome for those who move out from agriculture to another sector of the economy. Future research should focus on answering this question by exercising more rigorous data disaggregation and income/consumption tracking to the level of individuals instead of households.

On the other hand, there are some questions that available data simply cannot respond to the research design requirement. First is the operationalization of urbanization as a land use change concept. There are few data available on land use, which makes a study of land use change on such a large region such as at the national level impossible. Future research should be conducted at either county or city level, where land use data is available in finer resolution. Second, future research can also focus on determining the different impacts of urbanization on different types of landholders: land-owning, land-renters, sharecroppers and people who are dependent on public or community land. Those two objectives are simply impossible to be conducted at a national level. Therefore future research should focus on case studies with smaller sites of observation.

CHAPTER 3

URBANIZATION RATE, CLUSTERING OF URBAN GROWTH AND POVERTY IN SALATIGA, CENTRAL JAVA, INDONESIA

3.1 ABSTRACT

In this research, I tested the hypothesis that in the short term, rapid and more clustered urbanization of rural areas predicts the incidence of poverty. Using enhanced vegetation index (EVI), I classified land satellite imageries to evaluate land-cover changes in Salatiga, Indonesia and visualize the rural urbanization process. Two quantitative metrics were generated from this qualitative evaluation: the urbanization rate and the clustering rate. Urbanization rate measured the amount of land cover change from farmlands to urban uses, taking into account that there were also new farmlands opened during the period of the study. Clustering rate, on the other hand, measured the distribution of such land-cover changes over space. The research found that urbanization rate was not correlated to new poverty incidence, but the clustering rate was very positively correlated to it. This result was consistent across two alternative regression models employed in the study. This research provided an empirical support to spatial policies with a social policy insight: protection of farmlands during rapid rural urbanization, protection of farming jobs and public/communitarian access to farming lands, and selective implementation to land use changes by major developers.

Keywords: *poverty, agriculture, clustering, rural, urbanization*

3.2 INTRODUCTION

Do rural areas with higher rates of land-cover change have significantly higher risk of new poverty? How can we predict new poverty incidences by evaluating the trend in physical environmental changes in rural areas? This research studies how the geographic information on newly poor households can provide a better inference about where they fall into poverty. It evaluates whether rural urbanization—a transformation of a rural environment in a rapid and clustered fashion—actually expose rural population into a higher risk of falling into poverty.

This research attempts to answer those questions using data from Salatiga, a small city within the Regency of Semarang, Central Java, Indonesia. Salatiga is a *desakota* area that is physically detached, but economically integrated to the larger regional urban area of Semarang City. For the past decade, rapid economic growth of the region has been followed by substantial changes in the city's physical environment. Some parts of Salatiga have completely changed into substantially more urban areas while some other parts maintain its *desakota* characteristics. Locals have expressed concerns regarding how the rapid urbanization in Salatiga create pressures to local agricultural livelihoods through destruction of prime agricultural lands. Landless rural agricultural workers have been disproportionately disadvantaged by such rapid rural urbanization because public and community lands where they used to cultivate have been mostly converted into built areas. As one of the most direct evidence of an economic pressure, some of Salatiga's most rapidly urbanizing rural *kelurahans* (sub-districts) have maintained consistently higher poverty incidences than the provincial and national account, despite their positive accounts on aggregate regional income measures.

3.3 LITERATURE REVIEW

During the last three decades, geographers have identified and catalogued many forms of urban development of the 20th and 21st century. A substantial proportion of these new theories come from fruitful observations of the recently developed economies in the Global South, East Asia and Southeast Asia. The new paradigm addresses the lack of theorization of urbanization that emerges from the margins of the core cities (Guldin, 1996), where major transformational challenges are located at in many Asian countries (Rimmer, 2002; McGee et al., 2007, McGee 2008).¹

McGee (1991) coins the term *desakota*, a neologism from the Indonesian words *desa* (village) and *kota* (city) to represent the functional ambiguity of such spaces. While having a substantial proportion of agricultural function, continual growth of nearby larger urban centers and improvements of transportation disperses some economic activities to *desakota*. Most of these activities are dispersed because they are labor and land intensive. There are instances where national and transnational capitalists are more interested to go directly to rural areas to capture cheap factor resources of land and labor instead of investing in established urban areas. The landscape of *desakota* thus intersperses between agriculture and small shops, warehouses, or

¹ Dick and Rimmer (1997) disputed this notion of uniqueness and accused area specialists of essential-izing Asian and Third World cities. They suggest that the early phase of de-colonization is a transitional phase and that in the latter phase Asian cities are far more similar to Western cities. Shatkin (2007) indirectly rebutted this accusation by pointing out that urban studies need to recognize the negotiated interaction between global forces and local agency. The emerging perspectives on cities in the Global South are unique because of their particular understanding of local institutional settings, not just their urban fabric.

factories. Some authors called this phenomenon as “rural urbanization” (Taubmann, 1993) or “rural agglomeration” (Marton, 2002).

There are three inter-related but distinct processes happening within these kinds of transitional spaces: physical, economic, and political processes. The first process has something to do with the physical change of the rural landscapes as the consequence of the horizontal expansion of urban areas. Many scholars have documented the sporadic agricultural land conversion to urban uses in spaces beyond the city border, often called the process of “peri-urbanization” (e.g. Lin, 2001; Cai & Sit, 2003; Firman, 2001; Zhao et al., 2009; Winarso, 2010). The second process is the more structural transformation of the *desakota*’s economy as a result of the increasing influence of exogenous factors. The increasingly relaxed national policy to accommodate foreign direct investments (FDI) makes urbanization of rural spaces much more externally-driven. This process makes previously rural spaces much more integrated into transnational economic institutions and conditions. Sit and Yang (1997) call this process “exo-urbanization”. The third process deals with the changing borders of urban and rural spaces. The “lawlessness” of industrialization in transitional spaces often demands the presence of new institutions to govern the urbanization process. Thus peri-urbanization of rural spaces does not only change their physical borders but is often followed by the redefinition of its political borders as well. Peri-urbanization often reconfigures the relations among state, society, and capital. Leaf (2008) calls this process as (re)-territorialization.

Up to date, there is no single research which investigates the connection between new poverty and urbanization as a physical process involving land-related changes. Most researches

in this topic define urbanization as a people-oriented process, that is, the proportional increase of the urban population in comparison to the rural counterpart (e.g. Cali & Menon, 2013; Shahbaz, Aamir, & Shabbir, 2010; Ravallion, Chen, & Sangraula, 2007).

Despite the proliferation of research on this topic, in the literature there is very little interest to draw the connection between this less conventional, rural-based form of urbanization with the welfare dynamics of the rural people. Arguably, it needs to be the priority of any future work in economic geography because rural livelihoods typically are more dependent on the physical environment in comparison to urban livelihoods. Significant changes in the rural environment, such as conversions of farmland into residential, commercial, or industrial uses will greatly affect the rural agricultural community by physically limiting some people from agricultural production activities. One of the most important questions regarding household-level welfare dynamics is whether being located in a rapidly urbanizing rural area increases a household's chance of falling into poverty.

3.4 HYPOTHESES

In this research I hypothesize that places with higher urbanization rate and higher clustering rate also have higher poverty incidences. This hypothesis comes from the observation that urbanization that takes place in the rural areas often comes with the cost to the rural agricultural sector.

The urbanization rate reflects the actual area loss of farmlands to give way to urban growth. Because urban uses are established on prime farmlands, this land-cover change reflects a loss of primary livelihoods for many rural populations. The relatively low-skilled urban population may not be able to find employment in other sectors, despite new openings in newly established rural industries. Hence, the urbanization rate can hypothetically predict new incidences of poverty.

The clustering rate reflects the fashion in which urbanization occurs. Within a relatively similar urbanization rate, a more clustered urbanization represents a relatively more contiguous physical land use change. Contiguity in physical land use change over a large area reflects an organized development, typically driven by large-scale, corporatized development projects. On the other hand, more dispersed physical land use changes reflects decentralized decision making over where development occurs.

Dispersed physical land use changes is mainly driven by small land owners building new houses. Corporatized development projects are more likely to displace farmers from public or community farmlands. Hence clustering rate of urban growth can hypothetically predict new poverty incidences in the rural areas or urban peripheries.

3.5 DATA

3.5.1. Spatial Data

There is a technical reason behind the nonexistence of research on an important topic like this. Especially in developing economies, data on land use is barely available for most of the world's rural areas, including Indonesia's remote and peripheral regions. Where such data is available, records on land ownership and the type of establishments on land are typically not publicly available. Thus it is very difficult to evaluate changes of land use over time.

However, it is possible to assess changes of land cover using publicly available land satellite images. This paper relies heavily on the interpretation of land satellite images that are publicly provided by the United States Geological Survey (USGS) in its Earth Explorer website (<http://earthexplorer.usgs.gov/>). Many versions of land cover images in the format of aerial photography and land satellite imaging are provided by this agency.

The resources are notably limited for areas in which the US government agency does not have direct interest in geological explorations such as Indonesia. Although detailed information is limited, USGS does publicly provide the global land survey's (GLS) enhanced thematic mapper plus (ETM+) images that consist eight spectral bands. Bands 1 to 7 have a spatial resolution of 30 meters while band 8's resolution is 15 meters, each referring to how detailed the information is contained within each raster image. Images for year 2000, 2005 and 2010 are obtained for the purpose of this research.

Each of the 8 bands is sensitive to a specific wavelength spectrum, a mechanism that allows for greater accuracy of the satellite imaging's energy reception from the ground. Band 1 is sensitive only to blue spectrum colors, band 2 to green spectrum, 3 to red, 4 to near infrared (NIR), 5 to short-wave infrared (SWIR 1), 6 to thermal infrared, 7 to SWIR 2 and 8 is a panchromatic band. The first four bands capture all colors that are visible to human eyes, while the other bands capture energy reflected from objects on the ground that are not visible to human eyes. While the first three bands are good enough to differentiate water bodies from soil and vegetation, the other band can produce more specific classification of vegetation species and its health status (USGS, 2014).

3.5.2 Socio-Economic Data

This research uses the Social Protection Program Survey (PPLS) of 2008 and 2011, two datasets capturing the geographic information of Indonesian poor households. Each of these datasets contain the street address of each poor household in the respective year. The original datasets contain the names of the poor household heads, their occupations, the demographic characteristics of the household members, schooling, disabilities, land & home ownership status, source of drinking water, and type of cooking fuel. For the purpose of privacy protection the names have been removed from the datasets that I can obtain from Indonesian Bureau of Statistics (BPS). However, the *kelurahan* (sub-district) component, which is an important reference locator for this research, remains in the dataset. Additionally, the datasets include the

households' income which can be used as a reference for income cut-off points and occupational categories in welfare analysis.

While the datasets are named as “surveys”, in reality they have acted as the census of all poor population within the Indonesian territory. The datasets have been used as the basis for the service provision of some social protection programs such as cash transfers (BLT), health insurance for poor households (Askeskin), and affordable rice for poor households (Raskin). The Indonesian national government has also planned to expand the use of these datasets as an integrated data base to serve the service provision of all social protection programs at the national scale. Thus the coverage of datasets have expanded over time. While PPLS 2008 has only covered poor and very poor households, PPLS 2011 have covered all Indonesian households within the lowest 40 percent of income level, 24 million households or 96 million individuals in real numbers.

There has been very limited shapefile data available for administrative boundaries and street references, and the available data from the Indonesian Bureau of Statistics are not very reliable. Therefore all of the administrative boundaries used in this research are redrawn from a combination of political maps provided in Salatiga City's website as well as an observation of land cover in 2010. This has brought an important consequence to the geocoding of poor households. Because there is very limited data available for street referencing shapefiles in smaller cities such as Salatiga and there is no data available for the most part of rural areas, the geocoding can only be done at best up to the *kelurahan* (sub-district) level, and not to their street address levels.

Another notable limitation is on population data. While PPLS currently captures poverty information up to the individual level, Indonesian Bureau of Statistics (BPS never releases population data below the city/county (*kota/kabupaten*) level. Therefore, population growth cannot be used as a control for this study, which aims at predicting poverty at the *kelurahan* (sub-district) level.

3.6 SPATIAL ANALYSIS METHODS

3.6.1 Defining Agricultural Areas

Because the land satellite images come in nine different raster files for each time a satellite image is captured (band 6 comes on high and low gains), the images need to be processed before interpretation of changes over time can be done. Electronic geographic information system (GIS) can help in this process by calculating the enhanced vegetation index (EVI) for each pixel in the raster image provided by USGS' global land survey (GLS). Formally, EVI is calculated as follows:

$$EVI_{ct} = 2.5 * \frac{\rho_{NIR_{ct}} - \rho_{Red_{ct}}}{\rho_{NIR_{ct}} + (6 * \rho_{Red_{ct}}) - (7.5 * \rho_{Blue_{ct}}) + 1}$$

where EVI_{ct} denotes enhanced vegetation index for each pixel c of 30x30 meters resolution in time t , and; $\rho_{NIR/Red/Blue_{ct}}$ denotes the value of the near infrared/red/blue band's observation in pixel c and time t .

EVI is a better classification method than the more rudimentary normalized difference vegetation index (NDVI), which only uses red and near infrared bands to determine the presence of vegetation. Many researchers in environmental geography use NDVI because it has a very high correlation with the leaf area index (Xiao et al., 2002). The problem with NDVI is that sometimes it is difficult to take into account different atmospheric conditions. EVI, on the other hand, calculate the reflectance of the red band as a function of reflectance in the blue band. Therefore EVI is more capable to take into account different levels of residual atmospheric contamination, as well as various levels of soil and canopy background (Huete et al., 2002, 1997).

3.6.2 Calculating Urbanization Rate

Urbanization can be defined as the change of land cover from predominantly agricultural into more urban use. To determine the rate of such urbanization, it is necessary to take into account the fact that land cover change in rural areas does not happen unilaterally. Simultaneously with some farmlands being converted into urban uses, some open lands are also transformed into farmlands. Therefore, to determine the rate of urbanization it is necessary to subtract the two changes, normalized by the total area of each spatial reference. Formally, urbanization rate can be calculated as follows:

$$UR_{i(t-[t-1])} = \frac{\text{Farmlands to Urban Areas}_{ci(t-[t-1])} - \text{Open Grasslands to Farmlands}_{ci(t-[t-1])}}{\text{Total Area}_i}$$

where i denotes each *kelurahan* (sub-district); c denotes each pixel in the GLS data, and; $(t - [t - 1])$ represents changes between two time periods (2000 to 2005 or 2005 to 2010).

To avoid confusion, this paper uses a mathematical approach to the calculation of urbanization rate. It explains why this method of calculating the urbanization rate suggests that conversion of open grassland to farmland cancels out urbanization. In reality, of course, there are two separate processes. First, there are open grasslands that are converted into farmlands. Second, there are farmlands that are converted into urban uses. However, in relatively small regions it is reasonable to assume that farmlands are relatively homogenous and farm work can be evenly distributed across all farm land. Therefore, if what we are concerned is mainly the area and proportional reduction of cultivable land, from a purely mathematical perspective new farm openings can cancel out urbanization rate.

3.6.3 Determining Clustering Level

In general, clustering and dispersion can be analyzed to make inferences that pertain to the whole study area or specifically focused on detecting particular cluster locations within the studied area. The main difference of the two themes in spatial analysis revolves around whether the researcher is interested in global or local analysis (Getis & Ord, 1996; Anselin, 1995); in “smooth” or “rough” data (Haining, Wise & Ma 1998, based on Tukey, 1977), or whether he is interested in first-order (variation in the mean) or second-order (variation in the covariance) effects (Bailey & Gatrell, 1995).

