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URBAN PLANNING AND ECONOMIC DEVELOPMENT: 
A TRANSACTION-COST APPROACH

DISSERTATION

Presented in Partial Fulfillment of the Requirements for 
the Degree of Doctor of Philosophy in the Graduate 
School of The Ohio State University

By

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*****

The Ohio State University
1997

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ABSTRACT

This dissertation analyzes the role regulatory land-use planning plays in urban economic development. Successful property development depends on securing approval from public agencies through their authority to regulate land use through zoning. This creates a bargaining environment in which developers negotiate with planning staff, planning boards, and citizen groups over the nature, scope and design of projects. The development approval process incurs transaction costs for developing land, and differences in transaction costs among local jurisdictions may influence the pace, pattern and intensity of development within communities.

The dissertation empirically tests this hypothesis using case studies and multiple regression analysis. The case studies describe the intricacies of the plan and zoning approval process, and identify the types of transaction costs incurred by developers seeking development permission. Multiple regression analysis is used to help determine whether local planning boards or public officials can reduce transaction costs and promote economic growth within their jurisdictions.

The research tested five hypotheses about planning and urban development. The first hypothesis considered whether internal planning procedures could impact planning-related transaction costs. An analysis of planning innovations in twenty three cities and townships found that adopting planning innovations could reduce zoning applications
processing times by one third. The second hypothesis considered whether planning procedures could effect economic growth by increasing or decreasing transaction costs. Limited evidence was found suggesting individual procedures significantly impact economic development in cities. An analysis of sixty-three Ohio cities, however, found that subjecting zoning decisions to public referenda could reduce economic activity by nineteen to twenty-eight housing units. This confirmed the second hypothesis and third hypothesis that higher levels of uncertainty reduced economic growth in cities. Additional analysis of thirty-two cities found that cities with more complicated and specialized zoning codes also experienced lower growth, particularly residential permit growth. A fourth hypothesis addressed the potential impacts of transaction costs on the factor intensity of development, but the data did not support the transaction cost theory. Limited, indirect evidence was found supporting a fifth hypothesis that a community's values might impact transaction costs and economic growth.
Dedicated to Pauline White Day
without whose support this would
not have been possible
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Any errors, of course, are the responsibility of the author.
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## TABLE OF CONTENTS

Abstract ................................................................................................................................. ii

Dedication ............................................................................................................................... iv

Acknowledgements .................................................................................................................. v

Vita ........................................................................................................................................... vi

List of Tables ........................................................................................................................... xii

Chapters:

1. Introduction and Overview .............................................................................................. 1
   1.1 Urban planning and economic development ............................................................. 3
   1.2 Transaction costs and economic development ......................................................... 7
   1.3 Testable hypotheses ................................................................................................. 15
   1.4 Methodological issues and approach ..................................................................... 18
   1.5 The plan of the dissertation .................................................................................... 19

   2.1 Local planning and economic development ............................................................ 22
   2.2 Land-use regulation and urban development ......................................................... 24
   2.3 Innovations in urban planning .................................................................................. 28
      2.3.1 Targeted development tools ........................................................................... 29
      2.3.2 Neo-traditional planning and the New Urbanism .......................................... 31
      2.3.3 Flexible zoning ............................................................................................... 35
      2.3.4 Development regulations .............................................................................. 40
   2.4 Transaction costs, property rights and urban development .................................... 44
      2.4.1 Zoning and property rights ............................................................................. 46
      2.4.2 Transaction costs and urban planning ............................................................. 50
      2.4.3 Property rights and urban development policy ............................................. 55
   2.5 Conclusions ............................................................................................................... 56
6. Planning procedures, uncertainty, and urban growth ................................................... 186
   6.1 Data and empirical methods ........................................................................... 187
   6.2 Planning procedures and transaction costs ...................................................... 194
      6.2.1 Estimating model for the impact of planning innovations .............. 200
      6.2.2 Impacts of planning innovations on application processing .......... 204
   6.3 Plan evaluation, transaction costs and urban development ......................... 207
      6.3.1 The zoning approval process ..................................................... 208
      6.3.2 Estimated impacts of individual ordinance requirements .............. 213
      6.3.3 Interpreting the regression results for planning procedures .......... 224
   6.4 Uncertainty, zoning referenda, and urban development ............................. 232
   6.5 Summary and conclusions ............................................................................... 245

7. Transaction Costs, Zoning and the Architecture of Land Use ............................. 248
   7.1 Estimating the impact of ALU ................................................................. 249
   7.2 Effects on residential, commercial and industrial development ................. 264
   7.3 Impacts on building valuation ...................................................................... 279
   7.4 Conclusions and implications ...................................................................... 281

8. Conclusions and Policy Implications ........................................................................ 283
   8.1 The transaction-cost approach ....................................................................... 283
   8.2 Hypotheses and empirical evidence ............................................................... 284
   8.3 Caveats and qualifications ............................................................................... 290
   8.4 Policy implications ......................................................................................... 292
   8.5 Directions for future research ......................................................................... 295

Appendices
A. Solution for construction labor ........................................................................... 297
B. Variables and data used for multivariate empirical analysis ........................... 300
C. Impacts for building valuation ........................................................................... 310

References .............................................................................................................. 314
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Economic development policy tools and strategies</td>
</tr>
<tr>
<td>3.2</td>
<td>Dimensions of property rights and the land development process</td>
</tr>
<tr>
<td>3.3</td>
<td>Dimensions of contract in the land development process</td>
</tr>
<tr>
<td>3.4</td>
<td>Williamson's governance matrix</td>
</tr>
<tr>
<td>3.5</td>
<td>Dimensions of contract and land development</td>
</tr>
<tr>
<td>3.6</td>
<td>Governance structures and planning rules</td>
</tr>
<tr>
<td>3.7</td>
<td>Governance structures, zoning and land development</td>
</tr>
<tr>
<td>5.1</td>
<td>Profile of Centerville and planning department</td>
</tr>
<tr>
<td>5.2</td>
<td>Profile of Centerville rezoning application process</td>
</tr>
<tr>
<td>5.3</td>
<td>Profile of Centerville land use districts</td>
</tr>
<tr>
<td>5.4</td>
<td>Conditions for approval of hardware store as major use/condition use in Centerville, Ohio</td>
</tr>
<tr>
<td>5.5</td>
<td>Citizen objections to hardware store proposal</td>
</tr>
<tr>
<td>5.6</td>
<td>Profile of Washington Township and planning department</td>
</tr>
<tr>
<td>5.7</td>
<td>Profile of Washington Township rezoning application process</td>
</tr>
<tr>
<td>5.8</td>
<td>Profile of Washington Township land use districts</td>
</tr>
<tr>
<td>5.9</td>
<td>Issues and concerns raised during plan approval process</td>
</tr>
<tr>
<td>5.10</td>
<td>Comparison of approval and rejected zoning approvals: Meeting attendance, opposition and citizen concerns</td>
</tr>
<tr>
<td>5.11</td>
<td>Correlation coefficients for rezoning applications</td>
</tr>
<tr>
<td>5.12</td>
<td>Correlation coefficients for issues and concerns raised during plan approval process</td>
</tr>
<tr>
<td>5.13</td>
<td>Profile of Columbus and planning department</td>
</tr>
<tr>
<td>5.14</td>
<td>Profile of Columbus rezoning application process</td>
</tr>
<tr>
<td>5.15</td>
<td>Profile of Columbus land use districts</td>
</tr>
<tr>
<td>6.1</td>
<td>Descriptive statistics for cities in empirical analysis</td>
</tr>
<tr>
<td>6.2</td>
<td>Planning innovations covered by survey of Ohio planning departments</td>
</tr>
<tr>
<td>6.3</td>
<td>Variables used in multiple regression analysis of average zoning application processing time</td>
</tr>
<tr>
<td>6.4</td>
<td>Descriptive statistics for variables in multiple regression analysis of average zoning application processing times</td>
</tr>
<tr>
<td>6.5</td>
<td>GLS estimates of the impact of planning innovations on the average processing time for rezoning applications</td>
</tr>
</tbody>
</table>
Heights, Westerville, and Kettering ............................................................................ 272

7.11 GLS Estimates for impact of zone types on building activity per 1,000
population: commercial units 1990 to 1994 ............................................................... 276

7.12 GLS Estimates for impact of zone types on building activity per 1,000
population: industrial units 1990 to 1994 ................................................................. 278

7.13 Estimated impacts from comprehensive multivariate equations on
building permits per 1,000 population based on a city's architecture of land use ..... 282

C.1 Impact of zoning codes on average on average building valuation:
commercial units 1990 to 1994 ................................................................................. 313
CHAPTER 1

INTRODUCTION AND OVERVIEW

The one mile strip running south from I-675 outside of Dayton is an odd site to an urban economist. The road, recently widened to five lanes (with a center turn lane), experienced a spurt of intensive development in recent years. Large scale discount retailers such as Wal-Mart, Kohl's Department Stores, Lowes home improvement stores, and ten restaurants have sprouted up along the strip within the last five years alone. In important respects, this development pattern is not odd at all: it simply mirrors development trends in the southern regions of the metropolitan area that have been ongoing for more than thirty years.

What makes this strip odd, and of particular interest to urban policy analysts, is the spatial pattern to the development. The East side of the road is intensively developed while the West side consists of low density residential development and an abundance of vacant land. In fact, of the ten restaurants along the strip, all but two are located on the East side. All of the large stores and retailers are also located on the East side. The land closest to the interstate on the West side still lays undeveloped, even though the street connecting a fast-food restaurant dead-ends into several hundred acres of fallow farmland.
What makes this strip odd from an urban economist's view is its "lumpiness."

Urban economic theory suggests that land will be developed along a "rent gradient" that tends to "smooth out" the density of land development based on its most profitable economic use. In this case, while a long-term trend line reveals a steady increase in property development and in-fill, significant gaps emerge in the pattern of development. These gaps cannot be explained solely by the timing of development (e.g., projects delayed because of financing or other economic considerations).

What explains this lumpiness? One clue to the puzzle is political: who owns and controls the land? More specifically, who or what controls the pace and pattern of development?

In this case, the developed East side of the road is regulated by a township with a reputation for an aggressive "pro-growth" approach to land development. In fact, nearby residents of a city complain about the lack of growth controls or concern for regulating land uses in this township. The West side of the road is controlled by a city known for its strict growth controls and master planning. Developers and business owners often complain of this city's stringent planning rules that hamstring property owners and builders.

The differences between the two jurisdictions is evident in their sign ordinances. Businesses on the West side have low-profile signs that conform to the terrain and stay well below the skyline. Businesses on the East side have signs that tower dozens of feet into the sky, thrusting golden arches, cowboy hats, and other corporate symbols into the
air for all passersby to see and emblazoning their images against a black backdrop at night.

This scene provides an important clue to one of the emerging policy issues in contemporary America: the role land-use planning plays in promoting (or discouraging) urban economic growth and development. Recent trends toward statewide and regional planning have heightened academic and public interest in land-use planning as an important policy tool in urban development. In Oregon, for example, growth management laws enforce a growth boundary around the Portland metropolitan area and other cities to encourage compact development. In Florida, a statewide growth management plan requires local communities to develop long range land-use plans consistent with a statewide land use plan. State law also enforces "concurrency": a requirement that infrastructure be in place (or financed) before property development can proceed. In Ohio, as in other states, concern over urban sprawl has prompted concern over the status of farmland.

1.1 Urban planning and economic development

Despite the ongoing interest in planning on the local, regional and state levels, the role land-use planning and policy plays in the development process is poorly understood. Academic research has identified numerous factors that influence the location of new facilities (see Blair and Premus 1987), but relatively few scholars have attempted to analyze the interconnection between planning and economic development.¹ This is ironic

¹Important exceptions include Titman (1985) and Neutze (1987), who have analyzed the effects of planning on site location, and Mayo and Shephard (1991), who have discussed the role of stochastic planning elements on housing development process. See also Seigan (1972) for his case study of Houston, Evans (1988, 1992) for applications to England, and Lai (1996, 1997) for case analysis of Hong Kong.
because almost all major cities and towns regulate land use through zoning ordinances or comprehensive plans. More importantly, almost all significant developments in cities and urbanized townships are subject to some form of land-use regulation either on the local or regional level.

Local planning rules and procedures provide a fundamental component of the institutional framework -- social, political and economic -- in which development takes place. Local plan approval, evaluation processes and zoning codes help set the "rules of the game" for property development. The impacts of local planning on urban development are particularly important for land development in built-up environments such as central cities and suburbs. If local planning rules frustrate land development, recycling land for new uses will be more difficult, reducing prospects for economic growth and revitalization in those areas. In principle, a city (or township) that wants to encourage economic growth would want a planning system that facilitates property development (although not necessarily at the expense of quality).

The way land-use planning and other development controls influence property development can vary significantly. On the one hand, communities could permit unfettered land development in a free market. Local citizens and policymakers would allow land markets to determine what would be developed, where, and when. Land use decisions would be coordinated by land prices, where property owners determine when their land is most profitably sold and developers determine the content, style, and timing of new development based on their expectations about consumer needs, wants, and future market trends. In a pure free market, all infrastructure would be provided by developers
and public officials may have little, if any, input into the decision.

On the other extreme would be complete control of land development by one organization, public or private, either through ownership or detailed regulation. New towns provide some of the best examples of this type of planning. New towns are literally created from the planners' work station, complete with infrastructure networks, housing and employment centers. Reston, Virginia is a U.S. example of a community designed and built from such a master plan. In Europe, New Towns were sponsored and designed by the government to manage population decentralization and land use. In these cases, market forces have little influence over land development within the boundaries of the community.

The vast majority of cases lie somewhere in between these extremes. Even Houston, Texas, often heralded as an example of free-market land development because it does not have citywide zoning or land-use planning, constrains development through various set-back requirements, height restrictions, lot restrictions, and other development controls. Also, a system of private covenants specify (and often limit) land uses, enforcing a form of market-driven zoning and development control.

Even cities where development is tightly regulated or controlled by a private developer or city are subject to market forces. In the case of Reston, the developers were subject to larger market forces. The original project was a commercial failure until new developers re-tooled the design of the community to match consumer demand (Foldvary 1994). Many publicly sponsored New Towns also failed to attract the population and employment levels necessary to become vibrant urban centers (see the critique in Bristow
Economic development, however, is only one subfield of a broad, diverse field. Urban planning draws from a number of different professional and academic disciplines including, but not limited to, architecture, sociology, political science, public administration, engineering, and law. As a practical matter, planners are engaged in a variety of different activities (see So et al. 1979; Slater 1984) in cities including:

- **transportation and infrastructure planning** to ensure local, regional, state, and federal investments are coordinated, well timed and efficient;
- **historical development** which helps protect and enhance the historical pattern and character of a community;
- **cultural planning** to ensure adequate educational and cultural facilities and services are available to citizens, neighborhoods and regional communities;
- **urban design** to help augment the physical and aesthetic development of a community;
- **budgeting and finance** to manage public resources effectively and assist local policymakers in their efforts to allocate fiscal resources in ways that enhances the effectiveness of local government programs and activities.
- **citizen participation** to strengthen the participatory nature of local government decisionmaking and help define the public interest in local policymaking.

This dissertation focuses primarily on two other very important elements of urban planning: land-use regulation and economic development.

Focusing on land-use regulation in the context of economic development does not
diminish the importance of the other elements of planning, or suggest that other aspects of planning may not influence economic development in cities. Narrowing the focus of inquiry to the regulatory impacts of land-use planning on property development decisions, however, provides an important lens through which the impacts of planners and planning on economic development and growth can be analyzed. It also provides insight into how planning mechanisms and policies may hinder or promote land development irrespective of impacts on the quality of the development.

1.2 Transaction costs and economic development

The pervasiveness of development control through regional and local mechanisms suggests its impact on land development can be extensive. Particularly in the U.S., where dozens of communities make up metropolitan areas, understanding the economic consequences of development controls can be important. Developers will assess communities based on all characteristics of the prospective site, including the local regulatory environment.

Take the following case as an illustration of the potentially growth inhibiting effects local land-use regulation can have on economic development. A developer recently proposed building ten barrier-free homes on a five-acre lot in a city of about twenty-five thousand. The site was separated from an adjacent apartment complex by a creek. The land had remained vacant for several years despite surrounding single family residential neighborhoods and the apartment complex. Each new house was expected to sell for about $100,000, including the lot, generating $1 million for the developer. The lots would sell for about $10,000 each, doubling the developer's initial

7
investment, from which he would have to pay for improvements such as roads, sewer, and other infrastructure costs.

During the rezoning process, local planners determined that the adjacent apartment complex needed a second egress. Local officials viewed the proposed development as a way to provide the exit by requiring the developer to erect a bridge across the creek. In other words, local planners believed they could exact a concession from the private developer to meet a perceived need of neighbors unrelated to the proposed project. This condition became a "deal breaker" for the property developer because the bridge would have added $75,000 to the development costs. These added costs would have to be recouped through the sale price of the homes or by accepting a lower return on his investment. Since the developer believed the market would not permit him to sell the homes for a higher price, the bridge effectively eliminated his hopes of earning a reasonable rate of return of the property. The conditions added on through the rezoning process were enough to "kill" the project. Meanwhile, the developer had already invested substantial sums in the project up-front by commissioning engineering surveys of the site, developing plans for the housing development, and devoting time to the rezoning process.

Understanding how planning policy impacts economic development and investment decisions in the private sector requires a lens through which the interplay between development regulation and land investment can be evaluated. Unfortunately, a comprehensive theory of how land-use planning impacts the process of land development in communities has not been developed. More importantly, a paradigm suitable for
analyzing the regulatory impact of land-use planning on economic development has received little attention in the scholarly literature (see the discussion in Chapter Two).

This dissertation bridges this gap by developing a theory of urban planning and economic development within a regulatory framework rooted in a transactions-cost (TC) approach. Adopting an interdisciplinary approach, the present analysis suggests the impacts of development control on urban development can be analyzed most effectively using TC analysis rooted in economic analysis, particularly in its application to market failure and public policy. In fact, a TC approach to planning and urban development may be uniquely suited for this type of analysis because it explicitly incorporates the bargaining nature of land development into its framework. In addition to its analytical power, TC analysis lends itself to developing policy recommendations that can facilitate land development (and redevelopment) without jeopardizing public concerns over quality.

The TC framework thus provides a promising lens through which a variety of problems and issues can be analyzed. TC analysis has already been extended into political science and planning as a way of explaining when certain functions should be vertically integrated within a public-sector framework (Moe 1984; Bryson and Ring 1990; Alexander 1992). Another important area, however, and one virtually ignored in the economics and public policy literature, is the role TC analysis can play in understanding the relationship between the public and private sectors through the regulatory process. Neoclassical economists, for example, typically view regulation as a form of taxation that can be entered costlessly into the production decisions of the firm. But this does not capture the nature of the interaction between the private sector and regulatory process.
even though that relationship may be essential for understanding key issues such as the
mergers induced by government regulation or the impact of public policy on economic
growth and development.

One reason the TC paradigm has not been more fully integrated into policy
analysis may be attributable, in part, to the lack of a general framework. Traditional
economic approaches analyze transaction costs within the profit maximization framework
common in industrial organization and standard production theory. Thus, the goal of the
firm is to minimize costs, and, by implication, transaction costs. Usually, this is
interpreted as determining the "make" or "buy" decision, or, whether production should
stay "in house" or outsourced to an independent contractor. Most TC analysis in the
economics literature focuses on the type of production arrangement (e.g., in-house versus
outsourcing) that results from these cost calculations (Klein and Shelanski 1994). This
approach underlies the contributions of Williamson (1979, 1985) in explaining hierarchy
and vertical integration in private industry as well as the extensions of this approach into
political science by Moe (1984) and to land-use planning by Alexander (1992) and Lai

Another important contribution to this literature by Bryson and Ring (1990)
broadens the application of TC analysis to show how this paradigm can be used to assess
policy instruments based on principles other than efficiency (cost minimization). Bryson
and Ring argued that public policy has goals other than efficiency, and these other goals
need to be explicitly incorporated into policy analysis rooted in the TC paradigm.
Specifically, they identified liberty and justice as equally important goals. As such, these
goals also become *governing principles* for policy intervention. Those favoring efficiency, according to Bryson and Ring, typically emphasize market approaches to policy intervention. Those favoring liberty and justice might give precedence to other instruments for policy interventions such as regulation, public bureaucracies or self-help (214).

According to Bryson and Ring (214-5), the efficiency principle requires that "costs clearly be related to benefits." Justice requires public bureaucracies to make "equitable decisions" by treating people with the same problems the same way, ensuring fair treatment, equitable exchange, and an equitable distribution of income. Liberty means preserving individual freedom of choice while also protecting the interests of third parties. The choice of governance structure for a transaction (e.g., free market, regulation, or government provision) will depend on how policymakers balance these governing principles.

Bryson and Ring apply their transaction-based model of policy intervention to high school education policy. Self service might preserve individual choice (liberty) and treat everyone fairly (justice), but may be inefficient because graduates may not have a minimum level of technical, social skills or moral values provided at reasonable costs. Society, might thus choose to regulate high school education to provide a base set of educational standards, or even provide public education as a collective good to reduce costs (through economies of scale) and more effectively promote standardized education.

Thus, the transaction cost-approach to policy analysis can provide a number of insights into the purposes and impacts of public policy on several levels. This study
focuses primarily on the impacts of land-use regulation on urban economic development. The TC perspective is particularly useful because it focuses on a critical decision in the economic growth process: the decision by private investors and property owners to develop their property. This decision is made in the context of the local regulatory climate since local governments must often approve projects before land development can take place. "Development takes place in project-by-project decisions made by investors and the local government regulating their investments," notes planning consultant David Slater. "It is at the point of individual project development, however, that the investor's and the public's interests are negotiated." (1984, 78) Since, TC models focus on how public policy affects individual decision-making, they can easily consider public policy as part of the institutional context within which these entrepreneurial decisions are made. Thus, TC analysis can be used to help understand how public policy sets the "rules of the game" and should, as a consequence, help predict or explain certain outcomes.

The traditional approach to transaction costs in the economics and policy analysis literature, however, is not suited to a direct application to planning and economic development. In land development, the governance structure is given in state law and/or local ordinances and applied equally to all transactions. Local communities are enabled -- and in some cases mandated -- by state legislation to plan and zone property development. This means planning is subject to a legislative approval process requiring public hearings, open meetings, city council approval, and requirements for public notice. In essence, private property development is permitted with the explicit consent of the local community through its city council, and often planning board serving in an advisory capacity to the
Ohio serves as a useful example. Ohio is a strong "home rule" state. This means local governments are given authority to develop their own policies within general guidelines outlined in the Ohio Revised Code. Cities can establish their own charters that free them from many statutory restrictions in the revised code. Planning and zoning is an option cities (and unincorporated townships) can choose to adopt. Planning is defined as a legislative process. Legally, then, city councils (and township trustees if they have enacted a zoning ordinance) must formally approve substantive changes to land-use plans. Planning and zoning boards serve in an advisory capacity. Beyond this general framework, chartered cities have substantial discretion: they can choose to require public hearings at the planning board level (although all meetings are open to the public by law), deviate from the state's supermajority requirements for overriding planning board decisions, and alter the hearing notification requirements. Cities (and townships) could also choose to subject all proposed zoning changes and development plans to voter approval through referenda. Thus, local governments in Ohio have substantial leeway to fine tune the zoning and development control process to meet local concerns and standards. This suggests Ohio provides an interesting laboratory in which the interjurisdictional impacts of zoning and development control can be assessed.

