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Local Production, Territorial Governance: The Political Economy of Subnational Industrial Policies in Brazil

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Publication Date
2015

Peer reviewed|Thesis/dissertation
Local Production, Territorial Governance:
The Political Economy of Subnational Industrial Policies in Brazil

by

Pedro Formaggini Peterson

A thesis submitted in partial satisfaction of the
Requirements for the degree of
Doctor of Philosophy
in
City and Regional Planning
and the Designated Emphasis in
Global Metropolitan Studies
in the
Graduate Division
of the
University of California, Berkeley

Committee in charge:
Professor Karen Chapple, Chair
Professor AnnaLee Saxenian
Professor Paul Waddell
Professor Alison Post

Fall 2015
Abstract

Local Production, Territorial Governance:
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Doctor of Philosophy in City and Regional Planning

University of California, Berkeley

Professor Karen Chapple, Chair

This dissertation explores the emerging political economies of industrial policies undertaken at the subnational level in Brazilian cities since the mid-1990s, which became targets of economic development initiatives by the Federal government in the early 2000s. Contrary to the statist industrial policies of the post-World War II era, this new generation of industrial policies are implemented through collaborative relationships between private sector actors organized in governance networks made up of trade associations, labor unions, non-governmental organizations, and a constellation of public sector actors from all levels of government. Analyzing fourteen clusters in distinct industries in Brazil, this dissertation investigates these governance networks, and argues that their structure plays an important role in the implementation of subnational industrial policies. Specifically, I analyze the ways in which the motivation for forming such governance networks among entrepreneurs, local and state governments, and other actors lead to policies designed to generate developmental spillovers, or whether they are narrowly targeted towards a small segment of firms. Although the analysis focuses on regions within the peculiar case of Brazil, it draws insights from regions exhibiting a broad range of socioeconomic conditions, whose economies are driven by several different types of industries, and in which local and state governments vary widely in their capacity to implement their policy agenda. In this regard, the analysis provides insights to debates on economic development in other contexts; particularly middle-income countries where cluster-based policies have become fashionable in recent decades.
To Violeta
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Acknowledgements

Although the process of writing a dissertation is lonely and reclusive, it is made possible through the dedicated help of advisors, mentors, colleagues, friends, and family members. First on this list is my dissertation committee chair, Karen Chapple, who has been a steady mentor and friend since the early days of my doctoral studies. Karen hired me to work with her on a number of consulting assignments and was a great travel companion in Brazil and Guatemala. I was honored to have AnnaLee Saxenian once again put on her planner’s hat and provide her critical insights on regional economies. I thank Paul Waddell for pushing me to think of the spatial dynamics of my case studies. Alison Post helped me develop the theoretical foundations of this dissertation through my outside field and has been a rigorous reviewer of each of my drafts.

This work also benefited greatly from informal conversations and feedback of chapter drafts, conference papers, and research prospectuses from several colleagues and friends. I am deeply thankful for the friendship and willingness to grab a beer at a moment’s notice by fellow Ph.D. students Sergio Montero, Allison Lassiter, Cheryl Young, and Oscar Sosa. The members of my writing group Lizzy Mattiuzzi, Nicola Szibbo, and Mike Mendez and the GMS 201 writing seminar provided great feedback and always pushed me to keep submitting my chapters, half-baked as they may have been. Other individuals that provided important feedback through the writing process include Teresa Caldeira, Joan Walker, Karen Frick, Fred Block, Harley Shaiken, Robert Daughters, Claudio Cortellese, Andrés Matta, and Carlo Pietrobelli.

I have a huge debt of gratitude to the members of the RedeSist network who received me in Rio de Janeiro with open arms and willingly shared their time and work. Professor Eduardo Cassiolato made room for me at RedeSist’s office at UFRJ for ten months and shared his vast understanding of APL policies in Brazil; Marcelo Matos was always open to share a coffee and a conversation despite a daunting teaching and writing schedule; and Eliane Alves took care of all of the details related to my fellowship at the network. I am also deeply thankful to Professor Arlindo Villaschi, who kindly met with me for several conversations in Vitória that were critical to this entire dissertation. I am grateful to my hosts during various (and repeated) fieldwork trips: Beatriz Lindenberg in Vitória, Sonia Versiani in Brasília, and Raimundo and Daisy Peres in Nova Friburgo.

Lastly, I want to acknowledge the love and support I received from my family throughout my doctoral studies, but particularly during dissertation research and writing. My parents Beth Formaggini and Christopher Peterson and brother Lucas Peterson have always supported my academic endeavors, and helped me with crucial logistical issues during my fieldwork. Priscilla and Steven Weaver provided me with the best writing retreat anyone could ever hope for. Writing a dissertation is so much easier with laughter, good food and wine, and lambing breaks. My in-laws Jennifer and Robert Galeria always let me sneak away for a bit of writing during our visits to Prunedale and provided some crucial baby care as I was finishing the final draft. Finally, my wife Jessica Galeria has made writing this dissertation not only bearable, but downright fun. In addition to caring for Violeta and giving me some space to finish writing, she has been a great companion in Berkeley and Rio, and a loving, supportive, and steady presence during the hardest moments of doctoral study and dissertation life.
Chapter 1:
Industrial clusters as a subnational industrial policy

I. Introduction

Policies supporting industrial clusters, or regional agglomerations of firms in related sectors, have become a fashionable intervention to promote economic development and industrial capacity in a wide range of countries. This is particularly true in middle-income countries whose earlier generation of state-led industrial policies came to an end in the 1980s, and for whom more *laissez faire* approaches have failed to deliver sustained economic growth and prosperity. The implementation of such policies represents an attempt to break away from the “developmental trap” of middle-income countries, in which wages and standards of living are too high to compete globally in labor-intensive industries dominated by Asian economies, yet where technological capabilities and institutional arrangements are not advanced enough to foster high technology or advanced manufacturing sectors. National and subnational governments have made investments to strengthen their clusters, in industries ranging from traditional manufacturing to high technology sectors, as a vehicle to promote innovation and competitiveness in global markets. In many cases, subnational industrial policies double as developmental policies, with the understanding that increased competitiveness in the targeted sector will translate into better employment, income, and quality of life opportunities for local residents. Although a broader territorial development process is implied with sector-specific cluster policies, the linkages between these two overarching, and sometimes contradictory, goals has received little attention from academic and policy debates. This dissertation fills this gap through a study of cluster policies in Brazil.

In this dissertation, I posit that the extent to which subnational industrial policies translate into territorial development processes depends on fluid and changing relationships between public and private sector actors within governance networks that are a new form of coordination of productive and developmental activities. Contrary to the statist industrial policies of the post-World War II era, cluster policies are implemented through collaborative relationships with the private sector organized in governance networks made up of trade associations, labor unions, non-governmental organizations, and a constellation of public sector actors from all levels of government. Analyzing fourteen clusters in distinct industries in Brazil, this dissertation will investigate these governance networks, and argue that their structure will play a determining role in how this new generation of industrial policies is implemented. Specifically, I analyze the ways in which the motivation for forming such governance networks among entrepreneurs, local and state governments, and other actors shape the extent to which subnational industrial policies generate regional spillovers, or whether they are narrowly targeted towards a small segment of firms.

Although they play a central role in guiding state interventions in industrial development, these governance networks have been largely ignored by the cluster literature. As I discuss in chapter 2, this literature tends to treat the concept of governance as merely a “zooming out” of the organization of productive activities expanded beyond
the boundaries of the firm to the region or value chain. In its earlier formulations, this literature was largely concerned with the behavior of individual firms operating within clusters, focusing on the amount of collaboration or competition between firms, and the particular benefits generated from their insertion in these agglomerations. A later set of theorists came to stress the “associational” nature of clusters, highlighting the importance of joint action by firms, deliberately organizing in trade associations, as a vehicle to pursue the public goods necessary for regional development, though usually underemphasizing the role of the state. Recent scholarship analyzing clusters in developing countries have increasingly recognized the importance of the state’s role in this process, either in strengthening the associational culture of regions or in providing direct business services for local firms to improve their competitiveness. An unstated assumption that permeates this literature is that global competitiveness translates into (and is reinforced by) a strengthening of local institutions promoting territorial development. I summarize these debates, and situate my contributions to them, in chapter 2. Implicitly or explicitly, each of these strands of cluster theory recognizes the emerging role of governance, as a networked system of coordination and allocation of resources replacing a more centralized role for the state in the economic development process. However, the literature has yet to fully engage with questions about the structure of these networks, their participants, the role they play in allocating resources, and their impact on the development of regional economies. This dissertation understands this governance process to be embedded in the territory of the cluster and centrally involved in formulating the policies that will shape productive development.

II. Research questions and propositions

The analysis in this dissertation draws from the experiences of fourteen “Local Productive Arrangements” (APLs) in Brazil.1 Twelve of the APLs were studied by a network of Brazilian economists2 between 2003 and 2011, and I analyze them in chapter 3. These clusters represent a broad range of industries and geographical settings, which allows for some general propositions about the relationship between their governance and the types of policies they have pursued. I test these propositions through the analysis of two original, in-depth case studies of manufacturing clusters in the state of Espírito Santo, which I conducted during a series of visits between 2012 and 2014. The in-depth case studies are presented in chapters 3 and 4. Based on this research and review of theories on economic development and industrial clusters, I make the following propositions:

(1) Entrepreneurs within APLs engage in collective action through governance networks due to two broad motivating factors: “value chain insertion” and “productive upgrading”.

(2) All APLs are motivated by “value chain insertion” challenges, but only some are motivated by “productive upgrading”. Those that only (or primarily) pursue governance

1 The APL is the official designation of the Brazilian Federal government for clusters.
2 A network of researchers on local innovation and production systems throughout Brazil that is coordinated through the Economics Institute of the Federal University of Rio de Janeiro, where I was a research fellow from October 2013 to August 2014.
efforts to address value chain insertion are more likely to pursue narrow APL programs that benefit only a narrow set of firms, which I call a “sectorial” policy approach.

(3) The governance networks of APLs seeking to promote productive upgrading are more likely to engage in broader-based policies that I define as a “territorial” approach.

In their synthesis of the twelve case studies I analyze in chapter 3, Cassiolato and Matos (2011) note that one of the defining characteristics of the governance structure of APLs that can be generalized across all cases is the presence of what they call a “dynamic nucleus” of the region’s leading firms that actively engage with each other and public sector agents in the coordination of actions and policies to support the cluster. Around this dynamic nucleus, there is a periphery of less dynamic firms, which are generally disinterested, unaware, or unable to participate in the APLs activities. I identified a similar dynamic nucleus in the two case studies discussed in chapters 4 and 5, as well as in fieldwork I conducted in one of the first APLs in Brazil, the apparel cluster in Nova Friburgo, Rio de Janeiro. The central question of this dissertation is: under what conditions do governance structures led by a region’s leading firms undertake policies that have a territorial development impact rather than simply narrow interventions benefiting their particular niche?

I argue that one of the main drivers behind a territorial approach to APL development was that motivation for collaborative action among local entrepreneurs and the public sector, is to improve the productive capacities of local firms. In contrast, when the motivation for collective action is purely to improve access to markets, the interventions tend to be much more narrow, targeting only firms within the primary sector or, more likely, a particular niche of that sector. These commercial challenges include improving access to foreign markets, attracting buyers from other regions in Brazil, or conducting market studies to figure out how to best position the local firms. In cases where entrepreneurs came together to address value chain challenges, the policies they implemented tended to be narrowly targeted towards a small group of beneficiary firms.

Although the relationship between governance structures and the type of APL policies is likely to vary and have its own particularities in different cases, I posit that productive challenges lead to more territorial interventions for three main reasons, drawn from the literature reviewed in chapter 2 and the analysis of the cases in chapters 3, 4, and 5. First, the commercial challenges that call for value chain insertion policies do not require much coordination across a multiplicity of different actors. A small number of firms within a similar sectorial niche and with similar interests can mobilize and seek out incentives from public agencies to address these specific challenges. Connecting the dot between buyer and seller is relatively straightforward. On the other hand, productive challenges may require the connection of many different dots. Incorporating a technology that is new to a region’s firms (even if it is already a relatively mature technology) may require hiring engineers familiar with the new processes, trainers capable of educating local workers on the necessary new skills, supporting businesses that can service the machinery, suppliers of new inputs, to mention only a few of the local adaptations that need to occur. Similarly, the upgrading of a “hub-and-spoke” cluster may only be possible if local suppliers are able to upgrade their own production and meet more
sophisticated quality control standards (Villaschi, Cassiolato, and Lastres 2006). The literature on clusters argues that the presence of such supporting services is one of the main competitive advantages for firms located within agglomerations, and therefore introductions of new technologies need to be diffused across much of the production chain (Altenburg and Meyer-Stamer 1999; Porter 1998).\(^3\)

The second reason why a territorial approach might be more likely to emerge in cases where productive challenges prompt collective action from local actors is a question of scale. Although, as mentioned above, investments to facilitate value chain insertion may only require coordination of a relatively small number of actors, it is highly unlikely that they will be significant enough to make significant changes in the market for specific products. For example, a program to help firms in a region increase their exports may provide a few million dollars to brand local products, subsidize the costs of participation in foreign trade fairs, or reduce tax burdens of firms seeking entrance in foreign markets. While these efforts may benefit exporting firms at the margins, they are likely to be negated by macroeconomic policies and trends over which APL supporting policies have no control. A small shift in the value of the Real against the US Dollar, for example, will have an impact on a firm’s ability to export that is orders of magnitude greater than the marginal benefits of a localized export promotion program. These types of localized investments in value chain insertion are likely to have a greater impact if given to a small group of leading firms with greater chances of success than if they are spread out among many firms. Therefore, there is an inherent incentive for such export subsidies to be targeted narrowly where they have the most impact, and a dis-incentive for a broad segment of a region’s firms to engage in collective action for resources that will be spread thin.

By contrast, even small investments in productive development can be targeted such that they produce regional spillovers that can benefit many firms. In the cases analyzed in chapter 3, for example, productive challenges are often addressed through targeted interventions to address bottlenecks affecting many firms, such as in the case of the goat husbandry APL in Ceará, where researchers invested in training programs for farmers to produce fine leather from their goats, increasing the amount of revenue they could generate from each animal (Amaral Filho and Ximenes 2011). In the case of Cachoeiro de Itapemirim, analyzed in chapter 5, an earlier territorial approach to APL development specifically sought to upgrade the firms in the local production chain whose activities had the greatest impact up- and downstream.

Lastly, interventions that target productive upgrading challenges are likely to require coordination of actors across a number of “boundaries”, such as the public-private divide, various bureaucracies within local and state governments, as well as multiple scales. If local governance networks form to address these challenges, they are likely to involve relationships between actors across these boundaries as well as leadership from local interlocutors (generally public) who can mobilize resources from higher levels of government. This process generally requires a certain level of embeddedness among

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\(^3\) As Motoyama (2008) notes, these insights by the cluster literature are not new and the role of local linkages has been widely discussed by classic texts on industrial organization (Marshall 1961) and economic development (Hirschman 1965). For a longer discussion of this literature and its critiques, see chapter 2.
public and private actors such that the needs of local producers can be articulated to bureaucrats in the local (or state) governments, and actors who can establish channels of “vertical coordination” with bureaucracies at higher levels (Davoudi et al. 2008). In the case of the goat husbandry APL in Ceará described above, for example, the local governance network was formed by a producer’s association, the small business agency (SEBRAE), and the municipal government, which were able to mobilize resources from Federal agencies to implement the leather production program and from the state government to create a local workforce training center.

I develop these propositions more fully in the next chapters through the research and analytical methods discussed in the next section.

III. Research methods and case selection

This study undertakes a two-tiered methodology to answer the research questions and support the propositions outlined in section II of this chapter. The two methods are complementary and are designed to provide a certain degree of generalizable theory building through a small-N (12) analysis, as well as in-depth testing of the propositions in the two case studies. In this introduction, I will focus the discussion on the case study method used in chapters 4 and 5, and how it supports the work done for chapter 3 through the analysis of the twelve reports. Although the analysis focuses on regions within the peculiar case of Brazil, it draws insights from regions exhibiting a broad range of socioeconomic conditions, whose economies are driven by several different types of industries, and in which local and state governments vary widely in their capacity to implement their policy agenda. In this regard, the findings in this dissertation should have applicability to debates on economic development in other contexts, particularly middle-income countries where “cluster” based policies have been implemented in recent decades. I briefly describe the method used in chapter 3 here, but for a fuller discussion of my approach, I refer the reader to section II of that chapter.

In chapter 3, I undertake an analysis of twelve reports about APLs in four broad sectors: apparel, tourism, agriculture, and heavy industry. Through a series of close readings of the lengthy reports and other supporting documents and plans, I identified the motivation for collective action by the governance network of each cluster, as well as the policies and programs implemented to support APL development. I then compare these two variables and identify a strong relationship between them, which I describe in my propositions (in section II of this chapter) and explore further in the analysis of the case studies in chapter 4 and 5.

In chapters 4 and 5, I analyze the development of two APLs in the state of Espírito Santo, in southeastern Brazil, through the case study method. The case study method allows the researcher to generate intensive understanding of context-specific institutions and processes in order to develop insights through inductive logic as well as generalizable causal inferences through careful case selection and theoretical reasoning (Flyvbjerg 2011). As Yin (2009) argues, the information generated through this method cannot necessarily be analyzed through statistical techniques, and generalizations cannot be made by expounding the characteristics of a random sample to that of a population. Rather, he argues, “the mode of generalization is analytic generalization, in which a previously developed theory is used as a template with which to compare the empirical
results of the case study” (38, emphasis in the original). Thus, I use the two case studies as a way to test the theoretical propositions I develop in chapter 3, based on the analysis of the twelve clusters and existing theory on governance and economic development.

For the two case studies developed in this dissertation, I interviewed nearly eighty actors, including business owners; municipal, state, and Federal bureaucrats; business association managers; academics; and bankers. My interviews were semi-structured and open-ended, usually starting with a set of defined questions, but almost always driven by follow-up inquiries into whatever relevant and interesting topics the interviewer would bring up. They lasted between 45 and 90 minutes, in which I explored the evolution of each cluster’s organization; the changing dynamics between government, individual firms, and industry associations; and the ways in which municipal, state, and Federal policies have impacted cluster development. Between 2012 and 2014, I visited both APL regions, Cachoeiro de Itapemirim and Linhares, spending three weeks in the former and two in the latter.

For the Linhares research, I spent two weeks in August 2014 at the city, where I interviewed the owners of 13 furniture firms. The interviews included the two largest firms in the region, a number of medium-size firms, and some small enterprises that supply specific furniture components (doors, feet, etc.) to the larger firms for assembly. I also spoke with service providers such as banks, the local packaging firm, and investors in the firm that will produce medium density fiberboard locally. I also interviewed a number of institutional actors, such as the director of the furniture producer’s association (Sindimol), a specialist from the workforce-training center (SENAI), and a local SEBRAE agent. In Cachoeiro, I interviewed the directors of the two organizations that play leading roles in the cluster’s governance network, the Ornamental Stones Producer’s Association (Sindirochas) and the Marble and Granite Technology Center (CETEMAG), as well as several other organizations supporting the sector, such as the export association (Centrorochas), the machinery producer’s association (Sindifer), and the workforce training center (SENAI). I also interviewed the owners of 15 firms representing all of the links in the local production chain (see figure 5.2 in chapter 5), including quarry operators, cutting/polishing firms, and the marble workshops (marmorarias) as well as supporting services like machinery producers, the credit cooperative (Crediropchas), input suppliers, and waste disposal services. Most of these interviews were undertaken in March and June of 2012 and some in January and August of 2014.

Since much of this dissertation focuses on the institutional context in which the APLs are situated, as well as the ability of firms to engage collectively with public and institutional actors, I also conducted several interviews with state, Federal, and multilateral actors engaged in APL policies in general, and supporting the two APLs in the study specifically. Between March 2012 and August 2014, I made five separate trips to Espírito Santo’s capital, Vitória, where I interviewed state-level officials engaged in the governance and policies of either or both APLs. The most important state-level economic development institution in Espírito Santo is the state’s development bank, BANDES, and I interviewed four of their experts on five separate occasions. In addition I talked to the state’s APL policy director three times, the Secretary of Science and Technology twice, and with experts from SEBRAE and the state’s industrial federation (FINDES). In Brasília, I interviewed Federal government officials engaged in APL policymaking and attended a National Conference of APLs. I had more than a dozen
formal and informal conversations with experts from the Inter-American Development Bank, which has been closely engaged with APLs in Brazil since the late 1990s and directly supports the governance efforts in Cachoeiro, as I will discuss in chapter 5. Lastly, I had many conversations with APL scholars and researchers in Brazil, particularly Professor Arlindo Villaschi of the Federal University of Espirito Santo (UFES), who is the foremost expert on the Capixaba economy.4

I triangulated the evidence gathered through my interviews with several other sources of data. First, I gathered and presented descriptive data on the municipalities and APLs under study, including demographic and socioeconomic indicators, export statistics, location quotients, and input/output data, which are presented in the relevant chapters. I also consulted APL development plans, business plans, industry reports, industry association meeting minutes, news reports, and scholarly articles. I gained important insights from participant observation at two events: the National Conference of APLs in Brasília on December 2013 and the Vitória Stone Fair in February 2014.

A. Case Selection

One way to make causal inferences through case study analysis is to select “paradigmatic cases” (Saxenian 1989; Tendler 1997) that disprove dominant theories by presenting cases that diverge from its principles when they would be expected to converge. In contrast, in this dissertation I seek to build theory about the development of “middling” regions, not those seeking to be “the next Silicon Valley” or cases of “good governance” in a sea of corruption and inefficiency. I believe that these types of experiences match the developmental struggles of most of the world’s regions yet they are not widely theorized, perhaps due to a difficulty in developing generalizable insights about their less “paradigmatic” experiences. In any case, the twelve APLs analyzed in chapter 3 and the case studies of Cachoeiro de Itapemirim do provide a solid base from which to build theory about subnational industrial policies in middle-income countries.

As mentioned above, the APLs analyzed in chapter 3 were studied over a period of eight years (2003-2011) under a project organized by RedeSist, a network of economists from Brazil’s top universities whose research focus are systems of production and innovation throughout Brazil. Researchers associated with the network conducted initial case studies in 2003 and followed up in 2010-11 to track and analyze the changes that had occurred in those APLs over this period, which coincided with enormous fluctuations in the global economy, structural transformations to Brazil’s economy and society, as well as the maturation of APL policies at the Federal level. Cassiolato and Matos (2011), who organized the research project and summarized its findings, state that the cases were selected to comprise a broad variety of geographic contexts, economic sectors, and agglomerations of varying degrees of maturity, which allows for a certain degree of generalizability and theory building. As I discuss in more detail in chapter 3, the selected APLs come from all of Brazil’s macroregions (which vary widely with regards to economic, social, human, and institutional development), represent a spectrum of economic sectors (apparel, tourism, agriculture, and heavy industry), and degrees of maturity that range from industries created by ISI policies in the 1950s and 60s to more fledgling productive systems that have emerged since the “opening” of Brazil’s economy.

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4 Capixaba is the term used to describe someone or something from Espirito Santo.
in the early 1990s. Although this is a small-N study, which does not allow for holding these factors constant in a statistical sense, I show in section III of chapter 3 that my findings cut across various alternative explanations for why the governance networks of APLs implement territorial development policies when they would be expected to simply engage in narrowly sectorial ones.

I selected the two APLs for the case studies in chapters 4 and 5 because their similarities and differences provide a strong basis for comparative analysis to explore the theoretical propositions laid out in chapter 3. Linhares and Cachoeiro de Itapemirim (shown in figure 1.1) are both “intermediate cities” of similar size and development levels. Cachoeiro has a slightly larger population and it has historically been a more important secondary economic center for Espirito Santo, while Linhares’ population and economy have grown robustly over the past 20 years and both cities are currently of similar size, have comparable developmental indicators, and municipal production and consumption levels (as measured by a “GDP” index estimated by the Brazilian Institute for Applied Economics Research - IPEA). The fact that they are both in the same state also allows me to control for several exogenous economic, political, cultural, social, and historical factors, many of which cannot be measured, and use what Snyder (2001) calls the “subnational comparative method”. In other words, the study will seek external validity (generalizability) by measuring within-state variation in the dependent variable (policy approach) that I claim to be attributable to the independent variable (governance), controlling for outside factors.

The two case studies also describe industries that are similar enough to allow for some meaningful controlled comparisons. Ornamental stones and mass-produced furniture are both moderately heavy industrial activities that are not at the technological frontier of manufacturing, yet which do require modern machinery and a relatively skilled workforce. Both industries are highly susceptible to the volatilities of the global real estate development sector, and demand for their products suffered greatly during the financial crisis of 2008. The individual impacts of the crisis on each APL will be discussed in their respective chapters. However, the two industries are also different in ways that contribute to the argument in this dissertation. Mass-produced furniture is a competitive sector, producing goods through a highly codified process that several of my interview subjects in Linhares likened to “commodities”. As such, one of the only ways to achieve lower costs is through economies of scale, and so the local industrial organization has always been highly hierarchical, with one or two firms dominating production and playing a strong role in the governance network. Therefore, it seems like an unlikely place for a territorial vision to emerge. The ornamental stones sector in Cachoeiro, on the other hand, is much more unique and fills valuable niches in domestic and global markets. Although economies of scale may play a role, there is a greater number of large firms. Nevertheless, the policies to support the APL tend to be narrowly targeted towards improving the commercial prospects of the leading firms (trade fairs, export promotion, and the like) rather than broader territorial development processes.

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5 Snyder, of course, develops this method for within-country comparisons. Given Brazil’s size and federal political structure, this downscaling to the state level seems appropriate.
In the next two sections I describe the politico-economic context for the development and implementation of industrial policies at the subnational level and provide some background on the creation of the APL framework in Brazil since the 1990s.

**IV. What does subnational industrial policy look like?**

The concept of industrial policy in Latin America dates back to the work of structuralist economists, who after World War II argued that countries in the periphery of global trade and the international division of labor should take actions to promote the structural transformation of their economies through direct state intervention in production and stimulation of domestic demand rather exploiting Ricardian comparative advantages in commodities exports (Furtado 1972; Prebisch 1950). The work of these economists, which was associated with the United Nation’s Economic Commission for Latin America and the Caribbean (ECLAC or CEPAL in the Spanish and Portuguese acronym), formed the theoretical basis for the implementation of import substitution industrialization (ISI) policies after World War II.

In response to balance of payments deficits generated by falling commodity prices during the Great Depression, economists such as Prebisch argued that nations in the region should promote the domestic production of non-essential imports in order to save up foreign exchange reserves for essential goods. In practice, countries installed trade barriers (tariffs and red tape) and provided subsidies (up to and including direct...
government interference) for the production of manufactured consumer goods. These policies required, however, the importation of capital goods and intermediary products in order to give these nascent manufacturing firms the inputs they needed, meaning that countries overvalued their currencies to make imports cheaper, which automatically made exporting these goods (as well as primary goods for which these countries may have already had comparative advantages) very difficult. According to Cardoso and Helwege (2000), these policies had largely negative effects such large budget deficits, domestic industries that were uncompetitive internationally, and high unemployment rates.

Albert Hirschman (1968) compares the experiences of Latin American countries, which he calls “late late industrializers”, with those of Europe’s “late industrializers” (Germany, Russia, and Italy) and notes that, while the late industrializers already had in place rudimentary capital goods industries when they initiated the process of investing in forward linkages (finished goods), ISI policies focused on the finished goods without the underlying backward linkages, which he calls “higher stages” of the industrial process. Creating demand for those capital goods industries was, in fact, the end-goal of the more forward-looking policies. The failure of these backward linkages to materialize led to an “exhaustion” of the model that might have very well been delayed or prevented through sensible government action. However, Hirschman argues that several politico-economic barriers prevented these policies from being implemented, the most important of which is the set of disincentives that new industrialists had to support policies that would make it more expensive to import their inputs, which would be generated through backwards linkages industries. Evans (1979) argues that Brazil’s industrialization under ISI policies was an example of a “dependent development” model. Even during a period of “miracle” economic growth and rapid industrial expansion in the late 1960s and early 1970s, the country was unable to fully develop domestic backward and forward linkages between its industries, leading to severe balance of payment deficits that were paradoxically worse during years of higher volumes of exports.

In the early 1990s, President Collor lowered tariffs and dropped protections for a number of key sectors, and the “opening” of the economy continued through the early 2000s with the privatization of several state owned enterprises in telecommunications, petroleum exploration, and mining by Presidents Cardoso and Lula. Taking stock of the industrial policies of the post-War era, an influential report by Coutinho and Ferraz (1993), noted the contradictory nature of Brazil’s development. Although the country’s industrial sector had grown prodigiously between 1965 and 1980, with rates that were higher than all other newly industrializing countries (NICs) except for South Korea, Singapore, and Indonesia, Brazilian firms did not acquire the capacity to innovate in new products and processes. As evidence, the authors note the extremely low rates of investment by Brazilian firms, a phenomenon that continues to this day. Dahlman and Frischtak (1993) further argue that the country’s “national innovation system” is highly deficient in the formation of skilled workers, with weak elementary and post-graduate education as particularly problematic. Unsurprisingly, the reforms of the 1990s left Brazilian firms in most sectors, with a couple of notable exceptions, unable to compete in global markets.

With the economic reforms that began in the 1980s, a process of reflection on the legacy of structuralism led to a rethinking of state interventions in industrial development, and the emergence of a “neo-structuralist” school that descended from the
CEPAL work. Bitar (1988) argues that neo-structuralists were the first to recognize that neoliberal reforms that dismantled the ISI framework worsened the competitiveness of the productive sectors in Latin America and widened the productivity and income gaps between Latin American countries and countries in the Global North. Unlike the original structuralists, however, neo-structuralism combined the focus on import substitution with an emphasis on export promotion, following the example of South Korea’s development process (Amsden 1989). Neo-structuralists also reject the dichotomy between planning and the market, arguing that governments can make planning more strategic while allowing the market to dictate the production and allocation of most goods. However, this school also roundly rejected the idea that the market can reduce inequalities and alleviate poverty. Unlike structuralists, these scholars also abandoned the idea that industrializing countries should “overcome” agriculture and move towards manufacturing sectors, and saw agroindustry as a crucial sector for most countries and peasant agriculture as an important source of livelihood and food production.

Neo-structuralists would argue, for example, that “implicit” industrial development policies, such as using trade, tax, and monetary policy to create incentives for companies to hire and train workers can be justified in situations where “explicit” policies (public expenditures on education, workforce training, and research and development) are infeasible due to budgetary constraints (Cassiolato, Hewitt, and Schmitz 1992). They argue that where the costs of implicit policies fall on consumers, they can still be justified as “users paying for the training necessary for producers to be able to put these goods on the market. Given the difficulties of establishing an effective and equitable tax system in [less-developed countries], this seems an appropriate way of recovering the cost of training” (287). National governments hold most of the policy tools that make implicit approaches possible, such as the ability to level protective tariffs, provide incentives through the tax regime, or establish a favorable monetary policy, yet all of these were severely hampered after the neoliberal reforms of the 1990s.

After decades in the doghouse of mainstream economics, industrial policymaking has been making a comeback in recent years. Recent publications by institutions such as the World Bank (Rodrik 2008; Stiglitz, Lin, and Monga 2013) and the Inter-American Development Bank (Crespi, Fernández-Arias, and Stein 2014) have begun to question the notion that states are inherently incapable of “picking winners”, providing targeted subsidies or protections to specific and strategic industries, or engaging with the private productive sectors without generating destructive market distortions. Even a bastion of liberal thought such as the Economist, in its recent review of the IDB’s edited volume on “productive development” (a softer term for the still-loaded concept of industrial policy) stated that the institution’s policy recommendations were “timely” and that “sensible government policies can help” (The Economist 2014). The paradigm shift occurring within these institutions reflects insights from political economists such as Evans (1995) and Amsden (1989) who have for decades argued for an active state role in promoting structural economic transformation in developing countries.

Rodrik (2008), for example, argues that industrial development is fraught with externalities and market failures just like other policy arenas such as education and healthcare, and therefore state interventions are strongly justified. For instance, innovation efforts by firms (such as the development of new products or investments in their workforce) often generate spillovers that can be appropriated by competitors, even
in strict intellectual property rights regimes, and are therefore likely to be underprovided by the market. However, whereas few would argue that governments should not engage in education and healthcare policy, mainstream economics has argued that industrial policy necessarily leads to misguided public expenditures and a stifling of market competition or outright rent seeking and corruption. Rodrik argues that these critiques can be easily levied against government action in most public policy arenas and should not, in and of themselves, disqualify all attempts by states to promote industrial development.

In addition to the “macro” approaches to industrial development, which echoes much of the work of the structuralists of the 1950s and 60s, one of the defining characteristics of current neo-structuralist thought in Latin America is an emphasis on the territorial nature of production, and therefore on the need to frame “micro” interventions at the subnational scale. Drawing inspiration from neo-Schumpeterian insights on innovation and economic development (Nelson and Winter 1982; Lundvall 2010; Nelson 1993), these scholars argue that local economic development strategies must be based on fostering territorialized competitive advantages based on interactive learning and the diffusion of tacit forms of knowledge rather than on “spurious” factors such as low wages, unsustainable exploitation of natural resources, or “fiscal wars” among jurisdictions to attract outside investment. This “neo-structuralist” approach forms the foundation of cluster-based territorial development policies that emerged in Latin America in the 1990s (Dini, Ferraro, and Gasaly 2007), incorporating the theoretical and policy insights from the literature on Italy’s “industrial districts” (Brusco 1982; Bagnasco 1977) and Michael Porter’s (1998; 1990) clusters, which I discuss more extensively in chapter 2. In Brazil, these debates formed the policy framework for APLs, which I discuss in the next section.