Those who are interested in global analysis typically holds firm the principle of spatial dependence. Spatial dependence—often referred to as the first law of geography—implies that nearby things are more related than distant things (Tobler, 1970). On the other hand, researchers

who are more interested in making very focused and localized analysis typically hold firm the principle of spatial heterogeneity. This idea comes from the thinking that places are different one from another, which means that the understanding of context is very important in spatial analysis (Goodchild, 2004).

What this research uses is a disaggregated global metric to represent clustering and dispersion, to represent the uniformity of urbanization process across the study area within one sub-district, but to take into account the differences of this process among the different sub-districts. Technically, what I calculate is the global Moran's index (Moran's I) for each *kelurahan*, formally expressed as:

$$I_{it} = \left(\frac{n}{\sum_{cit=1}^n \sum_{dit=1}^n w_{cdit}} \right) \left(\frac{\sum_{cit=1}^n \sum_{dit=1}^n w_{cdit} (x_{cit} - \bar{x}_{it})(x_{dit} - \bar{x}_{it})}{\sum_{cit=1}^n (x_{cit} - \bar{x}_{it})^2} \right)$$

where I_{it} denotes Moran's index for *kelurahan* i in time t ; c denotes each pixel; d denotes each neighboring pixel to c , where $c \neq d$; x denotes the binary value assigned to each pixel in time t (1=agriculture; 0=non-agriculture), and; w_{cdit} denotes the queen contiguity spatial weights calculated for each sub-district i in time t .

3.6.4 Predicting Poverty Incidences Using Urbanization and Clustering Rates

The effects of urbanization and the clustering of urban growth on poverty can be estimated using ordinary least squares (OLS), as follows:

$$(P_{it} - P_{it-1}) = \beta_0 + \beta_1 UR_{i(t-[t-1])} + \beta_2 (I_{it} - I_{it-1}) + \varepsilon$$

where $(P_{it} - P_{it-1})$ reflects changes in the poverty incidence in sub-district i between two time periods (2000 to 2005 or 2005 to 2010); β_0 represents the intercept of this regression; $UR_{i\Delta t}$

represents urbanization rate in that time period; $(I_{it} - I_{it-1})$ denotes the clustering rate, which is the change of Moran's index over that period, and; ε reflects the assumed independent error terms. Further, $(P_{it} - P_{it-1})$ and $(I_{it} - I_{it-1})$ can both be presented as measures of changes, formally:

$$\Delta P_{i(t-[t-1])} = \beta_0 + \beta_1 UR_{i(t-[t-1])} + \beta_2 \Delta I_{i(t-[t-1])} + \varepsilon$$

However, there is reason for us to believe that the error terms in this equation are not independent. Given that poverty and welfare is related to livelihood, and livelihood is not a static object, there is a possibility that what happens in one *kelurahan* affects livelihood and poverty in another *kelurahan*. One example of such event is when the observed *kelurahan* experiences rapid urbanization, but the neighboring *kelurahan* does not. It is reasonable to believe that some of the lost rural agricultural jobs in that *kelurahan* may be compensated by the opening of new farmlands in another one, and thus, does not affect poverty levels as much.

To take into account such regional spillover effects, I estimated the impact of urbanization and dispersion using two additional regression models, namely the spatial lag and spatial error models. The spatial lag model incorporates additional effect of the changes in neighboring *kelurahan*'s poverty incidences into the model. It can be viewed as a spatial filtering model, formally expressed as:

$$\Delta P_{i(t-[t-1])} = \beta_0 + \beta_1 UR_{i(t-[t-1])} + \beta_2 \Delta I_{i(t-[t-1])} + \rho W_i \Delta P_{i(t-[t-1])} + \varepsilon$$

whereas W_i is the queen contiguity weight matrices created individually for each *kelurahan*; ρ denotes the parameter of the effect of changes in the neighboring *kelurahan*'s poverty

incidences. It is clear that the model assumes endogeneity, with $\Delta P_{i(t-[t-1])}$ being a spatially autoregressive variable.

An alternative model to this regression is the spatial error model, which assumes spatial dependence in the regression error terms instead of spatial dependence in the neighboring *kelurahan*'s poverty incidence. Formally, the spatial error model is expressed as:

$$\Delta P_{i(t-[t-1])} = \beta_0 + \beta_1 UR_{i(t-[t-1])} + \beta_2 \Delta I_{i(t-[t-1])} + \lambda W_i \varepsilon + \mu$$

Similarly, W_i in this model is the queen contiguity weight matrices for each *kelurahan*. However λ instead of ρ denotes the autoregressive coefficient of the effect of spatially auto-correlated errors. The non-spatial component of error terms in this model is denoted by μ .

The appropriateness of using either spatial lag or spatial error models will be addressed in a later part of the paper. However it is worth mentioning that since the data is not a spatial panel, the use of spatial panel regression method is not appropriate here.

3.7 RESULTS

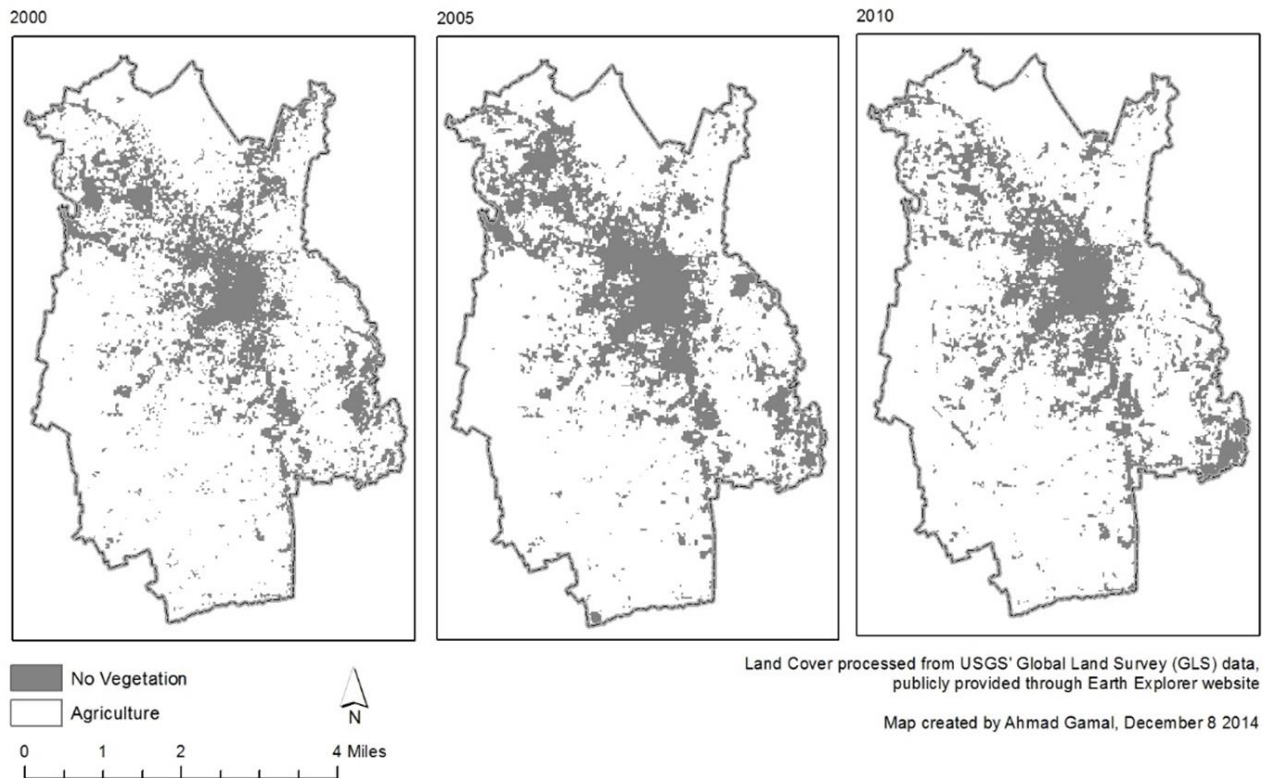
3.7.1 Agricultural and non-Agricultural Areas

Figure 3.1 below illustrates land cover changes in Salatiga during the study period, 2000 to 2010. The grey area represents non-agriculture areas, while the white areas represents vegetated, agricultural areas. The enhanced vegetation index (EVI) is a very good tool to

represent changes and growth of the urban areas at the center of city. The areas of built environment in the center of the study area are consistently progressing towards the outer ring of the city.

Given that they are calculated using enhanced vegetation index, however, there are far more confidence in the qualitative representation of the agricultural areas of the map. The grey areas may represent either the built environment or open lands, because both has no vegetation on it. This is particularly apparent in the southeastern areas of the city, where some inconsistencies appear across the different time period. The non-vegetated areas seem to be more concentrated in 2005, but spread closer to the city borders in 2010.

Figure 3.1 Land cover change in Salatiga, 2000-2010



Part of the explanation to this inconsistency is because the global land survey imageries are taken in the same period, but not at precisely similar dates. Differences in the dates of the image taking leads to the photo capture of agricultural fields in different cycles, one before the harvesting period and the other one after the harvesting period. Evaluation of this area through base map function in ArcGIS 10.2 (ESRI Corporation, 2013) confirms this speculation.

The qualitative evaluation of figure 3.1 confirms the necessity to take into account the changes from open land to farm land to calculate urbanization rate. Without taking into account such change, the variable urbanization rate will be significantly overestimated because all of the grey areas could be calculated as urban areas while realistically they also represent agricultural areas after harvesting seasons.

3.7.2 Urbanization

Figure 3.2 below illustrates two land cover changes that really matters to evaluate the rate of urbanization in the city. The first land cover change, represented by the green areas, is the change from open land to agriculture. These areas were previously grey and become white in the subsequent year (refer to figure 3.1). These areas may account for two things: First, it is possible that these areas are always agricultural in their use, but during the previous year captured after the harvesting season by the GLS satellite imaging. Second, it is possible that these areas were open pastures with nothing but low grasses on them, and they were converted into paddy fields or other agricultural uses.

The second land cover change, represented by red colored areas, are the regions where white areas change into grey (refer to figure 3.1), meaning that agricultural areas become less or not vegetated in the subsequent years. Like the first land cover change, there is the possibility that the red areas represent two events in reality. It may represent the capture of agricultural areas after harvesting seasons, or it may represent real changes from agricultural areas into urban uses. Subtracting the two possibilities, we can evaluate the real changes from agricultural areas into urban uses and normalize it with the total area of each *kelurahan* in the city of Salatiga to obtain each *kelurahan*'s urbanization rate.

Figure 3.2 Thematic land cover change in Salatiga, 2000-2010

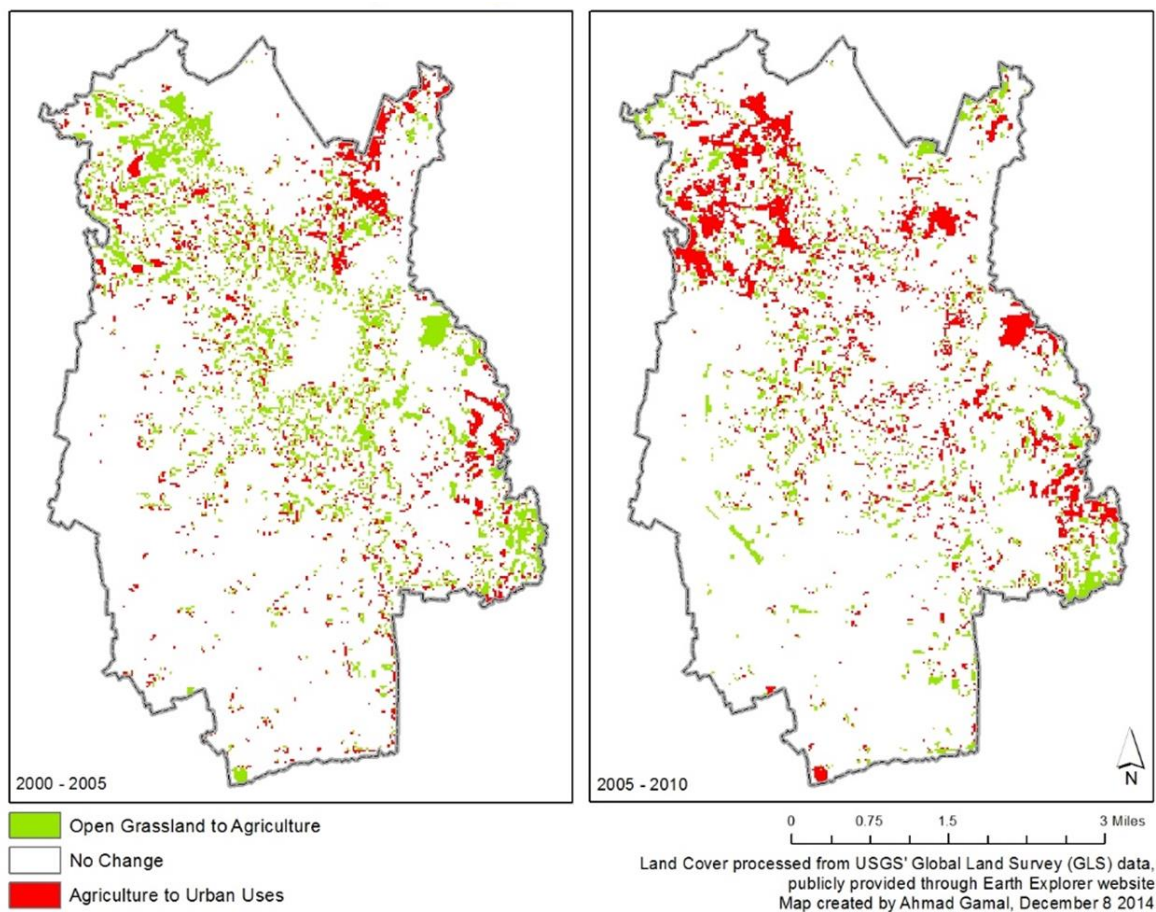


Figure 3.2 illustrated that urbanization did not happen uniformly across the city. The northeastern areas of the city experienced much more urbanization than the other parts of the city during the 2000-2005 period. The distribution of such rapid urbanization change during the second period of study, 2005 to 2010, with the northwestern areas having much more areas experiencing conversions from farmlands into urban uses. Additionally, however, the southeastern areas of Salatiga also experience much of the urbanization process. In general, the map confirms that urbanization in Salatiga happens in rapid and sporadic fashion, with conversions of farmlands into urban uses happens in dispersed spots across the city.