A TC framework also has several practical advantages over previous research that will be explored throughout this dissertation. Specifically, a TC framework

a. explicitly incorporates the elements of market failure (i.e., externalities and public goods) that drive much of the local planning process. This means that
issues such as justice and liberty can be considered as well as efficiency in an
analysis of the impacts of public policy on urban development.

b. *uses the exchange (i.e., development permission) between two parties as the
primary unit of analysis.* Decisions to develop land are not made in either a
private or public vacuum independently of the other. Investment decisions are
made after a period of bargaining and negotiation (often mandated by local
ordinance or statute) that implies a level of transaction costs that varies with the
community and project.

c. *suggests a different direction for empirical research on the impacts of planning
on urban development.* Rather than focusing on creating "better plans," or
suggesting developers become better acquainted with local planning processes and
procedures, the TC paradigm can provide insights into how the structure of the
planning approval process can be designed (or re-engineered) to minimize costs.

d. *suggests a range of policy recommendations that facilitate land development and
redevelopment.* Specific recommendations tied to the negotiation and bargaining
process can restructure the planning approval process so that information and
goals are brought into line more quickly. The TC approach suggests *systemic*
reform for urban planning is an important way to reduce costs associated with
negotiation and bargaining rather than to adopt piecemeal or ad-hoc approaches
specific to the needs of individual projects.

e. *explicitly incorporates uncertainty as a dimension for evaluating land-use
planning in the economic development process.* Currently, uncertainty is relatively
unexplored in the economic development planning literature. The TC framework provides a framework for identifying key planning variables and empirically testing their importance in the economic development process.

1.3 Testable hypotheses

Several testable propositions flow from the use of a transaction-cost framework:

1. Local planning processes with higher transaction costs will experience lower rates of economic development, all other things held constant.

Developers are sensitive to the time required to propose, negotiate and approve potential developments. In many cases, planning processes create substantial uncertainty in land development that significantly increase the transaction costs associated with land conversion and redevelopment. Planning systems that increase these costs by creating uncertainty, lengthening the bargaining process, or increasing the complexity of development approval will discourage investment, even if a stated goal of the community or local planners is to encourage private investment and land development. While some communities may choose to adopt a high transaction cost planning system (e.g., to maintain a certain level of quality, see Slater 1984), the adoption of this planning regime would still reduce overall levels of growth in the community.

2. Uncertainty in the planning process can drive up transaction costs and negatively impact rates of economic growth and development.

Land development and redevelopment is driven, in part, by expectations about the probability projects will be rejected or approved by PBs. Since developers choose from many potential sites among many jurisdictions, their decisions are made on marginal cost
calculations. Within a region, the capital and labor costs of construction and physical development may not vary significantly. The costs of plan/project approval, however, may vary significantly among local governments, influencing the calculus of land development and, ultimately, its pattern and pace within regions and even municipalities.\(^2\)

3. **Planning reform can impact transaction costs and economic activity within communities.**

Streamlining regulatory systems can reduce the bargaining and transaction costs associated with land development. Cities that do not adopt TC minimizing reforms may find attempts to promote growth frustrated. Similarly, communities that want to discourage growth could erect complicated planning processes that significantly increase transaction costs. The adoption of a particular regulatory approach (e.g., high transaction or low transaction cost) may depend on the governing principles explicitly or implicitly identified by the community or local policymakers. In some cases, for example, a high transaction cost plan approval regime might be important to protect certain values. In a historic district, local planning regulations may be strict to ensure new buildings and renovations of older buildings maintain the architectural style and heritage of the local community. Still, we would expect reforms that reduce transaction costs within these

\(^2\)Land-use lawyers can provide mediating roles between local governments and developers. These lawyers often have extensive local knowledge concerning the political economy of land development. One lawyer with statewide experience in these negotiations, observed the likelihood of plan approval could change even within a municipality that is governed by the same rules. When he receives a new case, he immediately drives through the neighborhood where the development is proposed and gauges the likelihood of neighborhood opposition using his personal experience and local knowledge.
communities to have a positive impact on economic growth even though the quality development remains the same.

4. **Local planning processes influence the "factor intensity" of land development.**

Planning processes that have high degrees of uncertainty and complexity will have higher transaction costs. Only developers with the administrative overhead and up-front capital to handle delays and complex negotiations will be able to undertake projects in communities with uncertain and time-consuming planning systems. Developers will also tend to shift resources as the transaction costs increase, making development more labor intensive and requiring construction to be more capital intensive. Thus, cities with high transaction costs will experience more intense land development through: a) more capital intensive developments, or b) large, space-intensive developments. In contrast, communities with lower planning-related transaction costs will be associated with a larger proportion of smaller, isolated development projects.

5. **The "character" of a community (i.e., residential dependence, employment diversity, etc.) might also effect the local planning process, and hence transaction costs, associated with land development in different communities.**

Some communities may be more willing to approve plan applications for "socially acceptable" developments. A commercial project, for example, will experience a lower likelihood of approval in a community that is predominantly residential. Multi-family housing developments are less likely to be approved in communities dominated by single-family housing. These preferences will be evident in the planning process and will effect rates of development in these communities.
Planning rules can also be applied differentially by type of land development (e.g., residential, commercial, industrial, or mixed use.). Non-residential development may be subject to different objective and subjective standards than residential development: design standards, for example, might be more strict. Thus, the choice of planning instruments will effect the type of development within communities.

Thus, while efficiency may be an important criteria for evaluating the transaction costs associated with land development, communities may also choose to adopt planning processes and procedures that incur high transaction costs. This may be particularly true if, in an effort to ensure justice and liberty on the part of existing residents, the community chooses to adopt an open planning process that minimizes the potential impacts of development on third parties (either neighbors or the community broadly defined).

1.4 Methodological issues and approach

This dissertation will investigate the relationship between the planning system and economic development using a TC theoretical framework and a two-tiered empirical approach. The first tier attempts to capture the richness and subtlety of the planning/economic development process by using case studies to identify the appropriate dimensions of the analysis and the nature of transaction costs in the development control process. The second tier of the analysis will broaden the empirical investigation using multivariate estimation techniques, primarily regression analysis, to analyze the characteristics and structure of the planning process across cities. In both approaches, economic development will be analyzed through a TC framework, emphasizing both formal planning processes (e.g., the plan application process, the plan approval process,
and the objective characteristics of the zoning system) and informal characteristics (e.g., staff attitudes, uncertainty in plan approval, effective versus legal points of commitment, and organizational culture.)

Understanding the relationship between economic development and local planning requires an understanding of planning complexity. More complex systems should be characterized by higher transactions costs associated with economic development, reducing the incentives and willingness of developers to invest in a community. Less complex systems should experience higher levels of economic development and growth given the same level of demand for investment.

The empirical analysis draws from a variety of sources, including Census data, surveys of local planning departments, analysis of the content of local zoning codes and interviews with planners and developers. The analysis concentrates on cities in large urban counties because these regions approximate competitive land markets where developers can actively search and evaluate sites in different communities with similar demographic and physical attributes.

1.5 The plan of the dissertation

The subsequent six chapters define and develop the transaction cost approach to local planning and urban development more fully. Chapter Two provides a review of the academic literature on economic development and local planning. It covers recent trends in development planning as well as the relatively scant literature on property rights, planning, and economic development. This review is used to provide a general context for the discussion of transaction costs in later chapters.
Chapters Three and Four lay the theoretical foundation for the transaction cost theory of urban planning and economic development. Chapter Three introduces and explains the key concepts underlying property rights theory and transaction costs, drawing primarily on contributions from the industrial organization literature in economics. These concepts are then extended to local planning, framing the relevance of transaction costs in land development. Chapter Four is a formal extension of the underlying framework introduced and developed in Chapter Three. A simple mathematical model is developed to explore the implications of transactions costs on land development, the factor intensity of development, and the impact of uncertainty on developer decisions.

Chapters Five through Seven empirically assess the impact of local planning on development through the lens of the transaction-cost paradigm. Chapter Five uses city and case-specific examples to illustrate the ways local planning processes impact property development in cities. Chapters Six and Seven more systematically examine the implications of the transaction cost paradigm by analyzing individual planning department processing procedures and city zoning procedures and codes.

Chapter Eight provides a summary of the research results, identifies areas for further study, and explores the policy implications of transaction cost theory for local planners and urban development policy.
CHAPTER 2

PLANNING, URBAN DEVELOPMENT AND TRANSACTION COSTS:
A REVIEW OF THE LITERATURE

This chapter explores economic development and urban planning policy through an examination of one aspect of a city's regulatory environment: land-use regulation. Its purpose is to, 1) understand urban planning in the context of urban regulatory policy, 2) assess trends and strategies in planning policy within the context of urban economic development, and 3) assess how the planning profession views economic development to construct a more general framework for analyzing land-use regulation. The next section discusses the relationship between economic development policy and urban development, providing a general frame of reference for understanding land-use regulation within the local policy environment. The importance of planning issues in urban economic development is explored further in Section 2.3 by focusing on recent research on growth management. The enduring debate over the regulatory function of planning and its impact on property development is a central feature of this research. This discussion provides an important context for understanding the regulatory impact of development controls on land
use and urban development. Section 2.3 extends this survey to look at developments in the planning literature, critically examining recent innovations within the context of their regulatory impact on urban economic development. Section 2.4 introduces property rights and transaction costs approaches to land use and examines their role in understanding the impact local planning on urban development. This literature, in particular, provides a useful perspective for evaluating the regulatory impacts of land use planning on urban development. Section 2.5 concludes the chapter with a discussion of the implications for public policy and urban redevelopment.

2.1 Local planning and economic development

Edward Blakely, a planner, argues that locally-based economic development "is essentially a process by which local government and/or community-based groups manage their existing resources and enter into new partnership arrangements with the private sector, or with each other, to create new jobs and stimulate economic activity in a well-defined economic zone" (1989, 58). Blakely's definition focuses on economic development as an activity, not a process of job or wealth creation. New jobs or wealth, in this framework, result from specific investments in capital or labor which can be influenced by specific programs and activities.

Blakely's definition links public policy to economic development through implementation. In the real world of planning, the practical realities of the planners' responsibilities force them to view economic development as an activity that can be encouraged, discouraged or manipulated. Thus, one of the principle activities of planners is to manage public resources, or rationally allocate resources to achieve specified
objectives. The planner's role is to supplement (or in some cases replace) economic
markets.

An important focus of Blakely's definition is thus on how communities and
governments manage their resources. The "management" of existing resources can be
defined narrowly to include only the revenues and expenditures of local government or
community associations, or broadly to include all resources (private and public) within a
jurisdiction. Development controls and zoning laws encompass the broader definition by
extending the regulatory hand of government into the market to direct, guide or restrict
private decisions of landowners, investors and developers. Zoning, in particular, is used
extensively to direct the pattern of property development in urban areas by controlling
densities, segregating uses, and imposing minimum standards for specified uses.

The role of development planning is limited to some extent by the nature of land
markets. Economists have long acknowledged the fact that, while the supply of land is
fixed, the supply of land for particular uses is extensive (Ingram 1980; Evans 1983; Neutze
1987). Property owners decide how to develop land based on expectations of the
profitability of potential uses. In some cases, land owners may prefer to defer development
to later periods if they believe profitable opportunities may emerge in the future. To the
extent planning rules increase uncertainty about future land uses, land-use regulation could
discourage property development and redevelopment. Mayo and Shephard (1991) have
also argued that the randomness associated with local planning decisions could increase
uncertainty and the costs associated with development, dampening economic growth.
Land could remain vacant for long periods because of these factors (Neutze 1987).
Thus, the nature and characteristics of the local planning system may play important roles in economic development, irrespective of the impacts on specific projects. Since private developers are the primary agents for economic development, understanding the ways local development controls and regulation impacts their perceptions is important. Unfortunately, few have attempted to link the uncertainties associated with the planning process with impacts on economic development, or developed a general theory of planning regulation in an economic development context.¹

2.2 Land-use regulation and urban development

The empirical debate over planning and urban development has centered primarily on the impacts of growth controls on housing and land values. In extreme cases, growth controls manifest themselves in caps on new development, moratoria on new construction, or limits on rates of growth. Less onerous forms of growth controls may require infrastructure development (e.g., roads, sewers, sidewalks) or the provision of parks and green space. Most studies have found that growth controls restrict the supply of housing and exacerbate housing inflation (Evans 1992; Lillydahl and Singell 1987; Fischel 1989; Atash 1990). Katz and Rosen's (1987) analysis of 85 cities in the San Francisco Bay region is typical of the approach used to estimate the effects of growth controls on housing prices. Their analysis found that the selling price of houses increased between 17 and 38 percent in communities with growth control measures. These studies often use dummy variables to control for the existence of growth controls, often ignoring the type, characteristics, and

¹Exceptions, as noted, are Mayo and Shephard (1991), Evans (1992), and Lai (1996, 1997).
design of the growth controls (see also Pogodzinski and Sass 1991).

More recent studies have found the relationship between planning and housing prices less direct. Landis (1992) attempted to assess the overall significance of growth controls. In California, growth controls boomed in the 1970s and 1980s: while in 1975 only three cities and counties had adopted growth controls, 93 cities and counties had adopted these programs by 1989. Landis found 9.8 percent of California’s cities had adopted population growth limits, 11.1 percent had adopted housing permit limits, and 3.4 percent had adopted commercial square footage limits by 1989. During this period, growth controls were also implemented through statewide growth management programs (Stein 1993).

The effects of these growth controls, however, were minimal according to Landis. Focusing on seven California communities that had imposed stringent controls and six similar communities that had not, Landis found that the local planning authorities often granted exceptions to the growth control limits. This effectively neutralized the impacts of moratoria and building permit caps. Moreover, much of the development spilled over into neighboring communities with less onerous growth control measures. More important, Landis found that ad hoc and informal controls over land such as annexation refusals or rezonings may have been more limiting than specific growth controls measures or programs. The author concluded that

far more pernicious have been the supply-limiting effects of informal, ad hoc controls. Through their powers of discretionary review, California cities and counties, as well as regional, state, and federal agencies, have acted (however
inadvertently) to reduce the available supply of new housing in the state. The result has been significant region wide housing price increases, which have dwarfed the inflationary effects of purely local caps. (Landis 1992, 502-3)²

Thus, Landis's study confirms the importance of planning-related impacts on housing prices, but suggests planning procedures and processes may be more important than specific policies. According to Landis, local politics matters.

Bramley (1992) provides another recent contribution to the literature on the effects of planning on housing supply. Analyzing ninety local planning authorities in England, Bramley found that the policy stance of the local agency (whether the authority was restrictive or not) had a statistically significant negative impact on the supply of new residential unit completions. Importantly, the effects of the planning policy variables on the flow of new planning permissions were not statistically significant. Bramley observes that the discrepancy between planning permissions and target numbers is "evidence of a considerable 'implementation gap' in the planning system . . . " (1036). Nevertheless, according to Bramley, this was a "first attempt" to model the planning permission process.

Bramley (1993) extended his earlier analysis to evaluate the impacts of planning versus tax subsidy interventions in the housing market. The analysis found similar results as his earlier work, but the models were specified to estimate the magnitude of the effects of planning changes on housing prices. The results found that releasing more land for development through the planning permission process moderated housing price inflation

²One of the limitations to Landis's study is that the definition of growth controls is narrowed to building permit caps, moratoria on new developments, or strict limits on growth (e.g., 2 percent residential growth).
(although the dominant effects were macroeconomic fluctuations). Unfortunately, this extension of Bramley's earlier analysis did not attempt to develop a more complete model of the planning process. In fact, the effects of planning were measured solely in terms of releasing new land for development. In built-up urban areas, the land-use regulation issue concerns the convertibility of land from one use to another. These issues remain substantially unresolved and unexplored in the literature.

The recent growth control literature and Bramley's analysis of English planning suggest that the planning process is not exogenous. In fact, Bramley's analysis attempts to incorporate at least one form of endogeneity into the model by arguing that the planning process responds to market conditions. This conclusion is supported by the results of Landis (1992) which suggests that growth control measures are often muted or circumvented by local politics or spillovers from other communities. McMillan and McDonald (1991) also found that planning agencies respond to residential market demand, although not commercial or industrial demand. Pogodzinski and Sass (1994) found that residential land use regulations tend to "follow the market" and thus did not significantly impact housing values.

Case studies have provided another avenue for exploring the interactive aspects of the planning and economic development. Seigan's (1972) seminal analysis of "non-zoning" in Houston used the case study method to track subtle differences in land-use planning based on restrictive covenants versus traditional planning approaches. Seigan

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Asabere and Huffman (1991) found the even though the demand for industrial land fell in Philadelphia, the area zoned for industrial uses remained constant, resulting is substantial reductions in the value of industrial property. This is consistent with McMillan and McDonald's (1991) finding that industrial zoning is less responsive to market signals.
found that restrictive covenants allowed for a wider diversity of uses, moderated housing prices, and expanded residential choices compared to more conventional zoning. Similarly, Staley's (1994) analysis of land use and planning in Hong Kong identified property rights as a salient issue in land development. To the extent the local planning reduces land values through aggressive regulation, uncertainty in property markets increases and economic development slows. Thus, the structure and process of the planning system affects the interest and willingness of developers to invest in a community (see also Lai 1996). Particularly in regions such as the U.S., where developers often have a wide range of land investment choices, developer expectations can be an important element of the land development process. The literature on the nature of planning and land development is surprisingly sparse given its importance in the development process. The growth control literature nevertheless recognizes the regulatory nature of planning and zoning and its potential impacts on economic activity. As such, land use regulation imposes costs on development. Even though zoning decisions may be endogenous, the impact of land use planning and regulation can be significant because it increases the transaction costs of property development within local communities (see the discussions in Chapters Three and Four). This can discourage economic growth in those areas.

2.3 Innovations in urban planning

To some extent, planning has attempted to address concerns about inefficiency and

4Interestingly, the endogeneity of zoning undermines the very concept of urban planning. Planning is intended to supersede, or at the very least guide, market forces by imposing a rational process on land development in the public interest. This is achieved, in principle, by adopting a master plan that lays out future land uses.
regulatory costs. Many planners are faced with the practical "in the trenches" problems of creating jobs and encouraging new investment in economically depressed areas. As a result, however, planners have relied on tangible, project-related innovations. The experience of Canary Wharf in London provides a large-scale illustration of the issues and problems planners face when redeveloping inner-city areas (Middleton 1991). The redevelopment project attempted to revitalize several miles of waterfront property along the Thames River in London. Much of the development attempted to replace abandoned warehouses with upscale apartments and professional offices. The project was delayed at almost every stage by organized opposition, the business cycle, and traffic coordination. The experiences of these approaches and strategies have important lessons for understanding the nature of development and the role transaction costs play in the process.

2.3.1 Targeted development tools

Public/private partnerships have received substantial attention in the redevelopment literature as have the formation of development corporations. These are typically targeted programs tied to specific projects or areas of a city and are consistent with the project orientation of economic development planning. Urban development corporations (UDCs) have been central to economic development in inner-city areas in the United Kingdom (Middleton 1991). In most cases, they provide incentives for the private sector to invest in unprofitable areas by providing public services, low-interest loans, or site selection assistance (see Gittell 1993). Ironically, these activities may have actually been strengthened by the withdrawal of federal funds since constraints imposed by federal funding were also lifted (Sagalyn 1990). Cities now use a wide variety of funding sources,
including quasi-public lending institutions, commercial banks, impact fees and "exactions" to finance economic development projects (Wiley 1982; Steinbach 1987).

These innovations have been particularly popular mechanisms to address affordable housing issues. Tax-exempt financing, for example, sustains large amounts of privately developed low-income housing (Farina 1992). Development agreements are also widely used to reduce uncertainties in the development process while ensuring revenues exist to provide important infrastructure (Delaney 1993). Nelson, Frank and Nicholas (1992) found a positive effect of impact fees on land development since they created a "contract" between developers and local governments that ensured that certain facilities, such as roads, sewers, and parks, would be provided when the development was completed. "Impact fees," the authors concluded, "improve certainty of land development proposals, generate revenue to extend facilities that in effect benefits the very developers who pay the fees, eliminate much of the ad hoc process of exaction negotiation, and treat similar development proposals similarly" (64).

Impact fees, however, can also place significant burdens on local developers that inhibit growth. Ross and Thorpe (1992), for example, identified twenty-two categories of facilities and activities that could be legally financed through impact fees. Many of these reflect political goals rather than facilities that, in fact, would be used or needed by local residents. Facilities that could be financed through impact fees included basic infrastructure such as roads and sewers, but also recreation facilities, public art, museums,  

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³Importantly, impact fees and exactions must be used to leverage public services, not as revenue raising strategies alone. See the discussions in Keenan and Buchsbaum (1991) and Ross and Thorpe (1992).
low-income housing, historical preservation, cultural facilities, day-care facilities and mass transportation equipment. Many of the latter groups of facilities may not benefit the entire community or, if demanded by local residents, could be provided through the private sector (e.g., day-care facilities) assuming local zoning enabled those uses.

2.3.2 Neo-traditional planning and the New Urbanism

Neo-traditional town planning (NTP) has also received substantial attention in the literature in recent years. Many NTP concepts provide the foundation for the New Urbanism, a new trend in urban planning that could rival the stature of earlier epochs such as the City Beautiful movement in the early twentieth century. Real estate development consultant Lloyd Bookout (1992a, 1992e) notes that neotraditional planning emerged out of dissatisfaction with Planned Unit Developments (PUDs) in the 1960s and 1970s. PUDs were originally designed as methods for creating comprehensive developments that cluster high-density residential uses with retail, shopping and employment uses. PUDs became a popular mechanism for providing more flexibility for developers and planners. Many "planned communities" (i.e., Reston, Virginia and Columbia, Maryland) have used them extensively.

But PUDs failed to create the sense of "place," or community, that many planners believed was important to urban design and "meaningful" community development. PUDs, despite their attempts to infuse comprehensiveness and flexibility into the development system, did not consider the community as an integrated urban design problem. NTP promised to fill this void. NTP was not simply a different approach to urban design. It represented an attempt within the planning profession to adopt a concept of cites that was
more tolerant of diversity and, in the initial stages, encourage flexibility to meet non-traditional planning standards (e.g., narrow streets, town centers, or mixed uses).

NTP was imported into the United States from Europe in the 1980s, borrowing heavily on European planning designs that focused on small villages and towns (Knack 1989). While most planners recognize the limitations of attempting to directly transplant European designs into the U.S., they also see NTP as an attractive alternative to the relatively bland, suburban sprawl common in most American suburban communities. Bookout (1992a, 1992b), for example, argues that neotraditional towns consist of several distinguishing features: mixed, balanced, and finely grained land uses; higher densities created through smaller lots and townhouse developments; grid lay-outs that facilitate through traffic on secondary streets; plans that encourage pedestrian traffic; formal open space areas such as town greens, squares and formally designed parks; and integrated architecture encouraging consistency within a thematic framework (e.g., type of roof, siding, and fences).

NTP concepts direct residential and commercial activity toward a town center. While the town center typically follows a traditional grid pattern, curved streets in low-density residential areas do not follow traditional suburban designs. One of the principle advantages of neotraditional planning, according to its proponents, is its ability to generate density and manage congestion through thoughtful planning (Bookout, 1992b).

Another advantage of NTP according to its proponents is the break from conventional codes and standards. This has become increasingly relevant given criticism of the rigidity of subdivision and zoning codes governing new development (Kingman,
In fact, many planning innovations in suburban areas are tied to the process of streamlining the development permission and zoning process. Flexible and performance zoning systems in particular will be discussed in the next section.

Neotraditional planning also has several disadvantages. NTP, for example, can become detailed and cumbersome. Knack (1989) notes that neotraditional planning codes can be extremely inflexible and burdensome, sometimes becoming more rigid than their predecessors. Even Bookout, a proponent of neotraditional planning, observes that "neotraditional town design can take lots of time and involve a tremendous amount of regulatory detail" (1992c, 21). Communities often create detailed performance zoning codes to ensure new developments remain consistent with the goals, intent and requirements of the neotraditional design concept.