V. The Local Production Arrangements (APL) framework in Brazil

Before proceeding any further, it is important to establish a precise working definition of a highly imprecise concept, the Local Production Arrangement (APL) and how it is framed in policy debates in Brazil. Most generically, many people understand APLs as a label for a particular type of industrial organization in which a constellation of firms, usually small firms operating more-or-less horizontally (Schmitz and Nadvi 1999; Cassiolato and Lastres 2003), but in some cases around a large anchor firm in a hub and spoke pattern (Markusen 1996; Villaschi, Cassiolato, and Lastres 2006), produce a particular product or provide a specific service and are bounded spatially within a region. The geographical agglomeration is usually driven by localization economies (economies of scale) that allow for specialization and division of labor along a particular production chain. This definition is basically synonymous with Alfred Marshall’s (1890) stylized industrial districts which provided firms increasing returns to scale through agglomeration due to decreased transportation costs, proximity to specialized inputs (such as skilled labor), and the ability to appropriate knowledge spillovers (“the secrets of
The idea of promoting regional “clusters” of firms as a way to improve the competitiveness of industrial sectors in developing countries gained considerable attention in the 1990s (Schmitz 1999b; Schmitz and Nadvi 1999; Altenburg and Meyer-Stamer 1999; Giuliani, Pietrobelli, and Rabellotti 2005), as I will discuss in chapter 2.

Secondly, the APL concept has been widely used as an analytical device by academics and policymakers interested in industrial policymaking. Political economists associated with the RedeSist network, as well as others, see APLs as a “virtuous” approach to industrial policy, where competitiveness is undertaken not through tax subsidies or the debasement of labor through lower wages, but through the promotion of the endogenous capacity for innovation within regions. These theorists understand innovation as a social, iterative process because it requires the exchange of “tacit” forms of knowledge (M. Polanyi 1966) that require collaboration and face-to-face interaction (learning-by-doing, learning-by-interacting), as opposed to codifiable knowledge that can be transferred through manuals, textbooks, videos, and the like (Gertler 2003). Cassiolato and Szapiro (2003), drawing on Schumpeterian insights about economic development as a process driven by firms’ ability to gain temporary monopolistic status through innovation, argue that strategies predicated on the exchange of tacit knowledge are much more difficult to be undermined by “low road” competition from regions with lower wage labor, weak environmental laws, and other low-cost factors. In this sense, APLs are therefore not seen as a geographic entity or set of policies, but as a “high road” approach to economic development through the structural transformation of the productive capacity of these regions (Cassiolato and Lastres 2003). The policy objectives for those subscribing to this definition is not to generate increasing returns to scale or to address market failures through state interventions, but to build national and regional innovation systems (Dosi, Freeman, and Fabiani 1994; Lundvall 2010; Nelson 1993). In this sense, the more “virtuous” APL policies are not those that seek to lower costs or increase sales for a few firms in a given sector, but those that build social capital, thicken local production chains and user-producer interactions, strengthen educational and productive institutions, and generally build a locality’s public goods.

The third definition is that APLs are basically a set of policies by the Federal, state, and municipal governments to promote the competitiveness of firms in industrial sectors that are either able to generate economic development in small and intermediate cities and/or to elevate Brazilian products towards global competition in targeted sectors. These policies are influenced by the two theoretical debates briefly mentioned above, which can lead to significant tensions in implementation, as discussed in chapter 2. In order to promote this type of industrial organization, the state (and semi-public organizations) has created a number of policy instruments such as more favorable lines of credit available to businesses in officially designated APLs, locating workforce development centers targeted towards local industries, and the establishment of tax abatements by state governments towards APLs (Ministério do Desenvolvimento, Indústria e Comércio Exterior 2006). Unfortunately, there are two key weaknesses with this definition. First, the availability of subsidies to regions that identify within

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6 See Amin and Thrift (1992). Though ignored by orthodox economists for almost a century, these increasing returns to scale in agglomerations of firms have been brought to the mainstream of economics in the past thirty years, starting with the work of Krugman (1991). See chapter 2.
themselves a particular form of productive organization provides substantial incentives for those regions to categorize any type of local production activity as an APL, whether or not it has the capacity to develop a governance structure, generate innovation, or even provide sustainable employment and income for local workers. The second weakness is that, because there is an incentive to label all localized productive activities as APLs, the range of industries classified as APLs is enormous, from advanced aerospace production in the state of São Paulo to family agriculture of staple products barely above subsistence, which brings into question the very relevance of the term.

Notwithstanding the two conceptual weaknesses described in the previous paragraph, the working definition of an APL in this dissertation is the official one since the research will focus on officially designated APLs and the policies to support them. Thus, this dissertation understands APLs as the geographic beneficiary (either one municipality or a group of adjacent municipalities) of a set of policies descending from the Federal government, state governments, credit institutions, and semi-public business federations (of SMEs, industrial firms, commercial firms, etc.) They feature an agglomeration of firms within a particular sector and (at least in theory) a certain degree of division of labor up- and downstream from the primary activity. Within these territories, a “policy network” of trade associations, quasi-public organizations, the public sector, and other actors coordinates some of the productive or marketing/sales activities outside of what can be understood as “arm’s length” market transactions. I call these the “governance structure” or “governance network” of the APL.

A. The Origins of the APL Framework

Though geographic agglomerations of firms in related sectors have existed in Brazil since it began its industrialization process in the late 19th Century (Furtado 1972), the movement toward giving them an official designation and making them an object of public policies started in the late 1990s. As discussed above, Brazil and other Latin American countries were just emerging from the “lost decades” of the 1980s and 1990s, after neoliberal reforms opened their economies to foreign competition while simultaneously dismantling state apparatuses for promoting industrial development. Decades of protective import substitution industrialization (ISI) policies had left the industrial sectors of these countries unable to compete in global markets and many saw these policies to support “clusters” of small enterprises as a new approach to industrial policymaking more in line with neoliberal imperatives of market competition and minimal “distortions” created by state interventions (Sepulveda and Amin 2006; Meyer-Stamer 1997).

In Brazil, the National Small Business Support Agency (SEBRAE) was the first institutional actor to undertake these types of policies. Launched in 1972, and funded largely through a small tax paid by large corporations, SEBRAE is perhaps the Brazilian institution with the greatest capillarity, supporting firms in all of Brazil’s roughly 5,500 municipalities. In the mid 1990s, it became strongly influenced by the experiences of the industrial districts of northeastern Italy (known as the Third Italy), which had enabled small firms to achieve global competitiveness in niche markets for traditional manufacturing goods like leather shoes, apparel, furniture, and the like. Within these districts, small firms specialized in particular segments of the production chain (such as for example, producing just the sole of a shoe) which would be assembled by an end
producer in a system that was described as *fabbrica diffusa* (Bagnasco 1977), or “widespread factory”.\(^7\) SEBRAE’s new focus on industrial districts represented an epistemic shift in conceptualizing production as happening by individual firms to an understanding of the importance of the territories in which firms were situated and targeting interventions at groups of firms along a single production chain.\(^8\)

In 2000, SEBRAE, the Inter-American Development Bank (IDB), and the Chamber of Commerce of Milan (PROMOS) partnered to pilot an industrial districts program in four manufacturing clusters producing furniture, women’s lingerie, clay products, and craft stitch work (Dalberg Global Development Advisors 2010). The IDB funded the project with a US$3 million grant (matched by SEBRAE), PROMOS provided technical assistance and hosted study trips for leading entrepreneurs from the clusters to visit their counterparts in Italy, while SEBRAE implemented the projects. The main activities funded by the program were incentives for collaboration among firms, sponsoring local trade fairs, and marketing and quality control.

During this time, SEBRAE also began funding research projects on what now had come to be called APLs as well as nudging public credit institutions, such as the National Economic Development Bank (BNDES) to create financing instruments aimed at small firms located in APLs. Perhaps the most tangible outcome of this effort was the creation of the BNDES Card, a pre-approved credit card for small firms with a line of credit of R$1 million for purchases of machinery and inputs from Brazilian producers which was first piloted in the women’s lingerie APL in Nova Friburgo, Rio de Janeiro, one of the original four projects of the SEBRAE/IDB/PROMOS project. Overall, the volume of credit directed towards MSEs by BNDES between 2002 and 2010 increased by a factor of 10, and several commercial banks have followed suit, creating lines of credit targeting MSEs located in APLs, with the understanding that improvements to management practices promoted by SEBRAE and CNI make it safer to invest in small enterprises (Cassiolato and Matos 2011).

Their funding also helped to consolidate a national network of researchers to conduct studies about APLs, the Local Production and Innovation Systems Research Network (RedeSist), headquartered at the Institute of Economics of the Federal University of Rio de Janeiro, which has associated researchers in universities in all 23 Brazilian states. RedeSist researchers have published more than one hundred case study reports on APLs (including the twelve analyzed in chapter 3) and are considered to be the foremost authority on this topic in Brazil.

In 2003, President Luis Inácio “Lula” da Silva established an Inter-ministerial Group to coordinate activities to support APLs that were under implementation by several Federal bureaucracies in order to avoid redundancies. Some of these activities included grants by the Ministry of Science and Technology to fund innovative collaborations among APL firms and universities; special credit products given by public banks like BNDES, Banco do Brasil, and Caixa Econômica Federal (the Federal Savings and Loan Bank); and programs by the Brazilian Export Agency (APEX) to help small firms in APLs to reach foreign markets. In 2004, this group was transformed into a

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\(^7\) See also Brusco (1982) and Piore and Sabel (1984). Chapter 2 includes a more detailed discussion of the Third Italy model and its critiques.

\(^8\) Personal communication with Professor José E. Cassiolato (2013).
Permanent Working Group for APLs (GTP-APL), coordinated by the Ministry of Development, Industry, and Foreign Trade (MDIC), which included twenty-two other institutions between Federal bureaucracies, universities, and semi-public institutions like SEBRAE and the National Confederation of Industry (CNI)\(^9\) established eleven “pilot” APLs. In the following year, each state established its own APL commission with appointed representatives in the GTP-APL and designated five of its regions to become APLs, bringing the total to 141. These APLs were required to create Development Plans (PDPs) outlining their institutional framework, the main actors participating in their governance structure, and ways in which the APL would engage with public policies to strengthen their productive capacities (Ministério do Desenvolvimento, Indústria e Comércio Exterior 2006). It is unclear how many of them actually completed the PDPs, though certainly not most.

B. The APL Framework Today

Currently, depending on whose definition one follows, there are between 800 and 1,200 APLs in Brazil. According to a 2012 study by BNDES, there are 817 APLs, in industries that range from aerospace, software, apparel production, to basic harvesting and processing of fruits and vegetables. Many APL experts now believe that the model is currently in a “second generation”\(^10\) whereas policies in the first half of the 2000s focused primarily on agglomerations of small manufacturing firms, the definition expanded in the latter half of the decade to include regions whose economies were significantly geared towards services like tourism. A strong focus of many Federal agencies like BNDES and SEBRAE has been to develop APLs around “hub-and-spoke” systems dominated by one (or a few) large anchor firms and a constellation of small supplier firms. This is the case, for example, with the large “structuring projects” financed by the BNDES, such as petroleum exploration platforms, petro-chemical processing plants, mining operations, and port facilities. In these cases, BNDES and SEBRAE establish programs to support local small firms to improve the quality of their goods and services so that they can become suppliers to giant corporations like Petrobrás and Vale\(^11\).

As this section showed, the concept of APLs is imprecise, has undergone significant shifts since its emergence in Brazil in the late 1990s, and describes a highly heterogeneous set of production systems in Brazil. Nevertheless as a public policy that seeks to address major socio-economic challenges in Brazil—the large inequalities between regions, the low productivity and competitiveness of the country’s industrial sector, the precariousness of the environment for small enterprises—it is worth studying through a systematic approach. The next sections analyzes the relationship between how and why APLs and their governance networks form with the policies implemented to support firms and their territories.

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\(^9\) Like SEBRAE, CNI is funded through levies on industrial businesses and functions as a lobby organization as well as service provider for industrial firms in Brazil, though it does not have the mandate to represent micro and small enterprises only (as SEBRAE does).

\(^10\) Presentation given by Professor Sérgio Duarte de Castro at the 6th National APL Conference in Brasília, December 3, 2013.

\(^11\) Presentation given by Professor Helena Lastres at BNDES headquarters in Rio de Janeiro on November 26, 2013.
VI. Dissertation overview

This dissertation is organized into six chapters. In the next chapter I will provide a review of the literature on local and regional economic development, paying special attention to two strands that have emerged to explain the success of certain regions in a globalized economy. The first approach ascribes regional development to the successful participation of local firms in global value chains, which both generate demand for local products and transmit innovations and learning down the chain to these firms. The second school sees learning, innovation, and development as a more endogenous process, and draw on Schumpeterian notions of imperfect competition to push for “high road” economic development strategies. Neither of these debates engage meaningfully with the idea of governance (aside from interactions within a given value or productive chain), and so I will engage with the literature on the governance of economic development and seek to join these debates with those on clusters and local economic development. In chapter 3, I will analyze the twelve APLs in the RedeSist study. Chapters 4 and 5 explore the Linhares and Cachoeiro de Itapemirim cases, respectively, and Chapter 6 offers some concluding analysis.
Chapter 2:
The process and governance of local economic development in a global economy

I. Introduction

As I discuss in the previous chapter, the urban and regional scale emerged as a privileged node for economic development analysis and policymaking in the 1980s and 1990s. At the risk of oversimplification, the epistemic and policy shift from “the national” to “the urban/regional” occurred in countries of the Global North as a result (or at least concurrently with) a crisis in the Fordist mode of production (Amin 1994; Piore and Sabel 1984) and its associated institutions (Jessop 1998; Reich 2007) and in the Global South as a new way for the state to promote industrial development after the demise of Import Substitution Industrialization and other developmental policies of the post-World War II era (Bianchi and Labory 2006; Montero 2002; Sepulveda and Amin 2006). I do not mean to imply that macro-level industrial policies have been replaced, as export-oriented interventions by national governments have in fact have received renewed attention in recent years (Crespi, Fernández-Arias, and Stein 2014; Rodrik 2008; Stiglitz, Lin, and Monga 2013), but regional development strategies predicated on connecting localized agglomerations of firms to global markets and/or building endogenous capacities for innovation and economic growth have continued to gather attention over the past four decades.12

Such policies are generally not undertaken by the state in a top-down fashion, but rely on public and private sector actors operating through governance networks, often led by associations of firms. Though the state can promote efforts to organize these networks and make available resources and policy instruments to generate local economic development, the literature on successful models of this “new generation” of industrial policies clearly shows that networked forms of governance are key. However, the existing literature from economics, economic sociology, and economic geography tends to either ignore the concept of governance or treat it as a simple “zooming out” of forms of corporate governance beyond the boundaries of individual firms. In this dissertation, I show that these governance networks are in fact closely engaged in the formation of public policies benefiting their sectors and regions. However, the engagement of firms through “associations” does by no means guarantee that these policies will be deployed towards developmental ends, and can just as likely be narrowly focused towards small groups of firms. As I discuss below, the existing literature does not address the question of under what conditions firms will engage in governance networks to pursue policies aimed at broad regional development processes.

12 Another set of “less virtuous” subnational industrial policies, encouraging tax competition among jurisdictions to attract firms and economic development strategies based on providing subsidies for real estate development have also been quite popular and, in many cases, led to wasteful and regressive “fiscal wars” among states and/or municipalities that benefited no one but the firms receiving subsidies (Greenstone, Hornbeck, and Moretti 2010; Rodríguez-Pose and Arbix 2001; Fainstein 2001). By-and-large, this chapter will discuss the literature that engages with the more endogenous regional development strategies.
In the next four sections, this chapter presents a synthesis of the state of local and regional economic development theory and policy at the beginning of the 21st Century. Section II provides an overview of the field of regional economic development and how the region came to be understood as a key scale at which to think about economic change in the second half of the 20th Century. In section III, I shift the analysis to two distinct approaches to endogenous regional economic development analysis and policy in developing countries, one which stresses the role of Global Value Chains (GVCs) in diffusing knowledge and generating demand for local firms and the other which focuses on the formation of regional innovation systems. Looking at the two sets of theories as separate analytical categories provides important insights into the economic development process in middle-income countries like Brazil. Lastly, section IV concludes this chapter with a discussion of the governance of local and regional economic development, a process which has undergone dramatic shifts in recent decades, and which I analyze through case studies in chapters 3-5.

II. Regional economic development theories in the 20th Century

One of the early contributions of regional development theory to economic thinking in a broader sense was the incorporation of Joseph Schumpeter’s insights about imperfect competition, increasing returns to scale, and the monopolistic profit motive as a driver of innovation and economic development. Schumpeter (1950) saw capitalism as an evolutionary process, “The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers’ goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates,” (83). According to him, the focus of economists on “price competition,” where firms compete with one another based on marginal gains in productivity or lower factor costs missed the “capitalist reality” where real competition occurs from new commodities, technologies, new source of inputs, new types of organization, constantly renewed through “gales of creative destruction.” While neoclassical economists vilified monopoly as a market imperfection, Schumpeter stressed that firms constantly sought innovation as a way to extract monopoly profits from new products or technologies.

A. Increasing returns to scale, externalities, and uneven development

One of the first regional economists to incorporate Schumpeter’s ideas into a theory of regional economic growth was François Perroux (1988), through his promotion of “growth poles” (later termed “poles of development”). Writing in the 1950s, Perroux added to growing criticism of early location theorists’ reliance on an evenly spread, and equilibrium seeking development pattern, arguing instead that national development emerged from the propulsive effect of particular regions, growing through the efforts of innovation and entrepreneurship, often at the expense of the underdevelopment of peripheral regions. He argues that, “not a single example of evolution was ever found where the constituent elements and the results are equally distributed in a set. Growth operates in and through privileged points. Development ‘springs up’ and ‘ends in’

13 Such as Lösch (1975), Weber (1929), and Hoover (1948).
privileged points,” (50). National economic development policy should not therefore seek to spread resources evenly across space, but to invest in “growth poles” that would have a propulsive effect on the national economy. Similarly, Albert Hirschman (1965) recognized the uneven spatial dynamics of economic growth, where the development of some countries or regions was inevitably linked to the “backwardness” in others. Hirschman argued that in cases where “trickle down” effects (such as the employment of surplus labor from underdeveloped regions by firms in developed ones) do not ameliorate regional inequalities deliberate state action should be summoned to reduce this polarization. He argues that investments that are most effective in promoting economic growth are large-scale projects that create forward and backward linkages to the overall economy, at once generating demand for local labor and inputs, and providing a supply of needed goods that will produce a multiplier effect in the economy.

Raymond Vernon (1960) challenged the idea of diseconomies of scale hampering regional growth and illustrated the limitations of traditional location theories that sought equilibrium solutions and a smooth distributions of firms across space through an analysis of the congested yet economically vibrant New York Metropolitan Region. According to theories favoring the minimization costs or maximization of revenues, the region’s congestion problems, expensive labor, high land rents, and taxes would have been a liability to economic growth. However, New York’s network of firms created external economies that made it an attractive place for entrepreneurship. Vernon describes the rise of this complex network from the establishment of the Port, which created wholesalers, then financial institutions, which needed lawyers and service providers, and so on. A large labor supply and broad range of intermediate suppliers allowed firms to pool their risks and decrease uncertainty, all of which was managed through face-to-face interactions by entrepreneurs.

Chinitz’s (1961) classic study of New York and Pittsburgh further reinforced the role of external economies (and diseconomies) on the resilience of a regional economy. Chinitz argued that New York’s diverse mix of industries created external economies that provided incentives for new firms and technologies, while Pittsburgh’s monolithic steel industry did just the opposite, creating external diseconomies that prevented other industries from emerging. The availability of capital for business formation and expansion is a case in point. In Pittsburgh, bank lending was largely oriented towards steel, which provided a safe, conservative haven for investment and discouraged risk-taking in other ventures. Banks in New York, on the other hand, needed to spread their lending across a wide range of firms in order to minimize risk, which enabled small-scale entrepreneurs to get access to start-up capital.

B. Diversity, specialization, and spillovers

Jane Jacobs (1969) also argued that dense and diverse cities generated externalities that were crucial to innovation and economic development. She argued that a diversity of industries was particularly important, as knowledge spillovers across industries were most likely to create “new work”, or entirely novel products that could not have been invented within the narrow confines of single industries. Famously, she described the emergence of the brassiere industry in New York City as an offshoot of dressmaking, not lingerie manufacturers. Glaeser et al. (1992), in studying economic growth in US cities between 1957-1985, provide support for Jacobs’ theory through
formal econometric modeling. In a later book Jacobs (1984) further argued that cities and their regions develop through a process of import-replacing. Cities serve as a place where agricultural or extracted goods can be traded for tools or other goods, which can be imported from other cities. This creates opportunities for local entrepreneurs to imitate or innovate upon imported goods, creating small, local economies of scale and carving out a niche within the area. As local production becomes increasingly sophisticated, the region begins to export its goods to other regions. She also argues that this is a process that must almost exclusively occur in cities because only urban areas have the necessary critical mass of infrastructure, labor, and demand for intermediate goods and services that is critical to cycles of innovation and import replacing.

More recent contributions to location theory further build on the concept of external economies and increasing returns to scale as a centripetal force on firm location choices as well driver of polarization among regions. Michael Porter (1990; 1998), for example, argues that spatial concentration (clusters) of specialized firms leads to endogenous and self-perpetuating processes of innovation that make host regions more competitive. Porter was inspired by the work of Marshall (1961), whose stylized industrial districts generated increasing returns to scale due to decreased transportation costs, proximity to specialized suppliers, and inter-industry knowledge spillovers (“the secrets of the trade”). Porter introduced the idea that sophisticated demand from local customers as well as the strategy, structure, and rivalry of local firms create the determinants of firm competitiveness and, by proxy, the competitiveness of regions and nations. The study by Glaeser et al. (1992) cited above, however, argues that regional specialization and dependence on inter-industry spillovers (as opposed to intra-industry, “Jacobs spillovers”) was associated with slower rates of innovation and growth in cities, a finding which echoes the arguments made by Chinitz (1961) and is supported by more recent research, such as Desrochers and Leppäla (2011).

In the 1990s, the “New Economic Geography” (NEG) emerged as a subfield in international trade economics, with Paul Krugman’s (1991) Geography and Trade as its founding text. Krugman argued that mainstream economics had been largely blind to new theoretical developments in economic geography such as increasing returns to scale and imperfect competition. Agreeing with Porter, he argued that industries often emerged in particular regions due to historical happenstance, then through processes of increasing returns to scale and external economies, first mover advantages would “lock in” and perpetuate long cycles of regional growth. Cronon’s (1991) economic history of Chicago clearly illustrates several of these points. Growing from a small Native American trading post on Lake Michigan, Chicago overcame competition from several Midwestern cities (St. Louis, Cincinnati) that boasted geographic advantages to become the primary transshipment point for commodities traveling from the American West to Eastern and European markets, and capital traveling in the opposite direction. Once the initial advantages had been set into place, technological improvements in rail transportation, commodities trading, and meat refrigeration unleashed a wave of growth and subsequent innovations that pushed the city to grow at prodigious rates over just a few decades, while its competitors remained stagnant. In subsequent works in the NEG (Fujita and Krugman 2004; Krugman 1998), Krugman and his collaborators sought to bring increasingly sophisticated modeling techniques incorporating monopolistic firm behavior and increasing returns to scale that explained the emergence and concentration of firms in
particular countries, an approach that has been widely adopted even by mainstream development organizations like the World Bank (2009).

C. Institutions and embeddedness

The role of institutions in regional economic development also gained much attention in the 1970s and 1980s. Starting in the 1970s, scholars associated with the New Institutional Economics (NIE) proposed that institutions emerged as solutions to problems in the assumptions of neoclassical economics, such as irrational or opportunistic behavior in the part of economic agents, as well as the untenable assumption of zero transaction costs. Early proponents like Williamson (1979) saw institutions as way to reduce transaction costs, particularly those related to imperfect information, by providing incentives against, and checks on opportunistic behavior and malfeasance. Elinor Ostrom (1990) has also explored the role of institutions in facilitating self-organized collective action to manage “common pool resources”, such as fisheries and agricultural land, which can also be extended to the analysis of innovation and economic development, which have strong “public goods” characteristics. In Ostrom’s work, three elements can be identified as generating incentives for collective action and coproduction: (1) relatively low costs of participation, (2) tangible benefits for actors to join and remain in the collective action efforts, and (3) “credible commitments” from all actors to discourage opportunistic behavior. Ostrom (1996) also highlights the possibility of “synergies” that can be generated through public and private efforts to provide goods and services that go beyond what would have been generated by the government and citizens (or firms) acting alone. She labels the types of projects that benefit from public and private actors as “coproduction”.

North (1990) broadened the scope of the theory with his argument that the presence of certain institutions (such as robust private property rights) provide incentive structures for individuals to behave in ways that led to economic development. Developing economies, he argues, tend to create incentives for “political entrepreneurs” that favor redistribution, rather than production and innovation, which leads to stagnation rather than economic growth. He argues that economic development occurs when institutions create incentives (lower transaction costs) for individual behavior that is productive for society. He stresses the importance of path dependencies, which “lock in” institutional advantages through increasing returns mechanisms that reinforce the directionality of change. More recently Acemoglu and Robinson (2012) have argued that nations that have created inclusive institutions that allow its citizens to freely participate in the market and which do not protect elites from Schumpeterian “creative destruction” have been the examples of economic success over the past several centuries.

NIE theorists have been critiqued for their view that individuals’ behaviors are shaped by institutions, the absence of which would result in a Hobbesian “state of nature” nightmare. Granovetter (1985) argues that this is an “undersocialized” conception of human behavior because it ignores the ways in which individuals often engage in market interactions embedded in broader networks of family, culture, nationality, and the like, such that the distinction between a Hobbesian marketplace and tight hierarchies that perfectly constrain individual behavior is a false one. Evans (1995; 1996), for example, argues that “developmental states” exhibit a combination of an autonomous, coherent bureaucracy that is able to articulate national goals and influence the action of private
interests to these ends, as well as a high level of embeddedness between these bureaucracies and society that allows the state to provide the adequate conditions for a private capital-driven industrial growth. Scholars of embeddedness often draw on Polanyi’s (1944) assertion that the state has always been centrally involved in creating and perpetuating markets, such that a conceptualization of pure markets as the “state of nature” is impossible.

D. Institutions and regions

Much of the work on economic geography in recent decades (Amin 1999; Cooke and Morgan 1998; Morgan 1997; Sabel 1994; Saxenian 1994; Scott and Storper 2003; Storper 2013) has focused on the ways in which certain institutions within regions can create competitive advantage for its firms. For example, formal institutions like business lending, credit, and investment can play a pivotal role in promoting (or hindering) innovation and an entrepreneurial culture as the classic comparison between New York and Pittsburgh by Chinitz shows, as well as the tight relationships between start-up firms and venture capitalists in Silicon Valley (Saxenian 1994), and the rules that encourage long-term thinking by investors under “Rhine capitalism” (Cooke and Morgan 1998). Informal institutions, such as the strength of social capital within a region (Putnam 1993; Woolcock 1998) can make economic, political, and social transactions more predictable and less prone to predatory or clientelistic behavior. According to Evans (1996), it can also improve relationships between the state and civil society and create “synergies” that allow for common developmental goals to be pursued. Storper (1997; 2013) calls such institutions “untraded interdependencies” because they are not created deliberately through individual market transactions, yet they create external economies (spillovers) at the regional scale with real pecuniary benefits to local firms.

III. Two conceptual approaches to local economic development in middle-income countries

As noted in chapter 1, in Brazil and many other Latin American countries, the process of economic development and the state’s role in its promotion was largely seen in terms of national goals and implemented through interventions in strategic sectors like petroleum exploration, steel manufacturing, defense/military production, and the like (Evans 1979), until the 1990s. As the “regional turn” in economic development theory described in the previous section gained importance, the experiences regions in Europe and the United States with successful industrial districts or clusters became important models for policy and research in developing countries. This section briefly summarizes the literature on industrial districts and clusters, and how they came to influence development policy, and discusses two different approaches taken by scholars studying regional development in a global economy.

A. The emergence of industrial districts and cluster theory

Cluster-based economic development strategies can be traced to the emergence of scholarly literature about industrial districts in the Emilia-Romagna region of Italy in the

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14 Although influential scholars like Furtado (1972) were well aware of the regional dynamics of economic development in Brazil’s history.
early 1980s. This region greatly outperformed the impoverished southern Italian regions and the industrially powerful north during the 1970s, a period in which most industrial regions in North America and Western Europe had entered into a deep and traumatic decline described above as the “crisis of Fordism” (Amin 1994). Bagnasco (1977) and Brusco (1982) attributed the success of this Italian region to the organization of its industrial districts, in which a constellation of small firms employing a highly skilled and flexible labor force was able to produce high-quality products for export, reminiscent of Alfred Marshall’s (1961) stylized industrial districts. Scholars such as Piore and Sabel (1984; Sabel 1989) attributed the region’s success to “flexible specialization”, or the use of general purpose machinery to produce specialized craft goods, which allowed firms to nimbly adapt to ever-changing consumer preferences (in stark contrast to the more rigid, capital intensive mass production processes of the Fordist model).

In North America, the concept of territorially based economic development gained prominence with the work of Michael Porter (1990; 1998), who popularized the idea of promoting the competitiveness of firms and regions through industrial clusters, a term he used to refer to “geographic concentrations of interconnected companies and institutions in a particular field” (78). Porter’s cluster theory of economic development argued that in a globalized economy, firms gained competitiveness by locating in geographic agglomerations of other firms in their sector or in related sectors. By clustering around their competitors and suppliers, firms can take advantage of positive externalities such as research and education institutions, a large pool of specialized labor, and a client base whose evolving demands can push innovation. Porter’s illustrated his cluster theory through a simple “diamond” structure in which firm strategy, the availability of inputs, local demand, and the presence of related and supporting industries interacted with certain local institutions (investment climate, entrepreneurial culture, etc.) to drive regional competitiveness.

Porter’s work, and cluster theory in general, have generated sustained criticism over the past twenty-five years from a number of different angles. In Markusen’s (1996) influential critique, she argued that the existing literature focused too narrowly on Marshallian-type districts of small manufacturing firms (such as those in the Third Italy), ignoring other types of regional productive systems that might also engender resilient economic growth (albeit with varying degrees of equity, knowledge spillovers, and other normative goals). She identifies three other types of “sticky” regions: those composed of large firms and their small suppliers (a “hub-and-spoke” pattern), branch offices of outside corporations within industrial parks, or large-scale government institutions (state/federal government offices, university, military bases, and the like). Martin and Sunley (2003), while acknowledging the appeal of cluster theory to policymakers engaged with regional development, argue that the concept’s lack of precision allows it to be “sold” in an overly broad range of contexts where it may not be applicable, even if it does have applicability in certain situations. They argue (9):

Porter’s cluster metaphor is highly generic in character, being deliberately vague and sufficiently indeterminate as to admit a very wide spectrum of industrial groupings and specializations (from footwear clusters to wine clusters to biotechnology clusters), demand-supply linkages, factor conditions, institutional set-ups, and so on, while at the same time claiming to be base on what are argue to be fundamental processes of business strategy, industrial organization, and economic interaction.
Motoyama (2008) further critiqued cluster theory for being “static”, often describing successful regions and ascribing the cluster’s development to a set of endogenous factors, yet being unable to explain why certain types of clusters emerge and grow in some regions but not in others.

These critiques notwithstanding, the cluster concept has been taken up by governments of countries at various levels of development. It has also been embraced by development and multi-lateral cooperation institutions like the Organization for Economic Cooperation and Development (OECD 2013), the World Bank (2009), the Inter-American Development Bank (Casaburi, Maffioli, and Pietrobelli 2014), the United Nations Conference on Trade and Development (UNCTAD 1998), ECLAC (Dini, Ferraro, and Gasaly 2007), and others. These organizations not only provide funding for the implementation of cluster policies and programs, but also help to shape and circulate ideas about regional development and grant authoritative legitimacy to particular approaches. In the next sections, I discuss two different theoretical and policy approaches to cluster and regional development, which align with the conceptual categories I discuss in chapter 1 and develop more fully in chapter 3. The first category, upgrading and global value chains provides much of the theoretical grounding for the sectoral approach while the second, neo-structuralism and regional information systems, aligns with territorial development policies.

B. Cluster upgrading and global value chain participation

A 1999 issue of the influential journal World Development edited by Hubert Schmitz and Khalid Nadvi (1999) was one of the earliest signals of the importance of the cluster concept to global debates on development and regional policy. It included case studies from countries like Brazil, Mexico, India, Pakistan, and Indonesia, as well as policy lessons for a broader set of low and middle-income countries. The authors argued that these cases showed that clustering helps small and medium enterprises (SMEs) overcome growth barriers in developing countries. By facilitating the mobilization of financial and human resources, these industrial agglomerations could break down investment into “small riskable steps”, where the initiative of one firm creates a foothold for the other, building a “ladder” that enables small firms to climb up and grow.