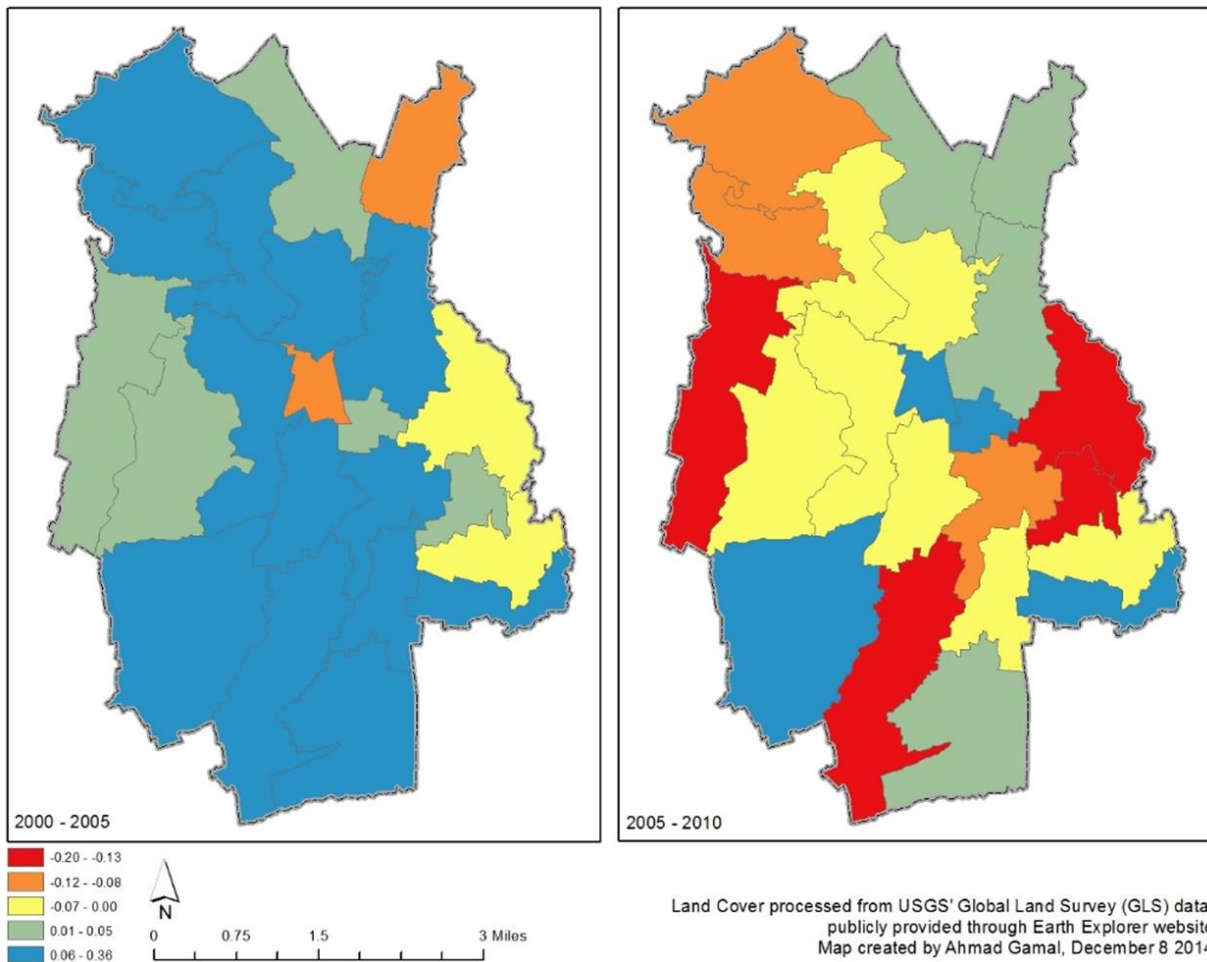
3.7.3 Clustering of Urban Growth

Moran's I represents the association of the values of each pixel with the values of neighboring pixels. Essentially, this global index measures the autocorrelation between each cell's values with its neighbors. A positive value of the Moran's I indicates positive autocorrelation, which means that similar values tend to locate closer to each other. A negative value signals the opposite. Intuitively, global Moran's I can be used to make inferences about the strength of clustering in each studied area. Subtracting two Moran's I from two different time periods can produce an inference about whether an area experience tendency to have more clustering or more dispersion over time.

Figure 3.3 below illustrates changes in global Moran's index (Moran's I) for two time periods (2000-2005 and 2005-2010) in each *kelurahan*. The red and orange areas represents *kelurahans* with negative autocorrelation over time, essentially the ones experiencing more

dispersions of urban growth. The green and blue areas represents *kelurahans* with positive autocorrelations, which means that growth in those areas tend to cluster over time. The yellow areas represents the *kelurahans* with bordering values. They still demonstrate negative autocorrelation, but the small index makes it very difficult to make inferences about whether urban growth in these areas have the tendency to cluster or disperse over time.

Figure 3.3 Dispersions of urban growth in Salatiga, 2000-2010



Some lessons can be learned from the map. First of all, in general the areas in the outer ring of the city tend to have more dispersed urban growth. This is generally true for both time

periods, although it becomes much more apparent in the second period of 2005 to 2010. Second, the magnitude of this dispersion is far greater in the second period of 2005 to 2010. This may be a confirmation of the fact that Salatiga's industrialization policy has led to rapid, corporatized manufacturing industries-driven urban growth in the previously predominantly rural agricultural areas.

3.7.4 The Correlation between Dispersion, Urbanization and Poverty

Table 3.1 explains two general conclusions about the correlation between urbanization and a dispersed fashion of urban growth in Salatiga. There is no statistical significance for the impact of the urbanization rate on poverty. However, there is very high statistical significance on the impact of clustered urban growth on poverty. OLS produces satisfactory statistical significance below 1 percent level for the impact of clustered urban growth on poverty. More sophisticated spatial lag and spatial error models taking into account spatial spillover effects produce more statistical significance below 0.1 percent level, which is virtually zero.

The statistical significance of clustering on new poverty incidence is very consistent on all poverty measures used against the urbanization and clustering variables. The clustering of urban growth can predict changes in the total number of new poor, very poor, poor, and the change in number of people who self-report themselves as being poor to be included in PPLS as a recipient for social assistance programs. OLS result predicts that one unit increase of Global Moran's Index can be associated to 1,500 new poor people in each *kelurahan* in Salatiga, between 2005 and 2010. This number can be broken down as follows: 359 new very poor, 527

new poor, 365 new almost poor, and 254 newly self-reporting poor people added to the existing cohort of poor people. Spatial Lag and Spatial Error models predict even higher number of new total poor for a unit increase in Global Moran's I, 1,639 and 1,918, respectively.

However, this result is not statistically significant on those who are identified by PPLS as almost poor (those whose income are above 120 percent of the poverty line). Using spatial lag model to take into account the spillover effect does not change the statistical significance for this account, and the spatial error model can only produce a weak statistical significance slightly below 5 percent level. It means that when the threshold of significance is increased, the significance of the impact on people who are almost poor disappears.

Table 3.1 New Poverty, Urbanization Rate and Clustering of Urban Growth, Salatiga, 2005-2010

Variables	OLS		Spatial Lag		Spatial Error	
	β	σ	β	σ	β	σ
Δ Total Poor						
Urbanization Rate	319.72	562.54	304.72	503.61	230.61	375.12
Clustering of Urban Growth	1,506.07**	534.42	1,638.61***	478.45	1,917.55***	338.50
Spatial Weights Matrix			-0.37	0.29	-0.98***	0.27
Constant	430.69***	50.61	565.62***	116.15	429.88***	25.76
Δ Very Poor						
Urbanization Rate	61.88	136.65	69.40	124.25	501.79	84.90
Clustering of Urban Growth	359.17**	129.82	387.00***	118.09	77.48***	93.89
Spatial Weights Matrix			-0.25	0.30	-0.95***	0.27
Constant	77.52***	12.29	93.68***	21.71	80.08***	6.47
Δ Poor						
Urbanization Rate	109.90	196.61	109.21	181.72	97.68	158.84
Clustering of Urban Growth	527.38**	186.78	550.308***	172.8245	649.26***	147.59
Spatial Weights Matrix			-0.14	0.29	-0.61*	0.32
Constant	144.20***	17.69	161.45***	39.73	145.15***	11.55
Δ Almost Poor						
Urbanization Rate	37.20	262.50	13.44	229.47	2.57	208.72
Clustering of Urban Growth	365.28	249.38	383.72	217.99	407.61*	193.55
Spatial Weights Matrix			-0.51	0.31	-0.64*	0.31
Constant	164.59***	23.62	240.09***	51.18	162.69***	15.09
Δ Self-Reported Poor						
Urbanization Rate	110.74	84.98	106.10	77.43	106.10	77.43
Clustering of Urban Growth	254.25**	80.73	265.89***	73.58	265.89***	73.58
Spatial Weights Matrix			-0.25	0.29	-0.25	0.29
Constant	44.39***	7.65	51.43***	11.35	51.43***	11.35

Note: $n=22$; * $<5\%$; ** $<1\%$; *** $<0.1\%$ level of significance.

Poverty data from Indonesian Statistics' (BPS) Social Protection Program Survey (PPLS) 2008 & 2011 Urbanization rate and level of decentralization calculated from the US Geological Survey's Global Land Survey (GLS 2005 & 2010). Thresholds: Very Poor = individuals with income less than 80% of poverty income threshold; Poor = individuals with income less than the poverty income threshold; Almost Poor = individuals with income more than the poverty income threshold, but less than 120 % of the threshold.

3.7.5 Determining the Appropriateness of Spatial Regression Models

Table 3.2 Diagnostics for Spatial Dependence

	Moran's I		Lagrange Multiplier		Robust LM	
	Value	<i>p-value</i>	Value	<i>p-value</i>	Value	<i>p-value</i>
Spatial Lag Model			0.60	0.44	2.73	0.09
Spatial Error Model	1.22	0.22	2.29	0.13	4.42	0.03

Note: LM=Lagrange Multiplier Test

Table 3.2 above summarized the regression diagnostics to help determine the appropriateness of using spatial lag and/or spatial error model. Lagrange Multiple tests result in no statistical significance for spatial lag and error model. The initial response to this result is that there is no need to use spatial model and to trust results from OLS estimations.

However, the Robust LM tests produces very statistically significant results for both spatial lag and error models. In this case, spatial error model is more statistically significant at 3 percent level, which signals its appropriateness to be used in this estimation.

3.8 CONCLUSIONS

This research does not find a direct relationship between the rapidness of change in land cover conversions from agriculture to urban uses with poverty incidences. What this research confirms is that the fashion in which that urbanization process takes place is correlated to the

changes in poverty incidences. A more centered, clustered, land use change from agriculture to urban uses predicts a higher number of newly poor people. A more contiguous land use change on large areas signals corporatized real estate or manufacturing industry development type. This type of development is more likely to displace people who are dependent on rural agricultural livelihood, and thus leads to a higher number of new poor people in the region. Dispersed land use changes, on the other hand, reflects a decentralized decision making process. Dispersed land use changes may represent individual families building new homes in their respective land plots. This type of development does not displace people from their livelihood and does not have poverty effect.

This result is not uniform across all levels of economic destitution. Those who are poor and very poor are much more affected by the clustered changes in land cover. This signals the higher proportion of people in this income category who are dependent on agricultural and land-based livelihood. Most likely people within this income group are landless and are far more affected by land use changes on public or community owned lands.

People from slightly higher income category, identified as almost poor, are less or not affected by the spatial configuration of the urban growth. There are two possible explanations for this. First, they are likely to be better off because they have more diverse sources of income, and not completely dependent on agriculture. Therefore, when there is a massive corporatized takeover of public or community owned land, they can shift their focus to earn from other available income source. The second possible explanation is that people in this group has their own land, albeit the small size, for cultivation purposes. Changes in publicly or communally

owned land use do not affect them directly. If they have land, the acquisition of that land will most likely be compensated, which means that their income and consumption will not take a direct hit.

3.9 POLICY IMPLICATIONS

This research confirms that the industrialization policy in Salatiga, with a strong land use component that gives a leeway for industrial establishment to take place on prime agricultural lands, accelerates the urbanization rate and increases the clustering of urban growth. Local municipal governments should have two policy takeaways from this research: First, aggressive farm land use conversions to urban uses may imply dispossession and displacement of people who are dependent on land for their livelihood. This substantial social cost should be included in the cost benefit analysis of any land-use based industrialization policy before they are implemented.

Second, people who are displaced from farm lands are not likely to be able to directly enter newly established industrial/commercial jobs, and thus will lose their livelihood and fall into poverty. Local governments should consider complementing land-use based industrialization policy with some labor development approach. People who are potentially displaced from the converted farmlands should be retrained to prepare them to enter non-agricultural jobs. If this is not a viable solution, then local governments is responsible for a form of compensation as a direct consequence of depraving them from their own livelihood.

CHAPTER 4

CAPITAL CONDITIONING: URBAN LAND-USE PLANNING AS THE STATE'S INSTRUMENT TO ACCOMMODATE CAPITAL-DEMANDED RURAL-URBAN TRANSFORMATIONS

4.1 ABSTRACT

Why do planning agencies make plans that are against the economic needs of their constituents? Why do economic-development plans work against the local public interest? This case study of rural urbanization-industrialization in Salatiga, Central Java, Indonesia uses a mix-methods approach with a concurrent nested strategy to help answering those questions. Benefiting from interviews, focus group discussions, and reviews of planning documents and regional statistics, I discuss the multidimensional mismatches between planning and the public's perspective. I argue that such mismatch is a result of required transformations demanded by the interest of capital. To allow for accumulation to happen, capital requires localities to meet certain conditions—I call this “capital conditioning”. Planning plays a key role in making sure that the locality meets capital conditions through four processes: alteration of perceived future and vision, compression of time frame for expected change, restructuring of legal and perceptual definition of locality, and redefining the role(s) of the State.

Keywords: *planning, capital, urbanization, industrialization, public interest.*

4.2 INTRODUCTION

Why do planning agencies make plans that are against the economic needs of their constituents? Why do economic-development plans work against the local public interest? This case study research presents the story of rural urbanization-industrialization of Salatiga, a mid-sized city in Central Java Province, Indonesia to help explain why. In its effort to industrialize, the city annexes and incorporates neighboring rural areas, develop future land use plans in incorporated areas, promotes and incentivizes industrial co-locations in the newly annexed areas. During this process, however, the city restructures the legal ownership of public lands, reorganizes the entire rural land use and allocations, and disfranchises many rural farmers from access to publicly owned farm lands.

I organize the paper into three large sections: In the first section I will present the case of rural urbanization and industrialization that takes place in Salatiga. This section will discuss the history of the annexation-incorporation of the neighboring rural villages into the city and its legal implications on rural community lands. One of the most important legal implication of the incorporation is the legal restructuring of land ownership, from previously community-owned and managed, into becoming publicly owned and commercialized. The section will also present the economic implications of this legal restructuring on aggregate income growth, persistent concentration of rural poverty, deprivation of rural agricultural livelihood and the unequal distribution of welfare impacts across space and between genders.

The second section tries to explain why a plan that would bring deprivation to rural livelihoods was executed in Salatiga by exploring the multidimensional mismatches between the planning agencies' and the public's interest, when it comes to effort to achieve economic development: (a) Planning agencies and the public have *diverging vision about the region's economic future*: The city envisions the region as a competitive industrial hub at the heart of the province while the local residents dream about local industrial development that revolves around capital intensive agriculture; (b) Bureaucratic planning operates within a *compressed time-frame* for research, planning, and implementation of policies. People's livelihoods, however, are subject to family and intergenerational cycles; (c) Locality is often perceived by residents in reference to the spatiality of lives and work. Bureaucratic planning, however, is dependent on administrative area definitions. *Conflicting legal and perceptual definitions of locality* leads to the different perceptions about equitable distribution of benefits and burden of development; (d) People and planners have *conflicting views about the role(s) of the State*. Planning agencies put more emphasis on their responsibility as promoters of economic development. On the other hand, people see them as a representation of the State, with ultimate responsibility as the guardian of marginal communities.