While neotraditional zoning codes can be short, the more diverse and complex the urban area is, the more complex the zoning codes will be (Bookout, 1992c). Seaside, Florida, for example, started the NTP movement in the U.S. by adopting a one-page, wall-size diagrammatic table that specified standards such as intent, land use, buildings, and infrastructure requirements. Fast growing Loudon County, Virginia, on the other hand, adopted several ordinances specifying different types of development for different densities and sizes: Rural Hamlets were small (forty acres) large-lot developments governed by a twenty-six page (single spaced) document. Slightly larger, more dense Rural Villages (one hundred to three hundred housing units) are governed by a forty-two page ordinance. The Loudon County neotraditional planning ordinances also allow for the development of
towns and urban centers, although the urban centers are designed to serve populations of only twenty-five thousand.

NTP is also most often associated with large, comprehensive developments more common in suburban and exurban areas. This limits its applicability to the problems of redeveloping land in built-up areas. Central cities and other built-up areas have relatively few large tracts of undeveloped land. Even vacant land has often been previously developed, creating complications concerning ownership and legal responsibility for externalities created from the previous use (e.g., environmental spills). Most cities, in fact, are faced with dozens of acres of abandoned buildings that are prime areas for redevelopment. NTP provides limited application to the problems of encouraging the redevelopment and reuse of land.

A more salient weakness of neotraditional planning is its attempt to reduce the size and scope of built-up areas. In many cases, this approach is not practicable in built-up areas such as central cities where services and development policy are administered city-wide. While some cities are beginning to develop and implement mechanisms for decentralizing political and planning approvals, many public agencies service a large region that inherently limits the scope of localized decision making.

Driving the NTP concept is an "ideal type," a vision of what a community should be and how it should work. Strictly applied, the pursuit of a NTP design provides little flexibility or opportunity to deviate from the plan. These plans are fundamentally static. NTP designs are innovative because they propose a different design concept compared to current practice. They typically do not accommodate a wide variety of interests and goals.
or the city's evolution away from the original design. Thus, despite claims NTP is "innovative," the designs cannot accommodate innovation. In fact, often the structure of the plan development and approval process is more tightly controlled and strict than under traditional zoning and planning procedures.

2.3.3 Flexible zoning

An alternative to neotraditional planning is flexible zoning. The principle advantage to flexible zoning is its adaptability and ability to conform to the dynamics of land markets. While various forms of flexible zoning were introduced in New York City in the 1960s, the 1980s experienced a resurgence of interest in this tool. In the 1970s and 1980s, planners began to reorient their thinking away from the rigid separation of uses that dominated planning theory through the 1960s.

The case for more planning flexibility is increasing as the process of land redevelopment and regeneration is better known. The need for low and moderate income housing, combined with changes in life styles and work environments, led some cities to adopt ordinances that permit combined commercial and residential uses. These units have become popular in Los Angeles among younger professionals and among single women because they offer better access to jobs and a heightened sense of security (Tilburg 1992). The proliferation of mixed-use districts in urban areas, however, is still incremental. In

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Increasingly, particularly in built-up environments such as central cities, the strict separation of uses was viewed as counter productive. Jane Jacobs (1961) argued forcefully that mixed uses were an essential component of urban life. By the 1970s, mixed uses began to emerge as a component of urban revitalization and planning. More recently, Garreau (1991) has criticized planners for their adherence to inflexible concepts of community and design. Land developers, he argued, have been far more innovative by their persistent search for meeting the needs of consumers.
most cases, mixed uses have been restricted to particular districts. The City of Chicago, for example, has several areas that are designated mixed-use districts.

Performance (or flexible) zoning ordinances have been implemented more comprehensively within cities, although in smaller jurisdictions. Porter, et al (1988) used case studies of seven communities to illustrate the benefits of flexible zoning: Fort Collins and Breckenridge (Colorado), Largo (Florida), Hardin (Kentucky), Bath Charter Township (Michigan), Buckingham Township (Pennsylvania), and Duxbury (Massachusetts). Fort Collins and Largo were the two largest cities with populations of 82,000 and 60,000 respectively. The complexity of flexible zoning ordinances varies considerably from jurisdiction to jurisdiction. Some ordinances, such as Fort Collins's,\(^7\) are extremely complex, consisting of hundreds of different criteria used to rate the acceptability of projects. Others are relatively simple, merely expanding the options for development beyond the rigid guidelines of most traditional zoning ordinances.

Flexible zoning ordinances attempt to improve the planning system by streamlining the development process, increasing certainty over development permissions and approvals, and reducing the costs of negotiating with local planners. Thus, these reforms directly impact the transaction costs of land development. As such, they attempt to provide general goals (e.g., aesthetics, open space, parks, or buffers) while allowing more maneuverability and flexibility for developers (Levy 1991). Planning in these systems may be administrative (rather than legislative) processes keyed to explicit criteria and decision rules that reduce the level of uncertainty in the plan approval process. Moreover, by

\(^7\)Fort Collins recently repealed its flexible zoning ordinance over the objections of the local planning staff.
avoiding more traditional, end-state zoning, land markets can conform more to the changing needs of consumers rather than constraints imposed by master plans. The potential benefits of an administrative process should not be underestimated. The case studies in Chapter Five and empirical analysis in Chapters Seven and Eight suggest that the uncertainties in a legislative approval process discourage economic activity in cities.

Adopting a performance-based zoning system, however, may reduce the role of planners in the development process. The experience of Fort Collins probably provides the clearest illustration of this effect. Development permission was granted almost exclusively according to published criteria weighted through formulas specified in the zoning codes. Dubbed the Land Development Guidance System (LDGS), developers assembled land and submitted their development plan based on over sixty-five performance criteria and forty-nine other impact criteria. Development plans were evaluated based on the number of "points" they accumulated. The overall score for the proposed project was determined by multipliers attached to the performance and impact criteria in LDGS. As long as the development achieved an established minimum number of points, it was approved by local planners. Thus, planners had relatively little discretion over the content of the proposed development once the formula was established, and negotiations became relevant only if the developer deviated from the written criteria. In other words, plan approvals were handled administratively. The effect was to require planners to incorporate design standards explicitly into the plan approval system. This contrasts with the more common practice where conditions are attached to applications when they are submitted to the local PB and then subjected to a public hearing (see the
case studies in Chapter Five).

While the direct role of planners was curtailed in the Fort Collins system, flexible zoning appeared to have achieved many of its goals. Planners and many residents acknowledged that the quality of development had increased within Fort Collins as a result of the point system. "The point system," notes Bill Eggers, a critic of traditional zoning and Director of the Reason Foundation's Privatization Center, allows the developer to be more creative and meet his needs and the community's through a more flexible framework. The strength of this approach is that certain objectives, deemed to benefit the community, are strongly encouraged by economic incentives and disincentives built into the system rather than by rigid, regulatory means. (1990, 12)

Moreover, the system effectively streamlined the development application and approval process in Fort Collins. Application processing once required seven to nine months. Planners estimated that most applications were processed in seven to fourteen weeks once LDGS was implemented. In large part, the reduced delays in processing were attributed to minimizing the need for rezonings and variances which accompanied almost all development applications before the adoption of LDGS (Eggers, 1990, 14). Since planners spend the largest proportion of their time administering zoning laws and development controls (Dalton 1989), the effect of reducing the number of rezonings and variances is an increase in the amount of time they can spend on other projects, including long-range and strategic planning.

Despite the apparent success of Fort Collins and other communities that have
experimented with flexible zoning, criticism has emerged. Jaffe (1993) argues that performance zoning standards have had little impact on enhancing environmental and public health protection. Performance standards have also increased the regulatory burden on developers by adding uncertainties to development permission. Pinpointing allowable densities, he notes, can be problematic because "the ultimate effects of the equations on density are so site-specific, the landowner is less able to pinpoint a parcel's permitted density within a specific residential zone" (6). Moreover, the fact that detailed planning is pushed to the front-end of the process means that developers must often incur these costs without bank financing.

In the end, performance standards may become too complex and sophisticated for most lay officials to implement consistently and effectively. Jaffe cites the case of Gay Head, Massachusetts, which helped pioneer performance zoning, as an example of a local jurisdiction that backtracked, adopting more traditional zoning to make their system of planning more manageable and practical. More recently, Fort Collins has abandoned LDGS. "There is little evidence," Jaffe concludes, "that [performance-base zoning ordinances] have ever been either adequately enforced or administered...." (9).

Nevertheless, flexible zoning systems permit more adaptation and variation in land use, allowing land development to conform more to market requirements than typically exists in traditional zoning and planning systems. In effect, developers are given quality control targets and relatively wide discretion in meeting those targets. As a result, developers can put development plans and packages together that conform more to the investor's market expectations than the views of the city's planning department. In some
respects, this flexibility enhances the potential for development in the market (Jaffe's objections aside) because the developer has more control over the final outcome and decisions are handled administratively. In the case of Fort Collins, in particular, criteria for approval were laid out clearly in the planning and development control procedures, reducing delays and uncertainty in the zoning process.

2.3.4 Development regulations

The administration of zoning and planning regulations consumes significant proportions of planners' activities, ranging from 20 percent to 50 percent of their time at work (Dalton 1989). Moreover, these impacts are not neutral. Numerous surveys of the effects of land-use controls suggest that local regulations add 20 percent to 30 percent to housing costs (Karlin 1981; Shlay and Rossi 1982; Atash 1990, 237-8). In addition, studies performed in the United States as well as abroad find that planning regulations can delay development by weeks, months, and, in some cases, years.

The negative impacts of a poorly designed local planning system are also recognized by practitioners. In an early case, the city of Beaumont, Texas recognized that its local zoning and development approval procedures impeded economic development. Zoning districts were defined so rigidly that innovative new forms of development, such as clustered residential housing, became economically unprofitable because of the approval process. "It was generally agreed that revising and updating the zoning ordinance was necessary to ensure that the community remained competitive with other development markets," observed the city's planning director, "while also providing local residents and developers with the opportunity to take advantage of more efficient or economical types of
development" (McClendon 1982, 145-6). Indeed, the city's planning staff identified forty "major deficiencies" in the zoning ordinance. Rezoning requests to accommodate developments such as shopping centers and beauty shops were often denied even when the city council, planning commission, planning staff, and neighboring property owners favored them (147). Similar types of regulatory problems have surfaced concerning the re-use of already developed land.*

The individual "horror stories" are numerous and can involve projects of varying sizes and scales. In San Francisco, Mission Bay, a three hundred acre mixed-use development took nine years to negotiate and complete (Porter 1992). Over fifty community and activist groups were involved in the planning approval process and the city and county of San Francisco exacted numerous concessions from developers, including pledges to provide low and moderate-income housing subsidized by the city. Two plans failed to gain approval from planners and public officials. The first plan failed because it was developed independently of city officials and community groups and proposed a suburban environment. The second failed because city officials felt the new development would compete with the downtown area. The resources expended in the plan approval process were extraordinary.

Atash (1990, 238-9), however, suggests that the inflationary effects of land-use regulations on housing costs can be mitigated through the adoption of several regulatory

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*In many central cities, for example, old industrial and manufacturing sites pose important obstacles to successful redevelopment. Environmental hazards have created numerous problems and obstacles for developers in urban areas. Pollack (1991) has argued that these environmental concerns have significantly increased the politicization of the development process, bringing a new awareness of the potential impacts of development to new constituencies.
reforms. Some cities, he notes streamline their review and permit application procedures, impose one-stop permit processing, provide for pre-application meetings with developers or staff review to fast track some applications. Regulatory authorities could easily fast track certain types of projects such as those prepared by architects or planning consultants, or developers that have worked with the city before. Empirical support for these suggestions is found in Chapter Six where their impact on application processing times is analyzed. In fact, developers attempt to maintain cordial working relationships with local planners and public officials because they believe the approval process will be smoother than if the relationship were adversarial.

Other planning or regulatory reforms suggested by Atash (239-40) focus on the substance of the development controls. Atash suggests that the number of rezoning and variance requests would be significantly reduced if mixed uses were allowed in a more comprehensive manner (such as the flexible zoning districts cited above), allowing for zero lot-line development to promote higher densities and allowing for accessory units in multiplex housing environments. Density bonuses could also be used to encourage more compact development including relaxed restrictions on building heights and allowing for cluster and planned unit developments.

Salins (1993) argues that New York City's cumbersome and complex zoning laws have significantly compromised economic development. Salins recommends abandoning hierarchical zoning (established through a 1961 revision of New York zoning ordinance) which defines uses for particular zoning districts. Under hierarchical zoning, planners would specify which uses were permitted and which ones were not for every district.
The earlier system was pyramidal, allowing for a wider range of uses within zoning districts. Under the hierarchical system, districts zoned commercial typically did not allow residential uses. Pyramidal systems, in contrast, would.

Hierarchical zoning, Salins argues, created an environment that encouraged a massive increase in the complexity of New York's zoning laws and micromanagement of urban development by planners. "The 1961 ordinance has been continually amended since its adoption," observes Salins, "reflecting an impulse to fine-tune urban development by anticipating every possible contingency" (42). The result has been a system characterized by uncertainty and arbitrariness that impedes the development process. Indeed, long lead-times and higher costs of developing new projects have been an integral part of the recent wave of office and building renovations in downtown Manhattan. "Approvals needed for a major renovation project can be obtained in less than six months," note observers of Midtown Manhattan office renovations, "while new buildings may require as much as two to three years' lead time" (Gordon and Shea 1990, 6). This also may be one reason nine out of ten apartment renovations in Manhattan are performed by unlicensed construction firms without permits (Sassen-koob 1989).

The solution, Salins writes (1993, 47-9), is a new zoning system based on three general principles. First, zoning ordinances should embrace markets as a generally effective allocator of land uses. Planning and zoning regulations should be restricted to correcting for market failures. This view is similar to that recently proposed by Seigan (1990). Second, regulations should be simple, flexible and predictable. Salins proposes a system for New York City that scales the number of zoning districts down from 125 to 18,
eliminates special districts, simplifies rules concerning the application of rules to sites and buildings, and allows no exceptions unless approved by an appeals board or court. Third, Salins suggests that, once written, the rules should not be subject to discretionary modification and should be applied consistently. "Indeed," argues Salins, "zoning compliance should be so simple and definite that it can be monitored by clerks in the building department" (28).

These criticisms of zoning and development control may be relevant in contemporary central city environments. In some cities, residential development has actually threatened commercial and industrial development, prompting city officials to enact zoning ordinances protecting manufacturing uses (King 1988). In addition, old multi-storied industrial buildings in traditional manufacturing cities have found new life as developers have renovated them to meet the needs of light industrial and high-tech clients (Baltic 1992). Caves (1986) has argued that allowing for second units in single-family homes could significantly ease the housing crunch in California based on evidence from San Diego. In another case study of San Diego, mixed uses were welcomed in non-downtown settings, suggesting the applicability of this concept may be acceptable outside dense urban regions (Fillip 1990). Empirical evidence for simplifying local zoning codes is also found in Chapter Seven.

2.4 Transaction costs, property rights and urban development

These proposals still lack an overall focus and framework for organizing their analysis and recommendations. This makes it difficult to evaluate their potential benefits
outside the experience of individual cities. A promising lens through which these analyses
of land use regulations and their recommendations can be assessed is the transaction-cost
paradigm rooted in the property rights tradition of economic analysis. While a more
complete development of these ideas is reserved for Chapter Three, the transaction-cost
paradigm provides a mechanism for assessing the impact of planning on the urban
development process. The primary insight of the transaction-cost approach is its focus on
development permission from a community as a contract between two parties: the private
developer and the local government. Project approval is equivalent to granting a
development right to a property owner that is legally protected. This protection provides
the security and certainty necessary for the developer to move forward with the project.

For many planners, property rights have centered on legal issues. This has become
particularly evident in recent controversies surrounding eminent domain and "takings."
Property rights are discussed almost completely within the context of whether private
parties have legal entitlements to use land and property. Property rights become important
because they constrain the ability of government to regulate private property and behavior
(see for example the discussion in Strong, Mandelker, and Kelly 1996). This effect is
perceived negatively since planners often presume urban planning operates in the public
interest. Thus, policies or legal principles that preclude planning operate against the public
interest.

A comparison to an alternative planning system usefully explains this point. In his
comparative study of American and British planning systems, Cullingworth (1993, 209)
explains that English planning does not include zoning which confers development rights
on property owners. Development applications are considered on a case-by-case basis. "Concern for individual property rights is, by American standards, minimal," he observes. "The public interest overrides them, often without any compensation being payable" (209). In fact, Cullingworth continues, "Effective planning necessarily controls, limits, or even completely destroys the market value of particular pieces of land" (210).

This view of property rights in urban development is significantly different from the economic view which provides the basis of the transaction cost approach to development regulation that serves as the basis for this research. Importantly, planners are reassessing their views of property rights in urban development. Recent Supreme Court cases (e.g., Nollan v. California Coastal Commission, Lucas v. North Carolina Coastal Commission, Dolan v. City of Tigard) have also begun to focus on takings issues with clear implications for planning and development controls. Thus, Donald Krueckeberg, a planning professor at Rutgers University, recently noted that "property" may be the "most central concept in planning" (1995, 301). Property, he argues, captures the relationship between "the owner of some thing and everyone else's claims to that same thing" (307). This conception is closer to the economic view than the traditional planning view represented by Cullingworth.

2.4.1 Zoning and property rights

Economist William Fischel, building on the work of Nelson (1977), made one of the most significant recent contributions to discussions of property rights and zoning, arguing zoning is a "collective property right" (1985, 55-56). Citizens in communities have the legal and statutory authority to challenge zoning decisions through political and
judicial processes Fischel notes, validating the practical orientation and use of conventional zoning practice. Nelson (1989, 303) argued that zoning was a way local communities and neighborhoods could factor neighborhood environmental issues into decisionmaking since land development could impose costs on neighboring property owners outside normal market transactions (thus creating an "externality").

Property owners are legally entitled to develop their property up to the levels and densities permitted in the zoning code, but the local jurisdiction "owns" the development rights beyond that level. Further development requires approval from the local legislative body (usually a city council) and sometimes regional and state planning agencies. Thus, the statutory authority of zoning abandons the common law concept of nuisance, where both property owners and neighbors had legally recognized entitlements to the use of their land. In principle, planning and zoning could effectively regulate uses in the public (or neighborhood) interest to maximize the community's welfare (Nelson 1989). Ultimately, zoning supersedes a private property owner's rights to change the use of her land. "Developers' entitlements have been curtailed by zoning," notes Fischel, "and this makes it difficult, if not impossible for them to acquire the right to build in a community" (1985, 56).

The development approval process, then, is largely about developers and property owners bargaining over changes in land use. Since developers need approval from local governments before they can begin, zoning creates a system of bargaining where zoning authorities, as representatives of the community, exact concessions from property owners before transferring entitlements to property development (Fischel 1985, 98-9). This
becomes clearly evident in the case studies in Chapter Five. Virtually all development applications were approved subject to numerous, sometimes more than a dozen, conditions. Developers also agreed to the conditions in order to expedite their projects.

Bargaining for these entitlements, however, is subject to numerous potential inefficiencies, including monopolistic tendencies of existing residents to prevent efficient property development, the lack of information about community preferences, and the ability of interest groups to use the political process to prevent growth desired by the majority in the community. Thus, as Nelson points out, zoning administration tends to reflect the "political power and interest of the groups most significantly affected by zoning decisions -- in this case groups within each zoning jurisdiction." (1989, 304).

The politicized nature of the zoning and the local planning process also tends to make zoning "fungible," adaptable to different circumstances and environments. By allowing developers to negotiate and bargain, property development is permitted even when it is inconsistent with an existing master or comprehensive plan. Nelson (1989, 305) has argued this fungibility is necessary to make zoning workable. Master plans rarely cover all contingencies in land development, or anticipate major changes and shifts in demographics or technology (e.g., interstate highway transportation's effects on suburbanization, the microchip's impact on telecommuting, or demand for home-based work space). This political adaptability has, on the whole, increased social efficiency according to Nelson. (An alternative view can be found in Gallion and Eisner (1986) who argue for strict adherence to master plans.)

Proposals for reforming zoning in this property rights tradition typically focus on
the public goods properties of land-use regulation. Reforms should minimize externalities associated with land development, the argument goes, in order to optimize social welfare. Little in this literature, however, analyzes land-use regulation from the perspective of economic development (e.g., job or wealth creation). Rather, zoning (and land-use regulation) represents a collective (public) choice mechanism that minimizes the external costs of market activity (see Fischel 1985; Nelson 1989; Mills 1990). It is a result of taking planning decisions out of the economic realm, where they are driven by private markets, and placing them in an explicitly political environment subject to legislative decisionmaking. "Although there is little agreement among expert opinion on the solutions [to zoning's imperfections]," writes Nelson,

there is close to consensus on the most important problem of zoning. Zoning is a system that may be acceptable in a stable environment such as an existing neighborhood seeking to keep out most new uses. However, zoning fails almost entirely in a dynamic context -- either in an existing neighborhood that is facing a transition to new uses or in the development of vacant land. (1989, 307)

This is an important insight. Zoning, and as a consequence most urban planning as it is practiced in the U.S., is a cumbersome instrument for handling economic and social change. In part, as the case studies in Chapter Five will show, this is because the legislative process tends to discourage change by giving weight to largely unproven concerns about the potential costs and impacts of development. Given the pervasive use of zoning as the primary policy instrument for regulating property development, the impacts on economic development can be significant.
2.4.2 Transaction costs and urban planning

A sub-branch of the emerging literature on property rights and public choice approaches to land-use regulation concerns transaction costs. Transaction costs are the costs of bargaining, negotiating, enforcing, and defining contracts. Transaction cost analysis allows a comparison of "the efficacy of different institutions, private property among them, to obtain information and apply it correctly" (Fischel 1985, 121; see also Masten, Meehan, and Snyder 1991; Moe 1991; Klein and Shelanski 1994). Thus, a property rights approach to land use issues, using a transaction-cost paradigm, allows analysts to consider planning and zoning issues in the context of exchange and social welfare, while also pointing to ways the planning process could be designed to address development policy issues and problems.

Bryson and Ring (1990) build on the work of Oliver Williamson in economics and Terry Moe (1984) in political science to develop a transaction theory of policy intervention. Bryson and Ring's primary focus is on the mechanisms used to implement public policy, arguing that the form of policy intervention will depend on the nature, or "profile," of the specific transaction. Notably, while they build on the insights from the "new institutional economics," Bryson and Ring are careful to avoid the term "transaction cost." They prefer to describe their approach as a transaction "based" theory of policy intervention. The benefits of the transaction paradigm include the ability to 1) target interventions for specific purposes, 2) include a broad range of governance structures (e.g., markets, agencies, or grants), 3) adopt performance expectations using overarching goals such as efficiency, justice, and liberty, and 4) develop a set of rules for switching
governance structures (e.g., moving more market mechanisms to government provision, or vice versa). While they do not apply their paradigm to urban planning, Bryson and Ring's framework is clearly intended to apply to a wide range of disciplines.

Different types of transactions may mean different implementation mechanisms will be necessary to achieve policy goals. "Few mechanisms are likely to perform well according to all principles," Bryson and Ring observe, "choices of which mechanism to prefer and when to switch, are likely to be complicated" (1990, 213). The key, then, is to determine which policy instrument best meets the goal. Thus, their framework is a transaction-based theory of policy intervention. They presume that policy is being devised to meet a shortcoming in the private market.

Alexander's (1992) contribution to the transaction-cost literature is more directly tied to the problems of planning. Frustrated with the distinction between "public" and "private" behavior, Alexander argues that planning is, in fact, inherent in organizational structure (see also Milgrom and Roberts 1992). Market firms do not need planning since their activities are guided and governed by market prices. Hierarchical organizations (e.g. agencies, corporations, or bureaucracies.) require planning to guide resource use to meet organizational objectives (Alexander 1992, 194). High transaction costs in the market require governmental planning to ensure land is used most effectively and efficiently (i.e., avoid incompatible uses, improve amenities, or coordinate infrastructure investment).

"The local government's master plan is intended as a frame of reference for its own and its residents' and firms' location and investment decision in a way the market cannot" (195).