Clusters and collective efficiency

Much of the literature on clusters in developing countries focuses on how agglomerations of firms can facilitate “upgrading” or finding ways in which firms can gain lasting competitive advantage by switching to higher value niches within their value chains (Cammett 2007; Giuliani, Pietrobelli, and Rabellotti 2005; Humphrey and Schmitz 2000; Lowe 2009; Navas-Alemán 2011). Most of these authors identify four types of upgrading that increase the competitive advantage of firms: (1) process upgrading: a more efficient use of inputs or the incorporation of new technologies or processes; (2) product upgrading: the production of more sophisticated goods with higher per-unit value; (3) functional upgrading: moving up the value chain into more valuable activities; and (4) intersectoral upgrading: applying knowledge and skills gained in one sector to production in a different, higher value-added sector. In this literature, Schmitz’ (1999a) concept of “collective efficiency” has become particularly influential. Collective efficiency refers to the advantages that firms have from a combination of external economies and joint action. The author argues that external economies are “passive” or
“incidental”, benefitting firms that are located in a given cluster, but which firms have little ability to generate through their own individual actions. Joint action is a more deliberate effort of coordination with other actors within a cluster (competitors, suppliers) or a value chain (buyers) to pursue a common goal. His main argument is that external economies arising from co-agglomeration are necessary, but insufficient for successful cluster upgrading. Successful clusters are able to adapt to external challenges and meet market demand only when their firms undertake joint action. Schmitz (1999b) illustrates this hypothesis with a case study of a shoe manufacturing cluster in the Sinos Valley in southern Brazil. He found that cooperation between firms, either horizontal (among peer firms) or vertical (among suppliers/buyers), helped them meet the changing demands from domestic and foreign markets, thus adapting to intense competition from low-wage Chinese manufacturers.

**Clusters and Global Value Chains**

Inherent in the concept of upgrading is an understanding of globalization in which much of the world’s production is organized in global value chains (GVCs) whose various functions are distributed across the globe. With exceptions, the higher-level functions of GVCs such as design, marketing, management, and the like are located in the “command and control” nodes of the Global North as described by Sassen (2001), Castells (1996) and others. Upgrading is therefore an effort of firms, groups of firms, or clusters to move towards these higher level functions where competition is based on innovation, product quality, and worker skills rather than low wages or production costs.

One of the antecedents to GVC literature was Vernon’s (1966) “product cycle” theory, which emphasized the “timing of innovation” as a key variable in explaining the locational patterns of production. Vernon argued that technologies aimed at high-income consumers which introduce labor-saving processes are likely to be initially produced in the United States and exported to other developed countries. As foreign demand increases, some firms will locate their production abroad and, if labor savings justify higher transportation costs, will start shipping finished goods to the US. Eventually, production becomes more standardized and competition intensifies, leading firms to seek labor cost-saving alternatives, such as locating plants in less developed countries. The emergence of manufacturing regions in the developing world led to the de-industrialization and loss of political power by labor in the Global North identified by Marxist scholars as a “New International Division of Labor” (NIDL). Fröbel, Heinrichs, and Kreye (1978) argue that a set of three factors determined the reorganization and locational decisions of multinational corporations from a “classical division of labor” during the 1970s: (1) a large and global labor pool, (2) transportation and telecommunication technologies, and (3) the modularization of production. These changes allowed a “de-skilling” of work in the Global North and relocation of standardized manufacturing processes (often under the same corporation) to low-income countries, generally those with authoritarian regimes that could enforce labor compliance and weak environmental regulations.

In the 1990s the “global commodity chains” (GCCs) or “global value chains” (GVCs) literature began to analyze the emerging spatial configurations of firms within a globalized capitalist production system. This scholarship analyzes the division of production across national as well as firm boundaries, generally under the control of a
multinational corporation. In one of the earliest contributions to this literature, Gereffi (1994) identified the different locational and coordination strategies for firms in “buyer-driven” and “producer-driven” GCCs. In buyer-driven chains, for example, large retailers such as the Gap will explicitly coordinate locational decisions with competitors and suppliers in order to create a high-quality, dependable, and deeply networked supply chain. Producer-driven chains, such as those centrally controlled by manufacturers like automakers, tend to be more vertically integrated, with stronger management and interaction between suppliers and final producers.

One of the most important contributions of the GVC literature was the linkage between these global chains and local productive agglomerations, often located in developing countries, which had started to be called “clusters”. This interaction between the organizing forces of GVCs and the local firms that produced the goods as subsidiaries or subcontractors of multinational corporations was described as governance. Up until this point, the idea of governance was absent from the literature even though its main conceptual contributions, “collective efficiency”, relied on joint action by firms to achieve common goals (Schmitz 1999a; Schmitz 1999b). Joint action was seen as an organic, evolutionary adaptation to global competition rather than a political strategy by local firms and the state’s role, when it was acknowledged, was limited to the need to “mediate conflicts and help foster an upgrading consensus” (Schmitz 1999b, 1646). The introduction of the concept of GVCs into the cluster literature opened a discussion into whether participation in such global chains enhanced or hindered firms’ ability to upgrade, and if different chain configurations had diverging impacts on local clusters (Humphrey and Schmitz 2000).

Drawing from a narrow transaction costs approach, Gereffi, Humphrey, and Sturgeon (2005) argue that the internal organizational dynamic of a GVC, or its dominance by buyers or producers, dictates location choices, which are often coordinated between firms in the chain. The authors identify different types of governance of GVCs: from repeated market transactions between firms with little formal coordination to vertically integrated value chains coordinated through tight managerial control from headquarters to subsidiaries. However, the focus on the governance of GVCs focused almost entirely on the corporate organization of the value chains and little on how they interact with localities. Giuliani, Rabellotti, and Pietrobelli (2005) on the other hand, find that participation in GVCs, while facilitating the technology transfer and quality control necessary to process and product upgrading, hinders the possibilities for functional upgrading, in which cluster firms could develop design and marketing capabilities that would eat into the niches of leading GVC firms.

Navas-Alemán’s (2011) analysis of the footwear and furniture clusters in Brazil broadens the discussion of GVCs and compares the performance of firms that participate in global and domestic chains. She also finds that in GVCs with a quasi-hierarchical governance structure, local firms were likely to achieve “process” and “product” upgrading because the leading firms in the chain need to ensure that their suppliers could deliver high-quality inputs or final products. However, these leading firms discourage functional upgrading because they don’t want suppliers to get distracted by new functions or because they do not want suppliers to become their competitors. However, she finds that firms that operate in domestic value chains were more likely to achieve higher level functional upgrading, such as designing their own products and coming up with their own
brands based on their knowledge of the preferences of the Brazilian consumer. The most successful firms, however, were those that could participate in both types of value chains, attaining technical skills from their multinational buyers while exploring their own capacities in design and marketing for the domestic market. Pietrobelli and Rabellotti (2011) also argue that well-functioning innovation systems (discussed below) can improve the conditions of learning and interpretation of complex, tacit knowledge within the locality by improving “relational proximity” between suppliers and buyers along GVCs, which can substitute for geographical proximity. This ability may also help local firms to engage with multiple buyers or GVCs such that they are not captive sellers dependent on one multinational firm or a narrow GVC.

The cluster upgrading literature conceives of governance as the coordination of productive activities along value chains (global or domestic) which can help firms in less developed countries enhance their competitiveness by improving the quality of their products, such that they can participate in the value chains in the first place, or their production process, so that they can be more efficient and reliable. It stresses the ways in which governance arrangements can help solve transaction cost problems (per traditional institutional economists like Williamson (1979)) such as how much investment firms are required to sink into any specific transaction, whether the particular input that is subcontracted requires the exchange of non-codifiable information such that physical face-to-face interaction is necessary, and the extent to which suppliers are competent and able to process complex information and deliver their goods on time. Gereffi, Humphrey, and Sturgeon (2005) identify five types of governance that helps buyer firms coordinate production among the suppliers in their value chains, which range from markets, where buyers can costlessly switch from one supplier to another without significant coordination, to hierarchy, where firms simply vertically integrate all of their production. Productive governance arrangements can also be analyzed in terms of their facilitation (or hindering) of innovation within a local production system; namely, the degree to which they help to diffuse new information among all actors within the network.

C. Regional Innovation Systems and neo-structuralist approaches

Whereas the cluster upgrading approach focuses on the relationships between local productive agglomerations and GVCs and the ways in which certain localities have managed to develop by tapping into global markets through their relationships with multinational or (in some cases) large domestic enterprises, the approach described in this section emphasizes institutional arrangements to foster endogenous innovation and economic development. This literature is strongly influenced by two overlapping theoretical traditions that investigate the way innovation is carried out by firms, institutions, the state, and other actors. First, the literature on regional innovation systems understands the innovative process as one that is highly reliant on “tacit” forms of knowledge, which cannot be codified and transmitted through symbolic representation, or according to the classic work by Polanyi (1966, 4), “we can know more than we can tell.” Contrary to knowledge that can be codified into manuals or “best practices”, the transmission of tacit knowledge within a firm or a region requires learning processes such as learning-by-doing and learning-by-interacting that can only be made possible through face-to-face interaction and close geographic proximity (Gertler 2003).
This literature also draws on contemporary readings of the work of Joseph Schumpeter (Cooke and Morgan 1998; Nelson and Winter 1982) that stress the evolutionary nature of economic change. As I’ve written in previous sections, these authors see the promise of monopoly profits that firms can accrue from creating novel products, production processes, securing new markets, or acquiring new or exclusive sources for its inputs as the main driver of innovation. Although much of this literature on local economic development focuses on the role of small enterprises, this line of Schumpeterian thought sees large firms as better-suited agents for innovation. As a result, contrary to orthodox economists, these authors see perfect competition as incompatible with economic progress as there is no financial incentive to innovate (Nelson and Winter 1982, 278). Under this assumption, the process of economic development is driven by qualitative changes in a firm’s (or region’s) output, which allow it to enjoy temporary monopolies, rather than marginal price competition, which in a global economy can easily be undermined by regions willing and able to offer “friendlier” business climates (through lower wages, the ability to externalize production costs such as pollution, and the like).

**California School and the Silicon Valley paradigm**

In the 1980s, a “California School” emerged to analyze the growth of certain regional nodes in a global economy based on high technology industries. Theorists like Storper (1997) and Hall (1985) argued that certain regions that developed systems of innovation (usually by facilitating partnerships between entrepreneurs and research institutions) would be better situated to produce new, cutting edge technologies allowing its entrepreneurs to generate monopoly rents and its workers to occupy more privileged positions in the international division of labor. These authors were also generally pessimistic about the prospects of non-innovative regions in the Global North (such as those in the “rust belt”), which would inevitably have to compete with regions in developing countries for production in maturing, competitive industries.

In the United States, the paradigmatic case of a successful regional innovation system is Silicon Valley where the presence of risk-taking entrepreneurs and venture capitalists, research institutions, and Department of Defense procurement policies transformed it into the world’s leading high technology region. AnnaLee Saxenian’s (1994) *Regional Advantage* emphasized the role of local institutions and culture, industrial structure, and corporate strategy in generating external economies that allowed Silicon Valley’s small, start-up firms to thrive. Porous company boundaries, for example, allowed engineers from competing firms to collaborate on projects, change jobs frequently, and interact socially outside work hours, creating a shared ethos and technological community that facilitated the easy flow of information and interactive learning. Boston’s Route 128, by contrast, featured more traditional vertically-integrated firms, with a more linear process of innovation, which proved to be too rigid to withstand competition from firms in lower wage regions. Silicon Valley’s “high-tech formula” has been widely imitated in the US and abroad. However, Saxenian (1989) has argued that these attempts are likely to be unsuccessful because certain path-dependent foundations to Silicon Valley’s success, such as the presence of strong domestic demand for technology, might not exist even in regions that contain most ingredients in the high-tech formula. Rather than following a strict “formula,” scholars have emphasized the
promotion of “old economy inputs” aimed at generating agglomeration effects and external economies (such as policies aimed at producing a dense skilled labor force), which are more effective at the early stages of high-tech cluster formation (Bresnahan, Gambardella, and Saxenian 2001). This type of approach, which calls for an active role by state governments in shaping territorial interventions with a high degree of spillovers (as opposed to narrowly targeting a specific set of firms) is also described as “third wave” economic development by scholars in the United States (Fitzgerald and Leigh 2002; Bradshaw and Blakely 1999). Chapple et al. (2011) argue that the regional innovation system that has formed in California around green tech industries are not necessarily focused on universities. Local demand for these technologies has been a bigger driver of innovation and clustering of firms and jobs. This opens a range of policy options for local governments, as they have several policies that can affect local demand for green goods, such as procurement, building codes, subsidies/incentives, financing, and the like.

National/Regional Innovation Systems

A European variant of the “California School” which has had a strong influence in the thinking around APL policies in Brazil has investigated the nature of the innovative process in firms and regions, and stressed the “systemic” nature of innovation. These authors stress that this is not a linear process of scientific discovery leading to commercialization of new products, but an interactive dynamic of knowledge sharing and collaboration between scientists, engineers, and entrepreneurs (Lundvall 2010; Nelson 1993). Lundvall (2010), one of the leading theorists in this movement highlights the two main assumptions in this approach: (1) knowledge is “most fundamental resource” in modern economy, and learning is the most important process that regions and countries need to facilitate in order to promote economic development and (2) learning is a social process that is both interactive and socially embedded, such that the study of economic development requires understanding of institutional and cultural context. The study of innovation, according to these authors, is a critique of Marshallian economics which focus primarily on scarcity, allocation, exchange, and seeking equilibrium because (a) knowledge is not scarce as it does not decrease in value as it is used, (b) some types of knowledge are easily transferred while others (such as tacit forms of knowledge) are much more difficult to transact, and (c) it is hard to privately appropriate knowledge to exchange over markets.

According to Dosi and Freeman (1994) in order to understand economic development it is necessary to have “a detailed understanding of how technological innovations are generated and diffused; of the incentive structure facing economic actors; of the internal organization, competences and strategies of business firms; of the institutions in which agents are embedded and which constrain and guide both microeconomic coordination and change” (2). While “New Growth” models see capital accumulation as driving innovation and knowledge growth (i.e. more or less exogenous since it is the accumulation of new capital that would lead to learning within firms), this school sees the process as running in both directions. Sometimes, accumulating capital

15 Many of the scholars associated with this particular epistemic community are affiliated with the Department of Business Studies at Aalborg University in Denmark or the global network of researchers studying innovation, Globelics and its associated regional groups like Lalics (Latin America), Asialics, etc.
can lead to learning and innovation, while in most cases, innovation happens endogenously and causes capital accumulation and growth. This is described as “co-evolutionary” process.

A particularly attractive feature by these scholars to thinking on development by middle-income countries is the focus it places on types of innovations that are not entirely novel or at the technological frontier, but that may be incremental improvements undertaken by single firms. For example, Dosi and Freeman (1994) stress that “technological learning involves many more elements than simply inventive discovery and patenting: equally important activities are imitation, reverse engineering, adoption of capital-embodied innovations, learning by doing and learning by using. And, of course, most often technological change goes together with organizational innovation” (11). This is an understanding of innovation that is widespread among RedeSist scholars (Cassiolato and Szapiro 2003; Vargas 2000; Villaschi and Bueno 2000), which see the APL model, at its most basic level, as a tool to help Brazilian firms, through a collective learning process, to improve their capacity to share tacit knowledge and incrementally become less subject to price competition. Cassiolato, Lastres, and Stallivieri (2008), for example, define innovation as including incremental processes, with low cutting-edge technology content, and may refer to technology or production methods that are new only to the actor that is implementing them. In other words, innovation is independent of whether a particular technology is currently in use by local or “outside” competitors. It is also understood to be a systemic process that involves the “productive, financial, social, institutional, and political spheres” (13).

Similar to the literature on clusters and GVCs, regional innovation systems scholars conceive of governance as modification of corporate governance, or the coordination of productive activities within a value chain. The two main differences is that the focus here is coordination within the regional (or national) system, and instead of facilitating the upgrading process, it takes a broader view of the ways in which governance diffuses innovation to local firms. Cassiolato and Szapiro (2003), for example, adapt Storper and Harrison’s (1991) simplified core/ring typology for local production systems based on empirical studies of 26 APLs in Brazil. The authors identify two types of governance arrangements, hierarchical and networked. Hierarchical systems include an anchor firm which generates demand from local supplier firms and diffuses knowledge and innovation throughout the local chain (Markusen 1996) whereas networked systems are much more horizontal and firms share market and product information more symmetrically. Suzigan, Garcia, and Furtado (2003) develop a similar typology and call for public-private forms of governance to increase competitiveness of firms in APL-type agglomerations, since they argue that insertion into GVC in and of itself is insufficient. They argue that government can, for example, create workforce training centers, technology centers, governmental development agencies and that trade associations and NGOs can catalyze joint actions by firms for exports and upgrading. However, this literature is silent on why individual actors would engage in these forms of collective action, what types of coalitions are likely to emerge, and which policies are likely to be implemented. In the next section, I tap into a different set of theories on governance to address some of these questions.
IV. Governance and local economic development

As discussed in the previous section, both the GVC and the regional innovation systems literature recognize that a multiplicity of actors are involved in the production process in a global economy. The former stresses the role of leading actors within a value chain that spans across several sites in coordinating the ways in which subcontractors add value to the final product, generally sold to consumers in the Global North. The latter focuses on the institutional arrangements of (usually) successful regions and the ways in which they facilitate the exchange of tacit knowledge to promote an environment of continuous innovation. It generally also investigates how certain types of institutions, like financial systems, patenting laws, and social capital promote (or hinder) processes of learning. Overall, however, both of these theoretical approaches engage with the concept of governance from the perspective of the productive process, seeing it as an evolutionary competitive advantage rather than a political engagement of firms with various other state and non-state actors. My primary questions in this dissertation, why do governance networks form and how do they affect the types of subnational industrial policies that are implemented, require a broader engagement with literature on the state’s role in industrial development and the interaction between associations of firms and the state.

A. From government to governance (or from managerialism to entrepreneurialism)

The changes to the global economy discussed above have generated policy and discourse shifts on the role of the state, with a particularly influential set of theorists proposing a paradigmatic shift from coherent, top-down state action to manage the economy (“government”) to a more fluid set of interactions between public and private actors, of which a central state apparatus is only one of many agents in a broad policy network (“governance”). Rhodes (1996) has become a key interlocutor in the Anglo-governance school, defining governance as self-organizing, interorganizational networks that span public-private-civil society divides and feature interdependence between organizations, continued interactions in which organizations share and exchange resources, the promotion of trust and reciprocity among actors, and, most importantly, a high degree of autonomy from the state. In the case of Great Britain, a strong central government role in economic development and service provision has been replaced by complex interorganizational network comprised on quangos, NGOs, private sector, and decentralized government agencies, of which the central government is just a “mediating” member. While acknowledging the “hollowing out” of the state described by Rhodes, Marinetto (2003) critiques the Anglo-governance school for going too far in its prediction of a diminished central state, and points to instances of strong state presence in implementing neo-liberal policies (such as urban regeneration).

Harvey (1989) has identified this dynamic at the urban/municipal scale as a shift from “managerialism to entrepreneurialism,” where the public provision of collective consumption goods becomes subordinate to the promotion of economic development through public-private partnerships and the subsidization of private investment. Hall (2002) argues that, in the United States and the United Kingdom, in the context of de-industrialization, suburban flight, and diminishing federal funds targeted towards urban development, this process has occurred through partnerships between municipal
governments and real estate developers to create jobs in retail, restaurant, and tourism as an emerging economic development strategy. He describes this strategy as “entrepreneurial” in the sense that it requires local governments to compete against one another for increasingly fleet-footed private capital investments by entering into public-private partnerships, developing formulaic consumption-oriented spaces, and engaging in beggar-thy-neighbor strategies with neighboring jurisdictions.

Other scholars interpret the shift towards “governance” as opening significant channels for public participation in the urban polity. Caldeira and Holston (2005), for example, argue that the Brazilian “Statute of the City”, enacted in 2001, empowered a wide range of actors to participate in urban governance in ways that were impossible under the former top-down, technocratic model of municipal management. This opening created spaces for powerful interests (real estate and construction lobbies) to participate in urban planning and development processes, but also for organized groups from poor and middle-class neighborhoods. Davoudi et al. (2008) similarly identify the potential for democratic territorial governance. The authors normatively describe the nexus of governance and economic development as a process of participatory employment of “territorial capital” (particularly “heritage goods” that cannot be easily reproduced elsewhere) in the interest of expanding economic activity within a region.

B. Social capital and the developmentalist state

The shift “from government to governance” described above implies a significant change in the understanding of the state’s role in the economy and its ability to engage with productive sectors to promote economic development, as I explain in chapter 1. Models that relied on a strong state presence and top-down engagement and new configurations of a “developmentalist state” emerged that relied on networked engagements with a multiplicity of actors. The concept of social capital came to be an important theoretical frame to understand how these networks of state and non-state actors function. Robert Putnam’ (1993) twenty-year study of several regions across Italy found that “norms of reciprocity and networks of civic engagement” (171) allowed regions to develop “social capital” that produced more accountable local governments and positive developmental outcomes. Woolcock (1998) argues that, in order to generate economic development, the bottom-up, micro-level social capital described by Putnam needs to also be connected to a macro-level coherent state apparatus, forming the type of “embedded autonomy” described by Evans (1995).

Analyzing cases of state government reform in Brazil, Tendler (1997) challenged Putnam’s causal inference that existing stocks of social capital are required to produce “good government”, and that regions lacking his networks of civic engagement are “path dependently doomed” (145) to clientelism and rent-seeking by public agencies. Tendler proposed that government policies could strengthen civil society in ways that improve service delivery and promote economic development. Montero’s (2001) study of industrial policies by two other state governments in Brazil supported this proposition. He argued that the formation of a competent and autonomous state bureaucracy in Minas Gerais, where agencies collaborated in a network of “horizontal embeddedness”, allowed the state to develop a highly advanced auto parts manufacturing cluster. Neighboring Rio de Janeiro, on the other hand remained mired in personalistic politics, was unable to implement a coherent industrial policy.
The successful experiences of subnational industrial policies seem to point to the need for a combination of a “networked developmental state” and “developmental associations” of private sector actors. Sabel (1994, 149) describes the latter associations that can advocate and communicate the needs of productive sectors with the state while pushing their members to adopt common standards, share knowledge and experiences, and incorporate new technologies. According to Sabel, purely market-based explanations for the developmental experiences of the 20th Century like Japan and South Korea were insufficient, while full faith in a developmentalist state also assumed that government bureaucrats would be able to read and respond to cues from the market on how much to produce, where to innovate, and the like. “Developmental associations”, he argued, allow for public-private collaborations where the state can play its role in providing subsidies and trade protections for learning and innovation, while firms can be made accountable and ensure that state investments are used to improve their capabilities. He calls this process of mutual learning and accountability learning-by-monitoring. Block (2008), on the other hand, argues that the “networked developmental state” is a new arrangement provides new venues for a developmental role for the state in a post-Washington Consensus policy environment, and that its embeddedness in local and global capital networks allows for them to learn from the private sector and target policies that better meet the demands of local firms.

Authors such as Ó Riain (2000) and Schrank and Whitford (2011) have argued that networked governance structures are particularly well suited to high technology sectors that require rapid transfers of tacit knowledge. However, others have shown that upgrading efforts in more traditional manufacturing and agricultural-based sectors in middle-income countries were also greatly enhanced by coordination efforts undertaken by governance networks of developmental state and associations. In Chile, for example, the agency CORFO transformed the tomato canning and salmon industries into world leaders by subsidizing the costs and risks of innovation (such as underwriting R&D costs by firms) while promoting the penetration of foreign firms into these sectors as a way to bring cutting edge ideas and push domestic firms to become globally competitive (Negoita and Block 2012; Perez-Aleman 2005).

C. Governance failure and metagovernance

Another concept that is useful to the analysis of the fluid configurations that coordinate local economic development and subnational industrial policies is “metagovernance”. Jessop (1998, 29) uses this concept to describe “self-organized steering of multiple agencies, institutions, and systems which are operationally autonomous from one another yet structurally coupled due to their mutual interdependence.” He is concerned with situations in which multi-layered governance efforts can fail (much like states and markets fail), and whether certain policy endeavors like economic development can cope, learn, and be redeployed after processes of self-conscious reflexivity. Jessop sees metagovernance as a new role for the state, which is thus tasked with establishing the appropriate parameters for a governance network geared towards local economic development, including the identification of relevant stakeholders, establishment of objectives and norms, and institutionalization of the process, within a state bureaucracy itself, or through a partner organization. Metagovernance acknowledges that governance efforts may fail (or even that they are
likely to fail) and therefore mechanisms for learning and adaptation should be incorporated into future endeavors. Sørensen and Torfing (2009) argue that agencies that undertake the role of “metagovernor” sometimes combine hands-on and hands-off methods, providing incentives for greater participation, while stepping back from setting the priorities and goals of the governance efforts. Rather than assuming that actors within a territory will be pre-disposed to engage in collective action, metagovernance recognizes that the relationships within the territory are likely to be complex and conflictual, particularly as the number of actors increases or in policy arenas that may require coordination across different agencies or from various levels of government.

V. Conclusion

This chapter provides an overview of debates about local and regional economic development over the past half century with a particular focus on epistemic communities that have engaged with endogenous forms of development. This approach contrasts with “smokestack chasing”, fiscal wars, and other policies geared towards attracting transplant investments from more developed regions. It then discusses two sets of literature that provide the theoretical foundation for the conceptual categories explored in chapters 3-5, namely the sectorial and territorial approaches to APL development. The sectorial approach is motivated by the insertion of firms within a cluster into domestic, regional, and global value chains, while the territorial APL policies are geared towards building the institutional foundations of regional innovation systems. The concept of governance, however, is treated by both sets of literature as the coordination of productive activities by actors within a given chain (local or global) to minimize the transaction costs of information and knowledge flow. In a sense, it is a “zooming out” of the concept of corporate governance across a whole production chain.

In section III, I propose an engagement with literature on emerging forms of the developmental state, reconfigured from the national scale to municipal and state governments, and implemented through networks of actors where the state is one among a multitude of actors. Of particular importance is the role of developmental associations of producers who can articulate the needs of their members within these governance networks and ensure that state resources for industrial development are used effectively to build local institutions for economic development. I apply these concepts in my analysis of the case studies in the next three chapters.
Chapter 3:
Sectorial and territorial approaches to APL development in Brazil

I. Introduction

Policies to support local production systems (arranjos produtivos locais, or APLs) in Brazil descend from a long line of efforts to promote economic development and structural transformations in the country’s productive capacity through state interventions in industrial development. As discussed in the introductory chapter, the Brazilian Federal government (and the governments of other Latin American countries) undertook industrial policies for decades in which the national state implemented strong measures to substitute imports through domestic firms or directly produce certain strategic goods through state-owned enterprises. In contrast, this new generation of industrial policies are developed and carried out by “governance networks” of private sector associations, labor unions, non-governmental organizations, and a constellation of public sector actors from all levels of government. Through an analysis of the evolution of twelve APLs in Brazil between 2003 and 2011, this chapter establishes a framework for investigating these governance networks.

Brazilian subnational (municipal and state) governments have promoted regional agglomerations of small and medium enterprises (SMEs), known as APLs, since the 1990s. The term APL was coined in the mid-1990s by researchers at the Economics Institute of the Federal University of Rio de Janeiro (UFRJ), who had been engaged in research projects on these agglomerations. In 2004, the Federal Ministry of Development, Industry, and Trade (MDIC) began to coordinate a working group (GTP-APL) composed of a national network that includes public and private banks; the Small Enterprise Support Agency (SEBRAE); the National Confederation of Industry (CNI); research institutes; and economic development agencies from all of Brazil’s state governments. Since then, GTP-APL has pushed for the expansion of a broad array of services geared towards SMEs located in officially-designated APLs, such as subsidized credit products, workforce development programs, technical consulting services, and entrepreneurial training courses. State governments officially designate these agglomerations of firms within their territories as APLs, which makes them (and the firms located within them) eligible for these Federal subsidies as well as other forms of promotion made available by the states themselves. The local governance networks described above, usually led by the trade association of the primary industry in the region, with assistance from SEBRAE, the local municipal government, or other institutional actors, will then create development plans for the individual APLs, lobby state governments (and sometimes the Federal government) for assistance, and implement the policies made available through the Federal government’s APL framework.

This chapter is organized as follows: in the next section I explain how the motivation for collective action among a region’s firms creates the conditions in which certain approaches to cluster development are undertaken. Section III discusses the methodology used in the analysis of the twelve case studies and provides some background information about the umbrella research project under which they were
written. It also summarizes the case studies and presents the findings of my analysis of how governance networks shape the approach to subnational industrial policies. Section IV explores alternative explanations for why certain APLs pursue territorial policies. Section V concludes this chapter, providing policy lessons and a framework for reading and analyzing the material in chapters 4 and 5, where I develop two case studies based on original research of two APLs in the state of Espírito Santo in southeastern Brazil.

II. Sectorial and territorial development approaches

This chapter attempts to systematically analyze the governance networks that guide APL policies in Brazil. Existing literature on this topic, discussed in chapter 2, tends to focus on single case studies or larger-N studies analyzing specific outcomes of these policies (impacts on exports, employment, and the like). By contrast, this chapter investigates the incentives for the formation of governance networks and their impacts on the specific set of policies that they pursue. Based on this analysis, I make three propositions:

1. Entrepreneurs within APLs engage in collective action through governance networks due to two broad motivating factors: “value chain insertion” and “productive upgrading”.

2. All APLs are motivated by “value chain insertion” challenges, but only some are motivated by “productive upgrading”. Those that only (or primarily) pursue governance efforts to address value chain insertion are more likely to pursue narrow APL programs that benefit only a narrow set of firms, which I call a “sectorial” policy approach.

3. The governance networks of APLs seeking to promote productive upgrading are more likely to engage in broader-based policies that I define as a “territorial” approach.

The next subsections describe each of the two approaches to APL development with references to the literature discussed in chapter 2. The policies associated with each approach in the case of APLs are shown in the concentric circles, which demonstrate that the two are not mutually exclusive, but that a territorial approach builds on the sectorial policies undertaken by all APLs.

A. Sectorial development

Sectorial development policies primarily focus on “productive integration” of firms within a localized sector. In other words, the main policy goal is to improve the ability of local firms to participate in domestic or global value chains, usually by correcting perceived market failures through interventions in spatial agglomerations of firms in related sectors, commonly known as clusters. Michael Porter (1998) popularized the idea of promoting the competitiveness of firms and regions through industrial clusters, a term he used to refer to “geographic concentrations of interconnected companies and institutions in a particular field” (78). Porter’s cluster theory of economic development argued that in a globalized economy, firms gained competitiveness by locating in geographic agglomerations of other firms in their sector or in related sectors. By clustering around their competitors and suppliers, firms can take advantage of positive
externalities such as research and education institutions, a large pool of specialized labor, and a client base whose evolving demands can push innovation.\footnote{In Porter’s work, clusters are almost always composed of firms in leading sectors of the global economy, making them unsuitable as a policy for less developed regions. For this reason, Porter’s work has been criticized as being both tautological (defining the success of regions by the inclusion of variables already inherent to that success) and static (recognizing the current competitiveness of clusters without explaining how they came to be competitive). See Motoyama (2008).}

**Figure 3.1. Two approaches to subnational industrial policy and their associated policies**

Source: Author’s conceptualization.

Though the term “cluster” became ubiquitous in academic and policy debates on economic development in Latin America, the experience of industrial districts in northern Italy was much more influential. Scholarly literature on the Italian experience attributed the success of such districts to their industrial organization, in which a constellation of small firms employing a highly skilled and flexible labor force was able to produce high-quality products for export, reminiscent of Alfred Marshall’s stylized industrial districts
Italy’s industrial districts were largely made up of small firms using low-technology machinery to manufacture high-end goods. Their “secret” was believed to be the ability to achieve great efficiencies and economies of scale at the regional level through a meticulously well-coordinated division of labor. Many of the sectors in which firm in Italian industrial districts were competitive (apparel, shoes, furniture) were seen to be within reach of firms in developing countries if only they were able to replicate the type of cooperation and division of labor achieved in the “Third Italy”. In Brazil, for example, the first attempts to promote SME competitiveness through cluster policies was a partnership between the Brazilian SME support agency (SEBRAE), the Inter-American Development Bank (IDB), and the Chamber of Commerce of Milan (PROMOS). The SEBRAE/IDB/PROMOS program implemented four cluster development projects aiming to replicate successes of the Italian industrial districts (Dalberg Global Development Advisors 2010).

The literature on clusters or industrial districts in Latin America stresses that one of the main goals of these policies is to facilitate the process of “upgrading” among SMEs, which means a transition by firms in basic resource extraction or manufacturing towards higher value niches within value chains, allowing them to gain lasting competitive advantages. This became a major preoccupation in the mid-1990s as China began to pose a threat to development strategies predicated on low-wage labor as a competitive advantage (Giuliani, Pietrobelli, and Rabellotti 2005; Altenburg and Meyer-Stamer 1999). Schmitz (1999a), argues that the key ingredient to these upgrading efforts was “collective efficiency”, the combination of the external economies achieved by agglomeration and joint action undertaken by firms. These external economies are “passive” or “incidental”, benefitting firms that are located in a given cluster, but which firms have little ability to generate through their own individual actions. Joint action is a more deliberate effort of coordination with other actors within a cluster (competitors, suppliers) or a value chain (buyers) to pursue common goals.