In the third section, I make the argument that planning's ignorance of local public interest can be explained by understanding the key role of planning in aligning all capital interests and meeting capital conditions. Molotch's (1976) growth machine theory has laid out the basis to understand how urban elites can coalesce to exploit land use intensification as a tool for wealth accumulation. However, this social theory does not really help us to understand how elites from such disparate institutions organize themselves around a common cause (Rast, 1999). More

importantly, it is unclear how they can organize themselves around a common land-use based strategy. I argue that the planning process is the way all of these interests are mediated, negotiated, and accommodated in Salatiga. Planning is the State's instrument to meet conditions demanded by capital prior to its intended wealth accumulation—a tool to satisfy capital conditioning.

4.3 PROBLEMATIZING PLANNING: FOUR PROPOSITIONS

To answer the question “why planning agencies make economic development plans that are against their constituents' economic needs and interests”, some research propositions need to be developed and tested. The first proposition deals with the probability that planners have some form of aspirational disconnect with their constituents, which makes them unable to understand their constituents' vision on the future of the locality. Planning theorists who prefer the Habermasian communicative rationality (1968, 1984) favors this explanation. Friedman (1973, 1987, 1994) suggests that planning should be trans-active, to be situation-specific, decentered, and draw potentially affected people into the planning process from the beginning. Variations of communicative practices in planning have emerged, for example collaborative planning (Healey 1997), consensus building (Innes, 1995, 1996; Innes & Booher 1999), mediation or conflict resolution (Ruben & Lievrouw, 1990; Susskind & Cruikshank, 1987; Dotson, Godschalk, & Kaufman, 1989).

An alternative explanation is what some planning theorists propose as the nature of time-compression in the planning process. Particularly in disaster management and planning for

recovery, a large amount of infrastructure is lost to a certain cause. Time-compression explains how the normal process of capital depletion and replacement is conducted in an extremely short time to avoid disruptions to services (Olshansky, Hopkins, & Johnson, 2012). The process of rebuilding, therefore, is similar to building capital services except that it has to be done in more expedient manner. I argue that the context of developing economies presents the same challenges with disaster recovery. Developing regions do not experience immediate capital infrastructure depletion. However, the fast population growth and lack of public services require those regions to generate capital public and private infrastructure investments in an extremely short period of time.

The third proposition deals with what Lynch (1960) calls the mental mapping. Lynch, an urban planner and architect, proposes that people create mental maps of their surroundings using some basic elements, such as paths, edges, districts, nodes and landmarks. Particularly interesting in his study is the notion that mental maps are unique at the individual level, since results from individual perceptions and experiences of their surroundings. Planners and constituents, both have unique and differing mental maps of the edges (boundaries) and the districts of their locality. However, planners are much more bound to the administrative definitions of the locality. Meanwhile, people are more attached to their perceived boundaries and districting of the city. In this research I propose to compare the two different (and most likely conflicting) definitions of the locality—the legal and the perceptual. I also explore the social and political implications of planning an economic development when the administrative definition of the locality violates the widely accepted, perceptual, traditional demarcation of the city's borders.

Last but not least, this research proposes that the explanation to divergences between the interest between planning projects and the interest of the common people lies at the differing roles of the State. Some planning theorists propose that planning is an integral arm of the Capitalist State (Yiftachel, 1989: 33), and therefore cannot be analyzed outside the framework of theories about the State. The standard Marxian view of the State is that it plays the role of facilitating capital accumulation and legitimizing the capitalistic institutions (e.g. Dear and Scott, 1981; Dunleavy and O'Leary, 1987; Hague, 1984; Harvey, 1973). Weberian scholars have more nuanced view on the role of the State. Weberian thoughts position the State as to serve multiple societal interests, but always guided and performed by a bureaucratic system that is rational and independent (Weber, 1978).

4.4 RESEARCH DESIGN & METHODS

This research uses a mixed-methods approach with concurrent nested design (Creswell, 2003; Creswell et al., 2003). A mixed-methods approach is the product of a pragmatist paradigm which combines the qualitative and quantitative approaches within different phases of research (Tashakkori & Teddlie, 2008: 22). It mediates the tensions between two opposing paradigms: the post-positivist quantitative research and the constructivist/interpretivist qualitative research (Terrel, 2012: 258). A “concurrent” strategy means that quantitative and qualitative data is collected simultaneously, without a sequence one before the other. Both types of data are used simultaneously in the analysis to produce an interpretation of the studied planning process. In this case, quantitative data collection is “nested” within the qualitative information collected for

the purpose of the research. More priority is given to the primary qualitative data—interviews, focus group discussions, and reviews of planning documents to help guide interpretation of the planning process studied. Regional statistics are used to clarify, confirm, and sometimes challenge, interpretations.

The following table 4.1 summarizes the research propositions and the methods used to address the propositions. In general, there are four propositions to be tested in this research, each has a specific method that is considered appropriate to address it.

Table 4.1 Research Propositions and Methods

Propositions	Methods	Notes
Aspirational disconnect	<ul style="list-style-type: none"> - Interviews with planners (6 interviews) - Interview with community activists (5 activists) - Interview with dislocated farmers (7 farmers) 	Community activists include heads of neighborhood/community associations (RT/RW)
Time-frame compression	<ul style="list-style-type: none"> - Interview with farmers (7 farmers) - Archival research (10 documents) 	Nine (9) city planning documents and 1 (one) national government regulation are reviewed
Conflicting perception of locality	<ul style="list-style-type: none"> - Focus group discussions with planners and senior officials (3 FGDs) - Focus group discussion with farmers (2 FGDs) - Inventory audit of public land resources 	FGDs with planners are conducted in the City Planning Agency (<i>Bappeda</i>). Inventory audit is conducted on Kelurahan Noborejo, as an example.
Diverging view on the role(s) of the State	<ul style="list-style-type: none"> - Interview with sub-district (<i>kelurahan</i>) administrator - Interview with community activists (5) 	Only one <i>lurah</i> (sub-district administrator) interviewed

As the table might suggest, the qualitative component in this research is more dominant. Quantitative data will be used to support inferences found in interviews/focus group discussions/archival research. If two interview subjects make conflicting claims about a particular topic, quantitative data is used to confirm the validity of each claims. For example, in

the table above, inventory audit of the land resources was conducted because officials and farmers make conflicting claims on whether the incorporation scheme benefits local residents. The inventory audit helps to clarify the amount and number of public farmland plots in the incorporated areas before and after the incorporation. The distribution of such farmland within and outside the incorporated areas will also help understanding the implications of the incorporation on farm livelihood.

4.5 CASE STUDY: RURAL URBANIZATION-INDUSTRIALIZATION IN SALATIGA, 1993-2015

4.5.1 Incorporation of Rural Land as a State-Sponsored Land Grab

In 1997, the City of Salatiga (the city) decided to incorporate Tingkir and Argomulyo, two *kecamatan* (districts) in the adjacent County of Semarang. Within *kecamatan* Tingkir were six *desa* (villages) of Kutowinangun, Gendongan, Sidorejo Kidul, Kalibening, Tingkir Lor, and Tingkir Tengah. Within *kecamatan* Argomulyo were the six *desa* of Noborejo, Ledok, Tegalrejo, Kumpulrejo, Randuacir, and Cebongan.

This incorporation allows the city to totally transform the institutional setup for land use management in the incorporated regions. Rural areas will adopt urban administrative status when they are incorporated by an urban municipality, regardless of their current rural characteristics. This change in administrative status not only gives the city control over land use, but also ownership over previously community-owned lands.

Before such administrative change, land use in the incorporated regions was determined by a traditional system. Traditionally, privately owned lands in a *desa* were widely unregulated. However a substantial amount of lands were categorized as *sawah bengkok*, the communally owned lands. The Javanese system recognized three main uses of the *bengkok* land, as *lungguh* (salary lands for village administrator), *kas desa* (village collective capital), and *pengarem-arem* (administrator's pensions lands) (Maurer, 1994). The land use of those communal lands was the discretion of the village head. On the other hand, property ownership of *bengkok* belonged to the village. Hence the transfer of property was impossible without the agreement of the village residents. The village head had the limited authority to decide how much rent will be applied and who was eligible to farm on the *bengkok* land. But he had no right to sell the land. Even *lungguh* and *pengarem-arem* lands must be returned into *kas desa* if the village head was deceased or no longer served in the position.

The city's incorporation of rural lands brings sweeping changes to the institutions overseeing land use designations. As *desa* becomes a *kelurahan*, *kepala desa* (village head) becomes a *lurah*. A *lurah* is appointed and paid by the city instead of elected by the villager and paid through the rent of *lungguh*. A *lurah* also receives the warrant for a pension from the government pension fund, thus he is no longer entitled to the rent from *pengarem-arem*. All of the *bengkok* lands in the incorporated regions thus become *kas desa*, the collective's capital. The increase in *kas desa* land, however, does not mean that the incorporated villages have much larger discretion over the use of *bengkok* lands. Instead, because the *desas* are incorporated, all of the property rights over communally-owned lands' are transferred to the city. Along with this

transfer of property right and ownership is the transfer of discretion to designate land use from the village heads to the city's planning department.

Owning abundant land with extraordinary powers over their land use, in 2003 the city designated the 12 *desa* as the city's new industrial district, outside the city's core urban areas. Through this policy, the city could transfer *bengkok* lands to private developers to build industrial establishments. The transfer of rights over *bengkok* lands could also happen through long term rental agreement. However the magnitude of industrial land use designation is beyond the direct sales or rental of *bengkok* lands. Instead, the industrial designation of the incorporated regions allow for the conversion of farm lands into industrial establishments. Consequently, there are major land rights transfers beyond the transfers of *bengkok* lands. Whereas right transfers of *bengkok* involve the city, these outside transfers are only between private land owners and industrial capital owners. Thus, outside transfers are beyond the city's oversight although it is the direct impact of the city's land use policy.

4.5.2 The Transformation of Local Economic Structure and the Aggregate Income Growth

Such aggressive land-use based industrialization policy directly transformed the economic structure of Salatiga, as evidently demonstrated by the stagnation of its agriculture, relative to income growth in other sectors. The city's aggregate income from agriculture still grew very modestly at slightly above 11 percent between 2005 and 2010. However it significantly lagged behind the provincial and national growth at 17 and 40 percent, respectively. As a comparison, growth of the city's agriculture income was even far behind the City of

Semarang's growth at 16.23 percent over the same period. It was quite a stark contrast considering that Semarang is Central Java Province's capital, a much larger agglomeration of industries, and has much less share of agricultural lands in comparison to Salatiga (see Table 4.2).

The much anticipated industrial sector growth as a direct result of aggressive farm land use conversion, however, did not come as expected. Over the five year period, Salatiga's manufacturing income grew modestly below 20 percent. This figure is considerably low considering that over the same period Semarang's manufacturing income grew more than 20 percent for both the county and the city. The figure is even much lower than the provincial and national figure, both above 30 percent between 2005 and 2010.

Table 4.2 Regional Sectoral Growth (% Change), 2005-2010

Region	GDRP	GDRP by Sector				
		Agriculture	Manu- facturing	Building Construction	Services	Other
Salatiga (City)	26.46	11.07	19.50	48.52	16.64	33.08
Semarang (County)	24.09	18.96	22.62	21.38	33.60	26.64
Semarang (City)	31.94	16.23	27.16	48.03	32.54	30.25
Central Java (Province)	31.90	16.81	33.15	38.36	32.95	35.44
Indonesia (National)	53.28	40.02	35.44	17.93	23.52	19.94

Source: Indonesian Bureau of Statistic(BPS)

Note: GDRP = Gross Domestic Regional Product. The "other" category includes revenues from mining & excavations, utilities sectors, hotels & restaurants, transportation & communications, and finance & commercial services. Numbers excludes oil & gas revenues.

Instead of a rapid industrialization, data on regional sectoral growth signals strong urbanization effect of the incorporation policy. During the five year period, construction income grew almost 50 percent. This change is significantly higher than the provincial and national

growth. Quite strikingly, this change is also higher than the growth of aggregate construction income of the City of Semarang. This is despite the fact that the City of Semarang is a significantly larger agglomeration of industries, commercial, and residential functions. Economically speaking, Semarang's aggregate GDP is almost 24 times larger than Salatiga's.² These figures indicate the strong and growing demand for new construction, as more land becomes available for other uses aside of agricultural purposes.

4.5.3 The Development Curse: The Loss of Rural Livelihood and the Impoverishment of Rural Farmers

Despite the rosy picture of economic growth at the municipal level, rural industrialization in Salatiga also brings a misfortunate impact to the people in incorporated regions, chief among them the villagers of Noborejo. The impact of rural industrialization is devastating to near-poor, agricultural populations whose sole access to land as their productive capital was made possible through *bengkok* system. Landless laborers, previously capable to do farming by contracting *bengkok* lots from the village administrators, lose their cultivation land to manufacturing company owners.

The loss of agricultural land does not only affect farmers who contract land through *bengkok*. Because the designated land use of the incorporated regions is no longer agricultural, it becomes a great disincentive for private land owners to seek rent from farmers. Industrial investments become a much more attractive alternative with a higher return to land owners.

² Consult Appendix C to find the relative size of GDP across the discussed regions.

Because most of them have little capital, if any, most of them prefer to sell or rent their land for the long term to urban industrial capitalists. Since the majority of farmers are landless, the transformation of land use also affects the lands they previously had access to.

In many parts of the incorporated regions, the widespread loss of livelihood can almost be solely attributed to the loss of agricultural land. A simple visual observation of a spatial poverty mapping from the Data Collection for Social Protection (PPLS) 2011 below can demonstrate the relationship between industrialization, unemployment, and poverty status. To illustrate, in *Rukun Warga* (Community Association, RW) where most *bengkoks* are converted from agricultural to manufacturing uses there are more numbers of factories. Ironically, these RWs also have the higher share of unemployment and very poor households (*rumah tangga sangat miskin*, RTSM). All of the high poverty and high unemployment RWs are areas where most *bengkoks* had been converted into factories. Most households registered in PPLS as either poor or unemployed in those regions are previous agricultural workers who were dislocated from the *bengkoks*. RWs with higher poverty share demonstrate higher poverty incidence than the national account at 12.49 percent in 2011 (see figures 4.1 & 4.2 and tables 4.3 and 4.4 from *Kelurahan Noborejo* below as an illustration).

The so-called urbanization effect which brings a substantial growth of the city's aggregate income does not actually lead to the welfare of the residents of incorporated regions. Land use transformations from agriculture to industrial and residential do lead to new job opportunities in construction industries. However these new job opportunities are not better than the lost agricultural livelihoods, both in terms of income stability or the level of income.

While being very dependent on the natural seasons, agricultural jobs are still a more stable source of income. This is because Salatiga farmers have managed an adaptation by having crop alternation techniques. Because rice can only be harvested twice in a year (sometimes even only once for fields without permanent irrigation), some farmers have planted red chili in between the rice crop planting seasons. Some others have completely moved to plant chili to make it possible to have 6 to 7 harvesting seasons, thus giving a yearlong income generating job.

On the other hand, new job opportunities in the construction industry do not provide income stability because it is even more seasonal than agricultural jobs. Most of the new construction jobs are in infrastructure (road and governmental building), which is very dependent on the governmental budgeting cycles. These jobs effectively last for the maximum of six months between July and December due to the inefficiency in the local and regional budgeting processes.

Since their loss of livelihood comes as an abrupt disruption, most farmers and farm labors have little opportunity to seek for alternative job opportunities beyond doing construction jobs. When less construction jobs are available (between January and July each year), ex-farmers who have lost their agricultural livelihood will

“,..., do whatever it takes to earn a living. (I) sometimes ride the becak (for hire rickshaw taxi), some other times (I) lift weights for vendors and buyers in the pasar (traditional food market). (I) do manual labor for factories too, when they need and want (it),..., (I) never know (what opportunity comes up),..., just work serabutan (a precarious livelihood) as long as (I) can eat.” (An ex-farmer).