Alexander's contribution is significant in that it explains why planning exists in
both the private and public sectors. Alexander's approach is a straightforward application of TC theory to the choice of governance structure that most efficiently achieves policy goals. Moreover, the transaction-cost paradigm links planning to organizational structure and, ultimately, implementation. Still, Alexander's contribution is not linked to the problems of economic development. His framework focuses (as do the public choice and property rights theorists) on resource allocation in a static world, not a dynamic one involving wealth and job creation.

More recently, Lai (1996, 1997) has explicitly linked the property rights and transaction-cost paradigm to local planning and urban development. Lai's contribution is twofold. First, he develops a comprehensive framework for understanding planning and zoning within a property rights framework that includes transaction costs. This is an important extension of Fischel's (1985) analysis that links the property rights framework to implementation and policy design issues. In essence, Lai argues that planning and zoning policy can be analyzed based on whether it increase or decreases transaction costs in the market. If planning policies increase transaction costs, they likely exacerbate inefficiencies and externalities. If they reduce transaction costs, planning policies likely enhance social welfare and increase the efficiency of property markets and project development.

Second, Lai applies the property rights framework to the problems of urban development. In fact, Lai (1997) justifies government intervention through planning on its ability to reduce transaction costs and facilitate market transactions. This, in turn, facilitates economic development by encouraging investment in land and property. The critical element to this process, ironically, is zoning. Zoning, in Lai's view, is defined as a
process of "boundary delineation" (1996, 7). By defining boundaries for private property and use, zoning creates enforceable property rights. Thus, if someone owns property in a residential zone, he is legally entitled to those development rights on that parcel of land. This facilitates economic development by creating a system of enforceable property rights and contracts. It also reduces uncertainties about whether land development will be approved.

To the extent that any land market presupposes the existence of land with clearly delineated boundary, zoning is implicit in all systems of property rights over land protected by the state. Without such boundary delineation, the transaction costs of measurement (valuation, land surveying, etc.) and enforcement of rights over land would be prohibitively high, if possible at all. As such, zoning is significant as an attribute of property rights that constrain rent dissipation. (1996, 36)

According to Lai, Ronald Coase accepted the possibility that government regulation of private market activity may be necessary in the face of high transaction costs (see also Fischel 1985; Hazlett 1996). "Zoning as government regulation," writes Lai, "may be acceptable as the alternative to free transaction in land market where the transaction costs of using the unregulated land market become excessive" (1996, 66).

Lai also empirically tests whether his transaction-cost theory of zoning is supported by evidence. In Hong Kong, Lai uses the Comprehensive Development Area (CDA) as a test case. CDAs were developed by the Hong Kong government to overcome the problems of fragmented ownership. Titles to land often include numerous property owners within blocks or even buildings. Some of the title holders are residents, but many are absent. In
other cases, the titles are dormant or unclaimed.

The government zoned older areas of the territory CDA, permitting redevelopment of large blocks of land only. Thus, individual tenants or landlords could not redevelop their property unless they secured agreements with all other property owners (or tenants) consenting to a comprehensive redevelopment plan. This prevented "ad hoc," piecemeal development. In principle, CDA developments should be more comprehensive in their character (re: better planned) and allow developers to maximize the intensity of their development while also achieving economies of scale (Lai 1996, 101). Superior planning and amenity effects should be reflected in the market value of the development projects.

While his results are not definitive, Lai (1996, 102-22) found that regions of Hong Kong with more CDA developments had fewer environmental complaints, suggesting the "amenity value" of the projects was higher. CDA regions also experienced higher housing prices than the district average, again suggesting these projects created higher quality products. (See also the discussion in Fischel 1985, 236-49).

Lai's work provides another important contribution to an understanding of the role local planning plays in the development process. While effective zoning and planning can reduce transaction costs, these benefits must be compared to the costs of implementing and enforcing the planning system. While CDAs provide benefits such as higher quality housing and more comprehensively planned developments, the system also imposes costs on developers and the general public. Resources are used to negotiate, bargain, or lobby for approval of development plans. If these regulatory processes destabilize the property market through uncertainty or the arbitrary use of government regulatory authority, the
costs may be greater than the gains obtained through the planning system. In Hong Kong, Lai found development plans were denied because they were inconsistent with local plans, or "planning intention." Yet, empirically, planning approval was not associated with improvements in neighborhood amenities (Lai 1996, 128-30).

2.4.3 Property rights and urban development policy

In sum, the property rights and transaction cost literature in planning can be categorized using four broad themes. The legal approach views property rights within the context of an overarching judicial system that assigns and protects entitlements to land use. The legal system defines the scope and boundaries for government intervention. This approach is largely instrumental since it focuses principally on identifying the appropriate mode of planning intervention and the limits of land-use regulation.

The political-democratic approach views property rights issues within the context of broadening or extending the political voice of residents into the land development process. Property rights, in this context, are important for determining who should control property development (e.g., individuals or communities). Issues of urban design and traditional urban planning often fall most easily into this approach since urban planning is viewed primarily as an expression of public interest through collective choice.

The third approach -- market failure -- is similar to the political-democratic perspective but differs through its economic rationale for planning and justification for government intervention in land markets. Land-use planning and development controls are expressions of collective choice resulting from imperfections in the land market. These imperfections create external costs that lower social welfare and must be regulated through
public policy, namely land-use planning. Theoretically, the existence of transaction costs justifies collective action to maximize social welfare and protect property owners from the negative externalities generated by their neighbors.

The fourth approach is the economic development perspective. This approach is not fully addressed by any of the previous perspectives, although the recent work of Lai goes the furthest in this direction. This economic development perspective will be explored more fully in Chapter Three and recognizes that property rights are an essential component of market economies. Public policy influences the stability and security of these rights and thus greatly influences the pace and pattern of economic development. Development controls and urban planning can impact economic growth by either increasing or decreasing transaction costs in the market. Higher transaction costs discourage economic activity while lower transaction costs encourage it. These issues, of course, are the focus of the remaining chapters in this study.

2.5 Conclusions

Planners have tended to focus primarily on projects and specific strategies rather than general policies in their pursuit of economic development goals. This does not necessarily imply that planners (or planning) lack a general framework for urban policy. In one of the few texts devoted to economic development planning, Blakely (1989) outlines a general framework and methodology for economic development policy. Starting with a theory of economic development, Blakely outlines the factors that contribute to economic growth. He then discusses general strategies for stimulating economic growth along with policies (both general and specific). Blakely's approach, however, lends itself to an
approach where public sector agencies and policymakers (e.g., planners) use specific programs and policies tied to specific goals and projects to leverage private sector investment or jump start the local economy. Ultimately, it can be viewed as a project-centered strategy.

This approach tends to de-emphasize systemic policy responses. Tax policy, the education system, or regulatory environment have important impacts on economic development and growth because they effect all firms and residents of the locality, not targeted projects. Thus, even though a city's system of land-use regulation effects virtually every aspect of development in urban areas, relatively little attention has been paid to the ways local planning and zoning have impacted economic growth. The recent trend toward statewide growth management plans, for example, has focused primarily on identifying planning goals and objectives. Economic development issues have been largely ignored or taken for granted. "Economic development elements," notes Jay Stein in his review of state growth management trends, "are either weak or nonexistent in most current state growth management plans" (1993, 220).

Thus, the impact of the land-use regulatory process on economic development has not received substantial detailed analysis. Studies examining the impact of zoning and growth controls identify general effects on residential and commercial property values, but few delve specifically into the regulatory process and the nature of the costs that are imposed through the system. Increasingly, however, planners and economic development analysts are recognizing the need to address inefficiencies in the planning process, particularly in the area of plan approval and permit processing (Atash 1990). "If project
approvals become endlessly tied up in bureaucratic red tape," observes Stein, "businesses will go elsewhere.... Even developers who support the basic goals of growth management planning resent the costs of time spent gaining approvals." (1993, 222)

The transaction-cost paradigm has the potential to provide a general framework for understanding how systemic policy (i.e., land-use regulation) impacts on economic development. Given the public/private nature of land development, understanding the factors that will encourage private sector investment and involvement in projects is critical to providing a general policy environment favorable to economic development and growth. The transaction-cost perspective is particularly well suited for this type of analysis because it centers on exchange, an agreement between two independent parties to either purchase or sell a service under mutually agreed conditions. Land development can be considered a contract, an agreement between private developers and local regulatory bodies. Thus, land development can be viewed as a bargaining process, and the factors that effect the costs of negotiating an agreement will impact investment decisions.
CHAPTER 3

TRANSACTION COSTS, LOCAL PLANNING, AND URBAN DEVELOPMENT:
A THEORETICAL FRAMEWORK

This chapter develops a transaction-cost theory of urban planning and economic
development grounded in property rights theory and institutional analysis. The roots of
this approach come largely (but not exclusively) from the economics literature. Many of
the concepts developed as part of the "new institutional economics" in industrial
organization and provide a conceptual bridge between planning and economics. These
congcepts also allow for the development of policy recommendations concerning the role
planning should play in economic development and identifying the growth enhancing (or
detracting) characteristics of local planning systems.

The next section assesses the role property rights and transaction costs play in
economic development. The property rights framework is extended using the
transactions-cost paradigm to more fully explore the interactive effects of local planning in
land development. The second section extends the transaction-cost paradigm to assess the
role and impact of governance structures on land development. The implications for
economic development are explored in Section Three. The final section concludes by
discussing ways the transactions-cost paradigm can be used to evaluate the impacts of
land-use regulation on land and property development within communities.

3.1 Property rights and economic development

The discussion of transaction costs and property rights in Chapter Two pointed to
an important, but often neglected, element of urban development: a community's general
policy environment, or its "policy infrastructure." The policy infrastructure consists of the
set of public policies that impacts investment decisions, growth, firm expansion, and
general urban development. More generally, the policy infrastructure is a reflection of the
institutional framework for development created through the political process. Thus, these
are policies that are not specific to firms or projects. Rather, they impact all manner and
forms of investment in a city.

Academic research has already identified several dimensions of this policy
infrastructure that impact urban development (table 3.1). Tax policies, for example, are
important determinants of intrametropolitan (rather than intermetropolitan) firm location.
Tax abatements are firm-specific policies that can induce expanding firms to relocate in
some cities. Poor access to transportation networks, such as interstate highways and
airports, can obstruct economic growth and development as well. Indeed, core
infrastructure is an important facilitator for economic growth. A city's business climate can
also impact its growth and development.
Another element of this policy infrastructure is business regulation. More specifically, a city's local planning and zoning policies can impact the pace, not just the pattern, of economic growth and development. This is because planning is a generalized regulatory process: it impacts every investment in a community, from the construction of a new home to the expansion of a commercial enterprise. This impact is also derivative of the very purpose of local planning and zoning policy which is to maintain or preserve a community's economic and social "character." Indeed, zoning powers derive from "police powers" which allow national, state, and local levels of government to regulate private behavior to protect the general welfare of the community. Whether these powers are exercised at the local, state, or national level is largely a political decision. Planning and zoning are most often exercised at the local level and help determine which uses will be permitted in what places, at what densities, and under what conditions. In order to enforce the local planning and zoning code, the regulatory system is designed to subject almost every new development to review by a public body or agency. Thus, planning and zoning
decisions are particularly relevant to discussions of economic development and policy.

Property rights are increasingly recognized as a key to understanding economic development policy. Institutions that defined and protected the right to contract and profits were essential for the development of market economies in Europe during the sixteenth and seventeenth centuries and the United States in the nineteenth and eighteenth centuries (Rosenberg and Birdzell 1987).

The reason is straightforward. Economic development results from the process of creating wealth. Market economies are successful wealth creators because they harness the self-interest of individuals to produce wealth through the social institution of the market. The market works through a price system that rewards successful ventures through profits and discourages unsuccessful ventures through losses. The system is decentralized, operating at the most basic level of the individual transaction or exchange.

Economic markets exist because individuals are free to engage in trade. Market exchange presupposes a system of property rights that allows individual producers and traders to exercise an enforceable claim on the result of the transaction, either a physical product, a service, or money. These property rights generally include the right to own, use, and transfer control over a product or service. Economic value derives from current use, but also expectations about the future value of products and services. Generally, economies that have facilitated market exchange have grown faster than those that have superseded market transactions through economic planning (Gwartney, Lawson and Block

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1 Douglass North's (1988; North and Thomas 1972) insights into property rights and economic development in the Middle Ages were instrumental for awarding him the Nobel Prize in Economics in 1993.
Property rights analysis has been used to justify and explain the existence of zoning and land use planning (see Chapter Two). Some scholars, however, have also used the property rights framework to criticize land-use planning, particularly zoning, for its tendency to abrogate property rights. This criticism is largely rooted in the belief that subjecting economic transactions to legislative processes weakens the rule of law. Transactions in the legislative sphere are considered less stable and more uncertain because of the potential for political manipulation and control, and the explicit use of force through the state to achieve objectives. Epstein (1987, 1989), for example, argues that the willingness of state and federal courts to uphold zoning laws and state-sponsored restrictions on employment significantly weaken constitutionally guaranteed contract rights and erode civil liberties. Paul (1988) also notes the use of environmental regulations and zoning laws to weaken property and contract rights. Anderson and Hill's (1983) analysis of property rights and land use in the American West emphasized that the establishment and enforcement of property rights were crucial for any efficiency gains that

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2 The critical dimension of this process is voluntary exchange secured through contract. Thus, North argues that the security of contract is critical to the successful development of an economy. More importantly, from a public policy perspective, government regulation that facilitates contracts will stimulate economic growth, while those that destabilize market transactions will discourage economic growth. This explains the emergence of Western Europe as an economic powerhouse in the thirteenth and fourteenth centuries (Rosenberg and Birdzell 1987). European legal systems protected contracts, allowing entrepreneurs to develop markets for innovations and products pioneered in the Middle East and Far East. The inability or unwillingness of China to allow similar market development is partly responsible for its historic economic stagnation despite achievements in science and technology (Cameron 1992).

3 An important exception is Lai (1996, 1997) who argues that zoning and planning can reduce transaction costs.
might accrue from formalizing those rights into law.

Property rights analysis is generally important for understanding the role contracts play in economic development. By defining the expectations, responsibilities and obligations of parties in an exchange, contracts become a mechanism, institutionalized by law and social behavior, for reducing transactions costs in market economies. Contracts thus facilitate exchange, and, ultimately, promote economic growth and development. In urban development, growth depends on the ability to use and re-use resources, including land. The pervasive effects of planning are important because they impact the process of converting resources in production. The contribution of property rights analysis rests on its emphasis on stable rules and the ability to secure the rewards of profitable investments and correct decisions about the use of resources in production.

Insights informed by the property rights paradigm are crucial for developing sound policy recommendations concerning the appropriate structure and administration of planning systems. A poorly designed system of local planning and zoning can discourage investment and economic development, particularly in cities faced with weak demand for property development (e.g., inner city regions) if they disrupt the contractual dimension of property development.

3.1.1 Property rights, contract, and land development

Property rights analysis has been used particularly effectively in analyzing firm behavior and individual incentives within organizations. Property rights, or more generally the right to own and dispose of resources, help explain why and how people behave within firms as well as other institutional environments (i.e., governments, communities, and
bureaucracies). Alchian and Demsetz (1972) pioneered this approach by outlining the specification and enforcement of contracts and stakeholder interests as protectors of property rights. Demsetz (1983) argued that how ownership is defined in a firm is important for understanding why managers behave in certain ways. Managers, workers, and owners often have different, sometimes conflicting goals. The behavior of individuals working within a firm is governed by the principles of utility maximization according to Demsetz.\(^4\)

The property rights approach to firm organization and behavior has been extended by recent research using the transaction-cost framework pioneered by Coase (1937, 1961). More specifically, the transaction-cost paradigm has been used to explain why firms internalize production rather than use market exchange (e.g., contract out). Coase (1937), for example, argued that firms existed because internalizing the production of products might be cheaper than purchasing them through the market (see also Williamson 1977, 1985, 1986). The crucial question was whether the transaction costs associated with "buying" products and services on the markets were lower than the costs incurred by "making" the product in-house.

A substantial literature on transaction costs has emerged. Most of the literature focuses on when firms tend to vertically integrate functions and production processes (e.g., Sanford and Hart 1986; Masten, Meehan and Snyder 1991; Klein and Shelanski 1994). As a result, much of the economics literature has tended to focus on the types of

\(^4\)Utility maximization may or may not be consistent with profit maximization. De Alessi (1983) also used the property rights framework, combined with transaction-cost analysis, to explain non-profit maximizing managerial behavior.
contracts, and contract enforcement mechanisms that exist in markets to explain why private parties prefer some contractual arrangements over others (Klein and Shelanski 1994). The empirical literature tends to support the transaction-cost perspective (Klein and Shelanski 1994), and, in at least one case, the potential cost implications are significant.  

The property rights and transaction-cost framework can be extended to the land development process with a few significant adjustments. Most studies using transaction cost analysis attempt to explain the existence of certain contractual arrangements are used in the market. As Masten, Meehan and Snyder (1991, 1) observe: "The tenet to which all transaction cost economists subscribe is that the choice among alternative organizational arrangements turns on a comparison of the costs of transacting under each." This approach is consistent with the extension of transaction cost analysis to policy analysis (e.g., Bryson and Ring 1990) and land-use planning (Alexander 1992) where the choice of contractual arrangements is an outcome of the choices made by voluntary traders in the market (see Klein and Shelanski 1994) or policymakers.

In land-use planning, the contractual relationship and organizational structure of the contracting process is given, often set by ordinance or in the state's revised code. Cities, for example, set up planning boards with broad powers to review and recommend

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Masten, Meehan and Snyder find that the choice of contractual arrangements -- in-house versus contracted work -- has substantial cost implications. "Mistaken integration of the typical subcontracted component in our sample, for instance, would increase organization costs by approximately 70 percent, while subcontracting work currently performed inside the firm would, on average, generate market organization costs three times those incurred managing the work internally" (1991, 2)
approval or disapproval of proposed market transactions. Moreover, the review process is usually codified in statute for every transaction: all rezoning applications must be reviewed and acted upon by a local legislative body, usually a city council or township commission. To some extent, then, variations in approaches to planning approval represent choices by communities over specific governing principles and values (e.g., efficiency, liberty or justice). The "choice," and hence competitive element, is implied in the spatial context in which property development takes place. Property developers can choose among cities and other local jurisdictions with different institutional structures for regulating land use and property development. These institutional structures often consist of formal (codified) and informal (attitudinal) elements which factor into the transaction and bargaining process.

For land development, transaction costs may not determine the "make or buy" decision. Rather, they will determine whether production takes place at all within a community. Private market decisions should be driven in part by the level of the transaction costs associated with land development in specific communities. Those with lower transaction costs should be preferred to those with higher transaction costs all other things held constant.

Using Alchian and Demsetz as an initial guide, the land development and planning process can be characterized as a mechanism for ensuring that the property rights of multiple parties are protected. One party is the local government responsible for protecting the public interest. This is the role most commonly associated with local planning and zoning boards (PBs). Legally, local city governments are the primary public
body with the authority to approve or reject zoning or development applications. PBs serve in an advisory capacity, although their decisions are often critical to final outcomes. Some state laws build in a presumption in favor of PB decisions, requiring a supermajority by city councils to overturn them. Some cities do not permit applications to move beyond the PB if it is rejected at that level.

The PB's role is rooted in a traditional approach to zoning which separates uses based on compatibility and nuisance. They typically exert their control over land use as an extension of the police power of government. Planning has evolved into a "fourth" function of government, according to some observers of property development. While land-use regulation is legally grounded in the police power, the power to zone has the additional function of granting legally enforceable development rights. The planning function of government is operationalized by placing limits on the ability of individuals to develop property through zoning, adopting master plans to guide or direct the pattern of property development, height restrictions, set back requirements, and other land-use controls.

Another role of local planning boards is protecting individual property rights. Lai (1996, 21-3, 67-8) argues that zoning, in its most basic form, is a spatial delineation of property rights. Lai argues that the exercise of zoning powers is, in fact, a fundamental element of the State's obligation to protect individual property rights. Zoning tries to

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6 Real estate textbooks, for example, separate the police power and zoning powers of government.

7 Police powers justify building codes under the general governmental function of protecting the health, safety and welfare of the community (see the discussion in Epstein 1985; Shultz 1992).
reduce the transaction costs associated with the land development by assigning exclusive rights over its use (Lai 1996, 5-11). To achieve this, zoning necessarily attenuates the property rights of other property owners (Lai 1996, 35-6).

Planning and zoning boards have substantial discretion over whether development projects will be approved, modified or rejected based on detailed zoning criteria, development controls, and the overall intent of the local zoning ordinance and comprehensive plan (if one has been adopted).

Planning discretion is often institutionalized by the legal system which creates a presumption in favor of planning. In Ohio, for example, even though planning boards serve in an advisory capacity to elected city councils and commissions, the Ohio Revised Code (Section 713.12) stipulates that no "ordinance, measure, or regulation which violates, differs from, or departs from the plan or report submitted by the [planning] commission, board, or officer shall take effect unless passed or approved by not less than three-fourths of the membership of the legislative authority." Planning boards are given this discretionary authority in large part because they are presumed to have the most detailed knowledge of land-use regulations and trends while also upholding their responsibility to protect public and private interests.

On a practical level, professional and citizen planners have the upper hand in the development process since in most cases plan applications are considered refused until they are approved by the local PB or local legislative body such as a city council. Alternatively, some have argued that this system also provides strong incentives for special interests to expend resources to manipulate outcomes (Tullock 1994). This is also
consistent with the academic literature discussed in Chapter Two that found land-use
decisions tend to follow market trends rather than lead them. Thus, plan approval is often
seen as a bargaining and negotiation process between professional planners (including
consultants), the local PB, and the land developer. Local development controls, combined
with building codes, may specify the type of landscaping, architecture, construction
materials used, and allowable uses of the property.

Property development in the U.S., however, is not solely a public sector
responsibility. Land development may best be characterized as a loosely defined
public/private joint venture. The public sector's role is as a regulating partner. The
private sector's role is the physical development of the property. Property development in
the U.S. can thus be viewed within a contractual framework because property
development requires public sector approval before it can begin. Understanding private
involvement in land development is critical since the private sector's participation -- and
hence physical development or redevelopment of property -- is voluntary. For property
development to occur, both the public and private sectors must come together and agree
to the nature, scope and type of development proposed.

Once a developer commits to property development, she invests resources with the
expectation that the project will earn a reasonable rate of return. While market conditions
may constrain her ability to turn a profit (e.g., by restricting capital or cyclical fluctuations
in demand), she expects to initiate and complete her project in a timely fashion without
interference in the development application and approval process. While market
conditions and capital availability are often exogenous and beyond the control of the
developer, the planning process is largely endogenous: it is designed and administered by
individuals with an element of discretion over plan applications, evaluations, and
approvals. Thus, the two parties -- private developer and planning board -- engage in a
process of negotiation that, if successful, will culminate in a development that protects
both parties' interests. Sometimes, this "contract" will manifest itself in a formal document
such as a detailed development plan. At other times, the contract will be less formal,
consisting of a general agreement on concepts but leaving details to another stage of the
land development process. Clearly, expectations play a key role in the plan application
process. Transaction costs are even more significant in projects sensitive to delay, such as
construction projects (Masten, Meehan and Snyder 1991). In fact, delay could effectively
"kill" a project.