Recent contributions from this literature have critiqued the notion that coordination among actors in a cluster or value chain is a rational, organic response to particular upgrading challenges faced by firms or regions. Lowe (2009), for example, argues that firms may face several types of cognitive “lock ins” that do not allow for the exchange of information among actors that is necessary to trigger learning processes and upgrading, which can result in the region remaining stuck in low value-added activities. She shows that in the case of an apparel cluster in Guadalajara, Mexico, a local “policy coalition” made up of public and private sector actors needed to intervene to facilitate dialog among firms to overcome these “lock-ins”. In this case, the local industry association convened brand-name manufacturers and smaller subcontractors to learn from one another how they could jointly upgrade, and thus reposition the cluster in a way that made it more competitive in global value chains. Perez-Aleman (2005) similarly stresses the role of institutions in pushing firms towards risk-taking and innovation in order to generate “positive external effects”. Analyzing the case of Chile, she demonstrates that the central government’s Production Development Corporation (CORFO) developed incentives for local trade associations to engage in “learning-by-monitoring” to promote innovation among their associates rather than lobbying efforts focused on the short term.
B. Territorial development

The second approach, which I will label as “territorial development”, stresses the broader institutional milieu in which SMEs are situated as a key driver for competitiveness and local economic development. Territorial development policies seek to strengthen local institutions with interventions aimed at building connections between firms and research organizations, combining entrepreneurial policies with social development goals, and engaging with broader territorial planning efforts as instruments to promote SME competitiveness.

The goal of a territorial development strategy, rather than simply maximizing exports or lowering the costs of sector-specific inputs, is to maximize a region’s “territorial assets”. Camagni (2002) employed the term “external assets” to underscore the idea that they are produced and can be appropriated at the regional level, outside the boundaries of a single firm. Other authors (Scott and Storper 2003; Storper 2013) described them as “untraded interdependencies” since they often occur outside the purview of the market, but often generate competitive advantages to firms with real, pecuniary benefits. Scott and Storper (2003) thus argued that economic policy should be much more mindful of the regional dynamics of economic growth, promoting developmental assets in regions, such as backward and forward linkages between firms in different sectors, natural resource endowments, dense local labor markets, and relationships among local actors such research institutes, universities, workforce training centers, public agencies, and firms from a broad range of sectors. These authors argue that, as public goods, these types of “relational” assets will likely be underprovided by the market, and therefore there is a strong rationale for state intervention.

The city of Rafaela, in Argentina, is perhaps the paradigmatic case of this type of approach in Latin America, and is often presented by development institutions as a model. Working with the main local trade associations, the municipality of Rafaela undertook efforts to improve the competitiveness of SMEs through the city’s strategic development plan, in which urban and environmental planning were key concerns. Rather than focusing on a particular sector (as was the case with cluster and industrial district policies described above), the local government sought to promote dialogue with SMEs that make up the region’s diverse economy, including sectors like agriculture, food production, and metals/machinery, and was therefore able to better understand the demand for its business services (Costamagna 2000). However, attempts to replicate the Rafaela experience in other Argentinian provinces through a “top down” approach have encountered serious challenges. As Sepulveda (2008) demonstrates with the case of the city of Tigre, the Buenos Aires provincial government was unable implement similar policies to support local SMEs due to a lack of strong local trade associations with which they could partner.

III. Methods and analysis

This chapter analyzes case studies conducted in twelve APLs between 2003 and 2011 in regions throughout Brazil. The case studies were conducted by researchers from the Local Production and Innovation Systems Research Network (RedeSist), coordinated by the Economics Institute of the Federal University of Rio de Janeiro (UFRJ). In nine of the case studies, researchers conducted surveys at two points in time (2003 and 2011).
following a methodology and questionnaires developed by RedeSist. The other three case studies were also published in 2011, and were conducted by researchers who had previously written and published several works on that particular cluster. Cassiolato and Matos (2011), who organized the research project and summarized its findings, state that the cases were selected to comprise a broad variety of geographic contexts, economic sectors, and agglomerations of varying degrees of maturity.

As such, the APLs in this study come from a range of industries that includes the “Electronics Valley” of Minas Gerais, a mature cluster of electronics firms that developed during the ISI years, as well as more traditional activities such as goat farming in the municipalities of Quixadá and Quixeramobim in the impoverished semi-arid sertão, of northeastern Brazil, which combines subsistence farming with fledgling commercial activities. The reports are richly descriptive about the institutional milieu of each agglomeration, their structures of governance, and the public policies and joint actions undertaken to support production and commercial activities over the past decade. Rather than focusing on the results of the surveys undertaken in each case study, which I did not find to be comparable across the cases, I have coded dependent and independent variables through the description by the authors about each of the APLs.

A. Coding the cases

Much of the current research on local economic development and subnational industrial policies in Latin America has relied on single case studies. This approach allows for the investigation of context-specific institutions within the studied regions, and generalizability is undertaken through careful case selection and inductive logic (Yin 2009; Flyvbjerg 2011). However, some of the more influential and oft-cited studies have analyzed the most advanced regions of Latin American countries such as southern Brazil (Schmitz 1999b) and northern Mexico (Lowe 2009), which are not comparable to most contexts where subnational industrial policies have been implemented. Others, like Tendler and Amorim (1996) and Montero (2001), have focused on reforms undertaken by subnational governments at particular moments in time and under specific politico-economic contexts that are not likely to be replicated. While these studies have made important contributions to scholarly knowledge about the dynamics of clusters in Latin America, their interpretation as generalizable case studies of “developing country regions” may not hold in most regions of countries in the Global South, which are likely to have weaker institutions, less developed industrial sectors, and a lower capacity of subnational state units to engage in successful industrial policies.17

This study approaches the methodology used by Giuliani, Pietrobelli, and Rabelloti (2005), which also codes case studies conducted in twelve agglomerations throughout Latin America to analyze differences in upgrading abilities in different types of sectors. The goal of the analysis is to use comparisons of context specific data from the individual case studies to make more generalizable conclusions about the relationship between governance networks and the policy approaches undertaken in subnational

17 These studies often do qualify their findings and caution readers against broad generalizations. In the case of Schmitz (1999b), for example, the author highlights several instances where firms were incapable of engaging in joint action to generate collective efficiencies, yet the literature often cites his case study as an example of successful small firm collaboration in developing countries, without noting the appropriate caveats.
industrial policies. In order to do so, I developed a typology that classifies specific policies into two overarching approaches to subnational industrial policymaking. The concentric circles in figure 3.1 summarize typical actions associated with each of the two types. The inner circle includes policies aimed directly at a specific firm or group of firms, or those whose benefits are non-public goods, or almost entirely appropriable by the beneficiaries. Here, for example, are policies like improved access to credit and markets, whose beneficiaries are likely to be the firms that qualify for those particular programs. As proposition 2 in this chapter’s introduction notes, all APLs undertake sectorial policies targeting only the firms in the primary productive activity of the cluster, shown in the inner circle of figure 3.1.

As proposition 3 states, however, some APLs engage in broader efforts to strengthen the institutional capacity of their territories with policies that are likely to generate regional spillovers. Policies that I classify as “territorial”, which are shown in the outer circle of figure 3.1, are those that provide benefits that are not so easily appropriable (in other words, they are closer to being public goods). One illustrative comparison, for example, are training policies. Managerial training will often target the owners of small firms or their family members, which means that the benefits of those policies will accrue to the firm itself. Workforce training, on the other hand, is classified as a “territorial policy”, because many of these programs provide workers with skills that can be taken to competitor firms or even applied to different sectors. Therefore, unlike managerial training, the primary benefit of workforce training programs is to improve the quality of the labor force in the region as a whole, not to improve the managerial competences of one, or a few, firms. I will use this typology to analyze the twelve case studies and code them based on the types of policies they have implemented.

I coded the cases focusing on variables relating to the governance structure, its composition, motivations for collective action, and the particular set of policies undertaken in each. In reading the cases and descriptions of the RedeSist research project, as well as through several interviews with researchers involved with the project, it is clear that the researchers did not select their cases based on governance as dependent or independent variable. Through two close readings of each case, I coded for variables relating to all of the policies undertaken in each APL between 2003 and 2011, the lead agency/organization/association in the governance network as well as its general organization and structure, the particular topics that galvanized entrepreneurs to engage in collective action. I noted, for example, which policies were implemented by each APL’s governance structure. Based on the typology developed in figure 3.1, I classified each APL as “sectorial” or “territorial”. For the purposes of classifying these two different approaches, I code those that engaged with at least half of the eight possible territorial policies as “territorial” APL approaches, while others are coded as “sectorial” approaches. The information came primarily from the case studies developed by the RedeSist researchers, but, where possible, I triangulated this information with available sources from the APLs, such as strategic plans and other official documents.

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18 Between October 2013 and August 2014, I was a Visiting Scholar at the RedeSist offices located in the Economics Institute of UFRJ.
B. Selection of cases

As is well known, Brazil is a country with great geographic diversity and intense income and developmental inequalities. Socio-economic inequalities are strong even within cities and are made worse by comparisons of different regions within the country’s vast territory. For example, the GDP per capita of states in the South and Southeast regions is R$26,000 (equivalent to about US$7,000) while in the North and Northeast, it is about R$10,000 (equivalent to US$2,700). The percentage of families that receive assistance from the Federal conditional cash transfer program Bolsa Familia is three times greater in the North and Northeast states (46 percent) than in the South and Southeast (14 percent). The Center-West is a more sparsely populated region that has seen tremendous growth in the past two decades driven by a highly competitive agroindustrial complex producing soy, cattle, cotton, and other commodities. As a result, its GDP per capita is currently higher than that of the South and Southeast regions, although its percentage of informal workers, average years of schooling for the adult population, and percentage of families receiving Bolsa Familia assistance are still worse than in the southern regions. Given these large differences in levels of development, any causal conclusion about the relationship between governance and the adoption of policies to support APLs need to be tested as to whether they hold across these regions.

Table 3.1. Developmental indicators in Brazil’s Macro-Regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Population (2010)</th>
<th>State GDP per capita (in 2010 RS)</th>
<th>% informal workers</th>
<th>Average years of schooling (25+)</th>
<th>% of families receiving Bolsa Familia</th>
</tr>
</thead>
<tbody>
<tr>
<td>North &amp; Northeast</td>
<td>68,938,336</td>
<td>10,458.26</td>
<td>62%</td>
<td>6.5</td>
<td>46%</td>
</tr>
<tr>
<td>Center-West</td>
<td>14,058,094</td>
<td>26,016.66</td>
<td>45%</td>
<td>8.1</td>
<td>19%</td>
</tr>
<tr>
<td>South &amp; Southeast</td>
<td>107,751,301</td>
<td>25,560.74</td>
<td>39%</td>
<td>8.3</td>
<td>14%</td>
</tr>
</tbody>
</table>

Source: Instituto de Pesquisa Econômica Aplicada.

The selection of APLs analyzed in this chapter purposely draws clusters from each of Brazil’s five “macro-regions”. Clearly, the case selection does not “solve” the problem of the socio-economic and institutional heterogeneity among the cases, although it does allow this research to test whether socio-cultural fixed effects from these regions play a determining role in the types of policies adopted by each governance structure. As shown in figure 3.2, three of the APLs are located in the South region, three are in the Southeast, the two are in the Center-West, three are in the Northeast, and one is in the North. The South and Southeast have historically been the most highly industrialized regions in Brazil with much higher indicators for income, education, human development and other variables associated with economic development than the North and Northeast regions, as shown in table 3.1.

Similarly, different economic sectors can be expected to have different governance structures and require different policy approaches depending on the need for economies of scale, capital intensity, proximity to the technological frontier, reliance on natural resources, and a number of other factors. The selection of the twelve cases by

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19 It does much better than the North and Northeast regions, however.
20 For simplicity purposes, I have combined the South and Southeast and North and Northeast regions.
RedeSist researchers purposely chose APLs from a wide variety of sectors in order to analyze the evolution of APL policies from different production regimes. I have grouped the RedeSist cases, which represent a range of industries in manufacturing and services, into four distinct categories since each implies very particular intensity of capital and labor utilization, relationships with domestic and global value chains, possibilities for innovation and local division of labor, and utilization of technologies. Below, I introduce each APL and present a description that is based on coding for territorial and sectorial approaches following the typology described in the previous section.\(^\text{21}\)

Four of the APLs in the study (and many others scattered throughout Brazil) are in apparel manufacturing, a very mature sector in the global economy, with very low barriers to entry, high competition from other regions in Brazil and imports (particularly from Asia), such that the possibilities for innovation and development new technologies are limited. Competitive advantages here tend to be related to the ability to manage stable relationships with subcontractors (often informal firms) to maintain production flexibility while gaining economies of scale and, in a few cases, the ability to innovate and adapt to particular fashion niches through design. Even in cases where specialization and differentiation through design is possible, however, competitive advantages are always fragile and subject to price competition. The APLs in the apparel sector are specialized in particular niches, such as hats in Apucarana, children’s clothing in Jaraguá, blue jeans in Colatina, and the production of uniforms and clothing made from organic and naturally-colored cotton in Campina Grande.\(^\text{22}\)

The cases also include two tourism APLs, a service sector that is an important source of employment and income in many of the less developed regions in Brazil. This is also a sector that features intense competition among regions in Brazil and abroad, and destinations are required to differentiate themselves from others in order to gain lasting competitive advantages. As natural landscapes are often the primary attraction of many regions, the governance of these regions must find a balance between opening environmentally sensitive resources to attract tourists and preserving these areas for local residents and future use. Therefore, a more “virtuous” approach to tourism development often centers on upgrading accommodations and dining experiences and the promoting cultural activities. The cases studied by RedeSist researchers were the ecotourism destination in Bonito and the “sun-and-beach” region of southern Alagoas state.\(^\text{23}\)

\(^{21}\) For a more detailed summary of each case study, see the appendix. The complete original case studies (in Portuguese) can be accessed at the RedeSist website: [http://www.redesist.ie.ufrj.br/notas-tecnicas1-p12/nt1-ca-p12](http://www.redesist.ie.ufrj.br/notas-tecnicas1-p12/nt1-ca-p12).

\(^{22}\) For Apucarana case study, see Scatolin, Paula, and Shimajv (2011); for Jaraguá, see Castro, Costa, and Arriel (2011); for Colatina, see Villaschi and Felipe (2011), and for Campina Grande, see Cavalcanti et al. (2011).

\(^{23}\) For the Bonito case, see Le Bourlegat and Dotto (2011) and for Alagoas case, see Lustosa et al. (2011).
APL policies have also been implemented in several regions where agriculture plays a strong role in the economy, particularly aiming to increase product quality (and value) and introduce cutting edge technologies, best practices, and help small producers engage in higher value-added processing activities. The APLs in this study include goat farming and husbandry in the municipalities of Quixadá and Quixeramobim of the sertão (semi-arid) region of Ceará state, the production of the açai berry and its derivatives in the outskirts of the Belém metropolitan area, and the wine producing region of the Serra Gaúcha, in the highlands in the southern state of Rio Grande do Sul. In these cases, competition from other regions is less intense due to favorable regional conditions (climate, soil, water resources, long-standing cultural practices) yet the main challenges are related to the ability to develop local capacities for higher income-generating activities, such as techniques to extract more value from butchered goats, processing meat

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24 For Quixadá and Quixeramobim case, see Amaral Filho and Ximenes (2011); for Belém case, see Costa et al. (2011); and for the Serra Gaúcha case, see Tatsch, Viana, and Farias (2011).
and leather locally; producing fine wines instead of low-quality table wines; and building local capacity to develop processed açai by-products competitive in global markets.

Finally, the project also investigated heavy manufacturing sectors whose production processes often require a skilled labor force, high technology content, and more complex divisions of labor. These sectors were either born or received substantial subsidies and protections during the import substitution industrialization period in Brazil, but have struggled to become globally competitive after the opening of the Brazilian economy in the early 1990s. The electronics sector in Santa Rita do Sapucaí in Minas Gerais state and the machinery and metalworking sector in Joinville, Santa Catarina are particularly emblematic of Brazil’s “middle income trap” in which they lack the technological capacity to produce at the cutting edge of global manufacturing in their industries, yet are also not able to compete on low labor costs with Asian producers.25 The oil and natural gas supply chain in Macaé, Rio de Janeiro, benefits from the discovery of massive oil fields off the southeastern coast of Brazil as well as leading exploration technologies developed by the majority state-owned oil giant, Petrobrás, but local firms do not have the capacity to participate as suppliers or high-value goods and services, and are generally stuck providing low-end services like catering, mechanics, and construction.26

C. Implementation of sectorial policies

All of the APLs implemented policies and activities aimed at strengthening the primary productive sector of the agglomeration, or what I have coded as sectorial policies, as shown in table 3.2. This makes sense since the APL framework, from academic debates to policymaking, is geared towards local development through the strengthening of a particular sector. The most widespread of the sectorial policies is the expansion of credit towards micro and small enterprises located in APLs, which was present in all of the cases. Credit policies are made at the Federal level, both by public credit institutions (like Banco do Brasil and Caixa Econômica Federal) and private banks (like Bradesco), so it is not surprising that access to credit would have improved across the board. New credit products targeting MSMEs located within APLs include lines dedicated to equipment and machinery purchase, such as the BNDES Card (sponsored by the National Development Bank), which extends a line of credit for purchases from a pre-approved roster of vendors, all of which have to be domestic firms. Policies carried out by the state affiliates of national-level organizations like SEBRAE and CNI were also widespread.27 SEBRAE, in addition to being the lead organization in most of the APL governance efforts, provides technical assistance and consulting services or managerial training to small firms (as was the case with seven out of nine APLs).

Another set of sectorial activities that firms in several of the APLs implemented jointly included efforts to market the APL and its products to other regions. One example of such policies is the organization of trade fairs aimed at promoting the region’s

25 For the Santa Rita do Sapucaí case, see Botelho, Carrijo, and Oliveira (2011) and for Joinville, see Stallivier and Tavares (2011).
26 See Britto, Vargas, and Oliveira (2011).
27 SEBRAE and CNI are components of Brazil’s “S-System”, or a set of quasi-public agencies that operate through mandatory contributions from firms based on their revenues. They generally operate with great autonomy from political interference.
products to outside buyers. In Jaraguá, for example, local entrepreneurs have organized an annual “Fashion Expo” where 165 of the city’s apparel manufacturers can expose their wares to wholesalers from other regions. In addition, nine of the APLs sponsored the participation of their firms in major trade fairs around the country, which, in the case of the apparel sector is the annual Textiles Industry Fair (FENIT) in São Paulo. Other policies to broaden the market for the APLs’ firms include the undertaking of market research (six APLs) and marketing plans (four APLs).

Sectorial policies that required coordination between the governance structures and municipal and state governments were less widespread. Four of the APLs featured relief on the value added tax (ICMS) imposed by state governments, especially on products “exported” outside of the state. Public procurement from local firms, a strategy highlighted by Tendler and Amorim (1996) and others as an important driver of demand for local products, was almost nonexistent. The only instance of a procurement policy was in the oil and gas APL in Macaé, where most of the efforts of the governance structure were aimed at inserting local MSMEs into the procurement chain of the state-run Petrobrás.

D. Implementation of territorial policies

As is the case with the sectorial policies implemented in the twelve APLs, the territorial actions that were most frequently realized were those that were funded by organizations at higher scales (state or Federal), although these programs were often designed and managed through the governance networks of the APL, particularly the leading trade associations. The most widespread territorial policy, present in all twelve APLs, was the creation programs to train workers in basic to mid-level skills necessary to firms in the primary sector of the APL. These workforce training programs are carried out by “S-System” agencies like the National Industrial Training Service (SENAI), the National Commercial Training Service (SENAC), and the National Rural Training Service (SENAR) which have campuses with classrooms and specialized laboratories or mobile units in the regions where the APLs are located.

These workforce training programs are generally developed through agreements between the agencies and the trade associations based on specific demands for skills in the APL, and translated into courses targeting specific skills desired by firms or general competences needed in the local economy. The courses are usually open to the general public, either free of charge or costing a nominal fee, which firms would generally pay to encourage their employees to attend. These kinds of courses are public goods, increasing the overall skill level among workers in these regions, yet which firms are not able to appropriate, as their workers are able to move freely to competitors willing to pay higher wages to more skilled workers. Many of the courses teach workers basic industrial skills, like welding, industrial painting, and the operation of general-use machine tools, which can, in fact, be transferred to activities in other sectors and likely have the effect of improving overall workforce quality in their regions, rather than be appropriable by a single firm or sector.
<table>
<thead>
<tr>
<th>Sectorial activities</th>
<th>Apparel</th>
<th>Tourism</th>
<th>Agriculture</th>
<th>Heavy Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Apucarana</td>
<td>Children's Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Jaraguá</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Campina Grande</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
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<tr>
<td>In Colatina</td>
<td>Apparel</td>
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<tr>
<td>In Alagoas</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Bonito</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Ceará</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Belém</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Serra Gaúcha</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Joinville</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Santa Rita</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Macaé</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Territorial activities</th>
<th>Apparel</th>
<th>Tourism</th>
<th>Agriculture</th>
<th>Heavy Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Apucarana</td>
<td>Children's Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Jaraguá</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Campina Grande</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
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<td>In Colatina</td>
<td>Apparel</td>
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<tr>
<td>In Alagoas</td>
<td>Apparel</td>
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<tr>
<td>In Bonito</td>
<td>Apparel</td>
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<td>In Ceará</td>
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<tr>
<td>In Belém</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Serra Gaúcha</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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<tr>
<td>In Joinville</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
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<tr>
<td>In Santa Rita</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
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<tr>
<td>In Macaé</td>
<td>Apparel</td>
<td>Tourism</td>
<td>Agriculture</td>
<td>Heavy Industry</td>
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</tbody>
</table>
In the case of the apparel APLs, for example, SENAI generally offers courses that can range from machine sewing, apparel design, and sewing machine repairs. In the tourism APL in Alagoas, local entrepreneurs worked with SENAC to develop training programs for waiters, line cooks, and hotel workers as well as basic foreign language skills and implementing a food safety program. In the goat APL in the state of Ceará, SENAR provided courses to small producers on modern milk handling, artificial insemination, and other basic techniques for optimizing production.

The other type of activity that requires coordination with organizations at higher scales is coordination between firms in the APL (individually or collectively) with universities and other research institutes (usually funded and managed by a state or Federal bureaucracy). These activities sometimes take the form of simple partnerships between individual firms and researchers, but much more often are the result of collaborations between the universities and the local trade associations to develop or test a specific product. In some cases, the state government will work with trade associations to create grants or fellowships to incentivize university students or researchers to develop solutions that meet the needs of firms within that sector. These types of partnerships are a crucial way to develop innovation and test new products, especially for small and medium firms that may not have enough scale to afford in-house research and development departments. As innovation is an iterative, social process, that often relies on the transmission of tacit, non-codifiable forms of knowledge, collaboration between entrepreneurs and researchers is particularly important (Lastres and Cassiolato 2003; Gertler 2003; Nelson 1993). Universities are also often the best sources of highly skilled workers (engineers, scientists, managers) for firms. In all, eight of the APLs in the study developed partnerships with local education and research institutes. One illustrative example is the hat APL in Apucarana, where the trade association worked with researchers from a nearby university to develop a “smart bill” that allowed for easy styling and was able to be appropriated by all local firms. The electronics APL in Santa Rita emerged from the creation of the Electronics Technical School in 1958 and its firms still draw much of their skilled workforce from its graduates.

Another source of innovation for firms is collaboration and collective action between firms in multiple sectors as well as densification of the local production chain through the emergence of new firms in related activities (Glaeser et al. 1992; Jacobs 1969). These activities were less widespread in the APLs, with multi-sector governance efforts occurring in four and efforts to promote new, related activities occurring in only three of the regions. In Joinville, for example, the governance network for the APL is not led by an association representing a specific sector, but a multi-sectorial commercial and industrial chamber. The chamber is made up of “sectorial sub-chambers” representing firms from specific sectors of the region’s economy, including various industrial activities related to metalworking and machinery production, such as industrial automation and machining, but also other sectors ranging from plastics, to environmental services, to supermarkets. As Stallivieri and Tavares (2011, 33) note, the chamber is a multi-sectorial “forum for exchanging experiences, learning practices, and information about new technologies.” In the Serra Gaúcha, there is a concerted effort to develop activities associated with wine production, and special lines of credit have been made available to tourism businesses (restaurants, hotels, etc.) and firms in those sectors participate actively in the main private sector association of the APL’s governance.
Lastly, the number of APLs that engaged in broader policies that were explicitly territorial, such as the development of new infrastructure or participation in local planning processes, was even more limited. These policies are territorial in the sense that, although the APL governance networks may be involved in their implementation, their benefits are likely to accrue to the entire region. Unlike policies like workforce training and partnerships with universities, these are generally local-level collaborations between the trade associations and municipal agencies in charge of planning, economic development, environmental protection, and the like. The best example of this type of engagement was in Bonito, which has become Brazil’s primary ecotourism destination due to the magnificent underwater caves teeming with exotic fauna and flora. Bonito, like several other of the APLs in this study, has received funds from multilateral agencies (in this case, the World Bank) to promote its development. Unlike other APLs like Santa Rita, which used the funds to develop vague “competitiveness plans”, the funds in Bonito were used to implement policies associated with the municipal master plan, such as improvements in the transportation network and solid waste collection, as well as developing a “tourism highway” in collaboration with neighboring municipalities, also within the context of each of their master plans. In Bonito and in the apparel APL in Campina Grande, support for the APL also specifically sought to engage with social policies such as incorporating production from families resettled through agrarian reform programs. In Campina Grande, resettled producers were encouraged to plant organic naturally-colored cotton which was purchased and used by the local clothing manufacturers, and in Bonito, these families produced jams and other goods to be sold to tourists in stores in the city.

E. Why do some APLs pursue territorial policies?

Some of the APLs analyzed in this chapter implemented narrow policies that benefit only firms within a particular sector (or a small subset of firms within that sector) while others engaged in much more horizontal policymaking, which I have called territorial policies. These interventions are more likely to generate broader developmental spillovers in their regions, such as an improved workforce, a higher capacity for innovation, and infrastructure that can be used and appropriated by other economic sectors and improve the quality of life for residents. With the exception of workforce training initiatives, which were adopted in all of the APLs in this project, why were broad territorial approaches so much less widespread than narrow sectorial ones? In this section, I show that a key predictor of the two approaches is whether the governance network of the APL galvanized around “value chain insertion” or “productive upgrading” challenges.

Value chain insertion challenges are related to the sales of products from a particular region to a wider market. Firms face these challenges when entering a particular sector or when outside competition encroaches on their market. Entrepreneurs engage in collective action to address these issues by making their products more visible to outsiders or by marketing their products more effectively. Productive upgrading challenges relate to the capacity of firms to develop competitive goods and services. In a large domestic market like Brazil, firms certain sectors can remain competitive regionally or domestically even if they would not be competitive in export markets. In a sector like apparel, however, competition from foreign producers within the Brazilian market is
always intense. I coded as productive upgrading challenges those relating to the necessity to adopt new machinery or production processes (and to train the local workforce for them) in order to develop new products, engage in activities within the same sector with higher per unit values, or specialize in more profitable niches within that sector. In short, productive upgrading challenges were those that firms face as they sought to increase the content of technology, design, or labor skill in their production processes.  

Table 3.3 shows APLs in the study and whether their governance networks galvanized themselves to address value chain or productive upgrading challenges as well as the type of local economy development approach undertaken in each. What becomes clear is that in cases where governance networks were formed to address productive issues, the APL is much more likely to also include several territorial policies, and where the focus of the governance is purely commercial, policies will tend to remain narrowly focused on the primary sector of the APL. An analysis of variance (ANOVA) between the “incentive” variable (where 1 = productive and 0 = commercial) and the “approach” variable (where 1 = territorial and 0 = sectorial) shows the strong correlation between the two, even with a small sample size (n=12). The adjusted R-squared is 0.686, meaning that just the incentive variable explains almost 70% of the variation in the approach variable, and that the null hypothesis that the effect is equal to zero can be rejected at the 0.001 confidence level. The p-value of a Fisher’s exact test comparing the two variables is 0.015, which allows me to reject the hypothesis that there is no association between them with 98.5% confidence.

Of the six APLs in which the governance network coalesced around productive issues, five developed territorial approaches to local economic development. The exception was the hat industry in Apucarana, which only implemented two territorial policies, workforce training and engagement with research institutes, although it undertook quite significant steps towards the latter, as described in the section above. Conversely, all of the governance networks created to address commercial challenges did not move beyond implementing mostly sectorial policies. The most extreme example is the oil and gas supply chain at Macaé, where the entire policy approach was to incorporate local firms into the low-level procurement demands of Petrobrás and its subcontractors. In this case, the impact of the oil sector’s growth on the urban fabric of the city was highly unequal and segregated and all innovation occurring in the region came from outside firms, either domestic (like Petrobrás and construction giants like Odebrecht) or multinationals (like Halliburton, KBR, and the like).

**IV. Alternative explanations**

Regional economies are complex and multidimensional, and causal explanations of their evolution and performance are likely to be circular, divergent, or even contradictory. In this section, I explore alternative explanations as to why the governance

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28 Refer to chapter 2 for a discussion of the literature on “upgrading” and its four types: product, process, function, and inter-sectorial upgrading.

29 The fisher’s exact test is a method for calculating the significance of the association between two categorical variables that performs well in small sample sizes (for large samples, a chi-square test is more commonly used).
networks of certain APLs undertake broad territorial policies with a greater potential for regional spillovers rather than a narrow sectorial approach.

A. Subnational state and institutional capacity

One plausible explanation for why the governance network of an APL would choose to pursue a territorial or sectorial policy approach could be related to the capacity of local/state governments or institutions to formulate and carry out coherent policies to support local economic development. Montero (2002), for example, finds that state governments in Brazil and Spain that formed networks of “horizontal embeddedness” among its bureaucracies were more successful in undertaking subnational industrial policies than those in which the executive branch could change policies and priorities according to political calculations. In the case of APLs, this would mean that the state’s capacity to carry out policies would have a greater explanatory power in whether APLs took a territorial approach than the motivating factors that led entrepreneurs to engage in collective action and build governance networks.

However, a composite measure of state and institutional capacity does not explain the approach undertaken by each APL better than the motivation for collective action by the governance network. Alston et al. (2008) developed an index to measure the level of “institutionalization” within states, or the ability of the subnational units to provide credible commitments for longer term policy implementation and overall economic exchange by imposing “checks and balances” on state governors’ ability to undertake “predatory” executive actions. The index was generated with data from the years 2003-2006, which is within the time window of the RedeSist study (2003-2011) and has a score that ranges from 1.000, for Rio Grande do Sul to 0.029 for Maranhão. It measures checks and balances at the state level, which is more appropriate than the municipal scale as economic development strategies are usually pursued by state bureaucracies, who have access to substantially more resources such as financing for research and development, public universities, development banks, and infrastructure funds. I coded the index as a dummy variable for a “high” level of checks and balances with a score higher than the median of 0.500, and low for all others. Only eight of twenty-seven states scored “high” on the composite index, but of the twelve case studies in this chapter, half (six) were high and half were low. A Fisher’s exact test of the checks and balances index against the policy approach (territorial or sectorial) yields a score of 1.0, meaning no association between the two variables.