Figure 4.1 Share of Very Poor Population, *Kelurahan Noborejo, Salatiga, 2011*

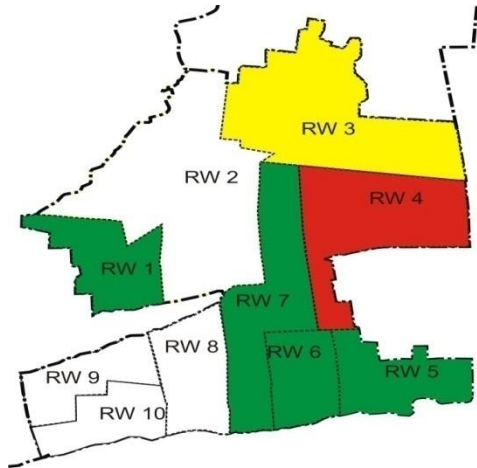


Figure 4.2 Share of Unemployed Population, *Kelurahan Noborejo, Salatiga, 2011*

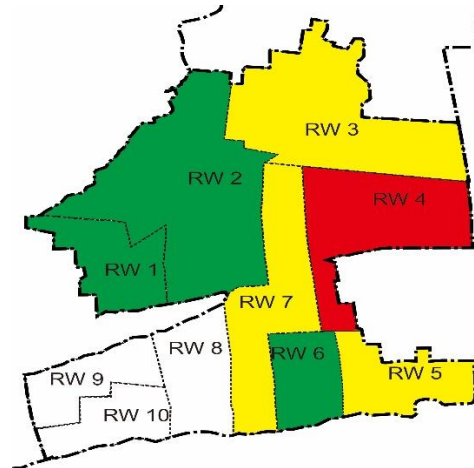


Table 4.3 Share of Very Poor Population, *Kelurahan Noborejo, Salatiga, 2011*

RW	Households	%
1	36	12.0
2	16	5.3
3	48	16.0
4	54	17.9
5	38	12.6
6	33	11.0
7	32	10.6
8	21	7.0
9	18	6.0
10	5	1.6
Total	301	

Table 4.4 Share of Unemployed Population, *Kelurahan Noborejo, Salatiga, 2011*

RW	Households	%
1	2	10.5
2	2	10.5
3	3	15.8
4	4	21.05
5	3	15.8
6	2	10.5
7	3	15.8
8	0	0
9	0	0
10	0	0
Total	19	100

Source: Map courtesy of BKM Sejahtera Mandiri, Kelurahan Noborejo. Data calculated using Pendataan Program Perlindungan Sosial (Data Collection for Social Protection, PPLS) 2011.

4.5.4 Unequal Welfare Impact across Regions

Disruption to livelihood is disproportionately experienced by people in the previously rural, incorporated regions. Meanwhile, urban dwellers do not experience such disruption and rather enjoy an increase in the demand of their labor as more factories are established. While being low-level, low-wage entry jobs, manufacturing employment rigidly requires a minimum of high school diploma. This requirement is almost impossible to be fulfilled by the people in previously rural, incorporated areas. Thus most of these jobs are filled by urban commuters with higher education level than their rural peers. People in incorporated areas who are predominantly ex-farmers and ex-farm workers losing their cultivation lands cannot fill these jobs except as manual labor without a long term contract. Thus while losing their agricultural livelihood, they still do not have access to the production line, which also means no access to higher income or income stability.

In the incorporated regions there is a widespread political awareness of the unequal distribution of benefits of incorporation and industrialization. The incorporation and the subsequent rural industrialization is perceived as

“,..., a way to bring benefit to the people of the city, not us (in the incorporated regions). When I say the people of the city, you know what I mean: the municipality. How can they benefit? I don't know, maybe they get something from factory establishments here. We (the residents of incorporated regions) only get the unemployment (as the direct impact of the incorporation).” (A teacher and a community self-help volunteer at Kelurahan Noborejo).

Some of the interviewed ex-farm workers report that as of today—about a decade after the first wave of farm conversions following the incorporation—some of their children have

begun to have access to manufacturing employment in the area as they have better access to high school education. However, by the time education is attainable for most of ex-farm workers' children, their urban peers have had more access to information about the hiring system through formal and informal channels.

The constant, annual re-hiring mechanism applied by manufacturing factories open opportunities for internal players to reap benefit from labor hopefuls by illegally soliciting money in the hiring process. It is common for each factory to have one or few *mandors* (group head). Aside of running the supervisory function against labors on the production line or manual labors outside this line, *mandors* sometime mediate the hiring process between the factory and the individual labor. Both types of workers, those commuting from urban areas and those originating from the incorporated regions are subject to this rehiring mechanism and also subject to its corrupt practices, thus similarly vulnerable to unemployment at any time.

4.5.5 Gendered Dimension of Work

Although rural livelihood has already been traditionally gendered, environmental transitioning in the form of rural industrialization introduces modern forms of gender disparities outside the domestic lives. Javanese women have been traditionally stereotyped as *nrimo* (gullible) in general.³ They are more willing to be paid less and work longer hours than their male peers at work.

³ There is no direct translation for this social attribute. The literal translation to the Javanese word is "accepting". The word is used to describe someone whose personality allows him/her to live life without much complaining. Such person takes much responsibility without worrying too much whether his/her rights are fulfilled.

Socially, this gender disparity finds justification in Javanese households' domestic distribution of financial responsibility. Men are typically paid better because they support a greater portion of household liabilities. Nevertheless, a number of people have begun to find this social justification less relevant. Rather, the difference between men's and women's wages is because men have some socially accepted lifestyle expenditures. In a construction labor's words:

*“(Women) are paid less because they do not smoke. When men are paid less (we have) no sufficient money to (buy) cigarettes and coffee (bought at coffee stalls).”
(A seasonal construction labor).*

The combination between the social stereotype and the lower market price for women's labor create a social paradox in the incorporated regions: female workers are indeed paid less but they are much more employable than their male peers. Unemployment figures for *Kelurahan Noborejo* demonstrate the staggering disparity between male and female employability. In a population of 6,000, 4,100 among them in the labor force, only 10 percent of male workers are formally employed. This figure is in stark contrast with female employment which reaches 20 percent. The high share of unrecorded employment does not always indicate unemployment because most people work in the informal sector.

The feminization trend of work is not exclusive to the production of traditionally gendered goods, such as cigarettes and garment. Quite recently more female workers are employed in heavy industries, such as the production of asbestos. Some of the newly established factories in the incorporated regions have even made it explicit in their street vacancy advertisements that they only look for female workers. Female workers have even been employed in the construction industry which is traditionally a domain of the male workers.

The gender disparity between men and women in the construction industry is demonstrated by both the differences in their wage level as well as their relative “career ladder”. Most female labors work as a *laden* (construction assistant). They can receive up to Rp. 45,000.00 (US\$40) for a 9-hour-day work.⁴ Male workers in the same position can receive up to Rp.50,000.00 (US\$ 45) for his work. The significant difference between construction workers’ wages will be observable when comparing a *laden* to a *tukang* (craftsmen). A *tukang*, although is not certified by any formal institution, is a construction worker with a special skill. A *tukang* can receive wages way upward from the Rp. 50,000 lower limit, sometimes reaching Rp 75,000.00 (US\$85) for his 9-hour-day work. The Javanese construction industry recognizes *tukang batu* (stone and cement craftsmanship) and *tukang kayu* (woodwork craftsmanship). In any of these two categories of *tukang*, very few women are employed, if any.

4.6 DIVERGENCES: URBAN LAND USE PLANNING, SOCIO-ECONOMIC REALITIES, AND THE PUBLIC INTEREST

4.6.1. Diverging visions on the region’s economic future

My interviews reveal that planners and the local residents have diverging visions about the future of Salatiga’s economy. Planners and decision makers in Salatiga are far more interested in substituting the agricultural economic base with manufacturing industries. The mayor, city planners, senior officers, and other government officials often speak of regional

⁴ Again, there is no direct translation for this word. The word literally means a “server”. A *laden* is usually an apprentice who does all of the leg and manual work for the actual craftsman.

ambitions: opening large-scale businesses, opening job vacancies, becoming the rival industrial center to Semarang's industrial zone, and combating poverty. In an analytical report for Salatiga's Detailed Urban Spatial Plan (RDTRK) 2010-2030, the following statements describe how urban and regional industrial ambitions is depicted in the document:

“The City of Salatiga plays a key role as a regional activity center,, directed as the province's regional growth center,, allowing the conversion of farmlands into human settlement and urban uses,, allowing the development of urban development corridors, promoting co-locations of industrial activities on designated industrial areas, (Laporan Analisis Rencana Detail Tata Ruang Perkotaan Salatiga, Chapter 2 p.2).

Meanwhile most of the interviewed farmers and farm laborers have modest dream of progressing in their current livelihoods. Some of the planning goals are considered grandeur, but very impersonal for farmers and farm laborers. They could not see themselves within the regional ambition. They see regional economic development as a project that will benefit someone else in another region, not necessarily them who live and work in their respective villages. In a farmer's words:

“Economic development projects maybe a good thing for those who can benefit from them, but not us. It is for someone else's benefit, whom we are not entirely sure who” (A member of a farmer's saving group).

Most within the farming community cannot even see the prospect of leaving agriculture all at once. But for those who see such prospect in their lifetime, typically the younger generation, they expect that such businesses will branch out from their current agricultural activity. Not only that those goals seem to be more achievable for them, but they also aspire to accumulate livestock as assets that are transferable to the next generation. Most of them contend that working in manufacturing industries or other jobs outside agriculture will not let their kids have anything to inherit from them.

“I don’t want to work in a factory. I currently have one cow and one goat. ‘Success’ to me means that I can have two or three, rather than one, livestock,, (raising) both milk and meat producing cows rather than goats; having more land to cultivate; or becoming a local supplier of tropical fruits, so I can leave something for my kids when I am gone (passed away).” (A very senior local farmer).

4.6.2 Mismatched Time Frame for the Expected Change

Like many officers in bureaucratized agencies, planners in Salatiga are bound to the annual budgeting and planning cycles. On top of their own workflow, they need to consult their work with regional planning agencies at the provincial and national levels at certain times of the year. Salatiga’s RDTRK is supposed to be a long term (20 years, 2010-2030) guide of the city’s urban development. However, the development policy is prescribed within 5 years increments.

Bureaucratic planning views economic development as an event that can be studied, planned, and executed within an annuity basis. Economic development planning thus frames the local economic problem as simplified challenges to job creation and income generation. The mantra of local economic development is “create jobs, raise local average income”. Simplification of economic problems help planners formulate measurable and achievable planning goals within a bounded and relatively short time frame. In a senior planning officer’s words:

“We had to deliver a plan in such a limited time, and we couldn’t just write a plan, it had to be a good plan! It was not an easy thing to do given our other responsibilities here. The plans needed to be reviewed by our superiors on January, consulted with the local house of representative (DPRD) on February,

consulted with the provincial and state planning agency on March and legislated sometime in May/June. And then the land use plan bound the implementation for the upcoming 5 years.” (A senior planning officer).

The fear that industries would choose to locate somewhere else adds the pressure to come up with the land use plan that accommodates industrial uses as soon as possible. In a planning officer’s words:

“If we don’t come up with land use designation, those industries will establish their factories right outside the city borders anyway. Rather than seeing them go to the County (of Semarang) we’d rather have them here. Besides, if they locate outside the city border, we will still get the passerby’s traffic (generated by the industrial trucking). Might be better for us to act fast and provide them the land they need.” (A mid-level management planner).

On the contrary, many farming households see development as something that happens over the course of their lifetime and often times cross generations. Most of the older farming workers and farm owners cannot care less about acquiring new skills to be involved in the newly created manufacturing jobs. But most of them encourage their children to go to school to be able to work in the new jobs. Very few objects to the notion that the place they live will change, becoming more urbanized and industrialized. But many find it really hard when all of a sudden their livelihood is no longer feasible because the land they cultivate are converted into factories. Most rural villagers expect that their work as farmers end when “their body is no longer capable of performing the task”. They do not know the concept of retirement. Very few can foretell that they have to quit farming activities before the end of their life.

“That is my daughter’s motorbike (proudly pointing at a sport bike in front of the house). She earns the money by working for a garment factory. Her sister is finishing high school and soon will join her there, or find a better factory job. They can do better than me, and I am happy to see they are getting better jobs. (But) I am old, and until my time comes I will work in the field,, if I am still allowed to (because now the public farm lands are no longer accessible for local farm workers)” (An old local farmer).

4.6.3 Conflicting Legal, Perceptual, and Territorial Definitions of Locality

Planning and policy-making has a very abstract view of locality. The administrative change during the incorporation of adjacent villages transforms the legal status of some rural areas into urban areas. From the legal, judicial, and administrative perspective, those rural areas that were previously an outside region becomes part of the new locality. The city then views the land as part of their territory and the people of the incorporated region as their citizens.

The people’s perception in the incorporated regions, however, does not change as drastically as the legal definition. The perception of rural locality is so small, often geographically includes only people in a small housing compound. A different compound in the same village is considered a different hamlet, and thus the people who live there are considered as “others”.

The challenge of planning when there is very different perception of locality is how difficult it is to create an image of equitable distribution of benefits and burden of development. The new manufacturing industries can be considered by the city as equitable provider of employment because they prioritize local workers in Salatiga. However, employing people from non-incorporated regions are not considered as employing locals by ex-farmers and ex-

landholders who lost their cultivation land. They do not consider themselves as “citizen of Salatiga”. They call people from the non-incorporated regions as “the city people”, which is a practice of differentiating and distancing themselves politically from them.

“All of these recent developments, that (asbestos) factory over there, the chicken feed (storage facility), and the paint (factory), they all don’t really benefit us, village people. Most of the employees working there are from (non-incorporation area of) the city. I once surveyed my own residents to find out how many works in factories around here. I could only find 6 people. Six! Out of 300 employees at that time! We don’t get any benefits from development. We just get the unemployed (people who lost rural agricultural livelihood because they lose access to public farmlands. ” (An ex-head of a neighborhood association).

The following table 4.5 further explains how the different definition of locality could create major changes in the territoriality of work and life, using just the example of *Kelurahan Noborejo* in Salatiga. Prior to the incorporation, the sub-district owned 75 land plots, all of which were located in its territory. More than 38 percent of those land plots were wet paddy fields. While 62 percent were dry fields, they were all used for cultivation purposes, mainly for farmers to grow Napier grass for cattle feed.

The incorporation that led to many land swaps involving public farm lands changes the spatial distribution of these public lands. Nowadays 42 percent of the public land is located outside *Kelurahan Noborejo*, although still in the city of Salatiga. Some of these lands are located in *Kelurahan Pulutan*, which is far up North, at least 5 km from Noborejo. The remaining land left in the *kelurahan* are dominated by dry lands, which produces cattle feed but not rice, which is a livelihood supporting crop. The area of paddy fields in the *kelurahan* is drastically

reduced, from 83,000 to a mere 19,000 m². If on average a farmer rent 1,000 m² from the *kelurahan*, the remaining land will only support less than 20 renter farmers livelihood.