For any specific development, criteria and standards may change depending on the
stage of the development process. For example, a developer recently submitted a
preliminary plan to a local zoning board for approval. The site, Sugarcreek Landings,
consisted of about ten acres of steep, wooded, hilly terrain that included a ravine that
drained excess water from a plateau above the development. The developer wanted to
build twenty-two single family, detached houses on the site. Because of the nature of the
site, the local PB required detailed engineering studies to estimate the potential impacts of
construction and building on drainage and erosion. The preliminary plan was approved by

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*Some elements of the planning system are exogenous. For example, state law
may stipulate a minimum number of hearings for certain types of plan applications such as
large-scale commercial or residential developments. On the other hand, city councils,
planning boards, and zoning boards have substantial discretion over when they consider an
application to be acceptable for formal consideration before their body.
the planning board 4-1, but only after the developer furnished specifications and details about site development typically not required at the preliminary plan stage in this community. The approved preliminary plan included road grades, final locations and sizes of detention and retention basins, and water volume calculations. The planning board has discretion over what can be required at each stage of the plan approval process, as long as it meets minimum standards established in the local ordinance. While this discretion can facilitate approval, it can also create uncertainty during the approval process. This uncertainty will be more clearly revealed when the case studies of rezoning applications are discussed in Chapter Five.

3.1.2 Dimensions of property rights and contract

The dimensions of the property rights approach, using Alchian and Demsetz as a guide, are defined in table 3.2. Alchian and Demsetz used a "principal-agent" framework to analyze incentives and behavior. The relationship between the principle and the agent will determine the effectiveness and efficiency of the production process. The unit of analysis is the individual transaction, or contract, at the firm level.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Planning Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal</td>
<td>Actor employing agent: grant of permission to develop</td>
<td>a) Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Planning board</td>
</tr>
<tr>
<td>Agent</td>
<td>Actor hired for specific task</td>
<td>a) Planning board</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Developer</td>
</tr>
<tr>
<td>Shirking</td>
<td>Failure of agent to perform task</td>
<td>a) Planning board inhibits development contrary to community interests</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Developer creates socially &quot;inappropriate&quot; uses</td>
</tr>
<tr>
<td>Residual claimant</td>
<td>Receives benefits of good performance</td>
<td>a) Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Planning Board</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) Future projects for developer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) Profits for developer</td>
</tr>
<tr>
<td>Team Production</td>
<td>Production requiring coordination between people and resources</td>
<td>a) Development application negotiations</td>
</tr>
</tbody>
</table>

**TABLE 3.2:** *Dimensions of property rights and the land development process*
In a standard economic case, the owner of a firm might hire a manager to oversee the production of goods and services. The "principal" would be the owner of the firm (e.g., stockholders). The "agent" would be represented by the person hired to perform a task (e.g., the manager). In the context of political systems, the principals would be the electors, and the agents would be their representatives serving in the legislative body. For the governance structure of local planning systems, the principals would be elected council persons (representing the community's interests) and the agents would be local planners and agency administrators. Within the context of land development, the legal and administrative constitution of the planning system effectively designates the PB to represent the community as the principal. Through the process of developing and administering a comprehensive or master plan, the planning process determines what development will be permitted where, its intensity, and its descriptive characteristics. Deviations from the plan must be approved by the PB before they can move forward. The agent, in this broader framework, is the land developer.

"Shirking" refers to the failure of the agent to perform the task assigned by the principal. If the PB "shirks," it approves development contrary to the public interest (as defined by the city council). One important type of shirking could be delaying approval of a project to the point it is no longer viable if the community desired development. This is

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9By extension, if a manager hired line workers on an assembly line, the principal would be the manager and the agent would be the line worker.

10The term planning board will be used in this paper to refer to both a Planning Board or Commission and a Board of Zoning Appeals although the purposes of the organizations differ substantially in content and jurisdiction.
also known as the "hold up" problem (Milgram and Roberts 1992; Masten, Meehan and Snyder 1991), where local governments attempt to extract concessions from private property developers by delaying approval of projects. In other cases, a PB might shirk by trying to extract excessive concessions from developers or concessions that "kill" a project.

In most cases, an implicit contract is created. The PB grants permission to a private party to develop land as long as it conforms to constraints specified during the plan application process, restrictions in the zoning code, comprehensive plan and/or subdivision regulations. At some point, the PB agrees to let the development proceed after the developer agrees to conform to the conditions of the plan approval. However, permission at the initial rezoning stage does not necessarily imply permission for the final project. In Chapter Five, a developer secured rezoning based on a preliminary site plan, but the final site plan was rejected several months later. Land development, then, can be considered a special case of "team production" in the Alchian and Demsetz model of contracts in the private market. Moreover, this contracting process can take months, or even years, to complete.

The Alchian and Demsetz model emphasizes contract enforcement to ensure efficient outcomes. Without an effective mechanism for enforcing the contract, the parties

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11Thus, the nature of the contract in the standard microeconomic application to the firm differs in at least one significant respect from the case of land development. PBs do not contract with private developers to build houses, commercial office buildings, or other land improvements except in special cases (i.e., publicly-financed housing or commercial projects). While owners of private property have legal title to their land, the local government, through land-use regulations and development controls, regulates how land will be used and developed. Land and private property cannot be significantly altered without the approval of the PB. Thus, the critical dimension is whether market transactions will take place and in what form, not whether the function will be internalized.
are more likely to "shirk" by failing to follow through on the terms of the agreement. Alchian and Demsetz argue that the property rights structure of the firm is crucial to understanding the enforcement properties of the contract. Firms, for example, that designate a residual claimant -- someone that benefits directly from the success of the organization -- build in incentives to monitor and enforce contracts through self-interest.

Tying a manager's compensation to stock prices or firm profits can provide significant incentives to limit shirking in firms. In land-use development and regulation, the benefits of development are more diffused and less identifiable than in a standard profit-maximizing firm. The plan application process can be used as a tool for uncovering the "true" intentions of the parties before formally committing to a project. If, through a series of meetings and public hearings, the PB believes the developer is committed to the community, and the developer believes the PB is committed to the development, the plan application will be approved and the developer will proceed. The developer of Sugarcreek Landings, for example, showed good faith and intent because he invested heavily in engineering studies on soil erosion and water flow even though these calculations were not usually required at the preliminary plan stage. This process approaches what Alchian and Demsetz characterize as team production.

The role residual claimants play in the development process is illustrated by another example. Staley (1994) found the plan approval process in Hong Kong characterized by substantial certainty and speed: large scale commercial buildings and residential estates are built and leased within two or three years of purchasing the property. Since the government owns or controls all vacant land in Hong Kong, leases to
new land are sold at public auction. This provides an important mechanism for reducing the likelihood of shirking since the government is a residual claimant, benefiting directly and tangibly from rapid economic growth. The leases serve the same function as protective covenants in the United States and often specify a wide range of permitted and conditional uses as well broad-based zoning requirements. While a town planning board has formal approval over all plan applications, most are routinely processed and approved (with planning department consultation) within thirty days. Many developers have substantial experience working within the system and ensure their plans conform to the planning department's broad concerns (particularly in the areas of safety and access). As a result, the effective point of commitment occurs at the point of sale of the lease. Thus, developers are willing to invest hundreds of millions of dollars in new land development since they expect few interferences in the plan application process. In contrast, the approval process in the United States or Europe is very uncertain, requiring anywhere from thirty days to several years to secure development plan approval.

The point of commitment for both parties could precede formal approval by the PB. Developers often invest extensive resources in the purchase of land and design phases of development with the expectation that common ground can be achieved with the local PB. Often, queues from local planners and consultants are used to make decisions about

12More recently, Lai (1996) has argued that plan approvals in Hong Kong are subject to uncertainty because planners and the Town Planning Board are more likely to invoke their discretionary authority, rejecting plans for reasons such as compatibility and inconsistency with existing zoning or the territory's comprehensive plan. Lai presents evidence that fewer applications are approved by the Town Planning Board than in previous years.
the likelihood of success during the planning process. As the process unfolds, an implied contract emerges between the local planners, members of the PB, and the developer concerning what will be approved or not approved. Thus, the point of commitment may be the point when both parties implicitly agree to a concept plan that could occur well before formal public hearings take place.

Sugarcreek Landings, once again, provides an illustration of this process. An earlier property owner attempted to develop the site in 1985. The site's original development plan called for the construction of forty-four condominium townhouse units. The process of public hearings and preliminary plan deliberation reduced the number of units to twenty-two single family detached units. The land was rezoned during this stage from agricultural (A-1) to residential (PD-1). The earlier deliberations also revealed a legal issue regarding emergency access to the site that would need to be resolved (at the expense of the developer) before the site would be approved. The PB considered the second preliminary plan (in 1995) in light of the issues raised during the first meeting ten years earlier. The zoning was already in place to allow the development of the site, and most of the major issues were identified during the first preliminary plan approval process. The second developer proceeded ten years later after a preliminary meeting with the PB determined that the existing board was generally favorable toward the development assuming the conditions from the first attempt were met as well as obvious concerns over erosion and drainage.
3.1.3 Shirking

As mentioned earlier, opportunities to "shirk" exist, particularly if the point of commitment is implied. Shirking manifests itself in different ways, depending on which party is effected (table 3.3). From the perspective of the developer, shirking could occur if the PB or planning staff impose an onerous development approval process, require extensive rewrites for small changes, or require multiple hearings that could extend the approval time by months or even years. An onerous planning process would reduce the likelihood a developer would seek permission to develop property in the community, ultimately resulting in economic decline. Unless residents have explicitly embraced a no-growth strategy, an onerous planning process characterized by high transaction costs would constitute a form of shirking from the perspective of the community. From the PB's (and planner's) perspective, shirking by developers could occur if developers build projects that do not conform to the plan approved by the city council.
<table>
<thead>
<tr>
<th>Term</th>
<th>Land Developers</th>
<th>Local Planners or Govt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shirking</td>
<td>Poor quality construction creates externalities</td>
<td>Onerous develop't approval process results in de-clining economy</td>
</tr>
<tr>
<td>Residual Claimant</td>
<td><strong>Tangible</strong>: profits from land</td>
<td><strong>Intangible</strong>: benefits of &quot;nice&quot; community</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>Reduced property investment</td>
<td>Reduced probability of development approval</td>
</tr>
<tr>
<td>Information</td>
<td>Well informed about project</td>
<td>Little information about impact of project</td>
</tr>
</tbody>
</table>

**TABLE 3.3: Dimensions of contract in the land development process**

Shirking can be difficult to detect since the two parties often have conflicting objectives. Developers see the impact of shirking by the PB directly in their production costs (which effects their "bottom line"). The costs of developer shirking are more difficult to detect since the benefits of "quality" development are less tangible. The incentives for developers to shirk are enhanced by imperfect information. Often the full costs and outcome of a development will not be available until well into the development and construction phase. Architectural features of buildings, for example, may change as markets evolve. (This may be one reason why PBs typically approve zoning, preliminary plans and final plans independently at different stages of development process.)

Access to information is also asymmetric. Developers often have data available
only to them (i.e., market conditions, the economic impact of their project, marketing surveys, cost projections, tax liability forecasts, and employment trends). Some of this information may, in fact, be tacit knowledge: information and knowledge that is known to the developer but not articulable in an explicit way (Hayek 1945; Lavoie 1985). Other information may be explicit in the form of market studies, revenue projections, or cost estimates. Planners and PBs typically do not have access to the same information. Moreover, developers have little incentive to release this information since it potentially compromises their competitive position within the market or reduces their bargaining power with local PBs and planners.

Planning boards, of course, can also shirk. An example of excessive concessions from private developers was the attempt by the city of Tigard to require a local business to dedicate a bicycle and walkway as a condition for allowing the business to expand (Dolan v. City of Tigard). In another case that will be more fully explored in Chapter Five, a local PB required submission of a market research study from a land developer showing the proposed project was economically viable. The developer balked because he did not want

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1 Communities and planners often compensate for this lack of market information at any particular point in time by adopting zoning and comprehensive plans that are intended to project and guide development within the community. Projections and forecasts quickly become obsolete, however. Thus, zoning tends to respond to market conditions rather than dictate them.

14 The relatively greater potential for developer shirking may be a primary reason the planning and development control process is so conservative. Generally, plan applications are presumed refused unless approved by the PB. More importantly, property improvements in most communities are illegal without a zoning certificate, which is an administrative determination that a proposed development is consistent with the local zoning plan and ordinance. (Often, building permits cannot be issued without a zoning certificate.) This delegation of regulatory power to the PB provides the foundation for the contractual nature of land development in the U.S.
to reveal proprietary market research in a competitive industry. The firm pulled out of the project and located in a neighboring community. If the local community would have benefited from the project, this could be considered an example of shirking by creating an excessive burden on potential property developers.

In Hong Kong, shirking by the PB was minimized because the board, as a representative of the government, had a stake in economic growth. In contrast, the connection between economic growth and planning is not as clear or direct in U.S. or European planning systems. U.S. cities, for example, typically separate economic development and planning functions within local government in a hierarchical organizational structure that limits interdepartmental communication.15

3.2 Land development, regulation, and contract governance

The property rights and contract framework can be extended further by examining the institutional framework in which planning and development decisions take place. The key to the contract puzzle is transactions costs. Coase (1937) argued persuasively that the raison d'etre for firms is their ability to effectively and efficiently internalize aspects of the production process. The market, Coase observed, is not a collection of atomized, autonomous entrepreneurs that produce and market products individually. On the

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15A survey of urban planning departments in Ohio jurisdictions with populations over 10,000 revealed that only 12 percent were combined with or part of an economic development division (see the discussion in Chapter Seven). Forty-four percent reported directly to the city manager or an independent planning commission. Twenty-one percent were part of an existing building department or division. Moreover, planning departments in the U.S. tend to focus on engineering, architectural, design and housing issues rather than job creation and investment. Thus, even though the connection between planning and economic development may be important, these connections are not evident in the administrative structure of economic development and planning policy at the local level.
contrary, the supply-side of market economies is driven by firms of all sizes, from small "Mom and Pop" stores to large corporations. Recognizing that gains to trade leads profit-seeking firms to specialize in various aspects of the production process, Coase observed that market activity involving only atomistic producers would incur substantial transactions costs. Each firm would need to identify customers and suppliers, negotiate contracts, and then monitor and enforce these contracts. The organizational structure of the firm, Coase reasoned, allowed entrepreneurs to reduce transactions costs associated with production by allowing firm owners and managers to monitor outputs closely through some form of outsourcing (contracting out).

Alchian and Demsetz extended the core insights of Coase by incorporating the concepts of residual claimant, shirking and team production (see table 3.2). Once the firm was established, they noted, the owners and managers incurred transactions costs by monitoring and supervising work within the firm. The institutional structure of the firm, the authors continued, was crucial to efficiency and, ultimately, profit-maximization. A manager who was a residual claimant (e.g., could share in the profits of the firm) would have natural incentives to ensure contract compliance, either among workers in the factory or outside contractors. In contrast, a firm where the benefits are more diffused would have weaker incentives to ensure contract compliance and minimize costs. Thus, Alchian and Demsetz argued that nonprofit or cooperative ventures that diffused individual gains and risks among a large group would have weaker incentives to enforce contracts and maximize profits than those firms where profits were larger or more concentrated.

Over time, specific forms of the firm emerged that worked best in different market
environments. For example, cooperative ventures where ownership is diffused or profits dispersed over a large number of workers, tend to be rare in market economies. Corporations and businesses where profits are concentrated in smaller groups (private owners or shareholders) are more prevalent.16

3.2.1 Williamson, transactions costs, and contract

Williamson (1979, 1985) helped pioneer the institutional contract approach to industrial organization by emphasizing the role contracts play in reducing transactions costs. Williamson identified "dimensions" of contracts by arguing all contracts had certain properties. Williamson argued that the type of contract could be defined by the frequency in which a transaction takes place, uncertainty about future events and the ability of the contracting agent to fulfill the terms of the agreement, and the durability or uniqueness of the transaction. Importantly, the nature and characteristics of the transaction are essential for determining the proper mechanism for enforcing the contract, or choosing the appropriate governance structure.

Williamson developed a "contract matrix" to elaborate on the relationship between governance structures and the characteristics of the transactions (table 3.4). Transactions that are homogenous -- where there is no substantive difference between one transaction or another -- can be handled efficiently through market governance. This is similar to the

16 While this organizational form may appear to be weakening as more companies adopt employee-stock ownership programs or implement worker empowerment strategies (Total Quality Management), these changes merely reflect an attempt by management to minimize shirking (broadly defined) among workers by giving them incentives to be more productive. If these strategies are successful, then they are used as a means for reducing transactions costs within the firm.

84
requirement that all products have the same characteristics and purpose in a competitive market economy. The homogeneity of the contract (investment nonspecificity) minimizes possibilities for opportunism since parties can find equally effective and useful alternatives if one of the party's shirks. Nonspecific investments are typically generic transactions that conform to the requirements of impersonal markets, where the identity of the party is not crucial to the success of the contract. Food franchises, for example, attempt to homogenize their products so that the identities of individual buyers and producers are not important to the transaction. The franchise signals all the important information for the purchase, regardless of who owns it.

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<table>
<thead>
<tr>
<th>Frequency</th>
<th>Nonspecific</th>
<th>Mixed</th>
<th>Idiosyncratic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasional</td>
<td>Market</td>
<td>Trilateral</td>
<td>Trilateral</td>
</tr>
<tr>
<td>Recurrent</td>
<td>Market</td>
<td>Bilateral</td>
<td>Unified</td>
</tr>
</tbody>
</table>

*Source: Williamson (1979).*

**TABLE 3.4: Williamson's Governance Matrix**

Transactions that are recurrent are also suitable for market governance. The repetitive nature of the transaction reduces uncertainty about the nature and disposition of the product or service. Over time, consumers recognize that the product's quality is the same, and the producer has incentives to retain customers to fulfill long-term profit.
maximization goals. Even if the transactions are occasional, however, the homogeneity of the product helps ensure that market governance is effective since the competitive pressures of an industry effectively enforce the terms of the contract.

Uncertainty plays an important role in the Williamson framework, although it is not included in his matrix. Contracts are mechanisms for reducing uncertainty in exchange. Even a verbal agreement reduces uncertainty about the timing, quality, and future provision of services and products, increasing the likelihood that exchanges will take place. The repetitive nature of market transactions reduces uncertainty by incorporating previous experiences and the history of the transaction into economic behavior. Thus, transactions governed by the market typically involve impersonal parties, recurrent exchanges, and a high degree of certainty.

Once product or service heterogeneity is incorporated into the analysis, however, Williamson argues the ability of markets to effectively police contracts is weakened. At one extreme, if a product is idiosyncratic, or unique, a third party may be necessary to enforce the contract. Typically, mediators or arbitrators are used to define the terms and enforcement of the contract. The uniqueness of the transaction also enhances possibilities for opportunistic behavior as one party takes advantage of information asymmetries. Thus, a neutral third party is added to the process (trilateral exchange) and becomes an important component of contracting behavior and economic exchange.

If idiosyncratic transactions become common, the contracting process may be internalized by the firm through unified governance. If, for example, a firm found that an expanded marketing effort resulted in more contacts with external marketing consultants,
the firm may want to internalize those transactions by creating a marketing department
that can handle the nuances and vision of the firm. The firm should then be able to
minimize the transactions costs of communicating the vision of the firm by incorporating
its marketing functions into the culture of the firm.

3.2.2 Governance structures and land development

The Williamson contract matrix can be extended to the land development process
(table 3.5). Although the nature of contracts between developers and PBs tend to be less
formal and more broadly defined, they establish both explicit and implicit contracts
characterized by many of the same dimensions as firms in economic markets. These
contracts take the form of zoning certificates, development agreements, preliminary plans,
or final plans. In land development, uncertainty is inherent since market conditions change
and PB's are political organizations. Moreover, large projects and applications are almost
always reviewed and approved by the local legislative body.¹⁷ Public hearings expose
projects to the uncertainties and vagaries of public participation as part of a legislative
process. As market conditions change, the feasibility of projects may change as well,
altering development plans and project characteristics. Furthermore, as Chapter Five
illustrates, the PB may decide to impose additional restrictions or requirements on land
development, particularly if the project is politically divisive or volatile (e.g., a mall or
downtown development project).

¹⁷This is because large projects are often developed under PUD arrangements
which require PB review. In addition, large projects are often significant enough to
constitute a change in use and require a rezoning which almost always requires legislative
review and approval.

87
The frequency of transactions also varies considerably. Some developers specialize in particular regions and project types, resulting in a higher number of contacts with PBs compared to smaller or more diverse firms. In some cases, developers may be faced with a one-time only development, creating opportunities to shirk for both parties. Finally, the durability of investments can vary with the type and characteristics of the project. Large, comprehensive developments, such as malls or downtown office towers, may be idiosyncratic while small-scale residential construction can be nonspecific and easily transferable among locations and environments.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Definition</th>
<th>Application to Land Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty</td>
<td>Lack of information about future, final characteristics and form of projects</td>
<td>a) Planning approvals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Market conditions</td>
</tr>
<tr>
<td>Frequency</td>
<td>Number of contracts and exchanges</td>
<td>a) Multiple development versus one-time only projects</td>
</tr>
<tr>
<td>Durability</td>
<td>Specific investments; idiosyncratic exchange</td>
<td>a) one-time investments and developments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Planned Unit Develop'm't</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) Large commercial developments</td>
</tr>
</tbody>
</table>

**TABLE 3.5: Dimensions of contract and land development**

These dimensions of contract can be extended to governance structures in land-use planning and development regulation. According to Williamson, two general categories of
governance structures exist. *Complex governance structures* handle transactions characterized by high uncertainty, low frequencies and idiosyncratic investments. In planning and land development, these structures are often associated with large, comprehensive developments. Planned Unit Developments (PUDs) serve as an example of planning tools intended to address projects that incorporate large spaces, multiple uses (e.g., commercial and residential), complex levels of uses (e.g., different types of residential/commercial uses), and highly specialized developments (e.g., commercial office towers). Subdivision development most often falls within this governance structure.

*Simple governance structures*, in contrast, are most suitable for transactions characterized by a high degree of certainty, high frequency, and nondurable investments. In land development, the most simple form of contract governance is the free market. Within zoning systems, development within zones is often characterized by simple market governance since the types of development are sufficiently narrow (e.g., single-family residential, low-density multi-family) that variations do not pose significant risks from opportunism or externalities. In fact, property development consistent with underlying zoning does not usually require plan approval by the PB or local legislative body. Plans are reviewed by building inspectors for engineering and design concerns.

Similarly, "As-of-Right" development, where uses are defined within planning and zoning codes, and development within land use categories occurs independently of deliberations of the PB, reflect a simple governance mechanism that represents a hybrid of market governance and planning authority. In "As-of-Right" land development, the parameters of development projects are defined by the PB through the zoning code, but
the timing and pattern of developments within the zone are left to market governance. Thus, if a developer wants to build a single family house in an single-family residential zone, permit processing is administrative rather than legislative. As long as the structure conforms to the zoning code in terms of set backs, high restrictions, density, lot size, and other restrictions, the local planning board will not usually review the plans nor hold a hearing on the development.

Simple and complex governance structures in the Williamson TC paradigm can be further classified as Classical, Neo-Classical, and Transactional Contracting (table 3.6). Market governance represents the case of Classical Contracting. Typically, transactions are anonymous and specific: the party purchases products knowing, with a great deal of certainty, how it will perform and what it will do. Market transactions are also characterized by multiple contacts, minimizing the likelihood of opportunistic behavior and shirking. The types of developments most likely under Classical Contracting are similar to what might occur under simple governance structures. Small scale development consistent with existing zoning would often fall under this category.

Neo-classical Contracting involves third parties capable of defining, mediating or adjudicating the terms of a contract among the contracting parties. Neo-classical contracting allows for a higher degree of complexity, but usually the nature and scope of the contracts is narrowly defined. Thus, PBs will resolve disputes over development through rezoning processes, which are changes in use. Actual construction may involve relatively little PB involvement or review.
Governance Structure | Contract Characteristics | Planning Applications
---|---|---
Classical | a) Market governance  
b) Discrete, point specific  
c) Multiple contacts | a) Free-market development  
b) "As of Right" development  
c) Development within zoning classifications
Neo-Classical | a) Third party governance  
b) Allows for complexity | a) Rezoning  
b) Variance
Transactional | a) Transaction specific  
b) Negotiation | a) Planned Unit Development

TABLE 3.6: Governance structures and planning rules

The most complex form of governance, according to Williamson, is Transactional Contracting, specific projects that involve lengthy negotiations concerning the type, nature, and scope of the development. PUD's provide one of the clearest examples of Transactional Contracting in land-use development and regulation. Importantly, modern land-use planning in the U.S. presumes that land development is idiosyncratic and requires a transactional contracting governance structure. Thus, the formal procedures imposed on the land development process require a substantial degree of negotiation, official approval and monitoring.