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30 The index is a composite of seven indices measuring the strength and independence of regulatory agencies, the judiciary, public prosecutors, the state’s audit office, the National Justice Council, the media, and “civic community”.
Table 3.3. Motivation for formation of APL governance network and approach taken by each

<table>
<thead>
<tr>
<th>Category</th>
<th>Incentive for APL Governance</th>
<th>Policy Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apparel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hats in Apucarana</td>
<td>PRODUCTIVE. Incorporation of new machinery to achieve economies of scale competitive with Chinese producers</td>
<td>Sectorial</td>
</tr>
<tr>
<td>Children’s Apparel in Jaraguá</td>
<td>VALUE CHAIN. Opening a factory outlet store to sell products from local firms to wholesale buyers.</td>
<td>Sectorial</td>
</tr>
<tr>
<td>Apparel in Campina Grande</td>
<td>PRODUCTIVE. Specialization of production towards uniforms and niche apparel using organic, naturally colored cotton.</td>
<td>Territorial</td>
</tr>
<tr>
<td>Blue Jeans in Colatina</td>
<td>VALUE CHAIN. Shifting towards higher end domestic markets (South and Southeast) by incorporating new fashion trends.</td>
<td>Sectorial</td>
</tr>
<tr>
<td><strong>Tourism</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism in Alagoas</td>
<td>VALUE CHAIN. Basic tourism promotion activities such as participation in fairs, development of marketing materials, and market studies.</td>
<td>Sectorial</td>
</tr>
<tr>
<td>Tourism in Bonito</td>
<td>PRODUCTIVE. Upgrading of municipal capacity to receive tourists and diversification of available attraction and services.</td>
<td>Territorial</td>
</tr>
<tr>
<td><strong>Agriculture</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goat husbandry in Ceará</td>
<td>PRODUCTIVE. Incorporation of farming best practices and processing of goat skins into leather.</td>
<td>Territorial</td>
</tr>
<tr>
<td>Açaí processing in Belém</td>
<td>VALUE CHAIN. Expansion into new domestic and international markets, largely demand-driven.</td>
<td>Sectorial</td>
</tr>
<tr>
<td>Winemaking in Serra Gaúcha</td>
<td>PRODUCTIVE. Incorporation of best practices, upgrading towards fine wines, and diversification of activities towards tourism and related products (such as cheese).</td>
<td>Territorial</td>
</tr>
<tr>
<td><strong>Heavy industry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metalworking /machinery in Joinville</td>
<td>PRODUCTIVE. Training local workforce to participate in activities with higher technological content.</td>
<td>Territorial</td>
</tr>
<tr>
<td>Electronics in Santa Rita</td>
<td>VALUE CHAIN. Promotion of exports and joint sales through commercial partnerships among firms.</td>
<td>Sectorial</td>
</tr>
<tr>
<td>Oil and gas supply chain in Macaé</td>
<td>VALUE CHAIN. Building capacity among local SMEs to participate in the oil and gas chain anchored by Petrobrás.</td>
<td>Sectorial</td>
</tr>
</tbody>
</table>
B. Regional institutional capacity and economic history

It is also likely that certain regions will have stronger institutions that would be more favorable to a territorial policy approach. States in southern Brazil, for example, have a much more developed industrial sector with a stronger presence of organized labor, civil society, and, by extension, better and more responsive institutions and municipal governments than states in the North and Northeast of Brazil. As discussed in section II.B, the selection of cases also reflects the reality that clusters in southern Brazil tends to produce much more advanced and higher value products, as is the case with machinery, electronics, oil and gas exploration, and even more complex (and valuable) agricultural-based goods (like wine), in contrast to goat husbandry, açai processing, and low-end apparel manufacturing. These are the types of products that may require strong relationships between firms and supporting institutions like universities as well as better physical infrastructure. In this case, one would expect that APLs located in states in the South and Southeastern to develop more horizontal policies benefitting their broader regions rather than a small subset of firms.31

While an APL’s location in regions with stronger institutions, political representation, and associational life does play a role in the likelihood that its governance network will pursue territorial policies, this impact is not deterministic. Of the three APLs located in the South region, two are classified as taking the territorial approach. However, neither of the two APLs in the Southeastern region undertook the territorial approach. In the North and Northeast regions, the least developed in Brazil, half of the APLs (two out of four) engaged with territorial policies, as did the APLs in the emerging Center-West region. A fully representative sample of APLs in Brazil would likely show that APLs located in the South and Southeast regions would be more likely to pursue territorial policies than those in the North and Northeast, particularly since the economies of these regions are much more diversified and therefore likely to have competing economic sectors vying for investments. However, the argument that within each region APLs pursuing value chain policies are less likely to engage in territorial development approach than those pursuing productive upgrading policies still holds within the constraints of this small-N study.

C. Level of urbanization

Another possible explanation is the extent to which the size of the metropolitan region in which the APL is located may have played a role in determining whether territorial policies were adopted. Larger, more diverse regions are more likely to have broader business lobbies pushing for legislation supporting a variety of sectors, and some of these may translate into interventions will stronger spillovers. As was the case with the location of APLs in the southern states, their location within a metropolitan region recognized by IBGE32 also seems to play a role, but not a deterministic one. Three of the twelve APLs in the study (Campina Grande, Belém, and Joinville) are located in metropolitan regions with populations of more than 385,000. Of these three, only Belém did not develop territorial policies. Among the other nine located in smaller cities, three

31 The argument here is not whether southern states have higher performing industries or APLs that are more competitive in domestic and global markets (which they undoubtedly do).
32 The Brazilian Institute of Geography and Statistics, which manages the decennial census and other surveys.
did engage in territorial policies, indicating that they are still quite likely to emerge in those contexts.

D. Researcher bias

Lastly, there is the possibility that the authors of some of the studies analyzed in this chapter may have been more diligent about identifying APL-supporting policies than others. In other words, a higher incidence of territorial policies, and my coding of the policy approach as “territorial”, may have had nothing to do with the actual policies undertaken in each of the APLs, but with whether certain authors were simply more detailed in their analysis, identifying a higher number of policies of both types. To test this, I plot the number of coded sectorial policies against the number of coded territorial policies. Figure 3.3 shows a completely random distribution of observations with regards to these two variables, meaning that knowledge of the number of coded territorial policies does not help explain the number of sectorial policies in a particular case study. This suggests that that the authors seem to have been equally diligent in identifying these two types of policy approaches and my coding is not skewed one way or another.

Figure 3.3. Number of territorial and sectorial policies in each APL

![Figure 3.3. Number of territorial and sectorial policies in each APL](image)

Source: Author’s calculations.
V. Conclusions

In this chapter, I explore the dynamics of the relationship between the governance networks that coordinate subnational industrial policies in Brazil and the menu of public policies and actions undertaken to promote MSME growth and local economic development. In the case of Brazil’s Local Production Systems (APL) policies, it is evident that all governance networks promote a set of sectorial policies aimed at improving the market competitiveness of firms in the primary productive activity of each region, whether the activity is in textiles, tourism services, agricultural products, or traditional manufacturing. In some cases (with examples from each of the sectors described above), the governance networks promote policies that go beyond narrow interventions aimed at the primary productive sector, and aim to strengthen the territory’s institutions and public goods. Although APLs in the regions of southern Brazil were more likely to promote this territorial approach, the stronger predictor of whether governance networks undertook the territorial approach was the set of challenges that motivated firms to engage in collective action. Where collective action was driven by purely commercial challenges, policies were likely to be narrow and sectorial. However, in cases where firms came together to address productive challenges, a broader set of policies emerged.

The findings in this chapter have important policy implications. Industrial policies (at the national and subnational level) have made a strong comeback in recent years. Multilateral institutions like the World Bank (Rodrik 2008; Stiglitz, Lin, and Monga 2013) and the Inter-American Development Bank (Crespi, Fernández-Arias, and Stein 2014) and powerful domestic institutions in Brazil such as BNDES have actively promoted such policies, with cluster-based approaches seen as an important driver in the development of regions outside major metropolitan areas. Despite the policy and, as described above, academic focus on these new modes of industrial development, most research focuses on whether clusters make regions more competitive, or on whether they facilitate different types of upgrading. This chapter contributes to the understanding of the political economy of these industrial agglomerations, why their governance networks form, and how supporting policies are created and implemented. I will apply this framework to the next two chapters, in which I will investigate the relationships between the formation of governance networks and APL policies in two regions in southeastern Brazil.
Chapter 4:
Development on the wrong side of the road: a territorial APL development approach in Linhares, Espírito Santo

I. Introduction

In chapter 3, I explored the relationship between the structure and motivations for public-private governance of an APL and whether the APLs evolved beyond sector-specific policies towards a more territorial approach to productive development. Analyzing twelve case studies of APLs from throughout Brazil that represented four broad economic sectors, I showed that when the governance structures were motivated strictly with value chain insertion, they were less likely to seek broad territorial policies, instead implementing policies that often benefited only a narrow set of firms within their primary sectors. On the other hand, when firms and public sector actors came together to upgrade the productive capacities of the APL (in addition to the value chain issues), they often engaged in territorial policies.

In this chapter, I explore this relationship between governance and the territoriality of APL policies through an analysis of the furniture industry around the city of Linhares in the southeastern state of Espírito Santo. Since the early 2000s, the region has seen remarkable economic growth and social development, consolidating itself as one of the most important furniture producers in the country while also diversifying its economy by attracting plants from important domestic multinational corporations in machinery and food production. Local furniture firms have been able to adapt to shifting demands in the Brazilian furniture market and have remained competitive even while Brazil’s industrial sector has entered a serious recession. This ability to adapt to exogenous market and political forces is even more impressive in an industry with relatively low barriers to entry and low profit margins that require firms to achieve great economies of scale in order to be competitive.

The growth of the Linhares furniture industry has occurred in a region that is quite distant from major metropolitan areas and from suppliers of the most important input for furniture production, the medium density fiberboard (MDF). One of the leading local entrepreneurs likened producing furniture in Linhares is like “driving on the wrong side of the road.” I argue that much of the success of the region owes to a highly collaborative governance network made up of the leading entrepreneurs in the sector, but that is also embedded with municipal and statewide policy actors, geared primarily towards addressing productive challenges under difficult conditions. This approach contrasts with the policies undertaken by the marble and granite cluster in Cachoeiro de Itapemirim, described in chapter 5, where there governance structure is dominated by a narrow set of firms within the industry and policies are much more targeted towards commercial activities.

As explained in greater detail in the introduction to this dissertation, this chapter (and chapter 5) complements the analysis undertaken in chapter 3 through a case study approach. The case study method allows the researcher to generate intensive understanding of context-specific institutions and processes in order to develop insights through inductive logic as well as generalizable causal inferences through careful case
selection and theoretical reasoning (Flyvbjerg 2011). As Yin (2009) argues, the information generated through this method cannot necessarily be analyzed through statistical techniques, and generalizations cannot be made by expounding the characteristics of a random sample to that of a population. Rather, he argues, “the mode of generalization is analytic generalization, in which a previously developed theory is used as a template with which to compare the empirical results of the case study” (38, emphasis in the original). For the two case studies developed in this dissertation, I interviewed nearly eighty actors, including business owners; municipal, state, and Federal bureaucrats; business association managers; academics; and bankers. I spent two weeks in Linhares in August 2014 and additionally made four trips to Espírito Santo’s capital, Vitória, to interview state-level officials.

This chapter is organized in four sections. The next section provides a brief overview of the various theoretical debates on governance of local economic development processes, which is treated at greater length in chapter 2. Section III describes the global value chain for furniture, particularly the type of mass-produced niche in which Linhares firms specialize. Next, it shows the socio-economic transformations that the city (and its region) have gone through in recent decades as well as some context on the role of the furniture industry within the local economy. The next two sections incorporate the theoretical framework established in section 2, first by showing the governance structure of the furniture APL and the ways in which productive challenges galvanized local actors (from the public and private sectors) to engage in collective action, and then showing that much of this collective action has focused on territorial policies.

II. Sectorial and territorial approaches to APL development

In chapter 3, I develop a typology for policies to support APLs in Brazil, categorizing them as either sectorial or territorial. I classified as the former policies that targeted a specific sector, and sometimes a narrow set of firms within that sector, including the promotion of local trade fairs or visits by local firms to expositions in other regions or countries, the development of marketing studies and plans, investments in branding local products with a geographic designation, and the provision of fiscal incentives towards specific industries (see figure 3.1 in the previous chapter). I classified these policies as sectorial because they are appropriable only by the firms in that particular sector and, in some cases, only to firms that directly receive the subsidies. For example, grants given by a state government agency to support travel by apparel entrepreneurs to an apparel trade fair is likely to benefit the recipients, who can use the trip as a way to connect to new buyers, be exposed to the latest fashion trends, and meet new suppliers, but it is unlikely to have direct impacts on other firms in the region.

Some of the APLs studied, however, engaged in territorial policies, whose focus was the broad development of the region as a way to improve the competitiveness of local firms. These policies, by definition, generated spillovers that could be appropriated by other productive sectors as well as potentially improving the provision of public goods and quality of life in their regions. These types of policies included workforce training programs, engagement with local planning processes, investments in infrastructure, incentives for collaboration between research institutes and firms, and efforts to “thicken”
the local production chains, either by linking separate productive activities or investing in new activities in that production chain locally (which may have formerly been imported from the outside). In chapter 3 I argue that while all APLs benefited from sector-specific policies, only some engaged in what I called a “territorial approach” to development, or an implementation of a critical mass of activities to strengthen local institutions, public goods provision, and collaboration across economic sectors.

My main argument in chapter 3 was that one of the main drivers behind a territorial approach to APL development was the motivation for collaborative action among local entrepreneurs and the public sector, or the governance structure coordinating the public policies to be implemented to benefit the APL. In cases where entrepreneurs came together to address value chain challenges, usually facilitated by institutions like SEBRAE or the state’s federation of industries, the policies they implemented tended to be narrowly targeted towards a small group of beneficiary firms in their particular sector. These commercial challenges include improving access to foreign markets, attracting buyers from other regions in Brazil, or conducting market studies to figure out how to best position the local firms.

This type of motivation can take different forms. For example, in the children’s apparel APL in the city of Jaraguá, the local entrepreneurs came together to build a factory outlet mall to attract wholesale buyers who sell the products in other cities (Castro, Costa, and Arriel 2011). In Macaé, a number of policies have been implemented to help insert local firms into the value chain of the massive state-controlled oil company Petrobrás, which has developed a large offshore exploration complex in the region (Britto, Vargas, and Oliveira 2011). In other cases, however, the primary motivation for collective action is to address productive difficulties facing the firms, such as the need to incorporate new technologies, move into more sophisticated production niches, or to introduce a new set of skills to local workers in order to compete with other regions. In the case studies discussed in the previous chapter, examples of these types of challenges included investments to upgrade wine production from table wines to fine wines in the Serra Gaúcha (Tatsch, Viana, and Farias 2011), the adoption of new technologies to achieve economies of scale in order to fend off competition from Chinese producers in Apucarana (Scatolin, Paula, and Shimajv 2011), and expanding the local capacity to receive tourists without detrimental impacts to the environment in Bonito (Le Bourlegat and Dotto 2011). In most of these cases, the local entrepreneurs and municipal government formed governance structures to design and implement territorial policies with great potential for regional spillovers and local economic development.

In the next sessions, I show the ways in which firms and the public sector in Linhares came together to form governance structures to address productive development challenges in their region. Although these governance efforts have also implemented sectorial policies, the thrust of their work has been to improve the productive conditions of the region through a territorial approach. The next section provides context on the furniture industry (globally, nationally, and in Linhares), before moving on to a discussion of the governance structures in sections IV through VII.
III. Global and domestic value chains in the furniture industry

The furniture cluster in Linhares is primarily geared towards the national market, and aside from its use of machinery from Europe, most of its inputs are sourced from within Brazil. However, furniture production is organized globally as a buyer-driven global value chain (GVC), following the typology developed by Gereffi and his collaborators (Gereffi 1994; Gereffi and Korzeniewicz 1994). Scott (2006) shows that, like many low-technology, labor-intensive activities in today’s globalized economy such as apparel and footwear, the furniture industry has organized itself in local agglomerations of firms, known as “clusters”, “industrial districts”, and the like, as discussed in chapters 2 and 3. He identifies three types of flows between these agglomerations and the global markets for furniture (1519):

1. Direct exports of final, high-quality products between countries in the Global North, or medium-quality products from the Global South to the Global North.
2. Goods produced in plants located in low-wage countries flow to parent firms in the Global North where “higher order” activities (branding, marketing, final assembly) are undertaken.
3. Outsourcing of production by firms in the North (who focus mostly on design, marketing, etc.) to subcontractors in the South.

A case study of IKEA’s buyer-supplier relationships in China and Southeast Asia (Ivarsson and Alvstam 2011) shows that the giant home furnishing retailer establishes preferential relationships with firms in those countries through which there is a significant transfer of technologies, production capacities, health and environmental standards, and other forms of knowledge. The authors show that, although the process of becoming a supplier is long and potentially risky (requiring up to a year of intense capital investments with little promise of returns), supplier firms can often learn and upgrade their products and manufacturing processes significantly.

However, the GVC framework misses much of the complexity of how furniture (and other similarly low-technology, labor-intensive goods) is produced globally. First, the flows described by Scott are not between countries, but usually between regions of countries, since most of the production occurs in regional agglomerations of firms, as Scott himself identifies. Secondly, although the value chain framework is a useful analytical device, the global scale is not the only relevant one, as furniture clusters often operate in national and regional value chains, and often simultaneously in more than one chain. Analyzing a furniture cluster in the Serra Gaúcha of southern Brazil, for example, Navas-Alemán (2011) argues that upgrading prospects are greatly enhanced with firms participate in national and regional value chains in addition to GVCs. She demonstrates through a comparative analysis with a footwear cluster located in the same state that sole participation in GVCs (as exclusive suppliers to Northern retailers or as producers for a few GVC buyers) may allow firms to upgrade their products and processes while stunting their ability to upgrade functionally, such as developing their own brands or design capacities, which is what allows them to move towards less competitive and more profitable niches within their industries. Her analysis, however, focuses on the most successful export furniture cluster in Brazil, and for reasons I explained in chapter 3, may be of limited analytical or policy value to most regions in the country (and other countries in the Global South), which operate exclusive in regional and national value chains. In
these regions, productivity is likely not high enough to compete with regions such as Serra Gaúcha while wages are too high to compete with Chinese and Southeast Asian firms.

The Brazilian furniture industry is similar to the global industry in the fact that it has also organized itself around spatially bounded regional agglomerations of a few medium and large firms and an array of smaller firms that act as final producers or subcontractors. The particular industrial organizations of each agglomeration, as well as product niches, markets, and export orientation varies considerably. The most well-known furniture cluster in Brazil is located in Bento Gonçalves, located in southern state Rio Grande do Sul, one of the most developed industrial regions in Brazil. It is characterized by a large number of vertically integrated firms with highly advanced machinery which export a significant amount of their production, as well as participating in the domestic market (Navas-Alemán 2011). Like most of the production in Linhares, firms in Bento Gonçalves also specialized in mass-produced, linear pieces using fiber board materials, which target a lower middle class market (Vieira and Barcelos 2014). Although many states have agglomerations of furniture-producing firms, Brazil’s major furniture clusters are located in states in the South and Southeast regions such as Rio Grande do Sul, Santa Catarina, São Paulo, and Minas Gerais.

In 2013, Brazil’s 19,000 furniture firms sold nearly R$43 billion (roughly US$11.5 billion) in products and employed more than 325,000 workers. Although its exports amounted to almost US$690 million, the country imported almost US$750 million in furniture products, such that the industry had a net negative impact on Brazil’s trade balance (Abimóvel 2014). The industry went through a strong modernization process in the early 1970s, and responding to incentives laid out by ISI policies and an economic growth model based on bolstering domestic demand, it had a strong focus on the domestic market and a very weak export orientation. The foreign debt and inflation crises of the 1980s severely impacted the domestic market for consumer goods, and like many other sectors, the furniture industry had not developed the capacity to be competitive in global markets during the ISI years. With lowering of trade barriers in early 1990s, large firms were able to modernize their machinery, but vast majority of firms (MSMEs) were not able to do this (Villaschi and Bueno 2000). The furniture industry in Linhares emerges in this period and is analyzed in greater detail in section V.

IV. The furniture industry as a driver of regional development in Linhares

The Linhares region has undergone substantial changes over the past three decades. This period has coincided with a transition from a rural economy based on agricultural production and extractive industries such as lumber, towards a vibrant and diversified industrial region. Prior to the 1960s, the local economy was almost entirely devoted to the production of coffee, but after a series of crises in the price in global markets, many local families began to specialize in activities they had previously pursued to supplement their income as farmers, such as sewing and carpentry. The presence of
native hardwood forests led a number of families to establish sawmills and a few to begin operations as woodworking shops.

During this time, the Espírito Santo government established a program to promote population growth in the northern part of the state through land donations, which attracted families from other regions to settle in Linhares and neighboring municipalities. In addition, the Federal government extended the country’s primary South-North highway, BR-101, from the state capital Vitória to the border with the state of Bahia in 1966, and later paved it in 1969. The location adjacent to BR-101 allowed the budding wood and furniture industry to access a broader market (especially the state’s capital, Vitória) as well as more easily connect to suppliers of intermediate inputs and machinery. In the 1980s, native woods became scarce through deforestation and the national demand for solid wood products declined, and the city’s location near BR-101 also made it easier for local firms to access fiber board products produced by firms in southern Brazil (Villaschi and Bueno 2000). The local industry, which had been relatively spread out among neighboring municipalities further concentrated around Linhares and the adjacent municipalities in its metropolitan region, as shown in figure 4.1.

Figure 4.1. The Linhares region

Source: Author’s mapping of IBGE georeferenced data.

33 The two most common native woods used for furniture were macanaiba and sucupira.
34 The section connecting Vitória to Rio de Janeiro (which was further connected to São Paulo and the southern states) was completed some years before.
35 The municipalities of Aracruz, Ibiraçu, Rio Bananal, and Sooretama.
Since 2000, Linhares has gained population at a rate of more than two percent per year, faster than both Espírito Santo and Brazil, and currently has 140,000 residents, as shown in table 4.1. The urbanization rate in Linhares, which was lower than Espírito Santo and Brazil in 1991 (72 percent) has outpaced both and is currently at more than 85 percent. In addition to its blossoming furniture industry (further described below), Linhares has attracted several other large-scale industrial operations. The discovery of offshore petroleum fields has resulted in the establishment of an oil exploration complex in the coastal portion of the municipality. In addition, one of Brazil’s most successful machinery manufacturers, Weg Motors, opened a plant in Linhares in 2011. This plant is one of 14 opened by the company in Brazil, and the only that is not located within one of the southern states, the São Paulo metropolitan area, or the Manaus Free Enterprise Zone. The city’s economic development director argues that the existence of a trained industrial workforce that developed from the furniture industry has been one of the most important aspects in attracting these other firms. As a result of these investments, the gross domestic product (GDP) generated within the municipality grew by more than six percent between 2000 and 2010, faster than Espírito Santo (which was one of the fastest growing states during this period) and two percentage points faster than Brazil.

Although economic growth may not necessarily lead to overall improvements in the lives of residents, Linhares has exhibited significant improvements in developmental indicators. The poverty rate in Linhares, which had been higher than 46 percent (19 percent in extreme poverty) in 1991, dropped dramatically to 26 percent (7 percent in extreme poverty) in 2000 and 11 percent (less than 3 percent in extreme poverty) by 2010. Linhares currently has a lower rate of extreme poverty and a comparable poverty rate than Espírito Santo, which also experienced rapid rates of poverty alleviation. The Municipal Human Development Index (MHDI), a composite measure of a region’s well-being calculated by the United Nations Development Program shows that Linhares progressed from a score (0.47) which classified it as “low development” in 1991 to a “high development” index (0.72) that is almost equivalent to Espírito Santo and Brazil. During this period, the Gini coefficient, a widely used measure of income inequality, has dropped from 0.60 to 0.52, twice as fast the decrease in Espírito Santo and similar to the national-level decreased from 0.64 to 0.54. This indicates a less unequal distribution of incomes that, according to the United Nations Development Program, owes to a shift in which lower income groups are able to appropriate greater shares of the wealth generated in Linhares, as well as Federal income transfer programs like Bolsa Família.

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36 The population decrease between 1991 and 2000 was the result of the incorporation of one of the city’s districts as a separate municipality.

37 In analyzing the furniture sector in South Africa, for example, Kaplinsky, Morris, and Readman (2002) identify a process of “immiserizing growth”.
<table>
<thead>
<tr>
<th></th>
<th>Brazil</th>
<th>ES</th>
<th>Linhares</th>
<th>Brazil</th>
<th>ES</th>
<th>Linhares</th>
<th>Brazil</th>
<th>ES</th>
<th>Linhares</th>
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<tbody>
<tr>
<td>Annual pop. gr. (%)</td>
<td>1.74%</td>
<td>2.12%</td>
<td>-0.66%</td>
<td>1.09%</td>
<td>1.19%</td>
<td>2.03%</td>
<td>1.56%</td>
<td>1.64%</td>
<td>2.03%</td>
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<tr>
<td>Urban pop. (%)</td>
<td>76%</td>
<td>74%</td>
<td>72%</td>
<td>81%</td>
<td>79%</td>
<td>83%</td>
<td>84%</td>
<td>83%</td>
<td>86%</td>
</tr>
<tr>
<td>GDP (in R$ 1,000,000)</td>
<td>1,179,482,000</td>
<td>23,248,586</td>
<td>742,490</td>
<td>1,682,208,371</td>
<td>36,642,686</td>
<td>1,209,369</td>
<td>192,755,799</td>
<td>3,514,952</td>
<td>141,306</td>
</tr>
<tr>
<td>Annual GDP gr. (%)</td>
<td>4.3%</td>
<td>5.76%</td>
<td>6.29%</td>
<td>4.3%</td>
<td>5.76%</td>
<td>6.29%</td>
<td>4.3%</td>
<td>5.76%</td>
<td>6.29%</td>
</tr>
<tr>
<td>Human Dev. Index</td>
<td>0.61</td>
<td>0.51</td>
<td>0.47</td>
<td>0.68</td>
<td>0.64</td>
<td>0.62</td>
<td>0.73</td>
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<tr>
<td>Poverty rate (%)</td>
<td>36.0%</td>
<td>39.3%</td>
<td>46.4%</td>
<td>28.7%</td>
<td>22.8%</td>
<td>25.6%</td>
<td>14.0%</td>
<td>9.5%</td>
<td>10.8%</td>
</tr>
<tr>
<td>Extreme poverty rate (%)</td>
<td>15.6%</td>
<td>16.4%</td>
<td>18.8%</td>
<td>11.4%</td>
<td>7.0%</td>
<td>6.9%</td>
<td>5.3%</td>
<td>2.7%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>0.61</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
<td>0.53</td>
<td>0.56</td>
<td>0.52</td>
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*Based on 2000 R$. GDP and growth rates not calculated for 1991 because IPEA used a different methodology, so results would not be comparable.*

Source: IBGE Census, IPEA, United Nations Development Programme.
One of the ways in which the furniture industry has increased living standards in the region is through increases in the wages of its workers. Though still lower in absolute terms than the wages received by all workers in Linhares and much lower than the wages received by workers in Espírito Santo and Brazil, the amount paid to employees of firms in the furniture sector has increased steadily and more rapidly since 2006. Calculated in number of minimum salaries, employees in the furniture sector in Linhares saw their wages increase by 4 percent, from 1.72 to 1.79 minimum salaries, between 2006 and 2013, as shown in figure 4.2. In the overall Linhares economy, workers saw their earnings increase by 3 percent, from 2.07 to 2.13 minimum salaries, while in Espírito Santo and Brazil the number of minimum salaries earned per worker decreased during this period. Between 2006 and 2013, the progressive policies of the Workers Party (PT) at the Federal level pushed significant annual increases in the minimum salary, which went from BRL 350 to BRL 678, or a 94 percent increase. Therefore, workers in the Linhares furniture sector saw their earnings grow by more than 100 percent during this period.

Figure 4.2. Evolution of wages (in minimum salaries) in Brazil, Espírito Santo, Linhares, and the Linhares furniture sector (2006-2013)

Note: The bar chart and right-side scale show the growth in the Federal minimum salary in the 2006-13 period.
Source: Author’s calculations based on Ministry of Labor (RAIS) data.

38 The monthly minimum salary established by the national congress is a common measure for studies on income in Brazil, as well as an index to calculate public pensions and other types of remuneration.
V. The furniture sector in Espírito Santo and Linhares

As mentioned above, a consolidated wood and furniture industry emerged in Linhares in the 1960s as global markets for the region’s main agricultural crop, coffee, went into a prolonged crisis. Due to the presence of native hardwoods, the region also had a large number of sawmills, some of which shifted to the production of low-quality furniture as the region became more accessible through the construction of the BR-101 highway. One of the pioneers of the local furniture industry, Luiz Rigoni, who came to Linhares in the mid-1960s, described their entry into this line of business:

When we arrived in Linhares, there were 165 sawmills, they dominated this region. We came from the countryside, however, and my family started out with a carpentry workshop in our backyard. We started our business as a workshop, and at the time, there were only four or five of them. We were trying to grow in this secondary activity, the furniture business. When the wood supply became scarce, many of the sawmills transferred to Bahia and Pará, but some stayed here and migrated to furniture.”

In 1979, Rigoni and his brothers purchased a fiberboard plant from a national firm, Mobrasa, and opened the first mass production furniture operation in Linhares, called Movelar.

Movelar became the dominant actor in the local furniture industry for the next three decades, until it went into bankruptcy in 2008. The company played a key role in diffusing knowledge about the industry and market demands to local firms. In the 1980s, for example, the Brazilian market for mass produced furniture shifted from hardwoods to fiberboard materials, which could be produced from softer, re-forested woods like eucalyptus. Movelar had developed a competency in furniture pieces featuring linear right-angled designs, and was easily able to replace hardwoods with fiberboard in their production lines. Throughout the 1980s, the company developed a local network of suppliers and subcontractors, many of whom were started by former Movelar employees who ventured into business for themselves, which helped to spread knowledge about the industry to firms throughout the region (Villaschi and Bueno 2000). Luiz Rigoni himself left Movelar in the 1990s to start his own company, Rimo, which is currently one of the two largest furniture firms in Linhares. Movelar became a firm with national reach in the 1980s, but most other local firms functioned either as exclusive suppliers to Movelar or had a limited reach of Espírito Santo and Bahia. In 1985, with the goal of reaching a national market for the whole emerging cluster, the leading firms formed an association, Sindimol.

When Movelar went bankrupt in 2008, it sent a strong shock to the Linhares regional economy. When 2006 and 2009, the region lost 17 percent of its jobs in the furniture sector (more than 1 percent of all jobs). Employment in the furniture industry has recovered since then, increasing by 6 percent (to 3,800) since the low point in 2009, but still lower than the 2006 peak of 4,300 jobs. However, as the region was shedding

39 Personal interview, August 15, 2014.
40 The following statistics are taken from an annual survey from the Ministry of Labor (RAIS/MTE) for all municipalities in the Linhares region (shown in Figure #), which are Linhares, Aracruz, Ibiraçu, Rio Bananal, and Sooretama.
jobs in the furniture sector, the number of firms actually increased between 2006 and 2013 by 20 percent, from 61 to 73, suggesting a form of horizontal fragmentation of the industry. A study by Espírito Santo’s development bank, BANDES (Vieira and Barcelos 2014), shows that this process is occurring throughout the state’s furniture industry (likely driven by the trend in Linhares, which has close to half of the state’s employment in the sector) but not in other states. Employment in the furniture industry has decreased slightly between 2006 and 2012 in Espírito Santo, while it has increased substantially (between 30 and 42 percent) in states like Rio Grande do Sul, São Paulo, and Minas Gerais. At the same time, the number of firms in Espírito Santo has increased during this period by almost 50 percent, while it has increased much more slowly in these other states (between 14 and 30 percent) This indicates that the state’s furniture industry is re-organizing itself around hierarchical systems subcontracting relationships rather than vertically integrated firms.

Despite the turmoil in the industry over the past decade, Espírito Santo has been rapidly catching up with more traditional manufacturing regions in southern Brazil in recent years. Between 2007 and 2011, for example, labor productivity in the sector grew by 39 percent, almost double the national average (21 percent) and faster than even the most advanced states like Rio Grande do Sul and São Paulo (as shown in table 4.2). Although its profit margin is still lower than the national average, it has also grown much faster since 2007, as shown in table 4.3. Vieira and Barcelos (2014) show that the gross production value in the furniture industry actually increased in the state between 2007 and 2011, to more than R$500 million. Several interviewees confirmed this trend and noted that Movlar’s bankruptcy may have helped several firms as skilled employees suddenly became available and looking for work, and as firms were able to fill in market niches that became vacant as the region’s leading firm gave up its entire market share. For many firms, revenues have returned to their pre-2008 levels. One possible explanation as to how small firms have been able to achieve economies of scale to fill the void left by such a large local firm is a form of partnership that firms have engaged in called a dobradinha, where through specialization in one specific piece of furniture (say, a closet) partner firms can supply an entire matching collection for bedrooms, living rooms or other spaces. I will discuss dobradinhas in more detail below.

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41 Data taken from the Annual Register of Social Data (RAIS) collected by the Labor Ministry.
42 Calculated as industrial value added per worker.
43 Calculated as revenues minus production costs divided by production costs.
Table 4.2. Labor productivity in the furniture industry in selected states (2007-2011)

<table>
<thead>
<tr>
<th>State</th>
<th>2007</th>
<th>2011</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espírito Santo</td>
<td>28.9</td>
<td>40.0</td>
<td>39%</td>
</tr>
<tr>
<td>Rio Grande do Sul</td>
<td>50.4</td>
<td>65.6</td>
<td>30%</td>
</tr>
<tr>
<td>Minas Gerais</td>
<td>29.7</td>
<td>36.2</td>
<td>22%</td>
</tr>
<tr>
<td>Paraná</td>
<td>43.3</td>
<td>49.6</td>
<td>15%</td>
</tr>
<tr>
<td>Santa Catarina</td>
<td>27.4</td>
<td>31.0</td>
<td>13%</td>
</tr>
<tr>
<td>São Paulo</td>
<td>45.5</td>
<td>49.7</td>
<td>9%</td>
</tr>
<tr>
<td>Brasil</td>
<td>38.2</td>
<td>46.2</td>
<td>21%</td>
</tr>
</tbody>
</table>

Note: Calculated as (2013) R$ 1,000 in value added per worker. Source: Bandes using IBGE data.

Table 4.3. Profit margin in the furniture industry in selected states (2007-2011)

<table>
<thead>
<tr>
<th>State</th>
<th>2007</th>
<th>2011</th>
<th>Variation (percentage points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espírito Santo</td>
<td>9%</td>
<td>27%</td>
<td>18</td>
</tr>
<tr>
<td>Minas Gerais</td>
<td>17%</td>
<td>31%</td>
<td>14</td>
</tr>
<tr>
<td>Rio Grande do Sul</td>
<td>30%</td>
<td>42%</td>
<td>12</td>
</tr>
<tr>
<td>Paraná</td>
<td>26%</td>
<td>32%</td>
<td>6</td>
</tr>
<tr>
<td>Santa Catarina</td>
<td>20%</td>
<td>22%</td>
<td>2</td>
</tr>
<tr>
<td>São Paulo</td>
<td>31%</td>
<td>32%</td>
<td>1</td>
</tr>
<tr>
<td>Brasil</td>
<td>27%</td>
<td>34%</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: Bandes using IBGE data.