Table 4.5 Land Inventory Before and After Incorporation, Kelurahan Noborejo, Salatiga

Land Inventory	Before		After	
	numbers	in %	numbers	in %
Number of Land Plots	75	100	97	100
<i>in the kelurahan</i>	75	100	58	60
<i>outside the kelurahan</i>		0	39	40
Land Area (m ²)	218,998	100	342,568	100
<i>in the kelurahan</i>	218,998	100	198,515	58
<i>dry land</i>	135,744	62	140,980	41
<i>paddy fields</i>	83,254	38	18,910	6
<i>urban uses</i>			38,625	11
<i>outside the kelurahan</i>			144,053	42
<i>dry land</i>			18,305	5
<i>paddy fields</i>			125,748	37

Source: Kelurahan Noborejo, City of Salatiga

There is a territoriality problem which extends beyond the perception of locality when a region is incorporated by a city. Rural agriculture is naturally a very territorial work. Farmers cannot work in farmlands that are too far from their house because they have to come twice a day (in the morning and in the afternoon) to their fields. Many farmers work within walking distance (less than 30 minutes of walking) from their fields. Such territoriality issue doesn't exist for manufacturing work. Factory workers are typically more skilled workers and with higher wages they can afford private means of transportation such as a motorbike. Many factory workers

commute from areas that are up to 45 minutes of riding a motorbike, which is substantially further than 30 minutes of walking.

The real issue comes when planning is ignorant of the different scale of the territorial nature of work for the two different economic sectors. The national regulation rules that strategic public assets such as land cannot be sold or transferred to private parties. Hence when the city transfers development rights on public property to private developers, it has to do it through land swap mechanisms instead of selling land. The national regulation however only stipulates that private developers have to swap the public land with another plot of land or multiple plots of land with the same value (Kemenkumham, 2014). The land swap often results in public land being scattered in other regions very far from the incorporated regions, where the original public land is taken away from landless farmers. The land that are offered for land swap by developers also often comes in inaccessible topographies or lower soil qualities, which makes it less suitable for cultivation purposes.

“I used to work on the bengkok (public land) in front of the Lurah’s office. It’s close to where I live, so I can come there in the morning and in the afternoon to water my plants or work the soil. But now it has been acquired by developers, I am not sure what it is for. The developers swap it with a land in the northern part of the city. It’s too far for me to work there so now I only work on a smaller plot that I have here. Pak (mention a name) can still work on public lands because he has more capital than I do. He can hire locals in the northern region to work on that land. We people with small capital cannot do such thing.” (An ex-farmer)

4.6.4 Conflicting Views on the Role(s) Of the State

The city (administration) is widely seen as the representation of the State, but not always the representation of the public. Many people in the incorporated regions are well-aware of the

nuanced political accountability of their local administrator before and after incorporation. A *kades* (rural village head) is democratically elected by the people while the *lurah* (sub-district administrator) is appointed by the mayor. The rural villagers in incorporated regions are quick to recognize that the *lurah* often times is not only not well informed about local issues, but is less concerned about finding a solution for them. *Lurah* is seen as “guy who brings the mission of the city people, for the benefit of the city people”. In a certain way, the villagers believe that the *lurah* plays his role as the agent for development in the region.

“What does a lurah do? Does he even know our problems? He only sits at his office, signing off (administrative) documents, (signing requests for) ID cards, those things. I am sure he doesn’t even know the area well. And I am pretty sure he is (dishonestly) involved in the land swap process. The developer often sits with him in his office. I am sure they talk about which land the developer can acquire. Who does he represent? Us or the developers?” (A community activist).

Even among farmers, there are different perception and expectation for the State. Farm owners do not expect the city to help them develop their farming business but at least protect the legality of their tenure on land. Their main interest is to secure buying and selling land to maintain liquidity of their assets. Farm holders (landless farmers who have access to community/public land through renting or other means) do not expect the state to redistribute land to landless farmers but at least protect their tenure on community land. Farm laborers are among the most skeptical people in the village. They do not really expect the State to have a role in their life.

“Anyone who gets elected (as a mayor, governor, or president) doesn’t change my life. My life will always be like this.” (A seasonal farm labor).

Prior to the incorporation, land resource allocation was performed by a communitarian traditional system instead of run by the State. In the traditional system, many farmers have

almost exclusive access to community land. The traditional exclusive farming rights resemble tenure on community farmlands. Farmers cannot own the community land. But there is a non-competitive land market. Community-owned land can be rented to farmers for very cheap price each year, and the contract often extends automatically. That being said, such traditional rights do not guarantee inclusiveness of access to community land for all community members. Some farmers benefit more from being able to rent land and become capitalist farmers, although they are only renters and not owners of the farm land.

“A tenant farmer (on a bengkok land) rents the land from the kades through an agent. The next year, he just needs to talk to the agent again to extend the contract. Some people get 1000 m², some get more. But generally a plot is about 1000 m², and each farmer get one plot. Some can get more if they win the lottery for it.” (An ex-tenant farmer on bengkok land).

The incorporation, however, changes how much role the State has in the rural residents lives. The incorporation of rural land means that the State now obtains the rights to (re)distribute land resources to serve their interests. Inequitable land distribution happens through two channels: First, most of public land is transferred to private developers for real estate or factory development, thus depriving many farmers indiscriminately of their livelihood. Second, even among farmers there has been inequitable redistribution of land resources. Because the land swap changes the location of public land in the city, some farmers are unable to work on those land because they are too far from their homes. It gives a way for farmers with more money and resources to rent more land in more distant locations, thus unequally redistribute land among farmers who were previously renters on the community/public land. Previously, each farmers could rent up to 1,000 square meters of community land. Some farmers with more resources now can rent up to 5,000 square meters while others cannot rent land at all.

4.7 DISCUSSION

4.7.1 An Antiquated Explanation: The Growth Machine

How do we explain why planners make plans that are against the economic needs of their constituents? How do we explain why economic-development plans greatly diverge from the local public interest? Using the case study of Salatiga's rural urbanization-industrialization to answer these questions requires understanding the importance of urban land-use and the authority to plan future changes in urban land use.

Molotch (1976) proposed a political economic lens to explain why regions induced upon themselves the physical transformations that would create sweeping land use changes. Molotch saw the city and any locality as the spatial expression of the capitalist interest, especially the land-based elites. In Logan and Molotch's words "...virtually all place entrepreneurs and their growth machine associates, regardless of geographical or social location, easily agree on the issue of growth itself" (in *Urban Fortunes*, 2007: 32). The growth machine—a loosely defined coalition of chambers of commerce, newspapers and politicians—advocated for economic development through the channel of land use intensification. The main rhetoric of the growth machine was economic development. The reason why the growth machine could create such a broad-based coalition was the perception that economic growth can solve some other social issues, in particular unemployment.

The growth machine theory partly explains why it is so difficult to protect farmland from speculative commercial land exchanges. Farmland preservation—a measure that limits the amount of farmland that can be converted into urban uses—is a direct challenge to the activities of land based elites. Land commodification that is associated with urbanization is the ultimate source of wealth accumulation and power concentration (Pfeffer & Lapping, 1994).

The widespread use of this theory has been a testimony of how universal the idea of urban coalition for economic growth is, despite the peculiarity of American urban governance in which the theory was contextualized. Growth machine has been used to explain urban transformations in authoritarian states like China (e.g. Zhang, 2014) or post-communist Eastern Europe (e.g. Valiyev, 2014). It has also been used to explain why people align their support for the gaming tourism despite the industry's harm to the residents (e.g. Harrill et al., 2011), why community's opposition to development often ends with a negotiation and a legally binding community benefits agreements (e.g. Harrill et al., 2011), and why cities try to ban the use of public spaces by homeless people (e.g. Anderson, 2015).

Unexplored in the theory, however, the remaining question about how the multiple and sometimes conflicting interests of capital organizes itself to produce a solid land-based strategy for the purpose of wealth accumulation. In the United States, where the theory is contextualized and developed, the growth machine is mainly driven by chambers of commerce, private utility companies, conservative news outlets, transnational corporations, and a very established governance. In that context, business interests can organize, unify, and represent the interest of capital. However, in the context of a developing economy/region where the stakeholders are

farmers, small and developing corporations, state-controlled utility companies, and a pre-mature governance, it is difficult to imagine the presence of such coalition to work as the growth machine. The question that remains is, in the context of developing economy and in this case in Salatiga, how does capital interest represent itself, solidify its demands, and making sure they are met for the purpose of wealth accumulation?

4.7.2 Planning's Key Role in Accommodating Capital Conditions

I argue that planning plays a key role in unifying the interest of capital, formulating capital demands, and meeting capital conditions through a chain of processes: To begin with, planning is inherently the work of those who supplants a local vision on economic future with a modernist one. People in the incorporated rural villages consider their area as an agricultural region. Development, in their view, is a progressive path towards the intensification of agriculture and the increase of farming-related assets. This family-based, incremental, change is considered by local farmers as a “natural” path towards economic progress. The enterprise of planning, however, is bound by the interest of capital and perceives economic development as a result of a capital business operation. Through the incorporation of rural areas, planning introduces regional economic ambitions that are fueled by capital-intensive manufacturing industries to formerly agricultural regions.

Alteration of local vision is useless without an effort to fix a timeline for an expected result, hence planning essentially plays the role in compressing the time for expected change. Planning creates cycles of analysis, plan formulation, implementation and evaluation to speed up

the process of delivering a policy, in this case a land-based strategy to generate economic growth. In doing so, the expected result is no longer reliant on natural, human-based lifecycles that can delay the delivery of the expected result. Without such time compression, planning will not be able to deliver the results unless there is a rapid and significant generational shift. In the case of Salatiga, the preference to work in manufacturing industries instead of agriculture represents this generational shift. However it was reached not without the social cost of putting so many farm workers into unemployment since they are disfranchised from access to cultivating public lands.

To avoid further conflicts, planning needs to extend beyond individual perceptions of what, who and where is considered local—which prompts it to restructure the whole legal definitions of the locality. In the case of Salatiga, the incorporation transforms some rural by absorbing it into the administrative region of Salatiga. Legally, the incorporated area residents are no longer rural people, but citizens of the city administration. Within the legal definition, they share their citizenship with other city residents, and have to compete in the same labor and job markets. Thus when they are disfranchised from accessing the public farm lands because those lands are sold to factories, the city does not frame their problems as an example of urban/regional/global capital taking over rural lands and dislocating rural people. Instead, they view the problem simply as the modern industries taking over a backward, less productive economic sector. The restructuring of legal definitions of locality deprives people from the incorporated regions their political identity and thus, makes them anonymous in policy analysis and evaluation.

To ensure that all of the above-mentioned processes are unchallenged, planning must be involved in redefining the role of the State. Most importantly, planning must arm the State with new powers over land and property ownership. Salatiga is a clear example of the State's exercise of power, not only to appropriate community lands, but also to transfer development and ownership rights of those lands to the capitalist class. The State thus does not only own lands, but also reserves the right to regulate and redistribute land, which is the single most important factor in economic production. The following table 4.6 below summarizes all of the planning issues, the role of planning, and capital conditioning outcomes.

Table 4.6 Key Elements of Planning's Role in Facilitating Capital Conditioning

Planning issues	Planning's Role	Capital Conditioning Outcomes
Low desire for intensive land-use designation	Altering the locality's perceived economic future, supplanting it with a modernist vision	Formalization of capital-driven regional ambition for capital-intensive, high-growth, high-profit industries which requires intensive land use designations.
Urban transformation is subject to intergenerational change and transfers	Compressing the time-frame of planning, implementation and evaluation of proposed policies	Legalization of drastic measures: i.e. State-sponsored land-grabs to expedite land resources reallocation from agriculture to manufacturing industries.
Conflicting views on the borders of local powers and authorities	Sorting out conflicting views by restructuring the legal and spatial definitions of the locality	<ul style="list-style-type: none"> - Dismissal of traditional and perceptual definitions of locality - Formalization of administrative definitions
The State has limited powers	Redefine the role of the State with respect to urban land allocations	The State is vested with new powers to: <ul style="list-style-type: none"> - Own and transfer property rights - Regulate land use - Designate land for capital-driven intensive industrialization purposes.

4.8 CONCLUSIONS

In the context of a developing, transforming rural economy, planning plays a key role in identifying, unifying, representing, and accommodating the interests and the demands of capital.

Planning sort out the multidimensional mismatches between the interest of capital and the existing socio-economic realities through four processes: (a) alteration of the local vision about the region's economic future and substitute it with a modernist one; (b) compression of the time-frame for expected change; (c) total restructuring of legal definitions of locality, and (d) redefining of the role(s) of the State. While all of these four processes can be true in many cases, planning does it best in its main responsibility as the sole governing institution that supervises urban land use.

CHAPTER 5

EPILOGUE

5.1 Lessons Learned

There are four important takeaways from the previous findings in this research. First, this study provides a strong evidence that securing landholding can help maintaining farming households' income and consumption, while taking away land will unequivocally create a livelihood shock for affected farming households. My finding suggests that most households that maintain work in agriculture could not find alternative income sources to weather an income shock that is caused by losing landholding. More importantly is what that income reduction means to the quality of life. Almost all of those loss are experienced through a reduction in non-food consumption. What that generally means is that when a farming household lose income from losing their landholdings, they would experience one of the following: not having money to buy enough clothing and personal expenditures, stop sending their children to school, not buying electricity and clean water, or not seeing the medical doctor when they are ill.

Second, it provides evidence of an economic pressure for people who choose to stay in agriculture when their surrounding environment is becoming more urbanized. It is true that the total income of farming households in urbanizing regions are not falling like their income from agriculture. However, the growth of their total income is smaller than the one enjoyed by their peers in relatively unchanging rural regions. This finding suggests that even if urban farmers are

able to find alternative income sources, the amount made from those other incomes will not sufficiently cover the loss of income from agriculture.

Third, and most importantly, the negative effects of urbanization, such as income loss experienced by farming households, occur through some forms of loss in rights to use land for cultivation purposes. This finding supports a reasonable assumption that urbanization leads to some levels of land use changes that are hostile to agricultural households. In plain, layman terms, it means that urbanization leads to people's displacement from farming lands, and displacement leads to the shock in income and consumption for people who cannot find alternative employment when they are deprived of agricultural livelihood.

Fourth, this research confirms is that the fashion in which that urbanization process takes place is correlated to the changes in poverty incidences. A more centered, clustered, land use change from agriculture to urban uses predicts a higher number of newly poor people. A more contiguous land use change on large areas signals corporatized real estate or manufacturing industry development type. This type of development is more likely to displace people who are dependent on rural agricultural livelihood, and thus leads to a higher number of new poor people in the region. Dispersed land use changes, on the other hand, reflects a decentralized decision making process. Dispersed land use changes may represent individual families building new homes in their respective land plots. This type of development does not displace people from their livelihood and does not have poverty effect.

5.2 Policy Implications

This research confirms that the industrialization policy with a strong land use component that gives a leeway for industrial establishment to take place on prime agricultural lands accelerates the urbanization rate and increases the clustering of urban growth. Aggressive farm land use conversions to urban uses may imply dispossession and displacement of people who are dependent on land for their livelihood. This substantial social cost should be included in the cost benefit analysis of any land-use based industrialization policy before they are implemented.

People who are displaced from farm lands are not likely to be able to directly enter newly established industrial/commercial jobs, and thus will lose their livelihood and fall into poverty. Local governments should consider complementing land-use based industrialization policy with some labor development approach. People who are potentially displaced from the converted farmlands should be retrained to prepare them to enter non-agricultural jobs. If this is not a viable solution, then local governments is responsible for a form of compensation as a direct consequence of depraving them from their own livelihood.