Free-market land development, where few restrictions exist on the form or content of development projects, are most likely to occur where investment is homogeneous (table 3.7). Thus, a region experiencing new development of a similar type, such as residential or mixed-use residential/commercial, could be sufficiently nonspecific that free markets
would be allowed to operate free of substantive planning rules. The types of development that could be considered nonspecific may change, depending on the characteristics of the region. Built-up, urban areas that are known for wide-ranging architectural characteristics and land uses might tolerate a wider range of projects that are nonspecific. For example, a multi-family residential development would not be considered "inappropriate" or "out of character" in a mixed-use commercial strip along a busy artery near a college campus.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Nonspecific</th>
<th>Mixed</th>
<th>Idiosyncratic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasional</td>
<td>Free market or within zone</td>
<td>Variance</td>
<td>Rezoning</td>
</tr>
<tr>
<td>Recurrent</td>
<td>development</td>
<td>Planned Unit</td>
<td>Planned Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development</td>
<td>or New Town</td>
</tr>
</tbody>
</table>

**TABLE 3.7: Governance structures, zoning and land development**

The same development, however, might have more unique investment characteristics if it were located in a single-family, low-density residential area. To the extent the investment had mixed investment characteristics, where some properties lend themselves to market policing and some might impose higher transactions costs (e.g., externalities), the project might require a zoning variance. If the project were sufficiently unique or out of character with local land development patterns, it may be considered
Similarly, large scale developments may be associated with a larger number of problems, or externalities, such as erosion, traffic congestion or aesthetics.

Large projects may be comprehensive, requiring numerous alterations to existing zoning or master plans. In this case, the developer may find that PUDs may be appropriate since they allow for a larger degree of flexibility and diversity within projects. Typically, PUDs allow a developer more options in creating neighborhoods or smaller communities, but remain within the general character of the city or town. Rather than building homes, for instance, a PUD will typically involve infrastructure planning and development (e.g., roads, sewer, water) or different mixes of uses (e.g., including a convenience store or gas station), but not significantly change the character of the town. (For example, the PUD would not relocate the commercial center of a city or town.)

If, on the other hand, the project is sufficiently idiosyncratic it becomes unique, the entire planning and development process could be internalized in a unified governance structure. New towns or planned communities may represent a case where comprehensive communities are created by developing an entirely new region and planning system. New towns or planned communities give developers complete control over the design, pace, and pattern of development within the city, free of procedural or systemic encumbrances common in less comprehensive projects.

Importantly, most local planning systems are designed to operate as if all

---

\(^{18}\) Often, rezoning are used to allow for a complete change of use and require procedures distinct from variances for approval. Both rezoning and variances are considered exceptions to the existing comprehensive plan and are often discouraged by planners and PBs.
development occurred in a unified governance structure. Most cities, for example, have adopted comprehensive planning systems to plot the pattern of development within their communities. The comprehensive plan determines where residential, commercial, and industrial districts will be, what densities will be permitted, and what the community will "feel" and "look" like as it develops. If development conforms to the details of the comprehensive plan, plan applications will be approved easily and with minimal delay: the transactions costs associated with the development will be low. If, on the other hand, the development deviates from the plan, local planning theory and practice requires a legislative review that includes public hearings, staff reviews, and PB approval. Deviations are considered the exception to the rules that are defined in the comprehensive plan. Thus, significant transactions costs can accrue through delays and uncertainty in the plan review process when a project deviates from the comprehensive plan. These transactions costs can become growth inhibiting. Indeed, as Chapters Six and Seven find, the likelihood projects could be subjected to an uncertain legislative process can reduce economic activity and growth.

3.3 Implications for urban planning and economic development

The transaction cost paradigm has several implications for land-use planning's impact on economic development. First, since the TC paradigm views land development as the product of a bargaining process between two actors, principals (PBs) and agents (developers), the governance structure is clearly crucial to the success of any exchange. The local planning system and procedures established by state enabling legislation and the local government provide the governance structure for land development within the
community. They set the rules of the game for bargaining, negotiating, monitoring, and enforcing contracts between developers and PBs. Because most local planning codes in the U.S. presume development and rezoning applications are refused, the governance structure imposes high transaction costs since developers must convince a public body or agency that their development project benefits the community. Given the comprehensive impact planning has on land development, public policy is thus critical in the land development process.

Second, key elements of these transactions costs are risk and uncertainty.\textsuperscript{19} Clearly, unpredictable planning delays can effect private investment decisions and hence economic development. Uncertainties in the plan application and approval process may encourage developers to withhold investments in land development until more information becomes available about allowable land uses. Thus, while land-use planning may reduce some element of uncertainty by ensuring approved projects proceed, uncertainty surrounding the application approval process or future zoning decisions could increase uncertainty (or be perceived as increasing the randomness surrounding land development) and discourage land development. Mayo and Shephard (1991) argue that an increase in the variance surrounding development approvals could be "critical," adversely effecting current housing supply. Evans (1992) has recently argued that these types of delays have significantly reduced the supply of housing in southern England and Allom (1992) has argued that planning delays significantly add to land development costs in Australia. To

\textsuperscript{19}The role of uncertainty in influencing investor expectations is recognized in macroeconomics (Cukierman 1980; Bernanke 1983).
the extent local planners are not constrained by the costs of their action, uncertainty-related transactions costs may increase significantly. This is particularly true when the regulatory costs of planning actions may be significantly greater than the costs associated with delaying project developments.20

North (1990) argued that the development of services were crucial to advanced economies because services, particularly advanced producer services, helped reduce the transactions costs associated with businesses. Similarly, in planning, the services industry provides a crucial mechanism for reducing transactions costs by expediting plan applications and approvals. Planning consultants, for example, are used to facilitate land development by relying on the consultant's knowledge of the local planning system, staff and procedures. PB's for example, require different levels of detail and project "packaging" depending on local concerns and the degree of staff expertise in planning matters. Similarly, the ability to contract out for special services such as architects allows businesses to avoid the expense of internalizing these functions.

Yet, planning consultants may also represent another dimension of transactions

20In Hong Kong, developers noted that planning rules would not be as destructive if the government fully compensated them for the lost value of their property. In one case, a zoning change lowered development densities, reducing property values by 38 percent, a loss of over US$3.5 billion (Staley 1994). Developers connected with the zoning change indicated that they would not have objected to the change in planning rules if the government were willing to compensate them for their loss. Developers voiced particular concerns over the effects of planning policies that disrupted a stable property rights structure in land development. Thus, by disrupting the system of property rights and increasing uncertainty in markets for land, developers would face higher interest rates and delays, increasing the costs of development. Thus, certainty, risk and expectations become key elements in assessing the impact of planning systems on economic development.
costs that North ignores. Planning consultants exist because of the growing complexities of the land development system. In many cases, these complexities increase uncertainties and reflect the added burdens associated with land development. To the extent a planning system can be designed that reduces transactions costs, facilitates economic development, and minimizes externalities, social welfare should be enhanced.
CHAPTER 4

TRANSACTION COSTS, PLAN APPROVAL, AND URBAN DEVELOPMENT: A FORMAL INQUIRY

This chapter uses a simple production function to illustrate the role transactions costs play in decisions concerning optimal output and resource use, and, as consequence, the institutional role public policy plays in influencing those decisions. In principle, developers will adjust production technologies to reflect the transactions costs imposed by local planners and planning boards (PBs). In some cases, as the model demonstrates, the effects may reduce the number of development projects undertaken and, thus, economic activity in local jurisdictions.

This analysis departs from recent contributions to research in this area by looking at the effects of planning once the decision to develop land in a particular area has been made. Titman (1985) and Neutze (1987) have analyzed the effects of planning on site location and Mayo and Shephard (1991) have discussed the role of stochastic planning elements on the planning process. This chapter argues that the effects of the local planning system on land development after the decision to locate in a particular region is
made is also important to understanding the role of public policy in urban development. Indeed, in large urban areas and central cities, many developers, particularly small developers, may be region dependent. Understanding the ways the planning process influences these decisions may have important implications for inner-city revitalization.

The next section develops a general model of firm resource use from a simple production function given cost constraints. A Cobb-Douglas production framework is used since this model provides a mechanism for analyzing input substitution (Nicholson 1985, 244-46, 256-7; Varian 1984, 28-30). Transactions costs are explicitly modeled and incorporated in the cost constraint faced by the firm, thus becoming part of the institutional framework in which the firm optimizes resource allocation. The third section more fully discusses the implications of transactions costs on land development within the context of uncertainty. The fourth section concludes with a summary of the importance of incorporating transactions costs into models of regulation and economic development and the implications for research.

4.1 Modeling transactions costs and plan approval

The production function of a land developer can be characterized as follows:

\[ Q = f(K, L) \]

where \( K \) is the amount of capital used in the land development and \( L \) is the total amount of labor used in the construction and planning phases of development. \( Q \) represents the level

---

1 This function is also commonly used in the public finance literature to analyze the impact of taxation on investment behavior (see the discussion Jorgenson's work in Atkinson and Stiglitz 1980, 154-7). While the model uses a Cobb-Douglas specification, any model allowing for an analysis of factor substitutions would be appropriate.
of output, in this case development projects consisting of constant quality housing units. An increase in $Q$ implies an increase in the number of projects (and consequently housing units) built in the community, holding the number, size and quality of the units in each project constant. All projects involve some level of capital expenditures such as construction equipment and materials. The labor component, $L$, can be further disaggregated into planning-related labor, $L_p$, and construction-related labor, $L_c$, where $L = f(L_p, L_c)$.

Firms face exogenous constraints that determine optimal technology and production levels such that:

\begin{equation}
C = rK + wL_c + tL_p + A
\end{equation}

where $C$ is the total cost of developing land, $r$ is the interest on capital, $w$ is the price of labor (wages and salaries) and $t$ represents the implicit price of the transactions costs associated with labor used in the land development process. The impacts of public sector regulation are manifest in $t$ and $L_p$.

\subsection{4.1.1 Land development and transaction costs}

The price of capital and labor, combined with the transactions costs associated with land development, represent the institutional context in which development decisions are made. In this case, $L_p$ represents the costs of negotiating, monitoring, and enforcing agreements between the developer and the local planning board. Virtually all development projects require the approval of the local PB and, often, local planners. Similarly, almost all projects involve overcoming conditions, stipulations, and objections raised by either the PB and/or a professional staff as Chapter Five will explain more fully. Thus, all
developers face a variable cost component to the development approval process.

Of course, as the number of projects increases, the level of detail and involvement of public officials will also increase since more variables will impact the land development. Thus, a community experiencing a increasing levels of development will also be faced with coordinating access points to the site via roads, coordinating the lay-out of other infrastructure (e.g., sewers, wastewater treatment, or schools), or controlling environmental and other external impacts (particularly as they relate to third parties). As the level of development activity increases, the planning-related transaction costs will increase as well. Some of these costs will be fixed, or can be considered fixed, because they are predictable based on the scale of the project. These costs would enter the equation as part of "A."

Thus, "A" is a constant representing the level of transactions cost inherent in the planning and land development process irrespective of the amount of variable input labor used to obtain plan approval. Since all developments must be approved by a PB, developers will be faced with some minimum threshold level of transactions costs that are implicit in the development process and the scale of the project (or projects). Virtually all projects are subject to staff review, and the time required to negotiate an acceptable application may be well known, particularly for firms with experience developing property within certain communities. Thus, developers go into a project incorporating a certain level of costs that are part of the approval process. We expect A > 0.

The variable cost component of land development, $r_{LT}$ represents the planning-related transaction costs that varies with Q. Since most projects are subjected to
legislative approval, many developers are also faced with a significant degree of uncertainty. Each project proposed in a community could in principle be subject to transaction costs inherent in a legislative approval system. As the number of projects increases, the transaction costs incurred to negotiate approval with the local PB also increases. In fact, transaction costs may increase in a nonlinear way if an increase in the number of projects also increases the likelihood that a project might be challenged through the ballot-box (e.g., referendum) or challenged in court. Additional engineering work could also result from an open public hearing process since developers will be required to modify their projects to meet citizen and planning staff objections. Consultants fees will also increase if projects are delayed or tabled for future deliberation.

Importantly, the value of labor used in the plan approval process, $tL_T$, reflects the physical units of labor used in the process as well as an implicit price. While the value of inputs in traditional production processes, $w$ and $r$, are market determined prices, and, as a result are objective and observable, $t$ is subjectively determined and will be revealed only through the behavior of the developer.²

In essence, this characteristic of $L_T$ captures the fact that plan approvals are not implemented with equal attention to detail and design by PBs. Planning boards have discretion over the plan approval process and thus introduce uncertainty in land

²This also implies that $t$ will be much more difficult to estimate and may, in part, be one reason why modeling transactions costs has received little attention in the theoretical literature. Nevertheless, estimates of the value of $t$ could be determined through methods similar to those used to value other non-market activities such as the value of commute time, or queuing.
development. The case studies in Chapter Five, for example, show that projects are routinely modified during the public hearing process, and local PBs approve applications subject to numerous conditions. All these changes require additional time to address and meet these concerns and may directly increase the cost of the project by altering its design. In one case, 40 percent of the rezoning applications were delayed at least one additional meeting (thirty days) so developers could accommodate concerns voiced during the public hearings.

Local communities can establish planning procedures that are complicated and multi-layered, or relatively simple and streamlined. The more complicated the planning process, however, the more labor will be needed to negotiate with planners and the PB to meet objections or concerns about the project. This would also increase $L_T$. Moreover, plan approval procedures can vary among PBs in different districts as well as among different plans submitted to a single PB. Thus, a PB may require different approval criteria for commercial projects versus residential projects, multi-family projects versus single-family projects, or mixed-use projects versus single-use projects.

4.1.2 Impacts of transactions costs on investment decisions

The production decision of the firm can be expressed so that the firm maximizes the following production function given its cost constraint:

\[
\text{max } Q = \Phi K^a L_c^b L_T^c
\]

subject to

\[
C = rK + wL_c + rL_T + A
\]

The Cobb-Douglas specification of the production function implies that the effects of
capital and the two different kinds of labor are interrelated in actual production. In other words, the developer can substitute capital (K) for labor \( (L_c \text{ or } L_T) \).

To analyze the effects of planning-related transactions costs on developer decisions, we can combine (4.3) and (4.4) into a Lagrangian equation and solve for \( L_c \) and K.

\[
\mathcal{L} = \Phi K^a L_c^b L_T^c + \lambda(C - rK - wL - tL_T - A)
\]

To solve for K, equation 4.5 is differentiated with respect to K. The partial derivatives are as follows:

\[
\frac{\partial \mathcal{L}}{\partial K} = \alpha \Phi K^{a-1} L_c^b L_T^c - \lambda(r) = 0
\]

Rearranging yields:

\[
\alpha \Phi K^{a-1} L_c^b L_T^c = \lambda(r)
\]

For non-planning labor, we differentiate the general equation with respect to labor \( (L_c) \) and get:

\[
\frac{\partial \mathcal{L}}{\partial L_c} = \beta \Phi K^a L_c^{b-1} L_T^c - \lambda(w) = 0
\]

Rearranging, yields:

\[
\beta \Phi K^a L_c^{b-1} L_T^c = \lambda(w)
\]

For planning-related labor, we differentiate the general equation with respect to labor \( (L_T) \) and get:

\[
\frac{\partial \mathcal{L}}{\partial L_T} = \gamma \Phi K^a L_c^b L_T^{-1} - \lambda(t) = 0
\]

Rearranging, yields:

\[
\gamma \Phi K^a L_c^b L_T^{-1} = \lambda(t)
\]

Differentiation with respect to the constraint yields:
\[(4.9) \quad \frac{\partial \pi}{\partial \lambda} = C - rK - wL_C - \tau L_T - A = 0\]

Since transactions cost are reflected in \(L_T\), and we want to understand how transaction costs effect other inputs in the property development, we want to solve for inputs \(K\) and \(L_C\). This can be accomplished by dividing (4.6a) and (4.7a) by (4.8a), solving for \(K\) and \(L_C\) independently, and substituting them into the constraint.

Thus, to solve for \(K\), we need to define \(L_C\) and \(L_T\) in terms of \(K\). Solving for \(L_T\) in terms of \(K\) yields,

\begin{equation}
\frac{\partial \pi}{\partial L_T} = \frac{\Phi K^a L_C^b L_T^{-1}}{\alpha \Phi K^a L_C^b L_T^y} = \frac{\lambda(t)}{\lambda(r)}
\end{equation}

rearranging, and canceling \(\Phi, L_C^b\), and \(\lambda\) (since \(\Phi/\Phi=1\), etc.), yields:

\begin{equation}
\frac{\gamma K}{\alpha L_T} = \frac{t}{r}
\end{equation}

or,

\begin{equation}
L_T = K(\gamma/\alpha)(r/t)
\end{equation}

Intuitively, this expression says that as the implicit price of transaction cost related labor \((\tau)\) increases, the units of transaction-cost labor \((L_T)\) used falls. Similarly, as the \(K\) takes on a more important role in the production process \((\alpha\) increases), transaction-cost labor also falls. (This follows by definition since production is a function of capital and labor.) These results are consistent with the Law of Demand: when the price of an economic good increases, the amount consumed will fall all other things held constant.
The nature of production implies that resources will be directed into another factor of production.

Solving for $L_c$ in terms of $K$ means dividing (4.7a) by (4.6a) such that,

$$\frac{\delta \mathcal{L}}{\delta L_c} = \frac{\beta K^\alpha L_c^{\beta-1} L_T^\gamma}{\alpha K^\alpha L_c^\alpha L_T^\gamma} = \frac{\lambda(w)}{\lambda(r)}$$

Rearranging and cancelling $\Phi$, $L_T^\gamma$, and $\lambda$ yields

$$\frac{\beta K}{\alpha L_c} = \frac{w}{r}$$

or,

$$L_c = K \left(\frac{\beta}{\alpha}\right)\left(\frac{r}{w}\right)$$

Intuitively, this means that as the wage rate ($w$) increases, the amount of labor used in the construction process ($L_c$) will also fall.

To show the impacts of the other inputs on the amount of capital used in the production process, equation 4.10b can be substituted for $L_T$ and equation 4.11b can be substituted for $L_c$ in the production constraint (equation 4.9) such that:

$$C - rK - wL_c - tL_T - A = 0$$

or,

$$C = rK + wL_c + tL_T + A$$

which, through substitution, yields:

$$C = rK + wK \left(\frac{\beta}{\alpha}\right)\left(\frac{r}{w}\right) + tK\left(\frac{\gamma}{\alpha}\right)\left(\frac{r}{r}\right) + A$$

Solving for $K$, yields the following substitutions and cancellations,

$$C = rK + rK\left(\frac{\beta}{\alpha}\right) + rK\left(\frac{\gamma}{\alpha}\right) + A$$
Equation 4.12c shows how the amount of capital used in property development will depend on the cost of capital \( r \) as well as construction and transaction cost-related labor. In other words, this equation shows the trade-offs developers face when they submit a plan application to the local PB. The cost of the project is usually determined in advance, and developers are required to trade off the use of resource (inputs) as the application moves through the approval process. If either labor component increases as a proportion of all inputs in the production process (\( \beta \) or \( \gamma \) increases), the denominator \( \{r[1 + (\beta/\alpha) + (\gamma/\alpha)]\} \) will become larger, reducing the amount of capital used in the development project. Similarly, as the transaction costs inherent in development approval process (\( A \)) increases, the amount of \( K \) will also fall. This may also suggest that as transaction costs in the planning process increase, the capital intensity of the project also falls.\(^3\)

Similar conclusions follow by extending the analysis to construction-related labor. The algebraic manipulations, however, are left to Appendix A. Solving for construction-related labor yields:

\[
L_c = C/\{w[1 + (\alpha/\beta) + (\gamma/\beta)]\} - A
\]

As in the case of capital, construction labor depends on the other two inputs: capital and planning-related labor. An increase in either \( \alpha \) or \( \gamma \) increases the denominator

\(^3\)This does not follow directly from the model, however. The model only predicts what will happen to the total amount of capital used in the project, not the relative proportion of capital versus labor used in the production process.
\{w[1 + (\alpha/\beta) + (\gamma/\beta)]\} which, in turn, reduces \(L_c\). The impacts of the inherent transaction costs of plan approval have similar effects as in the case of capital.

4.2 Uncertainty and transactions costs

Several studies and analyses suggest that uncertainty in the planning process can have negative impacts on urban development and the price of land (Evans, 1983; Titman 1985; Neutze 1987; Mayo and Shephard 1990). Uncertainty can be incorporated into this model through the transactions-cost equation. The model represented by equations (4.3) and (4.4) presumes that the amount of labor that will be needed in the planning process is known. Thus, the expected value of labor, \(E(L)\), is equal to the actual amount of labor used in the development process. This can be expressed more generally so that:

\[
E(L) = E(L_c) + E(L_T) + E(e)
\]

where the \(E(L)\) is actually an additive function of the known amount of labor used in land development, \(E(L_c + L_T)\), and a random component, \(E(e)\). \(E(e) = 0\) in the general model in the previous section.

Uncertainty can be incorporated into this function by allowing for \(E(e) > 0\). Thus, the amount of labor that will be used in the land development process is subject to some random component evident in the planning process. Thus, higher levels of uncertainty will imply higher values of \(L_T\) and/or \(\gamma\). This, in turn, will affect expectations concerning the appropriate choice of technology in the land development process.

4.3 Implications

The implications of this model are important for understanding the impact of local planning and development controls on the land development process. The planning
system is an important institutional aspect of land development and is treated exogenously by land developers. More specifically, public policy can effect the opportunity costs of input use in the production process, requiring developers to substitute one factor input for another. If planners increase the transactions costs associated with land development (increasing $t$ or $\gamma$), the amount of capital and construction-related labor will decline in the land development process. The planning process, in essence, would force developers to spend a larger proportion of their development budget on obtaining development permission from the local PB. An unanticipated increase in transaction-cost related labor would require substituting resources away from capital expenditures and construction related labor. Thus, higher planning-related transaction costs could also reduce the relative size of development projects.  

This conclusion sheds additional light on the example of SugarCreek Landings in Chapter Three. The density of the development was reduced from dozens of townhouse homes to just twenty-two single family units. While this decision was driven by local opposition to a large housing development (a political decision), the model suggests this downsizing may have also occurred because the developer had to front load more resources to the planning phase of the development.

Meeting the requirements of development controls and the local PB is a necessary expenditure of the developer's resources since PB approval is needed for the project. The developer, then, will most likely make adjustments in the capital labor ratio, $\alpha/\beta$, to reflect

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*This is true if the transaction costs are variable costs and a result of the planning process. If they are anticipated, they would enter into the developer's calculus as fixed costs and would not have a significant impact on the scale of the development.
the higher labor costs associated with the planning process. As a result, we would also expect projects to become more capital intensive. This substitutions are driven by public policy, in this case the local planning process. These implications will be explored further in Chapter Seven.