VI. Managing productive challenges through chain and territorial governance

From a classic economic geography perspective, it is easy to see how a regional furniture industry would have emerged in Linhares in the 1960s and 70s. The nearby hardwood forests provided the primary inputs needed for the production of basic pieces. The coffee crisis in the 1960s freed up local workers who could be employed in this labor intensive activity, in addition to new migrants that took up incentives by Espírito Santo to populate the interior of the state. The expansion of BR-101 connected Linhares to the state capital, Vitória, and other points to the south (where Brazil’s biggest markets are), and later to the northeastern state of Bahia and its capital, Salvador, and other states in the northeast.

However, with the loss of much of the local supply of hardwoods through deforestation and the shift in the market for furniture for “popular” classes towards fiberboard materials, the success of Linhares as an industrial region is more puzzling. Other regions in southern and southeastern Brazil, such as Bento Gonçalves in Rio Grande do Sul and Ubá in Minas Gerais, had much longer histories not just in furniture

44 A policy known as interiorização, or interiorization (Villaschi, Felipe, and Oliveira 2011).
45 Bento Gonçalves is also the center of the wine cluster that is analyzed in chapter 3.
production, but also in a range of industrial activities. The challenges inherent with developing the local industry in what several entrepreneurs described as “the wrong side of the road” 46 required more than targeted interventions in accessing markets or improving managerial practices. The region needed to find ways to dramatically decrease the costs of its primary input, train the local labor force to work with increasingly complex machinery, manage land use conflicts arising from the growth of the industry and a rapidly expanding urban population, and other pressing issues. Some of these challenges were addressed through strictly private interventions by individual firms, but for the most part were undertaken collectively by groups of firms acting informally or formally represented by Sindimol, or through embedded relationships between the sector’s leading entrepreneurs and the municipal and state governments, both processes are described below.

A. Chain governance to manage vertical dis-integration

Movelar’s specialization in wardrobe manufacturing drove the rest of the region to also specialize in the same niche. As firms grew larger and moved away from being exclusive suppliers to Movelar, they broadened their scope by producing entire living environments with matching colors and designs, such as full bedrooms, bathrooms, living rooms, and the like. Currently, larger firms often subcontract the production of other components of a room collection (say, a nightstand) or components of bigger pieces (such as the drawers or back of a chest of drawers) so that they can specialize in their flagship product and attain greater economies of scale. The subcontractors deliver their orders to the “parent firm” on a specified date, and it is assembled or boxed for shipment to the buyers, usually department stores, home furnishing stores, or independent retailers.

These relationships are often set informally, but with a high degree of control from the bigger firm, which must tightly control the timing of deliveries, ensure that all colors match perfectly, check that safety and quality standards are met, and other specifications. This often leaves subcontractor firms in a highly precarious situation, as they need to invest in machinery and logistics systems to meet the specifications of their larger clients, without any guarantee that they will recoup those costs (and make a profit) through a lengthy relationship. One owner of a subcontracting firm described his firm’s role as “solving the bottlenecks for the large firms”. In his case, his firm produces the feet of armoires, the small detailed pieces that go above the doors in closets, and other such labor-intensive niches, freeing up the leading firms to focus on the more capital intensive segments of the production chain. These relationships allow the parent firms to spread out their production across several factories, such that they do not have to invest as much in machinery, land, or hiring workers, and can increase or decrease their production according to the demands of the market. 47

Another approach taken by smaller firms is to jointly produce entire living spaces through partnerships called dobradinhas. In this case, firms will jointly invest in a design plan for a particular room (a bedroom or a living room, for example) and divide their labor such that each firm can specialize in one or two furniture pieces (the bed, bedside

46 Analogous to the English expression “swimming against the current.”
47 This is a similar type of organization as the fabbrica diffusa (widespread factory) of the paradigmatic industrial districts of the Third Italy (Bagnasco 1977; Brusco 1982; Piore and Sabel 1984).
This allows the firm to invest only in those types of machines that they need for that particular piece and arrange their factory workfloors such that they achieve maximum economies of scale. These arrangements also require joint sales of products, so firms in *dobradinhas* will also jointly contract sales representatives and logistics firms to sell their products as if they came from just one seller. *Dobradinhas* require a great degree of coordination (again, design, colors, safety standards, product quality, etc.) all need to be closely controlled and matched, without the benefit of a large leading firm to ensure that all of this happens. They are also informal arrangements, such that they require a that the partners trust one another not to defect from their relationship for any number of reasons, including the decision to start producing the other’s piece in house.

For small enterprises that work as subcontractors for larger firms, the *dobradinhas* offer a path towards developing their own product lines (a form of functional upgrading) without the need to invest in the machinery, floor space, and workforce necessary to produce the furniture for entire living environments.

The owner of a medium-size firm described the process of establishing a *dobradinha* that his firm went through. He said working as a subcontractor involved dramatic and unpredictable shifts in demand because when the market was strong, they would get a lot of orders from their clients, but during slow periods, the larger firms would make everything in house. When Movelar started to dissolve in 2006, he decided to start his own design line. However, the costs of maintaining a sales department, hiring a designer, and laying out his factory floor to build multiple pieces were too high for the firm to undertake on its own, so he sought out partners with whom he could share costs through a *dobradinha*. As he described to me, he sought partners for whom the firm’s core competency, beds, would provide the strongest match:

In my relationship with my partners, it will be very hard for them to produce beds. Beds still require a very manual painting process. You can’t just put a bunch of varnish from a machine, there are nooks and crannies and curves that you have to paint with a hand spray; there is no other way. I don’t think they [his *dobradinha* partner] have the space to make beds, to be honest. When we first started the partnership, he came to me and said: I need your bed to sell more closets and you need my closets to sell more beds. That’s how we started the partnership and it will be very difficult to break it up.

The *dobradinhas* also allowed some smaller firms to develop into larger players over time. One of the two largest firms in Linhares, Panan, started in the 1980s as a small producer that gained economies of scale by specializing in closets, while partner firms did other pieces. The owner of Panan explained their evolution to me:

It is a partnership. We had commercial partners. My firm would make the closet, yours produced the bed, and theirs would make shelves, chest of drawers, or the bedside table, so that we could complete a full bedroom. We shared the same team and the same structure so that we could strengthen ourselves, share our costs and bring our products to the market. In time, we all evolved and improved and each one of us decided to move on our own two feet. Today I make all of the bedroom pieces, and they moved on to make living room furniture. We each

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48 Personal interview, August 2014.
diversified as we could.\footnote{Personal interview, August 2014.}
Panan currently has 300 employees and has shifted its structure to a subcontracting model (explained above), where they have a network of firms that produce entire pieces or specific furniture components exclusively for them and they make the final assembly in their plant for shipment to buyers throughout the country. The owner said that he is actually part owner of several of these firms, which allows him to have greater quality control in their operations yet he does not have to bear the full risk of full vertical integration.

Despite these types of partnerships, competition in the mass produced furniture industry is fierce, as the knowledge to produce these goods is largely codified and widespread. One firm owner described their activities as producing “commodities”, where firms gained competitiveness through lowering prices (achieved through greater economies of scale) and providing good customer service to their clients. Therefore, many small firms seeking to develop their own products (as opposed to working as subcontractors) seek to specialize in very specific niches that have been heretofore ignored by the bigger firms. One firm has found that the real estate markets of many cities have been producing homes with compact living spaces, so they have specialized in small, flexible furniture pieces. Another firm has been shifting their production from beds and drawers to baby cribs.

One recent innovation that promises to pull some firms in the local industry into a temporary semi-monopolistic position is the development of modular furniture collections, combining the productive efficiencies of mass production with some degree of client customization. This is a new line that has been developed by the firm Rimo (the firm started by Luiz Rigon of the pioneering Rigoni brothers), through a new company called Dinamika. Up until 2008, Rimo exported to thirty countries, taking advantage of the weakness of the real against the US dollar. A sharp drop in the value of the dollar made them abandon their export program, leaving a large amount of their operations idle. The rise of Brazil’s “new middle class” generated demand for low cost furniture with a high design content and the ability for some customization. New machinery that combined computer-aided design (CAD) technology with robotics also allowed for easier customization on a mass scale. However, the problem remained of how to combine the design specifications from clients (and their architects and interior designers) with the production side. Rimo has solved this by launching a retail brand, Dinamika, and a franchise of stores that they operate within 500 kilometers of their Linhares factory (which reaches state capitals like Vitória and Salvador as well as several medium size cities) where they can interact directly with their customers. The brand launched in 2013, and although it is too early to have conclusive findings, many see it as a promising direction for many firms in the region.

\textbf{B. Hybrid chain/territorial governance to thicken local supply chain}

One of the most pressing issues affecting the industry is the difficulty in accessing a number of critical inputs and supplies due to the distance to major urban centers, especially the industrial centers of São Paulo and the states in the south region. One solution that the furniture entrepreneurs found to address this issue is to create
partnerships between themselves and business owners in other sectors to produce the needed inputs locally, thereby thickening the supply chain in the region. One of the early examples of this approach was the need for cardboard boxes to package the furniture pieces of various sizes for shipping. Linhares firms had to import the boxes from major urban centers in the south, which required large upfront investments, storage capacity, and high transportation costs for a relatively cheap and light product. In 1999, seven investors, four of which were from the furniture industry, raised the capital to build a local box factory, Liesa, which now produces a significant portion of the boxes used by the local industry. Local firms can now make smaller, more frequent orders that match exactly what they need in terms of their workload, can increase or decrease orders in the last minute, and pay almost zero transportation costs. As plants from other industries have located in Linhares, Liesa has diversified its client base and supplies sectors like food processing, metal/machinery, juice producers, etc. Since the founding of Liesa, a number of other box factories have opened in the area.

The Liesa experience has also produced a demonstration effect for other ventures. For example, the high costs and inaccessibility of the most important and costly input in the furniture production process, the medium density fiberboard (MDF), is emblematic of this approach. MDF makes up 30 to 40 percent of production costs of a typical furniture piece, 20 percent of which is related to the cost of transporting the slabs of the material as much as 1,200 kilometers from the factories in southern Brazil. For decades, firms have engaged in various collaborative strategies for mitigating these costs, such as engaging in the aforementioned dobradinhas in order to purchase bulk amounts in more favorable conditions, maintaining large stocks of the materials in house, and, in the case of subcontracting relationships, the larger firms often supply their subcontractors with the materials. The local entrepreneurs had also received assistance from the state government to attract a plant from one of the southern manufacturers to the region, but they were never successful. In the mid-2000s, Sindimol members started to discuss the idea of establishing a partnership among themselves to build an local MDF factory that could supply them with their materials. The consulting firm Ernst & Young conducted a feasibility study and found the project to be too ambitious, and that there would not be enough local demand to build such a factory.

The idea resurfaced in 2012 and Sindimol representative approached paper pulp investors to gauge their interest. The group traveled to several other MDF factories in the south and in the northern state of Pará and hired another consulting study that showed the possibility of a profitable factory that would meet the monthly demand for MDF in the Linhares region of 15 thousand cubic meters. This small group of seven investors attracted more partners (currently at 42) by selling shares of the project until they could raise enough capital to purchase land, receive funding from BNDES, and finance German machinery with assistance from a German bank. They decided to locate the factory 100 kilometers to the north, in a small municipality called São Mateus, where they could be eligible for additional fiscal incentives for generating 150 new jobs in a region whose economy depends on sugar cane and cattle (Cordeiro 2014). They either purchased land outright or contracted with local farmers to supply the factory with eucalyptus, and started planting the forests in 2013, with the expectation that it would open in early 2018. The project will cost R$275 million, from an initial estimate of R$90 million, yet the trust among the actors maintained the group together and they accepted a longer repayment
window in exchange for a larger, potentially more profitable, but also likely riskier venture. One of the greatest benefits to the region’s firms is that they will not have to maintain large stocks of MDF on site, locking up their capital. Rather, they will be able to pick up the materials from the nearby factory as they need to fill particular orders. Several of the firm’s investors also noted that the firm is not expected to supply its shareholders exclusively or preferentially. Rather, they stressed the fact that the mix of investors from various different sectors will ensure that the firm will need to be profitable and therefore will sell the MDF at market prices (though local firms will have substantial transportation savings). This is expected to generate significant savings not just for the large firms, but also for the smaller workshops, which have also transitioned towards MDF.

C. Territorial governance and collective action through Sindimol

The central actor in the territorial governance network for the furniture industry in Linhares is the trade association that represents the firms in this segment, Sindimol. Sindimol was created in the 1987 by the local furniture entrepreneurs with the goal of establishing a collective action body to represent the sector. As is usual in Brazil, Sindimol represents local firms in collective bargaining processes with the workers’ union and is the voice of the local industry with negotiations with the state and municipal governments on matters ranging from worker safety, environmental licensing, land use, and the like. It is also represented at the state level by the Espírito Santo Industrial Federation (FINDES), which is the state chapter of the National Confederation of Industries (CNI). Currently, its membership consists of ninety firms, which employ 4,000 workers in Linhares and eleven of its neighboring municipalities.

In addition to the pro forma responsibilities of the association, much of Sindimol’s activities are focused on improving the productive capacities of its members and the local competitiveness of the industry. Several of the firms I interviewed described their relationships in Sindimol as completely distinct from their commercial practices. The owner of a small firm that supplies parts to some of the large firms explain the relationships within the association in a way that was echoed by several other firms, large and small, “Inside Sindimol we are very united, we share a lot of information. But out there, with our clients, we are each trying to take bites from one another.” The Sindimol manager is a former SEBRAE expert and a graduate of the APL management master’s degree sponsored by CEPAL. Aside from running the association’s monthly meetings, he also regularly brings in firms to run surveys of their operations, focusing on “productivity and product quality”, paying particular attention to how firms manage their affairs. “The financial side is a consequence”, he argues, “if the production side is all in order, we will consequently have satisfactory results.” He uses these surveys to target specific programs for the firms, such as ways to save on energy consumption, how to optimize the use of materials, decreasing absenteeism among employees, meeting environmental legislation requirements, and the like, all undertaken with the assistance of specialized consultants.

Unlike the association of the ornamental stones producers, Sindirochas, described in chapter 5, Sindimol has broad legitimacy among all of the segments in the industry. The leadership of the association is, not surprisingly, taken up by the most prominent medium and large-size firms in the region (Panan, Rimo, Cimol, Moverama) on a rotating basis, but smaller firms feel like they are well represented and that membership in the
sindicato brings them tangible benefits. This is true even of the micro and small firms in
the made-to-order segment, which operate completely outside the value chain of the mass
production firms, and whose success (or failure) in no way affects the leading firms in the
region. The owner of a small made-to-order workshop, for example, argued that their
primary bottleneck is the lack of skilled carpenters in the region, since their process is
very labor intensive and seen by local workers as “dirtier” and more difficult than the
operation of machinery in a larger mass production firm. Despite the fact that his
segment is fairly marginal within the local industry, he spoke positively of a project he
has been developing with the Sindimol manager to train carpenters in the local SENAI
training facilities. This entrepreneur also spoke of the benefits of attending the meetings
and being around the larger firm owners, “I am trying to learn, so to be near someone
who has been in my position makes it much easier. My idea is this: attaching myself at
the hip to those guys because a lot of times, whatever is left over from their big firm, will
be very significant for my firm, which is small.” Sindimol’s current president, owner of
the medium-sized firm Moverama, has moved to strengthen the representation of small
and micro enterprises by creating a working group specifically that will be composed of
owners of suppliers of large firms and carpentry workshops.

Sindimol also operates as a venue for creating social capital among the
entrepreneurs in the sector. Its installations are located in a large wooded lot inside an
industrial park located outside of the city’s residential center. Aside from the main office
building with working spaces and conference room, it also has a large recreation area
with a swimming pool, a churrasqueira (barbecue pit), a soccer field, and workout
facilities. The same entrepreneur who stressed the cut-throat nature of their commercial
relationships described the activities of Sindimol as such, “Our sindicato is very active:
we have lots of courses, meetings, and lectures. We have a recreation area and every
Thursday night we have our pick-up soccer game. I am always the grill master. Two
weeks ago we started a program with a personal trainer with two sessions. So our group
is very united.” Sindimol’s manager also uses every opportunity to build trust among the
entrepreneurs. For example, he is often searching for funding to take them to joint trips to
trade fairs, where he makes them share hotel rooms, takes them out to restaurants and
nights on the town so that they end up building trust and friendships. In addition to
furniture firms, other types of businesses that also participate in the production chain are
also invited and attend the meetings. For example, the manager of the box factory, Liesa,
attends the meetings (without voting rights), as do owners of local sawmills.

Sindimol and metagovernance

In addition to coordinating the internal activities of the furniture sector, Sindimol
takes a leading role in helping furniture entrepreneurs coordinate their activities with
other private sector networks as well as the public sector, a process described by theorists
as metagovernance (Jessop 1998; Sørensen and Torfing 2009). Though I discuss the
concept of metagovernance more fully in chapter 2, I use as a working definition Jessop’s
(1998, 29) notion of having actors that can undertake “inter-systemic steering”, or “the
steering of multiple agencies, institutions, and systems which are operationally
autonomous from one another yet structurally coupled due to their mutual

50 All made-to-order firms with whom I spoke voiced a similar concern.
interdependence.” Jessop notes that under a Schumpeterian definition of “territorial competitiveness”, the regions (or sectors) that can establish institutional mechanisms for this kind of coordination may “derive added value from…extra-economic institutions and relations.” Although metagovernance is generally understood as a role undertaken by state entities, in the case of Linhares, it is driven by a private sector association, which in many cases leads public and private actions to promote local economic development. In this section, I illustrate it with a discussion of Sindimol and its ability to coordinate a multiplicity of actions and networks across different scales towards improving productive conditions in Linhares.

Sindimol took an active coordination role in the process of opening an MDF production plant in the region, for example. For years, it engaged in dialogue with the state government to provide fiscal incentives to attract one of the MDF producers in southern Brazil to open a plant in the region. When these efforts failed, it hired consultants to study the feasibility of launching a plant with local capital and convened long workshops with the leading entrepreneurs in the furniture sector to discuss the venture, while also providing research on project costs, financing mechanisms, public sources of incentives, and the like. After a basic business plan was created, Sindimol hosted meetings and barbecues throughout the region where the furniture entrepreneurs could present the idea to investors in other sectors so they could put together a capital structure to move the project along. The Sindimol director described their role to me as such, “The sindicato helps with the coordination, and then we get out of the way. We also help with the conversations with the government. We introduce all of the actors, make sure they are getting along, and then move on to a new project.”

Sindimol also coordinates the relationships between the furniture sector and the municipal government in order to addressing many of the productive bottlenecks in the region. This occurs through direct participation of Sindimol in municipal matters through planning councils and other activities. One particularly illustrative issue with which Sindimol has been intimately involved is the land use conflicts generated by the location of industrial activities in residential areas. These conflicts arose as the city’s residential areas grew outwards and without proper planning and code enforcement, eventually enveloping the many industrial areas, which generates negative externalities both for the residential uses (noise, fumes, and truck circulation from the manufacturing activities) as well as for the firms, who are unable to expand their operations once they are surrounded by homes. Land values in residential areas are much higher than those occupied by industrial uses, which means higher land taxes for firms, an additional cost that chips away at the ability of firms to operate in a highly competitive sector.

As a result of these land constraints, some local firms have relocated to surrounding municipalities with a greater supply of cheap parcels, and several others are considering doing so. However, a dispersion of local firms would likely lead to the loss of a key competitive advantage, because if firms start to leave Linhares seeking lower land prices, they will lose the ability to engage in activities that require face-to-face

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51 Fred Block and his collaborators (Block 2008; Negoita and Block 2012), for example, identify this new state role as “hidden” or “networked” developmental state. Chapter 5 demonstrates the failure of such a developmental state role to emerge in the case of the ornamental stones APL in Cachoeiro de Itapemirim.
interaction, and which are crucial to the survival of the local industry, such as the *dobradinhas* and the subcontracting relationships. As Schmitz (1999a) and others have noted, external economies that arise from agglomeration are a key ingredient to achieve collective efficiencies that are crucial to the ability of small enterprises to upgrade and remain competitive.

The municipal government and Sindimol have continually worked together to find and develop land suitable for industrial activities as a way of maintaining the strong agglomeration in Linhares. In 1996, for example, a group of entrepreneurs in the sector bought a lot with one million square meters to develop as an industrial park. They subdivided the lot into several parcels, most of which have been occupied by furniture firms, but some by other industrial businesses, and one large lot at the entrance was donated to Sindimol. For decades the industrial park had poor infrastructure and circulation network, but in the previous municipal master plan, the city government paved its roads and provided lighting. Firms were able to move from the residential neighborhoods to the industrial park with low interest loans from public banks like BANDES and BNB. Land parcels in the industrial district have become very attractive to firms, and land values have increased dramatically. As a result, smaller firms are no longer able to move to the industrial park and remain stuck in the residential areas.

Sindimol has taken up the goal of working with the municipal government to create an industrial park devoted specifically to small firms, including the carpentry workshops, with subsidized land parcels that would cost one tenth (per square meter) as the parcels in the original industrial park. The land area for the new industrial park has been identified by the city’s territorial master plan and the city is negotiating its purchase. The city’s economic manager described the approach as a public-private partnership where the city will provide infrastructure and the firms will dedicate some of their land for use as public space.

In addition to the collaborations between Sindimol and the municipal government, the leading entrepreneurs in the furniture industry have also formed an association with other local business owners to address broader policy issues in the region. The Linhares Economic Development Association (ADEL) formed in 2006 to undertake a benchmarking study on various areas of public welfare such as healthcare, education, urban mobility, and the like, as part of the city’s Agenda 21 planning efforts. Based on the indicators at the time, ADEL developed a strategic plan for regional development and proposing policies to bring Linhares’ services up to par with the state. In 2014, as Espírito Santo was developing its own strategic plan (Espírito Santo 2030) and as the region had undergone significant economic growth with the installation of large industrial employers (as described in section III) ADEL decided to engage in a second planning process and publish another strategic plan. The plan was developed through a series of open workshops and in addition to a diagnostic study of the social and economic changes that the region has undergone in recent decades; it provides policy proposals in a number of areas that go well beyond direct productive or commercial activities benefiting specific sectors. For example, one of the main interventions called by the plan is to increase the number of hospital beds in the region to meet the guidelines of the World Health

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52 An expert in the furniture industry at the state’s development bank (BANDES) made this point during an interview in August 2014.
Organization. To do this, they propose the attraction of a state-funded hospital, increasing the number of family clinics, and expanding the municipal family health program to reach 100% of all residents (ADEL 2014). They have similar proposals in other areas such as urban planning, environmental preservation, education, and cultural activities. The vice president of ADEL, one of the largest furniture entrepreneurs in the region, was adamant to note that the strategic planning document should not carry the seal of the mayor or any political parties. Even so, the city’s Secretary for Economic Development says the plan has strong legitimacy within the mayor’s cabinet and will serve as a guidepost for municipal interventions in these policy areas.

As mentioned in section II, territorial approaches to productive development require governance networks (and metagovernance agents) that can mobilize resources and engage in coordinating activities at multiple institutional and governmental scales. Sindimol has undertaken this role and established fruitful relationships with state government agencies like BANDES and the governor’s Economic Development Secretariat (SEDES), quasi-public entities like SEBRAE and FINDES, or Federal-level public credit institutions like Banco do Nordeste and Banco do Brasil. These relationships allow the furniture entrepreneurs to articulate the needs of the sector while ensuring that public investments in the sector are used to promote productive upgrading, which Sabel (1994) describes as the necessary role of “developmental associations”. This relationship is evident in a number of instances described above, such as the efforts to attract (and eventually launch) an MDF producer to the region and incentives to help firms relocate their plants to the industrial district.

Another example of Sindimol’s ability to undertake vertical coordination of policies at multiple scales is its work with the state’s development bank, BANDES. Currently, Sindimol and BANDES are developing a program to help the state’s furniture firms to upgrade their productive capacities. For small firms, primarily suppliers of large firms as described above, the program creates a line of credit with favorable interest rates for firms to purchase new machinery and productive technologies. The firms are required to undergo a consulting assignment with experts from SEBRAE or FINDES, after which they are given a set of recommendations of new procedures they can undertake to improve productivity. BANDES sees these investments as lower risk (therefore allowing for more favorable terms) since the consulting will help firms to improve in areas that will directly enhance their profitability. For medium and large enterprises Sindimol and BANDES decided to focus the investments on modular furniture lines such as the one developed by Rimo. Modular furniture is also mass-produced, but allows for a high degree of customization to meet a client’s (and their architects or interior designers) specifications using computer aided design (CAD) technologies. This process requires firms to establish a venue for direct interaction with its clients, such as their own franchised stores. The BANDES program will provide credit for furniture producers to establish direct retail locations in order to facilitate the shift towards modular production. In this case, the investment in a commercial enterprise is directly linked to productive upgrading, as it will allow firms to enter into more profitable niches of the furniture market.
VII. Conclusion

This chapter explores the evolution of the furniture industry in Linhares, Espírito Santo, and a process that has driven the development of the region despite highly unfavorable conditions. Building on the analysis of chapter 3, I show that the organization of a governance network led by the producer’s association, Sindimol, but which also includes the municipal government, state agencies, the development bank BANDES, as well as a broader segment of the local entrepreneurial class, led to the promotion of a territorial approach to APL development, which in addition to narrow sectorial policies, also featured broad-based interventions on local public goods and the strengthening of regional institutions. The implementation of such an approach required horizontal coordination between a multitude of local actors (public and private) as well as the ability to engage vertically with actors and resources at higher scales. I argue that the ability to establish these governance structures along the local production chain and more broadly across the territory play a significant role in allowing local firms to compete with much larger and better situated furniture clusters from other regions in Brazil, as well as foreign producers. Within a few decades, the region has been able to shift from coffee production, to made-to-order production, to mass production, and it is currently attempting to shift towards modular furniture. In each of these transitions the role of governance has been paramount.

In the next chapter I contrast the Linhares story with the cluster of ornamental stones in Cachoeiro de Itapemirim, a city located in southern Espírito Santo. In this case, what was initially a territorial approach to APL development morphed into narrow sectorial policies that were driven largely out of commercial concerns. Although certain segments of the APL have seen strong growth in recent decades and the upgrading of activities towards higher value added niches, the local governance network is quite narrow and dominated by only a few firms. As a result, the policies also tend to be narrowly implemented and out of reach for most of the region’s firms and do not generate economic spillovers for the region.
Chapter 5:
From territorial to sectorial development in Cachoeiro de Itapemirim, Espírito Santo

I. Introduction

In this chapter I analyze the evolution of the ornamental stones cluster in the region around Cachoeiro de Itapemirim in southern Espírito Santo, and how it came to be one of the most important exporters of marble and granite in the world. As in the case of the wood and furniture cluster in Linhares explored in the previous chapter, marble and granite emerged as driver of the regional economy in the 1960s and 1970s, with the decline of coffee as a “monoculture” in Espírito Santo. In the early years of the cluster, a combination of private-sector initiative and state government interventions promoted a territorial approach to the development of the industry, investing in human capital formation, the development of local technological capacity, and thickening of the supply chain. In recent years however, the sector’s governance has moved aggressively towards a commercial strategy and the policies have become much more targeted and sectorial, as the framework developed in chapter 3 would predict.

I describe the overall research methods used in this dissertation in chapter 1. Specifically, for this chapter, I base my findings on interviews with firm owners, industry association representatives, municipal and government officials, bankers, researchers, and other actors engaged with the governance of the APL. I conducted these interviews between 2012 and 2014 in which I visited Cachoeiro twice and Vitória five times. I also draw on industry statistics published by the most influential publication on the global ornamental stones value chain (Montani 2013) and Espírito Santo’s stones export lobby association (CentroRochas), as well as socioeconomic data from Brazilian government sources. Wherever possible, I also triangulated the data from the interviews with published reports, industry association meeting minutes, existing research papers and articles, and other sources.

This chapter is organized in 5 parts. The next section describes trends in the ornamental stones industry globally, showing Brazil’s increasingly important role. Section III discusses the role that the ornamental stones industry has played in the regional economy, and section IV shows the evolution of the regional industry, which initially benefited from territorial development policies and with its consolidation in the early 2000s, shifted towards a more sectorial approach. Section V provides some concluding thoughts and comparisons to the Linhares case analyzed in chapter 4.

II. The global and domestic ornamental stones industry

The ornamental stones industry can be best understood as a valuable cog in a larger global value chain for real estate and civil construction, which absorbs roughly 75 percent of its production (Montani 2013). Trends in the industry are driven by construction cycles throughout the globe and therefore, unsurprisingly, have its biggest markets for final products in the United States, China, and, in recent decades, the
booming oil state cities such as Abu Dhabi and Dubai. Marble has featured as an important construction material for millennia and over the last few decades, granite has also emerged as a valuable stone for many types of construction, such as outdoor uses and counter spaces. The growing demand for marble as a durable and attractive building material has been particularly beneficial to middle-income countries like Brazil, Turkey, and India, who have large and diverse deposits and also a relatively modern logistics infrastructure that allows for the extraction and transportation of the materials to their main metropolises and to ports for export. In 2012, China, India, Turkey, and Brazil accounted for 60 percent of the extracted stones in the world while Europe produced only 20 percent (although it is responsible for higher-order functions like processing and machinery production, as will be discussed later). As table 5.1 shows, these four countries dramatically increased their participation in the ornamental stones industry between 1996 and 2012 and surpassed Italy, the former leader in the industry, which decreased its participation in relative and absolute terms, going from 8.25 million tons and 17.7 percent of the global supply of extracted ornamental stones in 1996 to 7.25 million tons and 5.8 percent market share in 2012. During this period, Brazil more than tripled its gross production of ornamental stones (from 1.9 to 7.5 million tons) and increased its participation from 4.1 to 6.1 percent.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHINA</td>
<td>7.5</td>
<td>38</td>
<td>407%</td>
</tr>
<tr>
<td>INDIA</td>
<td>3.5</td>
<td>17.5</td>
<td>400%</td>
</tr>
<tr>
<td>TURKEY</td>
<td>0.9</td>
<td>11.5</td>
<td>1178%</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>1.9</td>
<td>7.5</td>
<td>295%</td>
</tr>
<tr>
<td>ITALY</td>
<td>8.25</td>
<td>7.25</td>
<td>-12%</td>
</tr>
<tr>
<td>IRAN</td>
<td>2.5</td>
<td>7</td>
<td>180%</td>
</tr>
<tr>
<td>SPAIN</td>
<td>4.25</td>
<td>5.25</td>
<td>24%</td>
</tr>
<tr>
<td>EGYPT</td>
<td>1</td>
<td>3</td>
<td>200%</td>
</tr>
<tr>
<td>PORTUGAL</td>
<td>1.95</td>
<td>2.75</td>
<td>41%</td>
</tr>
<tr>
<td>USA</td>
<td>1.35</td>
<td>2.5</td>
<td>85%</td>
</tr>
<tr>
<td>GREECE</td>
<td>1.8</td>
<td>1.4</td>
<td>-22%</td>
</tr>
<tr>
<td>FRANCE</td>
<td>1.15</td>
<td>1.1</td>
<td>-4%</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>36.05</td>
<td>104.75</td>
<td>191%</td>
</tr>
<tr>
<td>OTHERS</td>
<td>10.45</td>
<td>18.75</td>
<td>79%</td>
</tr>
<tr>
<td>WORLD</td>
<td>46.5</td>
<td>123.5</td>
<td>166%</td>
</tr>
</tbody>
</table>

Source: Montani (2013)

However, analyzing import and export statistics disaggregated by type of stone (marble and granite) and level of processing (raw block and processed slabs or products) shows that countries with a reduced role in extraction play a significant role, as

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53 The discussion of the global and domestic ornamental stones industries in this section draws from Montani (2013), unless otherwise noted.
processors or importers, in the stones industry, as table 5.2 illustrates. Italy, for example, imports almost 6 percent of traded raw granite and, along with the marble extracted domestically, exports a substantial amount of processed stones. Countries like Turkey and India, on the other hand, export a significant percentage of the world’s raw marble and granite (respectively), but have a much smaller share of processed stones exports. The United States, which does not import or export much raw stones, is a significant importer of processed marble and granite, accounting for 13 percent of all trade in that segment. Of the total amount of processed stones imported by the United States, 25 percent is purchased from Brazil and 21 percent from China, as shown in input-output tables organized by Montani (2013). Importers from the United States include large home improvement retailers such as Lowe’s and Home Depot or specialized stones retailers that produce countertops, construction tiles, and the like.