5.3 Introspections for the Discipline of Planning

This research contributes to a long list of critical inquiries that refuses to give professional the benefit of the doubt of its roles in the perpetuation of injustices and economic destitution. I argue that planning plays a key role in creating urban transformations that are designed to meet the demands of capital. Conventional wisdom stipulates that planning's role is

within the mental realm of reimagining and reshaping the economic future of the locality in which it is implemented. However, my study shows that planning plays a much larger role. It plays a role in creating a time-compression effect to expedite the process of urban transformation, so that wealth accumulation can occur in a relatively shorter time. It also helps restructuring the legal definitions of locality, by completely dismissing the perception of what, who and where is considered local. Most importantly, planning plays a great role in helping the State redefining its roles by vesting new powers over land use designations. In my case study, it even decorates the State with property rights over lands that were supposedly community-owned. In this case planning directly accommodates state-sponsored appropriation of public lands.

REFERENCES

REFERENCES FOR CHAPTER 2

- Ajaero, C. K. & P. C. Onokala. (2013). The Effects of Rural-Urban Migration on Rural Communities of Southeastern Nigeria. *International Journal of Population Research*, <http://dx.doi.org/10.1155/2013/610193>
- Becker, S. O. & A. Ichino. (2002). Estimation of average treatment effects based on propensity scores. *The Stata Journal*, 2 (4): 358-377.
- Christiaensen, L. & Y. Todo. (2009). *Poverty Reduction during the Rural-Urban Transformation - The Role of the Missing Middle*. Contributed Paper prepared for presentation at the International Association of Agricultural Economists' 2009 Conference, Beijing, China, August 16-22, 2009.
- Christiaensen, L. J. D. Weerdt, Y. Todo. (2013). *Urbanization and Poverty Reduction: The Role of Rural Diversification and Secondary Towns*. (Policy Research Working Paper No. 6422). Retrieved from World Bank website <http://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-6422>
- Démurger, S., M. Fournier, W. Yang. (2010). Rural households' decisions towards income diversification: Evidence from a township in northern China, *China Economic Review*, 21: S32-S44.
- Eaton, J. & Z. Eckstein. (1997). Cities and growth: Theory and evidence from France and Japan. *Regional Science and Urban Economics*, 27: 443-474
- Edwards, A. C. & M. Ureta. (2003). International Migration, Remittances and Schooling: Evidence from El Salvador. *Journal of Development Economics*, 72 (2):429–461.
- Escobal, J. (2001). The determinants of nonfarm income diversification in rural Peru. *World Development*, 29(3): 497-508.
- Food and Agriculture Organization (FAO) of the United Nations (UN). (2014). *FAOSTAT – Indonesia* [Country Profile]. Retrieved Feb 6, 2014, from <http://faostat3.fao.org/faostat-gateway/go/to/compare/Q/QC/E>
- Frankenberg, E. and L. Karoly. *The 1993 Indonesian Family Life Survey: Overview and Field Report*. November, 1995. RAND. DRU-1195/1-NICHD/AID
- Frankenberg, E. and D. Thomas. *The Indonesia Family Life Survey (IFLS): Study Design and Results from Waves 1 and 2*. March, 2000. DRU-2238/1-NIA/NICHD.

Guo, X. (2001). Land Expropriation and Rural Conflicts in China. *The China Quarterly*, 166: 422-439.

Harris, J. & M. Todaro. (1970). Migration, unemployment and development: A Two Sector Analysis. *American Economic Review*, 40: 126-142.

Imai, K. S., R. Ghaiva, A. Garbero. (2014). *Poverty Reduction during the Rural-Urban Transformation: Rural Development is still more important than Urbanisation?* (Working Paper No. 204). Retrieved from The University of Manchester's Global Development Institute website <http://www.gdi.manchester.ac.uk/research/publications/bwpi/bwpi-wp20414/>

Janvry, A.D. & E. Sadoulet. (2001). Income strategies among rural households in Mexico: The role of off-farm activities. *World Development*, 29(3): 467-480.

Jedwab, R., L. Christiaensen, M. Gindelsky. *Demography, Urbanization and Development: Rural Push, Urban Pull and... Urban Push?* (Policy Research Working Paper No. 7333). Retrieved from World Bank website <http://documents.worldbank.org/curated/en/2015/06/24689971/demography-urbanization-development-rural-push-urban-pull-urban-push>

Krugman, P. (1991). Increasing returns and economic geography. *Journal of Political Economy*, 99: 483-499.

Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review*, 45, p.1-28.

Lewis, W.A. (1954). Economic development with unlimited supply of labor. *The Manchester School*, 22(2), p.139-191.

Lewis, W.A. (1968). *Reflections on unlimited labor* (Discussion paper #5). Princeton, NJ: Development Research Project, Woodrow Wilson School, Princeton University.

Lucas, R. E. (2004). Life earnings and rural-urban migration. *Journal of Political Economy*, 112 (1): 2: S29-S59.

Miraftab, F. (2016). *Global Heartland: Displaced Labor, Transnational Lives, and Local Placemaking*. Bloomington, IN: Indiana University Press.

Norton, G.W., Alwang, J., & Masters, W.A. (2010). *Economics of agricultural development: World food systems and resource use* (2nd Ed.). New York, NY: Routledge.

Osili, U. (2004). Migrants and Housing Investments: Theory and Evidence from Nigeria. *Economic Development and Cultural Change*, 52 (4):821-849.

Osili, U. (2007). Remittances and Savings from International Migration: Theory and Evidence Using a Matched Sample. *Journal of Development Economics*, 83 (2):446-465.

Partohardjono, S., D. Pasaribu, & A.M. Fagi. (2005). The forest margins of Sumatra, Indonesia. In *Slash-and-burn agriculture: The search for alternatives*, edited by C.A. Palm, S.A. Vosti, P.A. Sanchez, and P.J. Ericksen. New York: Columbia University Press, 291-304.

Ranis, G., & Fei, J.C.H. (1961). A theory of economic development. *American Economic Review*, 51, p. 533–565.

Ranis, G. (2003, September). *Is dualism worth revisiting?* (Working paper #870). Economic Growth Center, Yale University.

Ranis, G. (2004, December). *Labor surplus economies* (Working paper #900). Economic Growth Center, Yale University.

Ray, D. (1998). *Development economics*. Princeton, NJ: Princeton University Press.

Sargeson, S. (2013). Violence as development: land expropriation and China's urbanization. *The Journal of Peasant Studies*, 40(6): 1063-1085. DOI:10.1080/03066150.2013.865603.

Strauss, J., K. Beegle, B. Sikoki, A. Dwiyanto, Y. Herawati and F. Witoelar. *The Third Wave of the Indonesia Family Life Survey (IFLS3): Overview and Field Report*. March 2004. WR-144/1-NIA/NICHD.

Strauss, J., F. Witoelar, B. Sikoki and AM Wattie. *The Fourth Wave of the Indonesia Family Life Survey (IFLS4): Overview and Field Report*. March 2009. WR-675/1-NIA/NICHD.

Swindell, K. & A. B. Mamman. (1990). Land expropriation and accumulation in the Sokoto periphery, Northwest Nigeria 1976–861. *Africa*, 60(2): 173-187.

Todaro, M. P., & Smith S. C. (2009). *Economic development*. Boston, MA: Pearson.

Wicke, B., R. Sikkema, V. Dornburg, and A. Faaij. 2011. Exploring land use changes and the role of palm oil production in Indonesia and Malaysia. *Land Use Policy* 28: 193-206.

Woodruff, C. & R. Zenteno. (2007). Migration Networks and Micro-Enterprises in Mexico. *Journal of Development Economics*, 82 (2):509–528.

Yúnez-Naude, A. & J. E. Taylor. (2001). The determinants of nonfarm activities and income of rural households in Mexico, with emphasis on education. *World Development*, 29(3): 561-572.

Zuhui, H. & Hui, W. (2002). Land expropriation for a non-public purpose and compensation for its development right. *Economic Research Journal*, 5.

http://en.cnki.com.cn/Article_en/CJFDTOTAL-JJYJ200205007.htm

REFERENCES FOR CHAPTER 3

Academic Works Cited

- Anselin, L. (1995). Local indicators of spatial association – LISA. *Geographical Analysis*, 27(2), p.93-115.
- Bailey, T.C. & Gatrell, A. C. (1995). *Interactive Spatial Data Analysis*. New York, NY: John Wiley and Sons.
- Calì, M. (2013, February 20), Urbanization is good for rural poverty (at least in India). Retrieved October 6th 2014, from *Let's Talk Development* weblog:
<http://blogs.worldbank.org/developmenttalk/>
- Calì, M. & Menon, C. (2013). *Does Urbanization Affect Rural Poverty? Evidence from Indian Districts* [Working paper #6338]. Washington, DC: World Bank.
- Cai, J., & Sit, V.F.S. (2003). Measuring world city formation: The case of Shanghai. *The Annals of Regional Science*, 37(3) p.435-446.
- Dick, H. W., & Rimmer, P. J. (1998, December). Beyond the Third World city: The new urban geography of South-east Asia. *Urban Studies*, 35(12), p.2303-2320. DOI: 10.1080/0042098983890.
- Firman, T. (2001). Land conversion and urban development in the northern region of West Java, Indonesia. *Urban Studies*, 34(7) p.1027-46
- Getis, A. & Ord, J. K. (1996). Local spatial statistics: an overview. In P. Longley and M. Batty (Eds.) *Spatial analysis: modelling in a GIS environment*. Cambridge: Geoinformation International, p.266.
- Goodchild, M.F. (2004). The validity and usefulness of laws in geographic information science and geography. *Annals of the Association of American Geographers*, 94(2), p.300–303.
- Guldin, G. (1996). Desakotas and beyond: Urbanization in southern China. *Ethnology*, 35(4), p. 265. (Online version). Retrieved March 23 2014, from EBSCO Publishing's website.
- Haining, R. Wise, S. & Ma, J. (1998). Exploratory spatial data analysis in a geographic information system environment. *The Statistician*, 47(3), p.457-469.
- Huete, A., Didan, K., Miura, T., Rodriguez, E. P., Gao, X., & Ferreira, L. G. (2002). Overview of the radiometric and biophysical performance of the MODIS vegetation indices. *Remote Sensing of Environment*, 83: 195– 213.

- Leaf, M. (2008). New urban frontiers: Periurbanization and (re) territorialization in Southeast Asia. Paper presented to a conference on Urbanization Trends in Southeast Asia. Ho Chi Minh City. Dec 7-9.
- Lin, G.C.S. (2001). Metropolitan development in a transitional socialist economy: Spatial restructuring in the Pearl River Delta, China. *Urban Studies*, 38(3): 383-406
- Marton, A.M., (2002, April). Local geographies of globalization: Rural agglomeration in the Chinese countryside. *Asia Pacific Viewpoint*, 43(1), p.23-42.
- McGee, T.G. (1991). The emergence of desakota regions in Asia: Expanding a hypothesis. In Ginsberg, N., Koppel, B. and McGee, T.G. (Eds.). *The extended metropolis: Settlement transition in Asia*, Honolulu: University of Hawaii Press.
- McGee, T. (2008, April). Managing the rural-urban transformation in East Asia in the 21st century. *Sustainability Science*, (3) p. 155-167.
- McGee, T.G. (2009, April). The spatiality of urbanization: The policy challenges of mega-urban and desakota regions of Southeast Asia (Working paper #161). Yokohama: Institute of Advanced Studies (IAS), United Nations University (UNU).
- McGee, T.G., Lin, G.C.S., Marton, A.M., Wang, M.Y.L., & Wu, J. (2007). *China's urban space: Development under market socialism*. London and New York: Routledge.
- Ravallion, M., Chen, S., & Sangraula, P. (2007). New evidence on the urbanization of global poverty. *Population and Development Review*, 33(4) p.667–701.
- Rimmer, P.J., (2002, April). Overview: Restructuring Chinese space in the new millennium. *Asia Pacific Viewpoint*, 43(1), p.1-8.
- Shahbaz, M., Aamir, N. & Shabbir, M.S. (2010, December). Urbanization and poverty reduction: A case study of Pakistan. *The IUP Journal of Infrastructure*, 8(4), p.23-37, Available at SSRN: <http://ssrn.com/abstract=1758663>
- Sit, V.F.S., & Yang, C. (1997). Foreign-investment-induced exo-urbanization in the Pearl River Delta. *Urban Studies*, 34(4), p.647-677.
- Taubmann, W. (1993). Rural urbanization in the People's Republic of China. In (Ed.) *Urban problems and urban development in China*. Hamburg: Mitteilungen des Instituts für Asienkunde.
- Tobler, W. (1970). A computer movie simulating urban growth in the Detroit region. *Economic Geography*, 46, p.234-240.
- Tukey, J. W. (1977). Box-and-Whisker Plots, in *Explanatory Data Analysis*. Reading, MA: Addison-Wesley, pp. 39-43.

United States Geological Survey (USGS). (2014, June) *What are the band designations for the Landsat satellites?* Retrieved August 1, 2014, from http://landsat.usgs.gov/band_designations_landsat_satellites.php

Winarso, H. (2010). Urban dualism in the Jakarta Metropolitan Area. In Sorensen, A. & Okata, J. (Eds.) *Megacities: Urban form, governance, and sustainability*.Tokyo: Springer.

Xiao, X., He, L., Salas, W., Li, C., Moore, B., Zhao, R., et al. (2002c). Quantitative relationships between field-measured leaf area index and vegetation index derived from vegetation images for paddy rice fields. *International Journal of Remote Sensing*, 23, p. 3595– 3604.

Zhao, P., Lu, B., & Woltjer, J. (2009). Conflicts in the urban fringe in the transformation era: An examination of performance of the metropolitan growth management in Beijing. *Habitat International*, 33(4), p.347-56

Datasets Used

Badan Pusat Statistik. (2005). Pendataan Sosial Ekonomi (PSE) 2005 [dataset]

Badan Pusat Statistik. (2008). Pendataan Program Perlindungan Sosial (PPLS) 2008 [dataset]

Badan Pusat Statistik. (2011). Pendataan Program Perlindungan Sosial (PPLS) 2011 [dataset]

Digital Chart of the World. (1992). *Indonesian inland water* [shapefiles]. Retrieved August 1, 2014 from <http://www.diva-gis.org/gdata>

Digital Chart of the World, (1992). *Indonesian main roads* [shapefiles]. Retrieved August 1, 2014 from <http://www.diva-gis.org/gdata>

Digital Chart of the World, (1992). *Indonesian railroads* [shapefiles]. Retrieved August 1, 2014 from <http://www.diva-gis.org/gdata>

Global Administrative Areas. (2012, January). *Indonesian administrative areas* [shapefiles]. Available from GADM database (<http://www.gadm.org/>)

United States Geological Survey (USGS). (2014). *Global Land Survey (GLS) 2010 of Semarang City, Semarang Regency, and Salatiga City* [raster datasets]. Available from Earth Explorer database (<http://earthexplorer.usgs.gov/>)

United States Geological Survey (USGS). (2014). *Global Land Survey (GLS) 2005 of Semarang City, Semarang Regency, and Salatiga City* [raster datasets]. Available from Earth Explorer database (<http://earthexplorer.usgs.gov/>)

REFERENCES FOR CHAPTER 4

- Anderson, C. L. (2015). Median bans, anti-homeless laws and the urban growth machine. *DePaul Journal for Social Justice*, 8(2):405-454.
- Cain, C. (2014). Negotiating with the growth machine: Community benefits agreements and value-conscious growth. *Sociological Forum*, 29(4): 937-958.
- Creswell, J.W., Clark, V.L.P., Gutmann, M.L., & Hanson, W.E. (2003). Advanced mixed methods research designs. In A. Tashakkori & C. Teddie's (Eds.) *Handbook of mixed methods in social and behavioral research*, (pp. 209-240). Thousand Oaks, CA: Sage.
- Creswell, J. (2003). *Research design: qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Dotson, A.B., D. Godschalk & J. Kaufman. (1989). *The planner as dispute resolver: Concepts and teaching materials*. Washington, D.C.: National Institute for Dispute Resolution.
- Dear M., & A. J. Scott. (1981). Towards a framework for analysis, in *Urbanization and Urban Planning in Capitalist Societies*. M. Dear, A. J. Scott (Eds.) Andover, Hants: Methuen. pp 3-18.
- Dunleavy P., & B. O'Leary. (1987). *Theories of the State: The politics of liberal democracy*. London: Macmillan.
- Friedmann, J. (1973). *Retracking America: A Theory of Transactive Planning*. Garden City, N.Y.: Anchor/Doubleday.
- Friedmann, J. (1987). *Planning in the Public Domain: From knowledge to action*. Princeton, N.J.: Princeton University Press.
- Friedmann, J. (1994). Toward a non-Euclidean mode of planning. *Journal of the American Planning Association* 59(4):482-485.
- Habermas, J. (1968). *Knowledge and Human Interests*. Boston, Mass.: Beacon Press.
- Habermas, J. (1984). *The Theory of Communicative Action, Vol. 1: Reason and the Rationalization of Society*. Translated by T. McCarthy. Boston, Mass.: Beacon Press.
- Hague, C. (1984). *The development of planning thought*. London: Hutchinson.
- Harrill, R., M. Uysal, P. W. Cardon, F. Vong, & L. Dioko. (2011). Resident attitudes towards gaming and tourism development in Macao: Growth machine theory as a context for identifying supporters and opponents. *International Journal of Tourism Research*, 13: 41-53.
- Harvey. D. (1973). *Social justice and the city*. London: Edward Arnold.