These effects will be magnified if development controls effectively hold constant the amount of capital invested in projects. Local zoning ordinances attempt to control the type, form, and quality of developments in particular areas through restrictions on density, lot size, and aesthetics that affect the choice of building materials. Zoning ordinances that are specific and detailed, then, limit the ability of the developer to substitute building technologies and, ultimately, the type of development. A zoning district, for example, that requires a specific type of development, such as single-family detached housing or minimum lot size, limits discretion concerning the capital or labor intensity of the development. Strict and detailed zoning laws may ultimately have the effect of holding the amount of capital used in construction and development constant, suggesting the developer will only be able to effectively control the amount of labor. In this case, as the model suggests, the effect of higher transactions costs will be to reduce the amount of labor and, ultimately, the number of projects. Thus, areas that have planning systems with high transactions costs will also experience lower economic growth. These implications will also be tested more thoroughly in Chapters Six and Seven.
CHAPTER 5

PLANNING APPROVAL AND TRANSACTION COSTS:
APPLICATIONS TO CASES

This and the following chapters use TC concepts and ideas to understand and analyze the effects of development controls and planning on economic activity within jurisdictions. This chapter, more specifically, explores cases and examples of land-use regulation and property development to more fully understand the implications of transaction-cost analysis. The transaction-cost paradigm is fleshed out by focusing on the bargaining process that is inherent in the plan approval and rezoning process on the local level. The next section summarizes the key concepts that provide the framework for a transaction-based analysis of land development and planning in communities. This section explores the potential sources of transaction costs in the rezoning and plan approval process and the potential impact these costs have on land development. Sections two through four apply the TC framework to three cases from the U.S.: a small city, a large township, and a large city in Ohio. These cases help illustrate the
variety of ways the planning process can impose transaction costs on land development in different settings while exploring some of the nuances of the rezoning and plan approval processes. These cases provide important background and context for exploring the impacts of planning in Chapters Six and Seven. Section five concludes Chapter Five with a summary of key points and insights drawn from the cases.

5.1 Land development and transactions

The core concept underlying the TC theory of planning and urban development is that property development should be viewed within a broadly defined transaction-based framework. Land development in the U.S., like other countries with Western planning traditions, require local government permission before improvements can be made. This means, in essence, the property owner and a governmental body must come to an agreement about the nature and character of the improvements. In the U.S., this approval process usually occurs in two stages. First, a planning board, often consisting of local citizens appointed by the city council, evaluates the application and makes a recommendation to an elected legislative body (e.g., city council or commission). If the local PB approves a development application, the application goes to the second stage: review by the local legislative body (e.g., city council). In most cases, the approval process requires public hearings where citizens can voice concerns and objections to proposed projects.¹

¹Public hearings, of course, are consistent with democratic and participatory governance, particularly on issues of public interest that require collective decisionmaking. Once an activity is considered in the public domain, it is subject to collective decisionmaking which requires citizen participation. This process, however,
The process is complicated by the nature of land development. Land development also typically occurs in two phases. The first phase requires obtaining permission to develop property -- securing development rights -- through zoning. Zoning approval also often requires submission of a preliminary plan, a rough outline of the proposed development that includes expected lot and building configurations, infrastructure needs, access points, and other details related to site development. The specific requirements vary by community although procedures for evaluating the application are often codified in state law. Once zoning is approved, property owners have a legal right to develop their land for a specific use subject to conditions established by the local PB or city council. The second phase encompasses the actual site development. Approval from PBs and city councils are required for final site plan before construction can proceed. The local PB and legislative body can stop development at either stage or phase of property development if they believe the project is not in the community’s best interest.

The key issue is the degree the local planning process imposes transactions costs also involves a higher level of transaction costs to reach goals and make decisions.

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2Ohio is a strong home rule state. Cities (and increasingly townships) can exert substantial discretion over zoning and planning procedures by adopting self-governing charters that free them from statutory limitations in the Ohio Revised Code. For example, state law specifies the minimum number of days public notice must provided before a public hearing. A chartered city can alter this number (usually by adopting a more conservative standard that would increase public awareness and/or participation).

3Zoning grants development rights to a property owner, but not approval to develop the site in any manner he or she wishes. Final site plans must be approved by local authorities regardless of zoning in most cases.
on private parties and whether these costs influence decisions to develop property within a jurisdiction (following the insights of Lai 1996).

This approach does not necessarily imply the optimal amount of development control is zero. Following the contributions of Coase (1961), the analysis presumes the presence of externalities — benefits and costs imposed on third parties not captured through normal market prices and exchanges. These externalities exist because information, search and enforcement costs preclude effective market solutions to land use problems that emerge as part of market development. Thus, a housing development may create increased traffic congestion in a neighborhood, a negative externality that could be minimized through appropriate planning or simply incorporating the concerns of third parties (neighbors) into the project’s design. Similarly, communities could purposely choose to adopt development controls that impose high transaction costs to discourage property development. Indeed, this is the major thrust of the public choice argument that zoning is a form of collective property right (Fischel 1985; Nelson 1989). Many of these problems or concerns may increase with the scale of a project. The impact of a one hundred unit housing project, for example, will be larger than a one unit development, prompting a higher level of public scrutiny to control for externalities (e.g., erosion, traffic congestion, or drainage).

Moreover, the choice of planning "regime" may also be a reflection of a community's desire to regulate the pace and pattern of economic development. Communities, in principle, could adopt an approach to development control that imposes high transaction costs to reduce the level of development activity within the
community. Also, following the insights of Bryson and Ring (1990), a community may choose a governance structure that is open at many stages of the project approval process to ensure all potential nuisances or impacts are revealed. A community with a strong emphasis on justice as a governing principle might choose a very open public approval process even though it implies high transaction costs.

Irrespective of the reason why communities might choose a high-TC or low-TC planning regime, the choice of governance structure will impact property development and, as a consequence, the level of economic development. The principal insight of the TC paradigm is to show how land-use policy influences private sector investment decisions through the effects of its regulatory powers. This may be particularly important in Western planning systems for two reasons: the presumption is usually against new development and the governance structure presumes idiosyncratic investment. Thus, two communities may have the same "core values" about quality, but the community imposing higher transaction costs for project approval will experience lower levels and rates of economic growth as developers opt for sites in communities with lower transaction costs. This chapter explores these interconnections through case studies to flesh out the more subtle impacts of land-use regulation on land development. Unfortunately, the case study method is not as well suited for measuring general impacts on economic growth. A more systematic empirical analysis of this proposition is reserved for Chapters Six and Seven.
5.1.1 Planning practice and transaction costs

Bargaining is the primary source of transaction costs in the land development process. The plan approval process usually involves numerous, often detailed, meetings between staff planners, planning consultants, PB members, property owners, property developers, and neighbors. Sometimes these meetings are informal. Other times they are formal and part of a public hearing. Often times, as the cases below demonstrate, these meetings involve discussions of broad issues, such as whether a parcel should be developed as a residential or commercial use or the intentions of the developer. These discussions also can include specific information about the types of housing units or commercial buildings, including construction, type of facade, or even the location of units on lots. Contentious issues could include the average value of homes in the development, the size of commercial buildings, or the specific use of the property.

Additionally, particular planning procedures used to bargain with developers may impact the transaction costs associated with the approval process. Attempts by local PBs to reduce uncertainty about the nature and character of property development often mean detailed contracts or agreements must be devised. The more detailed the contract, however, the less discretion the developer is given to tailor the project to perceived market needs and trends. More importantly, the more detailed the contract, the higher the bargaining costs associated with land development within a particular community (see Marvel and Marvel 1991). Thus, while creating certainty for the PB (and presumably the community), the process increases uncertainty and the bargaining
costs for the property developer. These costs -- the planning-related transaction costs associated with property development -- may discourage land development and potentially dampen economic growth within a community. Rather than managing growth, the development control process may actually inhibit growth in localities with onerous development approval processes.

The sources of transaction costs in the plan deliberation and approval process can be delineated more specifically. One potential source of transactions cost is *conceptual*. A proposed development plan, for example, has a much lower likelihood of success if it falls outside the general criteria for "acceptability" by key decisionmakers (i.e., staff, planning board members, city council). Thus, an industrial development is unlikely to be approved if it conflicts with either adjacent land uses (e.g., single family residential) or community interests (e.g., desire to maintain a residential "character"). Developers can incur substantial costs and expend significant resources in attempts to uncover conceptual issues and information. Sometimes, conceptual issues are clearly stated in the local zoning code: "land use regulation and zoning is intended to promote the residential character of City A." In practice, however, behavior may differ from stated principles. Discussing projects with experienced staff can reduce these information search costs before the application is actually submitted to the planning board or city council. Thus, even though a particular set of planning procedures and processes planning may have been adopted to protect a community value (e.g., create an open system for public participation), these values may not be an evident part of the development control and approval process.
A second potential source of transaction costs is process related. The application evaluation and approval process could create costs in terms of plan detail, delay, and uncertainty and significantly increase the transaction costs associated with land development. This is particularly likely in a unified governance structure that is highly politicized. Adopting policies that require public hearings for all plan applications, for example, increases the time associated with plan approval through public notification requirements. Hearings also increase uncertainty because standing is granted to a broad number of interests, resident and non-resident. Some communities have organized opposition to almost all proposed developments as part of no-growth coalitions.

The impact of these interests on PB decisions through the public hearing process is unknown for most developers and planners. These uncertainties are compounded by the fact projects must often be evaluated and approved at the PB level and the city council level. This means, for many communities, development applications are subject to public hearings and reviews at least twice.\footnote{Given the political nature of development approval, planning procedures can be efficiency enhancing. This occurs when externalities are not incorporated into the project's design. Public hearings can reveal these externalities. To the extent these processes expose these weaknesses and require them to be addressed in the proposal, the benefits of citizen participation may outweigh the costs.}

These procedures can create uncertainty and higher costs for developers if they allow special interests and non-externality driven concerns to influence outcomes. The property developer may be forced to modify his proposal even though the changes are...
inconsistent with the "true" community desires, contrary to market trends, or simply inefficient.

For example, a local township PB in a rural section of Miami County, Ohio attempted to address citizen concerns over the depletion of the local aquifer from a residential project. A significant reduction in access to water (e.g., lower water pressure) for nearby residents would be an externality generated by the land development. At the public hearing, citizens specifically voiced concerns over the impact of lawn watering on the aquifer and water pressure for nearby houses (Newnam 1997). No scientific evidence was provided that the proposed development would significantly impact the aquifer. The PB, however, approved the project conditional upon the use of a higher cost city water system instead of the proposed well-based system (Newnam 1997).

A third potential source of transaction costs emerges from the incidence, or likelihood, a development application will be subject to a drawn out, open ended public approval process. Whether a development application will be subject to an administrative or political approval process is determined in part by the "Architecture of Land Use," the structure of the local zoning map. The local zoning code and map segregate and define land uses within a community by district: residential districts (or zones) permit residential uses, commercial districts permit commercial uses, and other districts that might be appropriate for the community. Each zone also has a number of "always permitted uses" defined within the zoning code. Thus, a residential zone may allow single-family housing only and specify minimum lot sizes to create a distinct
neighborhood character. Commercial zoning may specify certain types of uses, such as office or professional, but not convention center or retail. Proposed developments that fall within these zoning definitions (e.g., single family housing in a single family residential district) are usually processed administratively and do not require PB or city council review. The zoning code grants, in effect, a development right to the property owner for that type of development.

If a proposed development falls outside the zoning classification, the application is processed through a legislative approval process. Typically, the application goes through a staff review, which makes a recommendation to the local planning board. The local PB takes the staff recommendations under advisement and holds a public hearing to solicit citizen input on the application. If the application is approved at the PB level, it is forwarded to the city council (or other local legislative body) for a second review and public hearing. This process can add months, sometimes years, to the approval process.

A development subject to an administrative review process has fewer transaction costs associated with it: development rights exist and are enforceable, reviews are handled quickly through a staff evaluation process, uncertainty is minimized by the application of administrative rules and remedies. Developments in this process, in principle, would be subject to minor process-related transaction costs.

One of the more dramatic examples of the potential efficiency of an

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If criteria for approval are specified clearly as part of the application process. This is the case with several flexible zoning programs.
administrative review process is the Land Use Guidance System adopted by Fort Collins, Colorado. After adopting a formula-based approval system as part of the city's flexible zoning code, application processing times fell by two thirds. If the application were subject to the political process, it would also be subject to potentially large conceptual and process-related transaction costs because of the politically-driven public review.

The Architecture of Land Use (ALU) can determine the likelihood a development application will be processed administratively or politically. If land use zones are defined specifically (e.g., agricultural, large lot residential, convention center, or highway services), actual development may be more likely to differ from the zoned use of the land, requiring a rezoning application and separate site plan review. In many suburban and rural areas, for example, land may be zoned for one specific use: agriculture. If a developer proposes to build homes on the land (e.g., large lot, single family estate development), she will need to obtain PB approval to rezone the property. This proposal is required to go through an extended public review process.

If, on the other hand, zones are defined broadly, the development may be processed administratively. For example, if zones with agricultural uses were defined to include a wide range of housing types (e.g., multifamily and single family) and commercial uses (e.g., office buildings), the project could be handled administratively and confined to issues related to the building code and project design, rather than development rights. In this case, the planning-related transaction costs could be substantially lower. In practice, most development projects require approval by the
local PB.

Thus, ALU, as defined in a local area's zoning code, can increase or decrease transaction costs and uncertainty. Zoning creates an enforcable system of development rights, and reduce uncertainty in land development (Bristow 1995) as well as transaction costs (Lai 1996). However, if zoning does not conform to existing development patterns, development applications and projects will be faced with more uncertainty and higher transaction costs because they will be required to undergo a legislative review and approval process.

Troy, Ohio, a city of about 20,000, recently changed from a pyramidal zoning system to one designating specific uses in districts. Pyramidal zoning systems allow land uses to "stack" on top of each other, where residential uses are typically the most exclusive. Commercial uses, however, would allow residential uses and industrial uses would allow residential and commercial uses. Now, residential, commercial, and industrial uses are classified in separate districts, with little mixed-use capacity. Any attempt to change land use (e.g., from residential to commercial) now requires zoning approval. This system of zoning increases transaction costs by subjecting a broader array of projects to the public review and approval process (Newnam 1997). While this process may reveal inefficiencies in the plan (e.g. externalities), it also increases the likelihood changes will be made to the proposal that may not be efficiency enhancing or socially beneficial.
5.1.2 The role of governance structures

Governance structures play an important role in determining the level of planning-related transaction costs in the land development process. The choice of governance structures will determine the kinds and levels of burdens property owners will face in their attempts to develop (or redevelop) their property. If a community adopts a free-market approach to land development, for example, it has effectively chosen a governance structure that resembles classical contracting. The interests of the community and property owners are served by traditional market mechanisms which include market-based contracts and traditional enforcement mechanisms.6

In contrast, all transactions are considered unique in transactional contracting governance structures. Contracts or agreements (planning permission) are the result of lengthy negotiations about the type, nature and scope of the contract and land development. These procedures are most clearly evident in local planning processes involving subdivision development, Planned Unit Developments (PUDs), and final site plan approvals. Typically, these projects require a change in zoning and allow extensive involvement in project design by local planning authorities. Final site plans provide project details including exterior siding, outside lighting, and landscaping and often become important components of the bargaining and approval process (as the case studies in this chapter show).

6Houston may provide the best U.S. example of a city that continues to use a classical contracting model for land-use development. Land uses are regulated through private covenants over land-uses rather than zoning or citywide planning (See Seigan 1972, 1990).
The higher transaction costs associated with transactional contracting may be an unintended consequence of local policy choices. Cities, for example, with traditions of encouraging growth may adopt narrowly defined and specialized zoning districts with the intention of facilitating growth or enhancing the quality of development. The effects, however, may be to discourage growth and development by subjecting development projects to a more highly politicized legislative approval process. This was the effect of adopting exclusive use zoning in Troy, according to local developers.

The transaction costs associated with property development will be explored using case studies of two smaller communities and a large central city in Ohio. Their planning procedures and processes will be examined with respect to the impact on the costs of "transacting" with the local government over land development issues. Specifically, the case studies identify and the explore three fundamental sources of transaction costs that derive from concept, process and incidence. A limitation of the analysis is its inability to determine whether the planning system is socially efficient in a global context. Some elements of the system may be efficient because they reveal externalities that can be addressed by changing the proposed project. The impacts on economic growth are easier to estimate. Since case studies are not suitable approaches to measuring the magnitude of the impact on economic growth, these effects are explored further in Chapters Six and Seven.

5.2 Development regulation in Centerville

The city of Centerville rests in the center of a growth corridor directly south of Dayton, Ohio, a metropolitan area consisting of four counties and a population of about
one million residents. Centerville benefited from central-city out-migration during the 1960s and 1970s and the decentralization of manufacturing in the 1970s and 1980s. This rapid growth pushed the city's population from fewer than five thousand in 1960 to more than twenty thousand in 1990. Its rapid growth is also evident in the number of housing units added in recent years. In 1990, Centerville reported 8,801 housing units. From 1990 to 1994, 106 single family homes have been added to the housing stock each year on average (table 5.1). Thus, single family housing alone increased Centerville's housing stock by 5 percent in just four years. By comparison, the average increase in single family housing in thirty-two cities in Cuyahoga, Franklin, and Montgomery counties was 193.2 units. Centerville is also relatively wealthy. The poverty rate is one of the lowest in the state and median household income was $45,424 in 1989.

Centerville retains a residential character although its commercial base is growing. While Centerville averaged more than one hundred building permits for single family housing during the early 1990s, commercial development accounted for eighty-three units on average (table 5.1). This is higher than the 12.6 permit average for thirty-two other cities in urban counties in Ohio. More than half of Centerville's land, 51.3 percent, is developed residentially. Through annexation, the city has also obtained substantial portions of undeveloped property. The city reports 36 percent of its land is either vacant or agricultural. Thus, less than 15 percent of the land in the

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7The average reflects growth for relatively large cities. Their average population is 65,281. See the discussion in Chapter Six.
city is used for industrial or commercial property. The zoning code and planning approval process is explicitly designed to protect the residential character of community.

The city employs three full-time planners to assist developers and property owners with the local planning process. Although the city reported adopting its current zoning code in 1986, it adopted its comprehensive plan in 1969. The zoning code has not been revised substantially since 1986, although numerous amendments have been approved by the PB and city council. The comprehensive plan was updated in 1988.

The city has adopted numerous vehicles for expediting planning and zoning applications, reducing conceptual and process-related transaction costs. Staff are assigned as case managers to applications as they are submitted. Voluntary pre-application meetings with the staff and PB are also encouraged. These features of the planning process help ensure the application is consistent with the general tenor of development as embodied in the comprehensive plan, community concerns, attitudes of staff, PB members, and city council -- concept-related transaction costs. As a result, only applications with a high likelihood of success actually make it to public hearings before the planning board.
Economic Growth

- No. of single family units, 1990-94 average: 106.8
- No. of commercial units, 1990-94 average: 83.2

Number of Planning Staff

- 3

Year Zoning Code Adopted
- 1986
- Most Recent Major Revision: 1986

Year Comprehensive Plan Adopted
- 1969
- Most Recent Major Revision: 1988

Permit Processing Times (average, months)
- Rezoning Application: 2.5
- Planned Unit Development (after rezoning approval): 1

Innovations in Planning Department
- Computer assisted permit application and tracking (1995)
- Maximum time limits for staff review (1986)
- 2-stop permit processing (1977)
- Case manager for applicants
- Voluntary pre-application meetings with staff
- Voluntary pre-application meetings with planning board
- Performance zoning bonuses

Source: Author survey of City of Centerville Planning Department.

TABLE 5.1: Profile of Centerville and planning department
Centerville adopted "2-stop" permit processing in 1977, consolidating most application processing into a few locations. This variation on the "one-stop shop" helped reduce red tape associated with permit processing. In 1986, the city council amended its zoning code to impose a maximum review time for staff, further expediting decisions on applications. The local zoning code also imposes a maximum 40-day limit for review by the planning board and a 65-day limit for city council (table 5.2). Finally, in 1995, the city adopted computer-assisted permit tracking. All of these planning innovations could substantially reduce the costs of obtaining and processing a development or zoning application.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Planning Commission</th>
<th>City Council</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Hearing Required</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Public Notification (days)</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Public Notice (feet)</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Maximum Time Limit (days)</td>
<td>40</td>
<td>65</td>
</tr>
</tbody>
</table>

*Source: Centerville City Zoning Code.*

**TABLE 5.2: Profile of Centerville rezoning application process**

Process-related transaction costs, however, may be increased by other aspects of the plan evaluation and approval process. For example, public hearings are required at both PB and city council levels. This draws out the application process, creating uncertainty. Similarly, the city of Centerville requires notification of property owners
within five hundred feet of the effected property. Alternately, the city could require notification of adjacent property owners, or use a smaller threshold for notification (e.g., two hundred and fifty feet). By limiting the scope of mandatory notification, the uncertainty resulting from the public hearing might be smaller since the likely effects of citizen impact would be less. Five hundred feet appears to be a more inclusive standard than many other Ohio cities (see Chapter Six, table 6.8). Similarly, the city requires at least ten days for pre-hearing notification. This also a slightly longer period than other cities, further widening the scope and likely impact of citizen participation in the hearing process.

From a developer's perspective, a session with the PB to hammer out potential problems with her project may be the most favorable strategy to facilitate approval since it minimizes the number of players in the plan approval process. Moreover, a city may have other justifications for open public hearings that maximize citizen participation on land-use issues, such as identifying and addressing externalities during early stages of development application review.

On the other hand, increasing citizen participation also increases the transaction costs of property development within the community by extending the approval time and potentially exposing the project to extensive revisions. An open, lively planning process may create uncertainty and discourage investment and economic activity within the city. Centerville requires all decisions by the PB to go to city council, regardless

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*The community, of course, may decide that the costs of this process (lower economic growth) are acceptable considering the political benefits they confer.
of the PB's decision. This provides an institutionalized appeal process allowing property owners to petition the city council and overturn an adverse PB decision. Other cities in Ohio, in contrast, stipulate that an adverse decision by the PB prevents the application from moving forward to another stage (no institutionalized right of appeal).

Another potential source of transaction costs concerns the likelihood a development application will require PB (and hence city council) approval. Centerville's zoning code provides for seven types of residential districts, fewer than the average for other cities in heavily urbanized counties (table 5.3). Centerville does not report any mixed-use districts, although the state average is 1.9. Overall, the city has sixteen different zoning districts, including two special districts, compared to the statewide average of seventeen. (The statewide average is exclusive of special districts.) This suggests that developments in Centerville are not necessarily more exposed to an open public review process than other cities when viewed from the general perspective of the Architecture of Land Use. In practice, however, most developments will be subject to some form of PB review.
<table>
<thead>
<tr>
<th>Districts</th>
<th>Number</th>
<th>State Average</th>
<th>Maximum No. Uses</th>
<th>State Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>7</td>
<td>7.3</td>
<td>34</td>
<td>13.5</td>
</tr>
<tr>
<td>Commercial</td>
<td>5</td>
<td>5.0</td>
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<td>47</td>
</tr>
<tr>
<td>Industrial</td>
<td>2</td>
<td>1.9</td>
<td>33</td>
<td>33.8</td>
</tr>
<tr>
<td>Mixed Use</td>
<td>0</td>
<td>1.2</td>
<td>0</td>
<td>22.1</td>
</tr>
<tr>
<td>Special Districts</td>
<td>2</td>
<td>1.6</td>
<td>15</td>
<td>N/Av</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>17</strong></td>
<td><strong>121</strong></td>
<td><strong>116.3</strong></td>
</tr>
</tbody>
</table>

*Source:* Centerville City Zoning Code and survey of zoning codes in 32 cities in Cuyahoga, Franklin, Hamilton, and Montgomery Counties. For a more complete discussion of the data see Chapters Six, Seven and Appendix B.

**TABLE 5.3: Profile of Centerville land use districts**

This overview provides a general description of the planning process in Centerville, but does not explain how the system works in practice. To more fully understand the approval process, and the attendant transaction costs, two cases were selected from Centerville Planning Commission deliberations between 1992 and 1994. The cases are not necessarily representative of all cases heard by the board. Rather, they were selected because they illustrate how the rezoning and plan approval works in practice. These cases also reveal the potential bargaining costs inherent in a review and approval process subject to legislative review.