Table 5.2. Exports and imports of marble and granite products (in 1,000 tons) by select countries in 2012

<table>
<thead>
<tr>
<th></th>
<th>Raw Marble&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Raw Granite&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Processed Stones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
</tr>
<tr>
<td>CHINA</td>
<td>118</td>
<td>10,080</td>
<td>1,413</td>
</tr>
<tr>
<td>INDIA</td>
<td>229</td>
<td>586</td>
<td>5,537</td>
</tr>
<tr>
<td>TURKEY</td>
<td>5,227</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>10</td>
<td>NA</td>
<td>1,142</td>
</tr>
<tr>
<td>ITALY</td>
<td>1,379</td>
<td>317</td>
<td>158</td>
</tr>
<tr>
<td>USA</td>
<td>145</td>
<td>27</td>
<td>101</td>
</tr>
<tr>
<td>WORLD</td>
<td>14,590</td>
<td>12,576</td>
<td>23,451</td>
</tr>
</tbody>
</table>

<sup>a</sup> Includes other similar calcareous stones.
<sup>b</sup> Includes other similar siliceous stones.


A. The ornamental stones industry in Brazil

The ornamental stones industry in Brazil is young, attaining a level of relative importance in the domestic market in the 1950s, driven by the demand for marble generated by the construction of the new Federal capital, Brasília, completed in 1960. The industry grew slowly for the next decades with rising demand from the domestic market. It has become an important global player since the 1990s, particularly after deposits of high quality granite were discovered throughout the country (in addition to the marble found in southern Espírito Santo), which met the growing demand by the US market for processed slabs and by China and European countries for raw blocks. Brazil has thousands of types of marble and granite in deposits that Montani (2013) describes as “endless”, and roughly 900 firms operate between 1500 and 1800 quarries. Siliceous materials (like granite) are more widespread, while calcareous stones such as marbles are found predominantly in the southern part of Espírito Santo state.

The largest producer of raw stones in Brazil is the small state of Espírito Santo. Although the state only occupies roughly 0.5% of the country’s landmass, Espírito Santo’s quarries extracted 3.6 million tons of marble and granite in 2012, or 40 percent of the country’s total, as shown in table 5.3. The neighboring states of Minas Gerais and Bahia, which produce 22 and 8 percent of the total, respectively, are also important
sources of extracted ornamental stones. Bahia is the source of particularly valuable and rare varieties of granite with darker, “chocolate” toned colorations. However, ornamental stones extraction, particularly granite, is widespread across the Brazilian territory, with as many as 15 out of 27 states providing at least 100 thousand tons of gross production in 2012. On the other hand, the processing of raw blocks into slabs is much more concentrated in Espírito Santo, which is responsible for more than 70 percent of the industrial transformation in the sector (the northeastern state of Ceará is the second biggest producer with 7 percent of the total). Even the states that concentrate much of Brazil’s industries, like São Paulo, Rio Grande do Sul, and Rio de Janeiro do not rise above 3 percent of total ornamental stones processing. As I will discuss later, the transformation industry in Espírito Santo itself is largely concentrated around the city of Cachoeiro de Itapemirim, in the southern part of the state, which emerged as an important region in the sector because of its deposits of marble, but now receives and processes granite blocks from throughout Brazil for domestic and international markets.

Table 5.3. Production of ornamental stones by state in Brazil in 2012

<table>
<thead>
<tr>
<th>State</th>
<th>Gross Production</th>
<th>Processing Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000 Tons</td>
<td>Share</td>
</tr>
<tr>
<td>Espírito Santo</td>
<td>3,600</td>
<td>40%</td>
</tr>
<tr>
<td>Minas Gerais</td>
<td>2,000</td>
<td>22%</td>
</tr>
<tr>
<td>Bahia</td>
<td>700</td>
<td>8%</td>
</tr>
<tr>
<td>Ceará</td>
<td>570</td>
<td>8%</td>
</tr>
<tr>
<td>Parnaíba</td>
<td>430</td>
<td>5%</td>
</tr>
<tr>
<td>Goiás</td>
<td>280</td>
<td>3%</td>
</tr>
<tr>
<td>Rio de Janeiro</td>
<td>200</td>
<td>2%</td>
</tr>
<tr>
<td>R.G. do Sul</td>
<td>120</td>
<td>1%</td>
</tr>
<tr>
<td>São Paulo</td>
<td>100</td>
<td>1%</td>
</tr>
<tr>
<td>Other States</td>
<td>1,000</td>
<td>11%</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>9,000</td>
<td>100%</td>
</tr>
</tbody>
</table>


III. Ornamental stones as a driver of regional development in Cachoeiro de Itapemirim

Similar to Linhares, Cachoeiro de Itapemirim is one of the sub-regions in Espírito Santo that emerged as centers of economic development in the 1970s through state policies to promote the development of the interior in order to diversify the Capixaba economy (discussed below). It developed during an earlier period than Linhares (the turn of the 20th Century), benefiting from its location alongside the Itapemirim River, which allowed it to become the first city in Espírito Santo (and one of the first in Brazil) to have

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54 Capixaba is the term used to describe someone or something from Espírito Santo.
access to electricity. It currently has the biggest population and largest economy in Espírito Santo outside of the Vitória Metropolitan Area.

Cachoeiro’s population and economy have undergone similar transformations as Linhares in recent decades. As shown in table 5.4, the number of residents has increased from 140 to 190 thousand between 1991 and 2010, and what was already a highly urbanized municipality (82 percent urban in 1991) is almost entirely urban at 91 percent. Since 2000, the municipal GDP has grown by 2.8 percent, which is a lower rate than Linhares (6.3 percent) and Espírito Santo (5.8 percent) and Brazil (4.3 percent). Between 1991 and 2010, it made similar improvements to Linhares in its Human Development Index (from a “low development” score of 0.47 to a “high” score of 0.72 between 1991 and 2000), significantly reducing poverty rates (from 46 to 11 percent), eliminating extreme poverty (currently at 2.5 percent), and reducing income inequality (reducing the Gini coefficient more rapidly than Espírito Santo and Brazil, from 0.60 to 0.52).

A. The ornamental stones cluster in Cachoeiro de Itapemirim

As discussed in chapter 4, the Espírito Santo economy underwent important transformations starting with repeated shocks introduced by volatility in global coffee prices in the 1960s. As a result, a series of actions by governors (appointed by the military regime that seized power in 1964) sought to diversify the state’s economy by developing sectors other than coffee, particularly in industry, as well as promote economic activities in the interior of the state, a process that came to be known as interiorização. Villaschi, Felipe, and Oliveira (2011) highlight three important elements to understand the evolution of the Capixaba economy over the past 50 years. First, the state government invested heavily in the attraction of large enterprises such as the mining giant Companhia Vale do Rio Doce following a policy called “Projects of Great Impact” (PGI) in the 1970s. The authors argue that this approach led to a “relative dis-autonomy” of the state, as these companies established satellite plants and branches that followed only the mandates of their corporate offices and were generally disconnected from the state’s economy, other than the low-level jobs they generated. However, the PGIs did generate limited externalities, which combined with the state’s more organic industrialization process led to the creation of a number of sub-regional complexes of small and medium enterprises (SMEs), especially in the interior of the state.

After Brazil’s democratic opening in the 1980s, Espírito Santo experienced a series of crises of governability, as the electorate became increasingly fragmented among small parties due to disillusionment generated by corruption, squandering of resources, and bad governance. As a result, the state was never able to form a coalition to promote industrial and economic development as was the case with some of Brazil’s “success cases” during this period such as Minas Gerais (Montero 2001) and Ceará (Tendler 1997) and the development that occurred was fragmentary and largely led by the private sector. The exception to the “dis-autonomy of the state” described by Villaschi et al is the state’s development bank, BANDES, which started to invest in several of the sub-regional agglomerations of SMEs described above, particularly through the creation of technology centers, which came to be known as centrinhos, or “little centers”. Perhaps the most successful of these centers has been the Marble and Granite Technology Center (CETEMAG) in Cachoeiro de Itapemirim, which gave the fledgling marble and granite industry in this region a boost in the 1980s, as is discussed below.
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>146,825,475</td>
<td>2,600,618</td>
<td>143,449</td>
<td>169,872,856</td>
<td>3,097,498</td>
<td>174,879</td>
<td>190,755,799</td>
<td>3,514,952</td>
<td>189,889</td>
</tr>
<tr>
<td>Annual population growth (%)</td>
<td>1.74%</td>
<td>2.12%</td>
<td>2.43%</td>
<td>1.09%</td>
<td>1.19%</td>
<td>0.79%</td>
<td>1.69%</td>
<td>1.49%</td>
<td>0.89%</td>
</tr>
<tr>
<td>Urban population (% of total)</td>
<td>76%</td>
<td>74%</td>
<td>82%</td>
<td>81%</td>
<td>79%</td>
<td>89%</td>
<td>84%</td>
<td>83%</td>
<td>91%</td>
</tr>
<tr>
<td>GDP (in R$ 1,000)</td>
<td>1,179,482,000</td>
<td>23,248,586</td>
<td>939,961</td>
<td>1,682,208,371</td>
<td>36,642,686</td>
<td>1,205,107</td>
<td>1,648,874</td>
<td>351,492</td>
<td>1,189,889</td>
</tr>
<tr>
<td>Annual GDP growth</td>
<td>4.3%</td>
<td>5.76%</td>
<td>2.82%</td>
<td>2.82%</td>
<td>5.42%</td>
<td>2.97%</td>
<td>3.74%</td>
<td>3.92%</td>
<td>2.88%</td>
</tr>
<tr>
<td>Human Development Index</td>
<td>0.61</td>
<td>0.51</td>
<td>0.52</td>
<td>0.68</td>
<td>0.64</td>
<td>0.63</td>
<td>0.73</td>
<td>0.74</td>
<td>0.75</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>36.0%</td>
<td>39.3%</td>
<td>31.1%</td>
<td>28.7%</td>
<td>22.8%</td>
<td>16.4%</td>
<td>14.0%</td>
<td>9.5%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Extreme poverty rate</td>
<td>15.6%</td>
<td>16.4%</td>
<td>11.1%</td>
<td>11.4%</td>
<td>7.0%</td>
<td>4.1%</td>
<td>5.3%</td>
<td>2.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>0.61</td>
<td>0.60</td>
<td>0.57</td>
<td>0.60</td>
<td>0.60</td>
<td>0.54</td>
<td>0.53</td>
<td>0.56</td>
<td>0.52</td>
</tr>
</tbody>
</table>

(1) Based on 2000 RS. GDP and growth rates not calculated for 1991 because IPEA used a different methodology so results would not be comparable.

Source: IBGE Census, IPEA, United Nations Development Program.

Table 4.1. Demographic and socio-economic indicators for Brazil, Espírito Santo, and Cachoeiro de Itapemirim (1991-2010).
The ornamental stones sector is an important piece of Espírito Santo’s economy, accounting for 7% of its GDP. The territorial base of the cluster is the municipality of Cachoeiro de Itapemirim and its neighboring municipalities in the southern part of the State, as shown in figure 5.1. This region is home to large, first-rate marble deposits of various types, including rare green and black colorations that are highly valued in US and European markets. The region’s firms span all segments of the production chain, and often “import” granite blocks from other parts of the state, and neighboring states like Bahia for processing into polished and unpolished slabs for export, or into final products such as construction tiles, countertops, sinks, and the like. In the past three decades, other sectors have emerged to support the ornamental stones cluster, such as local production of machinery, specialized inputs, and services targeting ornamental stones production and sales. Two other regions play important roles in this sector: northern Espírito Santo, particularly the municipality of Nova Venécia and its neighbors, provide much of the granite that is processed in Cachoeiro; and the Vitória Metropolitan Area includes hundreds of ornamental stones workshops (marmorarias), which provide an important market for polished slabs produced in Cachoeiro, as well as the regional shipping port.

Figure 5.1. The Cachoeiro de Itapemirim region

Source: Author’s mapping of IBGE georeferenced data.

The ornamental stones production chain has four distinct phases (shown in figure 5.2). The first step is extraction of marble or granite blocks from quarries. In the second step, the blocks are cut into one-inch thick slabs in teares, after which they are polished and exported or sold to local stones workshops (marmorarias), where they are processed into sinks, countertops, furniture, and tiles used in the construction sector. The first three phases are capital intensive, benefiting in particular from the use of advanced
technologies from Europe, such as the diamond cable, which allows for large productivity gains over conventional cutting methods like blades. These two phases tend to be dominated by medium-to-large firms, which often consolidate both activities (along with polishing) in-house. The last phase, the processing of slabs into consumer-ready products, is more labor intensive and requires specialized workers able to do manual detailed work, thus resulting in smaller profit margins. Firms in this phase, the *marmorarias*, which make up half of all firms in the sector, are usually micro and small enterprises, and the market for their products is highly competitive. Although there have been no recent detailed firm surveys of the ornamental stones sector in recent years, a 1998 survey (Villaschi and Sabadini 2000) 82% of firms in Espírito Santo were micro-enterprises, 16% were small, less than 2% were medium, and there were no large firms. Interviews revealed that a number of large firms have emerged in the past decade, either through consolidation of smaller firms, or, more commonly, the growth of smaller firms. However, the overall structure of the industry remains similar.

**Figure 5.2. Ornamental stones production chain in Espírito Santo**

![Ornamental stones production chain in Espírito Santo](image)

Source: Author’s conceptualization.

**B. Upgrading in Cachoeiro’s ornamental stones APL**

Since the 1990s, there have been some important changes in the cluster. Many firms within the ornamental stones cluster have been able to functionally upgrade (Humphrey and Schmitz 2000) their production to activities in the value chain that generate higher returns. Over the past two decades, firms have moved from extraction of marble and granite blocks to processing activities, such as cutting blocks into slabs, and polishing slabs for export or final processing into consumer goods, thus shifting their activities up the global value chain (Gereffi 1994) of ornamental stones. Figure 5.3, for example, shows the location quotients for “mineral extraction” and “processing of non-metallic mineral products” in the Cachoeiro region (including surrounding...
municipalities) compared to the rest of the state between 2007 and 2012.\textsuperscript{55} The figure shows that the region is highly specialized in both extraction and processing of ornamental stones, \textit{vis-à-vis} the rest of the state, indicating strong clustering effects. It also shows that the region has become more specialized in processing of the blocks rather than just their extraction.

**Figure 5.3. Location quotients for mineral extraction and non-metallic mineral products processing in Cachoeiro de Itapemirim region (2007-2012)**

![Graph showing location quotients for mineral extraction and processing in Cachoeiro de Itapemirim region (2007-2012)](image)

Source: Author’s calculations using Ministry of Labor (CAGED) data.

Similarly, export data from the industry’s association of exporting firms (CentroRochas) shows that the State’s exports of ornamental stones have shifted from raw blocks to polished slabs. In 1998, the dollar value of exports of raw blocks exceeded that of polished slabs, even though the unit cost of the latter exceeds that of the former by a factor of 3. Villaschi and Sabadini (2000) note that at the start of the millennium, firms were only beginning to explore international markets for polished slabs, and that most of the regions exports were undertaken by subsidiaries of European firms selling raw blocks, under exclusive contracts, to be processed by the parent firm in its home country (primarily in Italy). By 2012, Espírito Santo firms exported US$680 million in polished slabs and $120 million in blocks. The primary destination of raw block exports from the

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\textsuperscript{55} The location quotient is a measure of local specialization in a particular industry or sector. It is the proportion of local employment in a given sector divided by that same proportion at a greater aggregate scale; in this case, statewide employment in ornamental stones. A quotient of 1.00 means that the locality has the same proportion of employment in that sector as the rest of the state.
region are China, which imported 60% of concrete blocks, and Italy, which imported 76% of the marble. The two countries are major competitors for Brazilian firms in terms of productivity of labor (China) and capital (Italy). The primary destination of polished slabs, on the other hand, is North America, which imports more than 80% of the region’s exports. It is no surprise, therefore, to find that exports from the region closely followed the dynamics of the US housing market crisis, with a steep drop between 2007 and 2009 and gradual recovery since (as shown in figure 5.4). The movement towards exporting processed stones to the US market clearly illustrates a shift where the region produces goods that are closer to the final consumer and local firms are able to keep a higher share of the total value.

Figure 5.4. Exports of marble and granite blocks and polished slabs from Espírito Santo in US$1,000s, adjusted for inflation (1998-2012)

![Graph showing exports of marble and granite blocks and polished slabs from Espírito Santo in US$1,000s, adjusted for inflation (1998-2012)]

Source: Author’s calculations using CentroRochas data.

IV. The development of a cluster: from a territorial to a sectorial approach

The governance of the ornamental stones APL in Cachoeiro de Itapemirim has had two important moments that have shaped the way the cluster has developed. First, driven primarily by an impulse to modernize the sector in the late 1980s and early 1990s, entrepreneurs and state officials created local institutions to import and develop new technologies and help local workers attain the necessary skills to improve productivity by local firms. As external conditions changed, with the loss of trade protection for local machinery manufacturers and growing global demand for Cachoeiro’s stones, the sector’s
governance came to be dominated by an export orientation that was only applicable to a smaller subset of firms, and attempts at broader territorial policy efforts failed, while narrow sectorial interventions became the norm.

A. Building local institutions for APL development: the role of BANDES and CETEMAG

According to most accounts, the fledgling marble industry around Cachoeiro, which emerged in the 1950s and had not developed beyond a number of rudimentary sawmills by the late 1970s, organized itself into a denser productive system with the beginnings of an organized governance structure with the creation of the Marble and Granite Technology Center (CETEMAG).\textsuperscript{56} The president of the state’s development bank, BANDES, brought together Cachoeiro’s leading entrepreneurs for a meeting in 1987 to brainstorm the sector’s most pressing productive challenges. BANDES believed that the sector’s official trade association, Sindirochas, had become a vehicle to maintain low worker salaries (through monopsonistic wage negotiations) rather than a “developmental association” concerned with improving the sector’s technological and productive capabilities. BANDES conducted a survey of the sector’s entrepreneurs and found that their primary concerns included the poor quality of domestic machinery\textsuperscript{57} and the lack of qualified workers. That same year, BANDES financed the creation of CETEMAG to function as a not-for-profit center to help firms adopt new technologies, sponsor training programs for workers, and generally serve as a trade association focusing specifically on productive issues (as opposed to Sindirochas which had become focused on labor relations and other legislative issues).

The overarching goal of CETEMAG was to modernize the sector and bring its products and processes up to the standards achieved by firms in Europe’s marble centers like Italy and Spain. Though initially it did not have actual physical facilities, CETEMAG brought consultants to examine the sector and diagnose technical demands along the productive chain, as well as propose interventions that would generate spillovers up and down stream. It began to develop plans to create a technical school to train factory floor workers and managers and to rationalize production techniques to achieve the greatest possible impact. It also had a vision, early on, of the importance of establishing collaborative relationships between firms, particularly stones producers and machinery manufacturers.

Working with the sector’s entrepreneurs and hired consultants, CETEMAG identified that improvements made to the \textit{serrarias} (sawmills) would have the greatest impact on the local production chain. As discussed above, sawmills take the raw blocks form quarry operators and cut them into slabs that can be polished and exported or sold to \textit{marmorarias} (marble workshops) for final transformation into consumer products. At this time, despite the fact that Cachoeiro was already one of the primary marble production centers in Brazil, the cutting process was done through a mostly intuitive process. For example, workers would “eyeball” the amount of abrasive materials required for cutting blocks into slabs rather than relying on standardized methods. During the

\textsuperscript{56} This section draws from Abreu (2011) as well as personal communication with the author, who worked at BANDES in the late 1980s.

\textsuperscript{57} At the time, ornamental stones firms were effectively barred from importing machinery under Brazil’s import substitution industrialization (ISI) program.
cutting process, they would separate slabs that weighed thousands of kilos with small wooden blocks which could break or be displaced, threatening workers’ health, damaging the stones, and causing delays in the production process.

CETEMAG believed that “scientific” improvements to these processes would allow more efficient use of blocks, thus increasing their value and benefiting the quarries upstream, and also improving the quality and lowering the costs of slabs sold downstream to the workshops. The rationalization of production also allowed the sawmills to create quality standards that could be shared with the quarries, such as requiring neat 90-degree angles and even surfaces in the blocks, which improved the overall quality of the production process. These improvements were undertaken in close collaboration with a local machinery firm, CIMEF, which developed a saw and a polishing machine to meet these new requirements. CETEMAG also sponsored internships for twelve undergraduate engineering students from UFES in Vitória in the leading sawmills, who took detailed notes on specific steps of the production process, and determined that firms were operating at less than half of the capacity that domestic machines allowed (1,000 square meters instead of 2,500). CETEMAG also began to establish relationships with universities in Italy, Spain, and Portugal to begin exploring the possibility of importing the technologies to produce diamond cable machinery, which was the sector’s technological frontier at that time.

The presence of a local machinery firm in close geographic proximity of stones firms undertaking various activities in the production chain generated real competitive advantages for local firms vis-à-vis those in the south of Brazil. São Paulo and Santa Catarina, for example, had started to develop specializations in cutting blocks of marble from Cachoeiro. During this period, CIMEF was the only local manufacturer of ornamental stones machinery, and one of two in Brazil (the other one was in São Paulo). CIMEF noted that local stones firms were frustrated with purchasing machinery from São Paulo, as replacement parts and servicing were quite expensive and time consuming, and decided to enter the local market with an “entry level” product that would be affordable to local firms. In its beginning, in the early 1980s, CIMEF would help firms that could not get conventional business loans from banks (most small and medium enterprises) by financing its own products to local businesses, therefore creating a captive regional market. CETEMAG helped CIMEF improve their products and soon the firm was manufacturing original machinery with technologies that had not yet been developed in São Paulo or Europe. This included a potent blade cutting machine as well as a “multi-head” polishing system that replaced the rudimentary single-head method in use at the time. These competitive advantages helped the region emerge as the primary ornamental stones location in Brazil.

Although productive challenges defined many of the early the governance efforts, increasing the visibility of the cluster at the national scale was also a priority. With this in mind, BANDES sponsored a local trade fair, the Cachoeiro Stone Fair, which eventually became one of the most important events in the global ornamental stones industry. According to several accounts, local entrepreneurs became aware that firms in the state of São Paulo, which processed much of the stones production from Cachoeiro, planned to host the first trade fair of its type in late 1989. With funding from BANDES, CETEMAG entered into a contract with the local cattle association to borrow their exposition center in exchange for making infrastructural improvements to it. In organizing the fair ahead of
São Paulo, Cachoeiro established itself as the primary region for ornamental stones in the country.

B. An exogenous shock and the shift towards a sectorial approach

The beginning of the end of the territorial approach to the APL’s development came with the rapid “opening” of the Brazilian economy in the early 1990s by President Fernando Collor de Mello who, prior to being impeached from office on corruption charges by the Federal legislature, dismantled several trade protections on Brazil’s capital goods industry, including the manufacturers of ornamental stones machinery. The opening had a double-edged effect on the APL. On the one hand, it made possible the purchase of cutting edge technology from abroad by the leading local firms, allowing them to move into more profitable niches of the global value chain, as described in the previous section. As the machinery industry in China emerged in the late 1990s and early 2000s, upgrades to the production process became even more accessible. Even so, Montani (2013) estimates that only about 20 percent of firms in Espírito Santo use the latest technology, diamond cables, while 80 percent continue to use “first generation” conventional blades. As a result, the sector’s productivity (500 tons of stones per machine operator) has never caught up with the level of European countries. As less expensive machines from Italy (and later China) entered the Brazilian market, firms like CIMEF could not compete, and the region never continued to develop its capacity in that area. Only one other machinery firm currently exists in the Cachoeiro region (Rochaz), yet stones experts claim that Brazilian machines are of inferior quality and remain afloat largely due to financial incentives given to small firms to purchase domestic capital goods (such as the BNDES card mentioned in chapter 1 and other lines of credit). Brazil is currently the third biggest importer of machinery, importing about $100 million in 2012, while only exporting about $1.4 million, primarily to Latin American countries (Bolivia, Peru, Argentina, and Paraguay).

With the settling of one of the most pressing productive issues facing the APL, access to machinery, leading firms began targeting their efforts at expanding the markets for the region’s raw and processed stones. The greatest accomplishment in this direction has been the consolidation of two trade fairs that have become important nodes in the global ornamental stones industry. The Cachoeiro Stone Fair currently attracts 25,000 visitors from every state in Brazil and 19 foreign countries, and a second fair has been held in the state capital, Vitória, since 2003, which is now the main event in the industry in Brazil. Leading entrepreneurs in the sector also formed a lobby organization, CentroRochas, to promote public policies that would facilitate exports from the region. In 2012, for example, they successfully lobbied to include ornamental stones as one of a few strategic sectors that would receive payroll tax abatements in a Federal bill to spur exports (Lira 2012). They also organize courses to help member firms position themselves to enter the US market under the General Preference System, avoid paying tariffs, and navigate legal and bureaucratic hurdles.

Metagovernance failures: RedeRochas and the MIF/FINDES project

As the target of governance efforts narrowed towards sectorial development driven by commercial concerns, attempts to promote broader territorial policies through metagovernance failed repeatedly. In 2001, for example, a partnership between the Federal Ministry of Science and Technology and several State and local actors formed
RedeRochas, an attempted governance network with the intent of broadening the sector’s policy approach and pursuing goals like increasing firm competitiveness, improving working conditions, and meeting environmental standards. In RedeRochas the metagovernance role was undertaken by SEBRAE, working closely with SindiRochas a number of other important actors like BANDES, CrediRochas (the credit cooperative), SindiFer (the machinery trade association), SindiMármore (the employees’ union), and CETEMAG coordinated by outside consultants (RedeRochas 2007). During this time, the Federal government was making a concerted effort to support industrial clusters through its APL policies, focusing particularly on fostering cooperation among firms, incorporating and generating innovative practices, and improving competitiveness. The governing body created a number of working groups, made up of individual firms and representatives from government agencies or universities, with specific targets such as workforce and managerial training, technological development, environmental preservation, financing, transport logistics, tax legislation, mining and environment, and marketing and communications.

The most successful of the working groups created under RedeRochas was the “Continuous Improvements Working Group” (CIWG), which provided a platform for firms to discuss common challenges related to the production process, and seek collective solutions. Through the CIWG and other working groups, RedeRochas developed projects that directly targeted small firms with low profit margins, such as collective purchasing agreements and hiring design consultants to work with marmorarias to improve the quality of their products. According to Villaschi and Sabadini (2000), the RedeRochas working groups were successful in creating a spirit of horizontal cooperation between firms in the sector. In a 2003 survey, more than half of firms surveyed stated that they had worked collectively with other firms --through the CIWG-- to improve their final products (RedeRochas 2006). Several actors interviewed in March and June 2012 confirmed that the pragmatic focus of the CIWG, with projects that directly benefited firms throughout the production chain, created the environment for the most collaborative period of the cluster’s governance. The goal here was to replicate the model of the early BANDES/CETEMAG governance efforts where the actors identified specific bottlenecks where targeted interventions could have the greatest potential to generate spillovers up- and downstream.

Clusters can benefit from strategic planning processes that bring diverse interests to agreement, and in fact such a process for the marble producers in Andalusia, Spain, led skillfully by an intermediary, led to a shared vision for cluster development and governance (Barzelay 1991). Near the end of the RedeRochas effort, in early 2008, it conducted a strategic planning process. Participants came to an agreement that the most important objective would be to improve management capacity of businesses. Four other issues were lower priorities -- marketing, environmental issues, technological innovation, and diversifying markets – while logistics, predatory competition, business default, and taxes were priorities for just a few participants. However, the governance efforts were cut short before the visioning exercise was completed and the group had a chance to formally produce a strategic plan.

Collective action has been unsuccessful in trying to incorporate small firms into the export base. As mentioned above, the sector has been able to grow its exports in the past two decades, particularly by exporting polished slabs. The firms that are able to
participate in global markets, however, are only medium to large enterprises performing extraction, cutting, and polishing. Small-scale marmorarias, which make up the majority of all ornamental stones firms in the state, have generally not been able to break into international markets or luxury domestic markets (São Paulo and Rio de Janeiro, primarily). Through RedeRochas, SEBRAE attempted to form small groups of firms (less than 10) to hire design and marketing consultants with the goal of differentiating their products and making them more suitable for exports. These efforts were largely defeated by the financial crisis of 2007-2009, which severely affected the US real estate market, the largest importer of the sector’s products. In the words of a marmoraria owner, the crisis “ended the foreign market.” Since then, SEBRAE’s goal has shifted towards the “internationalization” of micro and small enterprises in several sectors, or inserting these firms into broader global value chains, even if their final products are not themselves exported. This strategy seems ill-suited to the ornamental stones sector, however, as marmorarias produce the final consumer good, and thus have to compete with foreign buyers for their main input, polished slabs from larger firms. This also means that small firms may perceive the efforts by SindiRochas and others to support exports as undercutting their own business, exacerbating the perception that small firms are excluded from governance.

In 2008, Federal funding for RedeRochas ceased, with the expectation that SindiRochas and its affiliates would take up the costs associated with maintaining the governance structure. According to stakeholders, lack of resources doomed RedeRochas, rather than change in the structure of the sector itself. This coincided with the international financial crisis precipitated by the real estate sector in the United States, which is the primary international market for Espírito Santo’s ornamental stones. The decrease in exports pushed larger firms to turn to the domestic market, competing with smaller and non-exporting firms and overshadowing the collaborative spirit engendered by RedeRochas and its working groups. This became one of the major schisms between small and large firms in the sector. During this period, SindiRochas was also in the middle of a shift in leadership, with a popular and active president being termed out. Lastly, SEBRAE’s position as the primary public-sector interlocutor in RedeRochas had started to seem out of place due to its official mandate to support only micro and small businesses. Since larger firms played an important role in the leadership of SindiRochas, the focus on small firms may have alienated some groups. These factors all contributed to the demise of RedeRochas and its working groups, and joint action shifted to more ad hoc collaborations between certain firms on specific issues, rather than a broader territorial governance effort.

In 2010, the Multilateral Investment Fund (MIF) of the Inter-American Development Bank formed a partnership with Espírito Santos’ Federation of Industries (FINDES) to promote a territorial governance effort modeled after RedeRochas, particularly in fostering collective actions among firms, and close coordination with the public sector in certain areas (such as environmental regulation). Rather than partnering with SEBRAE as the metagovernance agent, as it did in a previous generation of cluster projects in the late 1990s (discussed in chapter 1), the MIF chose to work with FINDES due to its representation of all industrial firms, not just micro and small enterprises. On the one hand, the move was seen to broaden the set of firms that would be engaged in the governance network, but in effect led to a dominance by large firms and their specific
commercial challenges. The partnership sought to expand governance to include a broader array of institutions, in order to shift into a more territorial governance and development approach. To accomplish this, the project cast a broad net, inviting 19 institutions to join the Steering Committee, including public actors from the State and municipal governments, trade associations, and the employees’ labor union. According to the donor’s memorandum for the project, it includes three main components aimed at developing a broader territorial governance, supporting the cluster and private sector joint action, and building capacity for governance across civil society, public, and private sectors: “Strengthening the local production development network,” “Business development initiatives in strategic sectors,” and “Promotion of collective solutions” along with a monitoring and learning component (Multilateral Investment Fund 2008). The Steering Committee met quarterly from 2010 to 2014 at the FINDES office in Cachoeiro, yet accomplished very little in terms of tangible results. The extent of the program’s activities involved a series of narrow pilot projects benefiting small groups of firms, such as environmental certification of construction materials made up of ornamental stones processing residues; a 3D simulator of indoor environments for stones applications; development of machinery for textured slab polishing; and development of improved machinery for high end cutting and polishing. None of these projects have moved beyond a conceptual pilot phase. Another six projects (including life cycle analysis of ornamental stones and its competitor products and a manual for distribution to architects and interior designers) were identified but never approved by the MIF/FINDES team (FINDES 2012). As Chapple, Peterson, and Daughters (2013) found in an evaluation study for the MIF, there is little interest by the sector’s leading firms in expanding the governance and promoting broad based territorial policies, and as a result, most firms in the region have become uninterested in participating. Most experts with knowledge of the regional economy describe the APL’s governance with terms like “fragmented”, “weak”, “individualistic”, and “non-existent”.

The sector’s governance network is also not actively engaged with territorial planning and policy in any meaningful way. Since the sector plays a crucial economic role in the region, the municipal government of Cachoeiro has taken some steps to assist firms in their growth and development, but compared to Linhares (discussed in chapter 4), this is done in a piecemeal fashion without a systematic dialogue with ornamental stones entrepreneurs who do not have a collective political voice to engage in these debates. Officials in various municipal departments described their role vis-à-vis the development of the ornamental stones sector as one of mediation between entrepreneurs and the bureaucracies of the state government, or as promoters of local industry. The Secretary of Economic Development, for example, said that one of the most important steps he took in his role was to convince firms to participate in the Cachoeiro Stones Fair during the years of the financial crisis (2007-2010), which hit the sector particularly hard. The municipal government has also invested in infrastructure for an industrial district at the periphery of the city and encouraged firms to relocate there from residential areas in the center. Unlike the Linhares government, however, these actions were not undertaken through a broad-based territorial planning process for the development of the city and region, but as one-off interventions. Firms in Cachoeiro were not engaged in civic activities or strategic planning processes, either individually, through Sindimol, or by forming booster organizations as was the case in Linhares.
V. Conclusions

The ornamental stones cluster in Cachoeiro de Itapemirim has a similar trajectory to the furniture APL in Linhares, discussed in chapter 4. In both cases, the industries emerged in the 1960s and 70s from existing small-scale economic activities following the collapse of the state’s coffee economy. Both Linhares and Cachoeiro also saw their primary industries form relatively dense production systems, with a number of supporting activities up- and downstream, as well as an institutional network that allowed for the governance of productive activities. In Cachoeiro, this governance network maintained a territorial approach to the development of the APL only as long as productive challenges were the primary motivating factor for collective action among entrepreneurs. With the opening of the Brazilian economy in the early 1990s, however, the leading mining and processing firms were able to acquire cheaper machinery and inputs from abroad and moved aggressively towards a narrower sectorial approach, driven primarily by commercial interests. As a result, the cluster has seen impressive results in exports, which has benefited the leading local firms, while repeatedly failing to establish a broader territorial vision, attract smaller firms to its governance efforts, or engage with public policies affecting the municipality and the region.
Chapter 6: Conclusion

I. Contributions of this dissertation

In this dissertation, I explore the emerging political economies of industrial policies undertaken at the subnational level in Brazilian cities, which became targets of economic development initiatives by the Federal government in the early 2000s. Although the analysis focuses on regions within the unique case of Brazil, it draws insights from regions exhibiting a broad range of socioeconomic conditions, whose economies are driven by several different types of industries, and in which local and state governments vary widely in their capacity to implement their policy agenda. In this regard, the findings summarized in this chapter should have applicability to debates on economic development in other contexts, particularly middle-income countries where cluster-based policies have become so fashionable in recent decades.