- Healey, P. (1997). *Collaborative Planning: Shaping Places in Fragmented Societies*. Basingstoke, Hants.: Macmillan.
- Innes, J. E. (1995). Planning theory's emerging paradigm: communicative action and interactive practice. *Journal of Planning Education and Research* 14(1):183- 189.
- Innes, J. E. (1996). Planning through consensus building: A new view of the comprehensive planning ideal. *Journal of the American Planning Association* 62(4):460-472.
- Innes, J. E. & D. E. Booher. (1999). Consensus building as role playing and bricolage: Toward a theory of collaborative planning. *Journal of the American Planning Association* 65(1):9-26.
- Logan, J. R., & Molotch, H. L. (2007). *Urban fortunes: The political economy of place*. 20th Anniversary Edition. University of California Press.
- Lynch, K. *The image of the city*. Cambridge, MA: MIT Press.
- Molotch, H. (1976). The city as a growth machine: Toward a political economy of place. *American Journal of Sociology*, 82(2): 309-332.
- Olshansky, R., Hopkins, L., and Johnson, L. (2012). Disaster and recovery: Processes compressed in time. *Natural Hazards Review*, DOI: 10.1061/(ASCE)NH.1527-6996.0000077, 173-178.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (1998). *Lembaran daerah Nomor 11 Tahun 1998 Seri D No. 8: Peraturan Daerah Kotamadya Daerah Tingkat II Salatiga Nomor 5 Tahun 1996 Tentang Rencana Umum Tata Ruang Kota Salatiga Tahun 1996-2006*. Salatiga: Sekretaris Wilayah/Daerah Tingkat II Salatiga.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (1998). *Lembaran daerah Nomor 11 Tahun 1998 Seri D No. 10: Peraturan Daerah Kotamadya Daerah Tingkat II Salatiga Nomor 5 Tahun 1996 Tentang Rencana Detail Tata Ruang Kota Salatiga Tahun 1997-2004*. Salatiga: Sekretaris Wilayah/Daerah Tingkat II Salatiga.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (2008). *Laporan Pendahuluan: Rencana Tata Ruang Wilayah Kota Salatiga Tahun 2008-2028*. Salatiga: Badan Perencanaan Pembangunan Daerah (Bappeda) Tingkat II Salatiga.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (2008). *Laporan Rencana: Rencana Tata Ruang Wilayah Kota Salatiga Tahun 2008-2028*. Salatiga: Badan Perencanaan Pembangunan Daerah (Bappeda) Tingkat II Salatiga.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (2008). *Expose Rencana: Rencana Tata Ruang Wilayah Kota Salatiga Tahun 2008-2028*. Salatiga: Badan Perencanaan Pembangunan Daerah (Bappeda) Tingkat II Salatiga.

- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (2011). *Laporan Kompilasi Data: Rencana Detail Tata Ruang Wilayah Kota Salatiga Tahun 2010-2030*. Salatiga: Badan Perencanaan Pembangunan Daerah (Bappeda) Tingkat II Salatiga.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (2011). *Laporan Analisis: Rencana Detail Tata Ruang Wilayah Kota Salatiga Tahun 2010-2030*. Salatiga: Badan Perencanaan Pembangunan Daerah (Bappeda) Tingkat II Salatiga.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (2011). *Laporan Rencana: Rencana Detail Tata Ruang Wilayah Kota Salatiga Tahun 2010-2030*. Salatiga: Badan Perencanaan Pembangunan Daerah (Bappeda) Tingkat II Salatiga.
- Pemerintah Kotamadya Daerah Tingkat II Salatiga. (2011). *Lembaran daerah Nomor 4 Tahun 2011: Peraturan Daerah Kota Salatiga Nomor 4 Tahun 2011 Tentang Rencana Tata Ruang Wilayah Kota Salatiga Tahun 2010-2030*. Salatiga: Badan Perencanaan Pembangunan Daerah (Bappeda) Tingkat II Salatiga.
- Presiden Republik Indonesia. (1992). *Peraturan Pemerintah Republik Indonesia Nomor 69 tahun 1992 tentang perubahan batas wilayah Kotamadya Daerah Tingkat II Salatiga dan Kabupaten Daerah Tingkat II Semarang*. Jakarta: Kementrian Sekretaris Negara.
- Pfeffer, M. J. & Lapping, M. B. (1994). Farmland preservation, development rights and the theory of the growth machine: The views of planners. *Journal of Rural Studies*, 10(3): 233-248.
- Rast, J. (1999). *Remaking Chicago: The political origins of urban industrial change*. DeKalb: Northern Illinois University Press.
- Ruben, B.D. & I .A. Lievrouw, eds. 1990. *Mediation, Information and Communication*. New Brunswick, N.J.: Transaction Publications.
- Rodgers, S. (2009). Urban geography: urban growth machine. In *The international encyclopedia of human geography*. R. Kitchin & N. Thrift (eds). Oxford: Elsevier, 12: 40-45.
- Susskind, L. & J. Cruikshank. 1987. *Breaking the Impasse*. New York: Basic Books.
- Terrel, S.R. (2012). Mixed-Methods Research Methodologies. *The Qualitative Report*, 17(1): 254-280.
- Valiyev, A. (2014). The post-Communist growth machine: The case of Baku, Azerbaijan. *Cities*, 41: S45-S53.
- Yiftachel, O. (1989). Towards a new typology of urban planning theories. *Environment and Planning B: Planning and Design*, 16: 23-39.
- Zhang, S. (2014). Land-centered urban politics in transitional China – Can they be explained by Growth Machine Theory? *Cities*, 41: 179-186.

**APPENDIX A. INCOME AND CONSUMPTION DIFFERENCE-IN-DIFFERENCE FOR
LAND-LOSING VS LAND-MAINTAINING FARMERS, 2000&2007**

Variables	N			Group Means (in IDR 1 million)			Alternative Hypothesis		
	T=0	T=1	All	T=0	T=1	All	< 0	≠ 0	> 0
INCOME									
Total Income									
Income 2000	2,372	270	2,642	8.26 (0.76)	5.12 (0.59)	7.94 (0.69)	0.92	0.17	0.08
Income 2007	2,372	270	2,642	11.27 (0.89)	6.58 (0.69)	10.79 (0.81)	0.96	0.08	0.04
Change	2,372	270	2,642	3.02 (1.04)	1.45 (0.79)	7.94 (0.69)	0.68	0.65	0.32
Farming Income									
F. Inc. 2000	2,372	270	2,642	4.87 (0.41)	3.60 (0.41)	4.74 (0.37)	0.85	0.30	0.15
F. Inc. 2007	2,372	270	2,642	6.34 (0.23)	3.47 (0.37)	6.05 (0.21)	1.00	0.00	0.00
Change	2,372	270	2,642	1.47 (0.45)	-0.13 (0.46)	1.31 (0.40)	0.89	0.23	0.11
CONSUMPTION									
Total Consumption									
Cons. 2000	2,338	269	2,607	20.64 (0.30)	21.02 (0.99)	20.68 (0.29)	0.34	0.68	0.66
Cons. 2007	2,267	259	2,526	25.00 (0.35)	23.29 (0.98)	24.82 (0.33)	0.94	0.12	0.06
Change	2,299	260	2,559	4.35 (0.47)	2.27 (1.15)	4.13 (0.44)	0.92	0.16	0.08
Food Consumption									
Food 2000	2,367	270	2,637	14.05 (0.21)	14.07 (0.60)	14.05 (0.19)	0.49	0.97	0.51
Food 2007	2,362	267	2,629	15.87 (0.24)	15.17 (0.66)	15.80 (0.22)	0.83	0.35	0.17
Change	2,366	267	2,633	1.63 (0.32)	1.11 (0.70)	1.58 (0.29)	0.70	0.60	0.30
Nonfood Consumption									
Nonfood 2000	2,358	269	2,627	7.34 (0.20)	6.97 (0.58)	7.30 (0.19)	0.72	0.56	0.28
Nonfood 2007	2,309	262	2,571	10.88 (0.26)	9.42 (0.74)	10.73 (0.25)	0.96	0.08	0.04
Change	2,311	262	2,573	3.30 (0.32)	1.98 (0.91)	3.17 (0.30)	0.91	0.18	0.09

Null hypothesis: mean difference between land-losing and land-maintaining farmers = 0. Alternative hypothesis: mean difference is <0, ≠0, or > 0. Difference is defined as mean (T=0) - mean (T=1). Change is defined as difference 2007 - difference 2000. Standard errors are reported in parentheses below each estimate value.

APPENDIX B. INCOME AND CONSUMPTION DIFFERENCE-IN-DIFFERENCE FOR FARMERS IN URBANIZING VS UNCHANGING REGIONS, 2000 & 2007

Variables	N			Group Means (in IDR 1 million)			Alternative Hypothesis		
	T=0	T=1	All	T=0	T=1	All	< 0	≠ 0	> 0
INCOME									
Total Income									
Income 2000	2,480	162	2,642	7.46 (0.60)	15.20 (6.37)	7.94 (0.69)	0.00	0.01	1.00
Income 2007	2,480	162	2,642	10.38 (0.67)	17.09 (8.29)	10.79 (0.81)	0.02	0.05	0.98
Change	2,480	162	2,642	2.92 (0.88)	1.90 (10.36)	2.86 (1.04)	0.59	0.81	0.41
Farming Income									
F. Inc. 2000	2,480	162	2,642	4.50 (0.22)	8.46 (5.03)	4.74 (0.37)	0.00	0.01	1.00
F. Inc. 2007	2,480	162	2,642	6.22 (0.20)	3.48 (1.27)	6.05 (0.21)	1.00	0.00	0.00
Change	2,480	162	2,642	1.72 (0.26)	-4.98 (5.21)	1.31 (0.40)	1.00	0.00	0.00
CONSUMPTION									
Total Consumption									
Cons. 2000	2,447	160	2,607	20.68 (0.30)	20.62 (1.02)	20.68 (0.29)	0.52	0.96	0.48
Cons. 2007	2,373	153	2,526	24.68 (0.34)	26.98 (1.44)	24.82 (0.33)	0.05	0.10	0.95
Change	2,405	154	2,559	4.04 (0.46)	5.57 (1.44)	4.13 (0.44)	0.20	0.41	0.80
Food Consumption									
Food 2000	2,475	162	2,637	14.12 (0.20)	12.91 (0.58)	14.05 (0.19)	0.93	0.14	0.07
Food 2007	2,468	161	2,629	15.67 (0.22)	17.78 (1.17)	15.80 (0.22)	0.01	0.02	0.99
Change	2,472	161	2,633	1.36 (0.30)	4.88 (1.17)	1.58 (0.29)	0.00	0.00	1.00
Non-Food Consumption									
Nonfood 2000	2,465	162	2,627	7.20 (0.19)	8.91 (0.99)	7.30 (0.19)	0.02	0.03	0.98
Nonfood 2007	2,415	156	2,571	10.68 (0.26)	11.51 (0.90)	10.73 (0.25)	0.21	0.43	0.79
Change	2,416	157	2,573	3.17 (0.31)	3.17 (1.22)	3.17 (0.30)	0.50	1.00	0.50

Null hypothesis: mean difference between land-losing and land-maintaining farmers = 0. Alternative hypothesis: mean difference is <0, ≠0, or > 0. Difference is defined as mean (T=0) - mean (T=1). Change is defined as difference 2007 - difference 2000. Standard errors are reported in parentheses below each estimate value.

APPENDIX C: SALATIGA'S SECTORAL GROWTH, 2005-2010

Region	GDRP (billion Rupiahs)	GDRP by Sector				
		Agriculture	Manu- facturing	Building Construction	Services	Other*
Salatiga (City)						
2005	722.00	46.97	150.76	38.84	140.48	345.01
2010	913.02	52.17	180.16	57.69	163.85	459.15
% change	26.46	11.07	19.50	48.52	16.64	33.08
Demak (County)						
2005	2,471.00	1,061.20	279.78	162.84	245.13	722.31
2010	3,020.82	1,259.94	315.76	193.35	359.80	891.97
% change	22.25	18.73	12.86	18.74	46.78	23.49
Kendal (County)						
2005	4,277.00	1,027.49	1,716.52	117.46	336.45	1,079.43
2010	5,392.97	1,257.19	2,152.29	159.80	434.88	1,388.82
% change	26.09	22.35	25.39	36.05	29.26	28.66
Semarang (County)						
2005	4,481.00	596.03	2,108.70	169.91	354.84	1,251.88
2010	5,560.55	709.06	2,585.79	206.23	474.08	1,585.40
% change	24.09	18.96	22.62	21.38	33.60	26.64
Semarang (City)						
2005	16,194.00	207.45	4,508.13	2,230.74	1,924.16	7,323.78
2010	21,365.82	241.13	5,732.67	3,302.08	2,550.37	9,539.57
% change	31.94	16.23	27.16	48.03	32.54	30.25
Central Java						
2005	133,578.04	29,925.00	46,106.00	7,961.00	14,313.00	44,747.00
2010	176,187.00	34,955.96	61,390.10	11,014.60	19,029.72	60,605.10
% change	31.90	16.81	33.15	38.36	32.95	35.44
Indonesia						
2005	1,539,110.69	267,679.00	431,628.00	89,900.00	148,618.00	752,402.00
2010	2,359,127.70	374,814.89	584,576.76	106,022.34	183,577.04	902,413.95
% change	53.28	40.02	35.44	17.93	23.52	19.94

Source: Indonesian Bureau of Statistic(BPS)

Note: Gross Domestic Regional Product is reported using constant base price of year 2000, discounting yearly inflation rate to provide net industrial (sectoral) growth. Numbers presented here excludes oil & gas revenues.

* The "other" category includes revenues from mining & excavations, utilities sectors, hotels & restaurants, transportation & communications, and finance & commercial services