As I discuss in chapter 2, the literature on clusters and industrial districts (or local economic development more generally) tends to either ignore the concept of public-private governance, or to treat it as an organic response by firms to certain market challenges and do not question whether the outcomes of governance efforts are likely to trigger developmental processes in their territories. This is particularly true of the literature on clusters and industrial districts, which treats the concept of governance as merely a “zooming out” of the organization of productive activities expanded beyond the boundaries of the firm to the region or value chain. In other words, firms engage in governance to coordinate their activities and achieve some larger productive or commercial goals that would not have been possible to do on their own (economies of scale through a “widespread factory” model, joint purchasing or sales, collective efficiencies, etc.) This dissertation understands this governance process to be embedded in the territory of the cluster and centrally involved in formulating the policies that will shape productive development. It can be deployed towards broad economic development purposes or to channel public subsidies towards a limited number of firms, but it should be understood as a territorial process spanning across the public-private divide.

The main theoretical contribution of this dissertation is the deconstruction of the idea of policies to promote industrial clusters as synonymous with policies to promote local and regional economic development. The literature often conflates these policy goals and therefore is silent on answering under what conditions do cluster strategies actually spill over into efforts to strengthen the institutional capacities of regions to endogenously generate learning and innovation, key elements in economic development as defined in chapter 2. What this dissertation shows, however, is that cluster-based local economic development policies are generally geared towards providing benefits to a specific segment of firms within the cluster, and in only certain situations do the governance networks leading these efforts seek policies to strengthen local institutions and promote investments in local public goods to generate territorial spillovers. I argue that the motivation of producers to engage in these governance networks of collective action is a key variable to understand whether the policy approach is sectorial or territorial. Specifically, when collective action among entrepreneurs is motivated by productive upgrading challenges, the governance networks that undertake these actions
are much more likely to promote a set of policies geared towards territorial development. On the other hand, when entrepreneurs are motivated by commercial (but not productive) challenges, policies will tend to be much narrower and likely targeted towards the benefit of the “dynamic nucleus” of firms most engaged in the leadership of the governance network.

II. Propositions

In chapter 1, I make three propositions about the relationship between governance and policy approach that guide the analysis in chapters 3-5. Below, I restate each of the propositions and present the evidence from the analytical chapters.

Proposition 1: Entrepreneurs within APLs engage in collective action through governance networks due to two broad motivating factors: “value chain insertion” and “productive upgrading”.

This is an intuitive insight, based on the fact that engagement in governance networks through collective action is costly in terms of time and resources, and usually requires overcoming several barriers including lack of trust and reciprocity, institutional impediments that favor individual over collective action, and incentives to behave opportunistically for short-term gain at the detriment of a longer developmental vision. Ostrom (1990) explores these barriers extensively and highlights the need for low costs of participation and tangible benefits to actors who engage in collective action like territorial governance networks. In the analysis of the twelve case studies in chapter 3, I identified two overarching types of “tangible benefits” that provide motivation for such actors to participate in governance networks, “value chain insertion” and “productive upgrading”, as synthesized in table 3.3 and in the summaries of the case studies in appendix A.

Value chain insertion was a concern of all governance networks, and it referred to the need to expand towards new markets, or preserve the share of a cluster’s firms in existing markets. Examples of this type of motivation included self-organization among entrepreneurs in several APLs to organize local trade fairs to attract outside buyers sometimes in conjunction with branding efforts to establish a given region as the “capital” of that particular product. One of the cases analyzed in chapter 3 involved market opportunities for local firms generated by the oil and gas exploration complex established by Petrobrás in the municipality of Macaé. Of the twelve APLs analyzed in chapter 3, six had governance networks formed primarily through a motivation to improve their position along a domestic or global value chain. In the case of the ornamental stones APL in Cachoeiro de Itapemirim, I showed that recent governance efforts were almost exclusively motivated by value chain challenges, such as increasing exports and branding the local industry.

In other regions, however, the governance networks of the APLs were motivated by a need to upgrade local productive capacities. This type of motivation builds on the value chain incentive, as they are always driven by the need to increase competitiveness through upgrading, but they focused primarily on the adoption of a new technology, institutional arrangement, or learning of new skills (such as design, more efficient
production processes, and the like). The case studies in chapter 3 included different examples of this type of motivation, such as the need to adopt new machinery and parallel requirement to retrain the local workforce, incorporating new methods for processing agricultural products, and diversifying local production. Early in the formation of the ornamental stones APL in Cachoeiro, local firms faced major challenges with access to imported machinery and were forced to work with local manufacturers to improve the quality of local stones cutting and polishing technologies. The furniture APL in Linhares, since its inception in the 1970s, overcame substantial geographic and productive challenges though concerted collective action by its firms through a powerful *sindicato* that was strongly embedded in local and state-level economic development activities.

**Proposition 2:** All APLs are motivated by “value chain insertion” challenges, but only some are motivated by “productive upgrading”. Those that only (or primarily) pursue governance efforts to address value chain insertion are more likely to pursue narrow APL programs that benefit only a narrow set of firms, which I call a “sectorial” policy approach.

**Proposition 3:** The governance networks of APLs seeking to promote productive upgrading are more likely to engage in broader-based policies that I define as a “territorial” approach.

Propositions 2 and 3 are two sides of the same coin. As shown on table 3.2, all APLs pursued narrow sectorial policies with little spillover benefits to their regions (except for the indirect benefits associated with higher employment, contributions to tax rolls, increased economic activity during trade fairs, and so on). These policies included increased access to credit (mostly through Federal programs targeting APLs), managerial training, joint purchasing consortia, and fiscal incentives from state governments targeting specific industries or clusters. All of the APLs analyzed in chapter 3 whose governance networks were motivated by value chain insertion challenges described in Proposition 1 pursued a sectorial approach characterized primarily by these types of activities.

As the analysis in chapter 3 shows, five out of six of the governance networks analyzed in chapter 3 that were motivated by productive upgrading challenges of their APLs pursued territorial development approaches. This type of approach is characterized by policies that either by design or by effect were much more likely to lead to regional economic spillovers. Workforce training programs were the most common of these policies, pursued even by most of the APLs engaged in a sectorial approach, as well as investments in productive infrastructure and the establishment of links between firms and research institutes and universities for research and development activities.

As the case of Cachoeiro clearly illustrates, however, there is nothing deterministic about a given industry or regional context to explain whether an APL’s governance network will pursue a sectorial or territorial development approach. Moreover, the approach is not static. Early in the formation of the governance network of the ornamental stones APL, for example, firms were motivated by the need to overcome the poor quality of the local machinery and outdated cutting and polishing techniques and
procedures. They partnered with the state’s development bank, BANDES, and fledgling local machinery manufacturers to form an ornamental stones technology center, CETEMAG, which helped to modernize the industry and invest in the production of machines that utilized diamond cable technology in the region. However, in recent years the focus of the governance structure has been much more on exports and marketing, shifting the territorial approach to a sectorial one. Even CETEMAG, though still a technology center in name, has shifted towards a much more political role, being described by many interviewees as a “lobby organization” for the region’s leading firms.

The furniture APL in Linhares has maintained a territorial development approach since the formation of the governance network in the 1970s. Given the highly unfavorable productive and market conditions in the Linhares region, discussed in chapter 4, local entrepreneurs have placed a high priority on collective action through their trade association Sindimol. They have placed a particularly strong emphasis on thickening the local supply chain with investments in up- and downstream activities such as cardboard boxes manufacturing for sales and the production of the primary input material, medium-density fiberboard (MDF). Through Sindimol and other business associations, the entrepreneurs have also been closely engaged with the city’s urban planning process, focusing specifically on creating industrial parks to accommodate the region’s firms that have been enveloped by the growth of the city’s urban boundaries, as well as supporting infrastructure. As the region’s success requires close proximity and collaboration among firms, these organizations see these activities as a way to combine urban growth and development with maintaining industrial activity within Linhares.

III. Policy considerations

The theoretical insights in this dissertation should also contribute to policy debates on subnational industrial policies and local economic development, areas that have received increased attention and resources in recent decades, from municipal and state governments to multilateral cooperation agencies to development banks, both in the Global South and North. This analysis does not engage with the question of whether targeted investments in leading firms is an effective method to improve their productive capabilities, increase exports, and generate industrial development. However, the dissertation shows that these programs will likely not lead to economic development policies in most cases. Therefore, careful consideration of which types of sectors to engage in and which associations are likely to promote developmental policies is crucial.

Productive upgrading is a complex process that requires interventions at multiple scales. As the cluster literature has demonstrated, firms are highly dependent on their regional context, such that productive upgrading cannot happen in a vacuum, and usually must be undertaken with upgrading efforts by suppliers, buyers, supporting institutions, and the local workforce. For example, the adoption of a machine or production process that is new to a region’s firms (even if it is already a relatively mature technology) may require hiring engineers familiar with the new processes, trainers capable of educating local workers on the necessary new skills, supporting businesses that can service the machinery, and suppliers of the new inputs. However, though these interventions may be local in nature, they are also likely to require coordination of actors across a number of “boundaries”, such as the public-private divide, various bureaucracies within local and
state governments, as well as multiple scales. Local governance networks are likely to involve relationships between actors across these boundaries as well as leadership from local interlocutors who can mobilize resources from higher levels of government. This process generally requires a certain level of embeddedness among public and private actors such that the needs of local producers can be articulated to bureaucrats in the local (or state) governments, and then actors who can establish channels of “vertical coordination” with bureaucracies at higher levels.

After building its industrial sector through intense national-level industrial policymaking, Brazil was left with a highly unequal regional development pattern and firms that were unable to compete globally when the country opened its economy in the early 1990s. The dismantling of the apparatus to support industrial development did little to increase the competitiveness of Brazil’s firms and only exacerbated the vast intra- and interregional inequalities that characterize Brazilian society (a process that started to reverse through social policies under presidents Fernando Henrique Cardoso and Luiz Inácio Lula da Silva). In this context, the APL policies analyzed in this dissertation have marked an effort to find an effective new role for the state in promoting industrial development without falling into the old pitfalls like shielding uncompetitive firms from market forces, misallocating resources, and the dreaded notion of “picking winners”. However, these policies also serve as “social policies” in the sense that they seek to generate employment and income outside of Brazil’s major metropolitan areas. This dissertation shows that these two goals can be pursued jointly in cases where local entrepreneurs engage in collective action to improve their regions’ productive capacities, yet where this is not the case, they may end up reproducing the missteps of previous generations of industrial policy.
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Appendix: Summary of Chapter 3 case studies

I. Hat production in Apucarana, Paraná

The hat cluster in Apucarana, a municipality of 122 thousand residents roughly 350 miles west of the state capital of Curitiba, emerged in the 1980s with a small number of firms making promotional hats for large national companies. The local industry received national attention when Brazilian Formula One hero Ayrton Senna began wearing a hat from his sponsor, Banco Nacional, which was produced in Apucarana and became a national icon. The region has diversified its production from promotional apparel towards higher value added hats for department stores, boutiques, and, in a few cases, the development of local brands. There are now almost 150 hat producing firms and an additional 400 subcontractors in Apucarana, accounting for one third of the municipalities added value, and the region produces 60 percent of the athletic hats made in Brazil. Exports from the region are negligible as Chinese companies dominate the global market through a highly efficient and complex supply chain management system spanning several countries in southeast Asia, under which they are able to achieve very high economies of scale that are out of the reach of Apucarana’s producers.

In order to address these challenges, the 180 of the local firms formed two trade associations in the late 1990s and, under the guidance of SEBRAE, formed the APL in 2002. Initial governance issues related to short-term commercial concerns such as collective purchasing, managerial training, and expansion of markets. Connections to important local research universities in nearby cities Londrina and Maringá were practically nonexistent, and most learning processes occurred within firms themselves.

However, the governance network quickly realized that China’s emergence required stronger efforts to train workforce to operate complex new machinery in order to be able to achieve high economies of scale. The sector developed a strategic plan in 2005 outlining the following priorities: commercialization/markets, technological innovation, entrepreneurial/management training, workforce training, and cooperation. Cooperation increased during this period across the board, with micro enterprises increasing the most (from a low baseline) and medium enterprises remaining with the top instances of cooperation. One of the most notable increases was in the way new information and technologies were accessed, with an increase in the role of research institutes. Working through one of these research centers, firms collectively developed a “smart tab” for athletic hats that has been widely appropriated and used by firms in the region. This has allowed the region to shift 30 percent of its production away from promotional materials and towards higher added value niches such as department stores, national brand names, and local brands.

II. Tourism in Lagoas and Mares do Sul, Alagoas

The Lagoas and Mares do Sul tourism APL is comprised of 9 coastal municipalities to the south of the state capital Maceió. Like much of the coastline of northeastern Brazil, the region has scenic beaches and lagoons with calm and warm waters. The local tourism industry grew in the 1970s and 80s when local governments

58 The summary and analysis are drawn from Scatolin, Paula, and Shimajv (2011).
59 The summary and analysis are drawn from Lustosa et al. (2011).
began to promote seasonal festivals (Summer Festival, Duck Festival) to attract visitors. However, these were discontinued in the 1980s and the region has had to rely on undifferentiated “surf and sand” tourism. In the 1990s, as Alagoas underinvested in its tourism infrastructure, other northeastern states with similarly beautiful coastlines invested heavily and developed sophisticated tourism destinations, and the region fell even further behind.

Alagoas’ Planning Department and SEBRAE implemented an APL development program in 2004, with the Lagoas and Mares do Sul tourism cluster as one of its priorities. Local merchants also formed an association to promote cooperative solutions to the regions’ challenges and a governance structure was formed that also includes the state’s Tourism Department, the National Association of Tourism Operators, and the National Commercial Learning Service (SENAC). The menu of services provided for the APL focus almost entirely on tourist attraction through promotional activities such as subsidizing participation of firms in trade fairs, business consultancies and market studies, promotional materials, and assistance with quality/regulatory controls (i.e. safe food handling, etc). Through SENAC, the APL has also developed some low-skill workforce training for service workers. However, very little has been done in terms of infrastructure development or broader planning efforts, and the region continues to linger behind other nearby beach destinations, such as the northern coast of Alagoas state.

III. Children’s apparel in Jaraguá, Goiás

The municipality of Jaraguá has 42 thousand residents and is located along the highway that connects the cities of Brasília and Belém. In the 1980s and 90s, as the national economy opened and foreign brands gained favor among Brazilian consumers, Jaraguá’s fledgling apparel manufacturing sector began to produce counterfeit products and sell them to truckers on the Brasilia-Belem route. In mid-late 1990s, authorities began a crackdown on piracy, with many producers going bankrupt while some being able to successfully transition towards legal production. In 2000, a group of entrepreneurs formed the Commercial and Industrial Association of Jaraguá (ACIJ) to face the crisis from the loss of the counterfeiting specialization. They decide to organize a local apparel fair and get support from SEBRAE and the State of Goiás’ Department of Industry and Commerce.

One of the main activities of the APL has been the development of a “factory outlet” shopping mall to serve as a one-stop location for outside wholesale buyers coming to the city to do business. Initially it was a joint partnership between the municipal government and ACIJ, but that did not go forward, and eventually it was taken up by a local entrepreneur and developer. The mall was completed in 2010, with 166 stalls, yet only 46 were in operation as of 2011. In parallel, some informal manufacturers opened their own “Fashion Big Fair” in the outskirts of town that has attracted a lot more buyers and caused friction with the more established manufacturers who make up ACIJ. Other collective action efforts such as joint purchasing and building a local “brand” and quality control seal also fizzled out. SEBRAE and ACIJ attempted to develop a Fashion Technology Center with areas for design, management, innovation, and social inclusion. With funds from the Federal Ministry of Science and Technology, the Center opened in

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60 The summary and analysis are drawn from Castro, Costa, and Arriel (2011).
2008. However, without operating funds, the building was never fully put into use, and was eventually turned into the headquarters for ACIJ and a small SEBRAE office and to host workshops and lectures.

IV. Apparel in Campina Grande, Paraíba

The apparel sector in Campina Grande, a municipality of 385 thousand in the poor northeastern state of Paraíba emerged in the early 1980s as a group of 11 seamstresses formed an association, and through help from SEBRAE and courses at the SENAI in the city of Natal, began to train other seamstresses to work for them. By late 1980s, they had formed a Commercial Center, that attracted buyers from throughout the northeast, and region had become a major competitor with older apparel agglomerations in Ceará state, targeting middle class consumers. By 1992, there were 142 firms in the region, but the 1997 crisis and emergence of Asian manufacturers (especially China) as well as more efficient manufacturers from southeastern Brazil created serious challenges for the region, and several firms were forced to close.

In recent years, two upgrading strategies have been undertaken. First, firms moved away from manufacturing children’s apparel, which faced stiff competition from other regions that produce under contract for department stores towards the production of uniforms. Some producers also formed a cooperative to work with organic and naturally colored cotton developed through a partnership with the Brazilian Agricultural Research Corporation (EMBRAPA). The cotton is produced by family farmers resettled through agrarian reform programs and hires local artisans to provide knitting for their products.

V. Blue jeans production in Colatina, Espírito Santo

The apparel industry in Colatina emerged in the 1970s when the state government and the state’s development bank began to invest in regional development projects to diversify Espírito Santo’s economy away from its primary driver: coffee production. In the late 1980s, a group of apparel entrepreneurs formed a trade association (SINVESCO) and the Apparel Technology Center (CETECON). Through the 1990s, firms were able to incorporate new technologies (such as using computer aided design software) and shift their production towards more sophisticated markets in southeastern Brazil, which allowed them to decrease their dependence on lower end northeastern markets, which faced strong price competition from Asian imports. Currently, the primary concern of SINVESCO is to bring knowledge about current fashion trends to local firms, such as establishing a Fashion Research Center, hosting fashion workshops with consultants and designers, offering fashion courses to member firms, and building capacity among local subcontractors.

VI. Goat husbandry in Quixadá and Quixeramobim, Ceará

Sheep and goat farming has been a marginal subsistence sector in the semiarid zone of Brazil’s northeast for centuries, although in recent decades the region’s economy has been dominated by cotton and (to a much lesser degree) cattle farming. The decline of cotton production opened up labor and land resources, which led to the development of

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61 The summary and analysis are drawn from Cavalcanti et al. (2011).
62 The summary and analysis are drawn from Villaschi and Felipe (2011).
63 The summary and analysis are drawn from Amaral Filho and Ximenes (2011).
some subsistence sectors like goat and sheep husbandry into tradable activities. In Quixadá and Quixeramobin, two neighboring municipalities in the state of Ceará with roughly 150,000 residents, the goat production chain gained strength with the construction of a private industrial butchery and refrigeration unit (Pé da Serra) in 2000 and the creation of a goat producers’ association (Acocece). In addition, SEBRAE, EMBRAPA, and the municipal governments began funding a program to fund agricultural extension through Sustainable Regional Development Agents, which taught farmers techniques such as growing native grasses for grazing, reproductive management, disease control, meat production system, milk production and hygienic management, and treating of the animal’s skin to produce leather.

The Pé da Serra butchery and refrigeration unit is the primary market for local producers and also plays a key role in disseminating technology and information within the APL. It provides high quality animals directly to farmers to be raised at butchered at their operations. Since 2005, it has also invested in processing skins into “wet blue” leather that can be manufactured into fine rugs that can be sold in southern and southeastern Brazil and in Europe. Utilizing the animal’s skin can increase its value by 10-12% from simple meat production. By 2010, a bigger support network had emerged, including a Vocational Technical Center (CVT) funded by the state government offering classes in rural enterprise management, accounting, veterinary practices, milk and meat processing, etc. A couple of public and private university campuses also opened in the region.

VII. Açaí processing in Northeast Pará

Production of açaí goes back generations to family production for local and family consumption. Very fast growth in the sector, but not much progress in terms of infrastructure development, technological and innovative capacity, high level of “predatory” competition among producers. Between 2003 and 2011, number of workers in the sector grew by 6% per year, quantity of pulp increased by 13% per year, and revenues increased by 17% per year. Productivity increased by 4% per year, from 15.1 tons/worker to 25.2 tons/worker, and price increased from R$2.3k/ton to 3.2k/ton. However, much of this growth was driven strictly by demand, and occurred between 2002 and 2007, and has decreased since. Much of the resulting growth in the industry seems to have gone to intermediaries, rather than staying in the region. A new subset of foreign and Brazilian firms has emerged to meet the growing demand from abroad. (such as Mona Vie, Sambazon, Bolthouse, etc). These firms have introduced a series of product innovations (such as using acai for beauty products and a dry powder that can be fashioned into energy drinks) although endogenous innovation by local firms is nonexistent.

Strong institutional support for research and development, including the Federal University of Pará, Federal Rural University of the Amazon, The Amazon Development Agency, and the State Agriculture Department, EMBRAPA, etc. There is a trade association (SINDFRUTAS), but that is not very well articulated among its members and with support agencies. Number of associated firms actually decreased from 2003 (14) to 2011 (13). Although the APL has experience an explosion of foreign demand, increasing

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64 The summary and analysis are drawn from Costa et al. (2011).
that market share from 4% to 33% of the demand for local products, there has been a sharp drop in prices and profitability in domestic market, which has caused intense competition among older, established firms. Firms selling to national markets (especially those in southeastern Brazil) command the lowest prices (R$2.5/kilo), which has decreased significantly due to undercutting competition.

VIII. Winemaking in the Serra Gaúcha, Rio Grande do Sul

Wine brought to region by Italian immigrants in late 19th century and flourished primarily in municipalities of Garibaldi and Bento Gonçalves. Industry consolidated in late 1970s with the entrance of multinational firms who brought new technologies (stainless steel tanks, destemmers, etc). With opening of the economy in 1990s, industry underwent a crisis period due to competition from Chile and Argentina, which produced cheaper and better wines, but has emerged making competitive wines over the past two decades. Industry has evolved from making wine for local consumption, to state-wide markets, to the whole country, to the beginnings of exports. The local industry is made up of three types of firms: large wineries (mostly domestic with some branches of multinationals) that make up 2% of all firms but are responsible for one third of the region’s production, primarily of fine wines; small wineries that produce low-quality wines (almost 50% of total wine of the region); and family-owned and “boutique” producers making fine wines for the national market.

The cluster also includes a dense network of firms providing inputs for the wineries including corks, machinery, and equipment. However, most of the inputs are imported, with Brazilian companies only serving as representatives of foreign firms. A French company has a bottle factory nearby, which is the only domestic supplier. Depending on exchange rate, firms will buy bottles from abroad. Corks usually come from Portugal, and also create exchange rate uncertainty for producers. There are several companies that make presses, destemmers, etc. Formerly they provided maintenance services for imported products, but several reverse engineered those machines and now produce them locally.

The region has a very strong institutional framework, including the main campus of the Fedral EMBRAPA Grapes and Wine agency, a local research center of the Ministry of Agriculture created in 1975. EMBRAPA provides new technologies and geographic designations, sustainable production methods (organics, etc), new product development, and climate change adaptation research. The Association of Fine Wine Producers of the Vinhedos Valley (APROVALE) was created in 1995 to help grape growers produce and sell their own wines instead of selling their grapes to large-scale wineries during a period in which the price of grapes had dropped dramatically. The goals of the association have expanded to incentives to wine research, land preservation activities, exploration of tourism potential of the region, preservation of the geographic designation of local wines. Membership is currently at 31 wineries plus 39 non-winery members, which include hotels, bed and breakfasts, restaurants, crafts workers, and cheesemakers.

65 The summary and analysis are drawn from Tatsch, Viana, and Farias (2011).
IX. Tourism in Bonito, Mato Grosso do Sul

The tourism industry in the municipality of Bonito emerged in 1970s as school groups discovered stunning visiting caves located in private farms. It gained media attention in the 1990s after visit by French divers who led an expedition in the region’s pristine rivers. Local actors began to organize themselves in order to promote ecotourism, and a Municipal Tourism Council was created in 1995. Tourism agencies began issuing “single vouchers” to tourists that included a municipal fee, entrance to main attractions, and access to tour guides (which had become mandatory in the more environmentally sensitive areas). These vouchers helped to control the number of visitors allowed to enter the more sensitive areas. The agencies, municipal government, and owners of the attractions were able to balance both the demand for particular sites and services, and the capacity of those areas to receive visitors.

With the opening of other ecotourism destinations in Brazil, the expansion of visitors to Bonito slowed down between 2002 and 2006. The single voucher system was also seen as a bottleneck, as the tourism agencies had become glorified intermediaries, and were often not paying the providers their share. The Association of Tourism Attraction Operators (ATRATUR) worked with Visa to allow for direct payments from the single voucher system to the providers, bypassing the agencies. Agencies then had to innovate to justify their role in the local tourism chain, and began promoting new modalities of tourism, such as adventure tourism (rappelling, rock climbing, backpacking) to young tourists from Brazil’s major cities. They also began to cooperate on sharing bigger rides (micro-buses) to the attractions to gain economies of scale and providing alternative transportation to shorter (and closer) tours, like bicycles and motorcycles.

ATRATUR and the municipal government also developed a diagnostic study with various local actors (and funds from the World Bank), which found that infrastructure development was the biggest bottleneck. The diagnostic targeted roads, a small airport, and improved solid waste and sewerage systems. This allowed for expansion of tourism supply with weekly flight coming from São Paulo and the installation of a small convention center, which has helped to smooth out the annual seasonal calendar. These projects were undertaken within the “master plan” process undertaken by Bonito and its two municipalities, which created a tourism corridor among all three.

X. Metalworking/Machinery Production in Joinville, Santa Catarina

Metalworking and machinery sectors are the most important in the economy of Santa Catarina (responsible for 35% of industrial value added in the state) and their greatest concentrations are in the Joinville region, which is one of the most industrialized in Brazil. Region was settled by small farmers, which generated demand for industrial products, but also by a non-farming contingent that could serve as labor supply. Settlement was largely by Germans, many of whom already had a strong background in
industrial production. First phase of industrial development was made up of firms producing textile and food processing. During ISI period, firms in Santa Catarina benefitted greatly from government shelters for industrial sectors (intermediary, durable consumer, and capital goods) and direct investments in infrastructure. The metropolitan region’s population in 2010 was 840,000 of which 515,000 lived in the Joinville municipality.

Institutional framework of the region includes trade associations, labor unions, universities, technical schools, technology centers, and professional training centers. The trade associations of greatest importance in the region are broad private sector associations representing all industrial sectors, although each has separate committees for specific sectors, concerned with issues like incorporating new technologies, finding cheaper inputs, opening markets, and the like. Meanwhile, the broader organizations tend to promote discussion forums based on broader regional issues. There has been a market growth in the number of sectoral nuclei as well as in membership numbers in recent years. These local associations have pushed to increase supply of courses for professionals in this sector and a recent victory was the opening of a Federal University of Santa Catarina campus in Joinville providing engineering courses specifically geared towards the sector.

XI. Electronics Sector in Santa Rita do Sapucaí, Minas Gerais

Santa Rita is a small municipality, with fewer than 40,000 residents in 2010, and about 400 km from the state capital Belo Horizonte. The local electronics industry grew out of the Electronics Technical School established there in 1958 by a local patron. In the next two decades, two other engineering and technical training centers opened up focused on electronics and telecommunications. The region benefited from import substitution policies in the 1960s and 70s, and from its proximity to the city of Itajubá, which has the only helicopter plant in South America and five times the national average of PhDs. In the mid-1980s, local boosters began to refer to the region as “Electronics Valley”. The region’s firms, all of which are owned by independent domestic capital, specialize in electronics, telecommunication, and informatics, such as telephones, electronic security systems (intercoms and alarms), phone booths, energy sources (transformers, inverters, converters), software development and consulting, industrial automation, and circuit boards.

The primary market for the region was out-of-state metropolitan areas such as Rio de Janeiro and São Paulo, and firms benefitted greatly from the country’s robust economic growth in the 2000s. However, firms from Santa Rita exported almost none of their production, and the region actually contributed to the country’s trade deficit as many of their inputs had to be imported. The APL’s governance structure was led by a network of mostly medium-sized firms through the local trade association (SINDVEL). The association lobbied for research and development funds from the state’s research support institute (FAPEMIG), which did increase substantially between 2002 and 2010. However, private investment decreased during this period.

There have been several efforts to bolster the APL through state-level action, mostly targeting competitiveness through expansion of markets and lowering production

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69 The summary and analysis are drawn from Botelho, Carrijo, and Oliveira (2011).
costs. In 2010, for example, the IDB and Minas Gerais state government launched a project to promote competitiveness among seven APLs in which Santa Rita received about $3 million to develop a competitiveness plan. The Spanish consulting firm Competitiveness partnered with SEBRAE in 2009 to promote cooperation among firms to provide entire security systems to large construction projects (project is called building connectivity). Very little has come of these efforts beyond doing some workshops, participation in fairs, etc. The state and municipal governments also approved a series of tax breaks, including a reduction of the state’s tax on goods and services on products sold outside of the state. Efforts to promote exports from the region (particularly to MERCOSUR countries) largely failed, and the region’s micro and small firms have pushed for assistance to participate in trade fairs as a way to expand their markets.

XII. The Oil and Gas Supply Chain in Macaé, Rio de Janeiro

Oil was discovered off the shore of Rio de Janeiro state in the late 1970s, and city of Macaé became the primary exploration launchpad for the country’s largest oil producing region, the Campos Basin.70 The local population quadrupled from 47,000 in 1970 to more than 200,000 in 2010. Macaé has the third highest income of all municipalities in the state (after the capital, Rio de Janeiro, and Niterói). The production chain is a classic “hub-and-spoke” system with the state-owned giant Petrobrás leading most production and operations. A second level of high-complexity, customized service providers (engineering, prospecting, production and development), which are mostly large foreign multinationals like Halliburton, Slumberger, Weatherford, Pride Energy makes up an intermediary ring around Petrobrás. These manage much of the supply chain by providing logistics to Petrobrás and handling subcontracting relationships upstream. A third group is made up of EPC (Engineering, Procurement, and Construction) companies, in which large Brazilian firms (especially construction firms such as Odebrecht and Camargo Correia) are very competitive but also has a strong presence of multinationals like Bechtel and Kellog, Brown, and Root. Lastly, an outer ring of MSMEs provide services of lower complexity, primarily to the higher-level firms as subcontractors, but sometimes directly to Petrobrás. These services include catering, trucking, industrial painting, and small repairs and services. Most of the formal APL policies and efforts to form governance networks are aimed at inserting and strengthening the position of this last set of firms within the oil and gas production chain, which largely responds to the procurement needs and policies of Petrobrás.

The main governance structure of the APL is RedePetro-BC, formed in 2003 by municipal government, SEBRAE, and group of 12 entrepreneurs following example of similar networks in other regions where Petrobrás has operations. RedePetro-BC has 76 members, including several large firms like Odebrecht, the usual supporting institutions (SEBRAE, industry associations, local universities), and the municipal government. As a network concerned with improving MSMEs position within the Petrobrás supply chain, RedePetro-BC’s primary lines of action are market oriented: matching supply and demand, hosting business roundtables, improving financing for small firms, issuing RFPs, and the like. Main early activities were: a strategic plan, events to link buyers and sellers.

70 The summary and analysis are drawn from Britto, Vargas, and Oliveira (2011).
Conspicuously absent from the activities of RedePetro-BC or other policies targeting the APL are projects aiming to strengthen the broader territory around the Petrobrás installations. Although the municipality saw some of the fastest rates of economic growth and became one of the 10 richest in the country, its HDI was mediocre and it had some of the worst inequality in Rio de Janeiro state. During this time, the municipality saw tremendous growth in its revenues, from petroleum exploration royalties and from increases in the goods and services tax, although very little was spent on improving the city’s infrastructure (aside from that which serves oil and gas exploration) and public services. As a result, Macaé has grown through a dual urban development pattern with upscale gated condominiums serving the professional classes at Petrobrás and its closest suppliers; and on the side of the city an inadequate amount of public housing and squatter settlements. This pattern is also evident in non-residential parts of the city. Large domestic and multinational firms are located primarily the city’s upscale neighborhood of Novos Calheiros while small firms are located in neighborhoods without any basic infrastructure (even basic sanitation/sewerage) such as Imbetiba.