5.2.1 Restaurant rezoning and variance

The first case involves the location and construction of a sit-down restaurant in a rapidly developing section of the city recently annexed from a neighboring township.
The section of town is south of Centerville's historic downtown, and several strip shopping centers are located nearby. The proposed restaurant would be located across from a major regional department store. Directly south and east are two high density residential developments. Just north of the lot is a low density commercial and office strip.

The zoning classification for the property, a holdover from township zoning, was Special Use Residential. The restaurant developer asked the Centerville Planning Commission to rezone the property to a classification compatible with its proposed commercial use and grant a use variance (City of Centerville 1993a). The developer's application requested a rezoning to B-1, Neighborhood Business. Since the restaurant needed to accommodate table service, a variance was also requested to construct a building 25 percent larger (6,423 square feet) than the legally permissible size of 5,000 square feet under B-1 zoning.

Importantly, a zoning classification, B-2, existed in the city’s zoning code that accommodated the larger building size. According to city staff, a B-2 designation would allow a wider range of businesses (Centerville 1993a). Thus, if the restaurant failed, B-2 would grant use rights to a wider range of businesses than the proposed restaurant. By rezoning to B-1, fewer businesses would be given use rights to the property and the variance would give the planning commission more control over future uses of the property. The decision to zone the property B-1 rather than B-2 would increase the likelihood future development will be subjected to a similar legislative review process.
City staff recommended approval of the B-1 zoning and the variance, but attached sixteen separate conditions (City of Centerville 1993a). Some conditions referred to details in the plan such as marking landscaping more clearly. Others addressed potential externalities. Condition three, for example, restricted access because of potential congestion problems along the major artery (State Route 48) feeding the residential and commercial strip areas. Condition four required a money donation in lieu of a five foot wide sidewalk required by the zoning code. Road improvements for the immediate access to the property -- a private road connected to the major thoroughfare -- would also be subject to review by the city's public works department.

Other conditions, however, dealt with issues more directly related to urban design, aesthetics and general land-use planning. Planning department approval was required for all exterior lighting (condition twelve), a specific type of stucco siding (dryvit) (condition thirteen), building colors (condition fourteen), and the location of the restaurant's dumpster (condition fifteen). These conditions were required as part of the normal site plan approval process even though the site is more than one mile outside the city's historic district.

During the public hearing, representatives of one of the neighboring apartment complexes objected to the development. The apartment complex owned and maintained a private drive which provided access to the proposed restaurant. The "burden of maintenance" would be on the apartment owners since 68.5 percent of the roadway was on their property (City of Centerville 1993a). The restaurant would, in effect, free ride
on its neighbors.

Professional consultants hired by the apartment owners also objected to a proposed drive-thru window which was not part of the original application (City of Centerville 1993a). Drainage was considered a potential problem, and the consultants for the apartment owners noted that a lighting and erosion control plan was not included in the application. (Planning commission members noted that these aspects of the development would be considered at a later stage of development plan approval.) Finally, the apartment owners objected to the classification of B-2 because it would increase the potential number of uses, negatively impacting the desirability of their property.

The discussion among commission members centered mainly on the appropriateness of the zoning classification (City of Centerville 1993a). Two commission members felt strongly that the land should be properly rezoned to B-2 (which would also have made the variance application moot). Other planning commission members noted that the Centerville’s Policy Plan was to discourage "intensifying the zoning of land" (6). City staff had determined that adjacent land uses were consistent with B-1 zoning, and B-1 zoning plus a variance gave the city more control over the property’s future development. A motion to approve the rezoning to B-1 was approved by the planning commission on a 4-2 vote (6).9

A second motion to table the variance application to allow further review by the

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9The two dissenting members were not opposed to the development. Rather, they believed a more appropriate zoning classification was B-2.
planning commission was rejected (4-2). If this motion had passed, the review of the application would have been extended at least another thirty days. In fact, since city council needs thirty-day notification for public hearings, the motion could have delayed the project by two months. Since the motion failed, the commission moved the meeting to the next stage, opening a public hearing on the variance application.

The public hearing on the larger building size was more straightforward and less contentious. The variance was justified to improve movement within the restaurant, allow for wider tables, and otherwise increase the comfort of the customers (City of Centerville 1993a). Neighboring property owners objected to the variance, arguing that the restaurant also needed a bigger setback to separate the project from neighboring residential uses. Planning commission members assured the apartment complex owners that these issues would be addressed when the final site plan was reviewed. A motion to approve the variance contingent on approval of B-1 zoning by council passed 4-2.

A third stage of the restaurant's application process required asking the planning commission for a "special approval" to allow the use of dryvit, a stucco-like material used on the building's exterior. The city of Centerville has strict limitations on the use of stucco. The restaurant's problem stemmed from whether the city determined the building was on a corner lot with two frontages, or a regular lot with one frontage. Since the lot was considered a corner lot, the site would need special permission to use the stucco material. A fourth motion on the restaurant's development application passed 5-0-1 permitting the use of stucco on the building.

This case is instructive from a transaction-cost perspective for several reasons.
First, the process of public hearings, staff recommendations, and planning commission review created a bargaining environment in which the developer adapted his proposal to the wishes of the planning commission. In other words, the developer's conceptual vision for the project was brought into line with the planning commission's vision. The proposed restaurant project, for example, included a private sidewalk requested by city planning staff. Moreover, city staff recommended approval only if it were subject to extensive and detailed review by city officials at later stages of the design and construction phases.

Second, even though the planning commission favored the restaurant project, and believed the use was compatible with adjacent land uses, the project could have been easily delayed because of decisions about the appropriate land-use designation of the property. The zoning designation of the property (Special Use Residential) was inconsistent with the development pattern for the particular area. Thus, the developer needed to rezone the property to a zoning district compatible with the proposed use. Previous zoning, in this case, increased the likelihood (incidence) of subjecting development projects to a plan approval and evaluation process politicized by legislative review.

As a result of the review process, the commission elected to approve zoning that would maximize their control and influence over the project (B-1). Importantly, approving B-2 zoning would have provided for a wider range of uses at later points in the area's development cycle. By choosing B-1, a more restrictive commercial zone, the planning commission adopted a position that would increase the incidence of future
projects becoming subject to a legislative development review process. The project was potentially delayed because of concerns over future development rights that might be conferred on the site if the planning commission adopted a zoning classification that accommodated the intended use of the property (a table serve restaurant).

Third, the case illustrated the variety of arguments that could complicate development project review and approval. Some of the concerns involved legitimate externalities, such as the imposition of road maintenance costs on neighboring property owners or the potential negative effects of run-off on adjacent properties. Other points, however, represented attempts to use the review process to prevent further development. Arguments against the restaurant's application, for example, also focused on technical deficiencies of the application and questions about the legal authority of the commission to approve the variance. Each of these points became an issue that needed to be resolved by the planning commission, city planning staff, and the developer.¹⁰

5.2.2 Conditional use application for hardware store

The second example further illustrates the vagaries of the plan approval and public hearing process in land development cases. The Centerville Planning Commission was asked to consider the application of a developer representing a major,

¹⁰Thus, the plan review process had two offsetting transaction cost properties. One reduced transaction costs to address public good issues (e.g., externalities). This use of the planning process has been embraced by economists using property rights theories of zoning. The efficiencies of the plan review process, however, were offset by transaction costs that impose inefficiently higher costs on development projects and uncertainty through the public hearing process.
national hardware store chain. The chain wanted to build a 121,248 square foot building (major use) with an outdoor garden center (conditional use) (City of Centerville 1993b). Road improvements would also be required, but these would be paid for through impact fees.

The developer sought Major Use/Conditional Use approval for a 22.6 acre parcel of land at the intersection of a major north/south thoroughfare and I-675 (City of Centerville 1993b). The land was zoned B-PD, Business Planned Development. The project also abutted an apartment complex (to the west) and a gasoline station (to the north) with direct access to a major artery. The developer had submitted an original petition for Major Use/Conditional Use approval to the planning commission in 1990, but it had expired after two years.

The development company made a presentation to the planning commission in 1993 (City of Centerville 1993b). The hardware store is part of a 350 store chain spanning twenty-one states. The proposed store in Centerville would be only the third store with brick construction. The construction would result in $11 million of new investment over ten months and create 250 to 300 construction jobs. After construction, the store would create 150 permanent jobs with a payroll of about $2.4 million (an average of $16,000 per job, or $8 per hour). The store was expected to generate about $20 million in sales.

The city staff recommended approval of the application with fifteen separate conditions (table 5.4). Many of these conditions required detailed involvement by local officials to approve certain aspects of the development. The first condition, for
example, required the company to present a market analysis to the PB to show adequate demand for the store. In addition to concerns over traffic congestion and volume, the city restricted deliveries to standard business hours. Several of these conditions were considered onerous by the developer.

Specifically, the department store was unwilling to divulge its market analysis (condition one). The hardware industry was very competitive, the developer argued, and the store believed releasing its results would compromise its market position (and allow competitors to free ride off their research). The developers also wanted the planning commission to allow a chain-link fence with additional landscaping instead of wood fencing (condition two). A chain-link fence, they argued, would be easier to maintain and become virtually invisible with proper landscaping. The wood fence required by the city would be difficult to maintain and present a security problem. The developer also believed condition five was too restrictive and wanted delivery hours extended to between 7:00 a.m. and 9:00 p.m. The hardware store believed an outdoor paging system (condition seven) was essential for operating its store, and said the paging system was designed so it could not be heard off site. Finally, the hardware store questioned the calculations used to limit the size of their wall sign (condition fourteen), arguing the zoning code permitted a larger sign.

11The zoning code required a market analysis for all commercial applications. This provision was deleted in 1994 even though planning commission members thought this was an effective "control mechanism" for maintaining the residential character of the community (City of Centerville 1994).
<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Market analysis must be submitted by developer to provide evidence the shopping center is economically viable</td>
</tr>
<tr>
<td>#2</td>
<td>100 foot buffer strip abutting apartment complex, detailed landscaping subject to approval by city planning department. Require wood privacy fence to limit pedestrian access from apartment complex.</td>
</tr>
<tr>
<td>#3</td>
<td>Dumpster location, outdoor containers and concealment approval by planning department</td>
</tr>
<tr>
<td>#4</td>
<td>Landscape screening required to limit view from road</td>
</tr>
<tr>
<td>#5</td>
<td>Deliveries and refuse removal limited to 8:00 a.m. and 5:00 p.m.</td>
</tr>
<tr>
<td>#6</td>
<td>All exterior lighting approved by planning department</td>
</tr>
<tr>
<td>#7</td>
<td>Non-emergency outdoor speaking system prohibited</td>
</tr>
<tr>
<td>#8</td>
<td>Developers must provide evidence they have adequately addressed federal wetland requirements</td>
</tr>
<tr>
<td>#9</td>
<td>Stormwater drainage plans must be approved by city engineering department</td>
</tr>
<tr>
<td>#10</td>
<td>Covenants approved by city attorney for future private maintenance of stormwater retention basin</td>
</tr>
<tr>
<td>#11</td>
<td>Southern driveway will be prohibited from making left-hand turns (modification paid by developers).</td>
</tr>
<tr>
<td>#12</td>
<td>Developer must pay to the city the estimated cost of: a) adding a lane of pavement, b) curb, c) gutter, d) stormwater drainage, and e) sidewalk</td>
</tr>
<tr>
<td>#13</td>
<td>The city shall specifically approve use of dryvit and partial use of smooth finish concrete block on walls and building</td>
</tr>
<tr>
<td>#14</td>
<td>Wall signs facing main artery will not be approved (ground signs only)</td>
</tr>
<tr>
<td>#15</td>
<td>Outdoor storage, sale, display of materials prohibited except in wrought iron fenced garden center</td>
</tr>
</tbody>
</table>

Source: City of Centerville (1993b, 2-3).

**TABLE 5.4:** Conditions for approval of hardware store as Major Use/Condition Use in Centerville, Ohio
Eight citizens testified on various aspects of the development (table 5.5). Four were explicitly opposed to the development. The remaining citizens, while not explicitly opposing the project, argued for tight restrictions if the store were approved.

The thrust and range of their comments varied considerably. Citizen complaints can be categorized into four general types: concerns over externalities generated by the project (i.e., congestion, environmental damage, drainage, or erosion), concerns over land use issues (i.e., appropriateness of development, zoning intent, or density), project design issues (i.e., aesthetics, lay-out, or landscaping), and procedural issues (i.e., the application process or legal authority to make decision).

Aesthetic and project design issues were important for several citizens. Three, for example, emphasized the need to maintain an adequate buffer strip between the store and the adjacent apartment complex. The seventh person simply thought that the major-use application should be denied because the site was inappropriate for this type of use (he preferred office development).

Other concerns centered on potential externalities that might accompany the project. For example, several citizens raised concerns about increased traffic congestion. Others suggested that increased noise would degrade the quality of life of the neighborhood. The last person testifying believed the added traffic volume would increase pollution and kill additional trees.
<table>
<thead>
<tr>
<th>Citizen</th>
<th>Nature of Objections and Comments</th>
</tr>
</thead>
</table>
| #1 (opposed) | - Width of buffer strip between development and apartments too narrow  
- Rerouting of creek would disturb the woods  
- Security fence was inappropriate  
- Store should install no-trespassing signs  
- Left turn into project is a traffic hazard due to limited sight distance  
- Current roadways could not handle incremental traffic increase  
- Noise would increase in the neighborhood  
- Delivery should be restricted to 8:00 a.m. and 5:00 p.m.  
- Parking lot lights should be "down directed"  
- Trees should be raised to screen nearby residents |
| #2 (opposed) | - Market analysis was not included as part of the submittal  
- Development exacerbates traffic problems  
- Light and noise problems will increase with development, negatively impacting neighborhoods  
- B-PD zoning classification allows developments with too high density  
- Weed growth on the lot was too high |
| #3 | - Encroachment on buffer strip should be avoided  
- Light brick more compatible with surrounding residential neighborhood  
- Chain-link fence should not be allowed  
- Environmental impact statements should be performed  
- Delivery hours should be restrictive  
- Citizen was not anti-business, but wanted restrictions to accommodate the concerns of residents |
| #4 | - Pole buildings should be prohibited  
- Mechanical equipment on roof should be screened with wood fencing  
- Wood fence is a better sound barrier |
| #5 | - Separate section for contractors to purchase materials would create a noise problem |
| #6 (opposed) | - Market survey was necessary because of recent workplace downsizing |
| #7 (opposed) | - Site was not appropriate for business. Should be office park. |
| #8 | - Buffer strip should be higher  
- Wood fence should be required  
- Development would increase traffic congestion  
- Incremental air pollution would kill trees |


**TABLE 5.5:** Citizen objections to hardware store proposal
Mixed in with the comments from citizens were other points about process. Citizen three, for example, emphasized that environmental impact statements should be performed to quantify the negative impact on the environment (a nearby stream was going to be diverted because of the project). Citizens three and six argued that a market analysis should be required before the planning commission could approve the project.

After citizen testimony, the public hearing closed. The discussion among the planning commission members was truncated. One member observed that a market analysis was not included with the application, and he was "uncomfortable" discussing the application without it. In fact, the member thought the commission could not lawfully proceed to act on the application without it (City of Centerville 1993b). As a result, a motion was made to table the Major Use/Conditional Use application until a market analysis was completed and submitted to the city. The motion was approved 5-0.

While the planning commission technically tabled the discussion on the proposal, the result was to effectively reject the project. Soon afterward, the department store began construction on a site in another jurisdiction one mile south of the Centerville location.

Once again, this example illustrates how the three potential sources of transaction costs impact the evaluation of development applications and approvals. The Architecture of Land Use increased the likelihood of politicizing the approval process by subjecting major-use applications to public hearings and special consideration from
the planning board. These effects were compounded by the expiration date for applications approvals. Development rights for this parcel were not secure under this zoning classification. The approval process further increased transaction costs by requiring impact statements and market analyses from potential property developers as a pre-requisite for approval.\footnote{In 1994 the city of Centerville deleted the requirement for a market analysis in its zoning code. During the discussion of the amendment, a majority of the planning commission members believed the city was "throwing away one of their best tools to control development" by deleting the requirement (City of Centerville 1994). The planning commission believed this provision was an effective "control mechanism" for maintaining the residential character of the community. The planning commission voted to accept the amendment on a 5-2 vote because it "understood that the council was in favor of the change in the zoning ordinance" (City of Centerville 1994). Implicitly, the planning commission recognized the value of the market analysis to increase transaction costs and discourage development in Centerville.}

Transaction costs also increased through the need to match conceptual issues regarding the site and its development. These issues were particularly evident through the citizen comments on the development application. Importantly, these types of issues and concerns were not readily discernable from the zoning code or other written materials. Conceptual information was obtained during the bargaining process through interactions among the developers, city planning staff, planning commission, and citizens participating in the public-hearing process.

5.2.3 Summary of Centerville case

These two examples from Centerville illustrate how the planning process can increase the transaction costs associated with land development. Adopting a governance structure where major development projects are subjected to extensive legislative
review creates a bargaining environment. Transaction costs increase as property developers attempt to modify their proposals to meet concerns over development. Some of these concerns are driven by concept issues, such as what the development should look like or how it will fit in with other development trends. Other transaction costs are created by the nature of the legislative process. Concerns are raised through public hearings that require planning commissions and developers to modify proposed projects, increasing costs (e.g., mandating wood fencing rather accepting landscaped chainlink fencing). The process also creates uncertainty since a proposal that appears to have little public support may not be approved. Finally, the structure of the zoning code may impose higher transaction costs by increasing the likelihood development applications will be politicized through the public hearing process. A lower cost alternative might be processing applications administratively outside the legislative arena. These issues will be discussed more fully in Chapters Six and Seven.

The effects of these transaction costs on the developers varied between the two cases. For the restaurant, the added conditions did not stop the project. In the second case, the transaction costs associated with the project's approval effectively "killed it" for the city. These cases reinforce the view, developed in previous chapters, that development controls impact the marginal costs of property development on the local level.

5.3 The case of Washington Township

Washington Township is an unincorporated territory within Montgomery County directly adjacent to Centerville. Its development appears to be driven more by
residential growth than commercial growth (table 5.6). The township approved only eight commercial units per year on average from 1990 to 1994 compared to eighty-three units in Centerville. Single family residential units increased about one third faster than Centerville’s, helping boost the township’s population to 46,780 in 1990 and 48,701 in 1994. Although current income data are not available, the township’s population, like neighboring Centerville, is relatively wealthy.

5.3.1 Profile of planning process

Despite rapid growth, the township’s planning staff is relatively small, consisting of a full-time planner and public works manager and a part-time assistant zoning administrator. Washington Township, however, hopes to hire a full-time zoning administrator in 1997. The township has a relatively long history of zoning, passing its first zoning code in 1957 and updating it in 1988. The township also adopted a comprehensive plan in 1988, updating the plan just four years later.

The township’s planning process appears at first glance to be somewhat more cumbersome compared to Centerville. Rezoning and PUD applications take about thirty days longer to process. The planning department, however, has taken steps to speed up the application process. It adopted computer-assisted permit application tracking in 1987 and instituted voluntary pre-application meetings with staff in 1986.
### Economic Growth

<table>
<thead>
<tr>
<th></th>
<th>1990-94 average</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of single family units</td>
<td>131.6</td>
</tr>
<tr>
<td>No. of multifamily units</td>
<td>109.6</td>
</tr>
<tr>
<td>No. of commercial units</td>
<td>8.2</td>
</tr>
</tbody>
</table>

### Number of Planning Staff

|                        | 2.5             |

### Year Zoning Code Adopted

- **Most Recent Major Revision**: 1988
- **Year Zoning Code Adopted**: 1957

### Year Comprehensive Plan Adopted

- **Most Recent Major Revision**: 1992
- **Year Comprehensive Plan Adopted**: 1988

### Permit Processing Times (average, months)

- Rezoning Application: 3.5
- Planned Unit Development (after rezoning approval): 2

### Innovations in Planning Department

- Computer assisted permit application and tracking: 1987
- Voluntary pre-application meetings with staff: 1986

### Source

Survey by author.

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**TABLE 5.6: Profile of Washington Township and planning department**
The township reports making significant steps toward improving the efficiency and effectiveness of its zoning and planning process in recent years. Its 1994 annual report notes that the zoning office was the "first township department to have its performance evaluated by a customer service survey conducted by the [Township] Administrator's office." (Washington Township 1994, 37) Moreover, the recent computerization of zoning records significantly streamlined zoning certificate issuances. Permits for minor projects, such as residential additions, accessory buildings, and pools, can now be issued on a walk-in basis (38). Commercial projects that require review by the township's public works, fire, and zoning departments can take five to seven working days (38).

The zoning office's customer service efforts improved zoning code enforcement as well. Three hundred and ninety-five complaints were registered in 1994, most generated by staff periodically driving through neighborhoods (Washington Township 1994, 38). Almost all these complaints (99 percent) were resolved without court action. Nuisance abatement ordinances were also strengthened and enforcement tightened. Weeds must be cut twelve months out of the year and the township issued 179 citations for excessive weed growth in 1994 (38). Fourteen (7.8 percent) required township contracting to cut the weeds and six were assessed property taxes (38).

The plan evaluation and approval process is potentially time consuming and onerous task for developers and property owners. Since the township is an unincorporated area, rezoning applications must be submitted to the Montgomery County Planning Commission for review. After review and recommendation from the
county, the application is submitted to the Township Zoning Commission, which then makes a recommendation to the township trustees.

Public hearings are required at both the zoning commission and trustee levels (table 5.7). The township also encourages citizen participation, averaging twenty-two people in attendance at zoning commission meetings.¹³ Property owners within five hundred feet are notified automatically of public hearings on rezonings at the zoning commission level only. The township also places signs at the location of proposed zoning changes to further encourage participation. "The signs are a unique notification tool used by Washington Township," according to the zoning department (Washington Township 1994, 39), and often generates more participation than mailings to adjacent property owners (Douglas 1997).

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Planning Commission</th>
<th>City Council</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Hearing Required</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Public Notification (days)</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Public Notice (feet)</td>
<td>500</td>
<td>none</td>
</tr>
<tr>
<td>Maximum Time Limit (days)</td>
<td>40</td>
<td>30</td>
</tr>
</tbody>
</table>

*Source:* Washington Township Zoning Code, interviews by author.

**TABLE 5.7: Profile of Washington Township rezoning application process**

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¹³This is an average taken from attendance sheets for township zoning commission meetings from January 1992 through December 1994.
The township enforces a cut-off point for development applications in the middle of the month. The county planning commission usually provides a recommendation to the township trustees within three weeks. Thus, the township zoning commission can often schedule public hearings within four weeks of receiving the application (Douglas 1997). If the zoning commission approves the application immediately following the public hearing (the evening of the public hearing), the trustees can approve the application by the end of the second month. By the time the application reaches the township trustees, the application has been refined sufficiently to make approval more likely. Thus, the zoning commission hearing process is potentially important for vetting citizen concerns at an early stage of the review process. To the extent these concerns are addressed in the proposed project, uncertainty is reduced in the later stages of the proposal’s evaluation and review.

Once again, however, the transaction-cost implications are twofold. On the one hand, the legislative process provides a framework in which public goods and externality issues can be addressed. On the other hand, the political nature of the legislative process may increase uncertainty and the cost of site development. The latter costs may be exacerbated by explicit attempts to increase citizen participation, particularly if notification enhances the likelihood special interest groups can interfere, or delay projects. This was evident in the examples from Centerville in the previous section. Whether the net effect of these transaction costs impact economic growth within communities is an empirical questions and a more complete discussion is reserved for subsequent chapters.
The likelihood a development application will be subjected to zoning commission review appears, at first glance, to be somewhat lower for residential uses and higher for commercial uses compared to other cities and towns in urban counties in Ohio (table 5.8). The township zoning code provides for 6 residential zones, compared to a state average of 7.3, although the maximum number of uses appears to be smaller. The township provides for eight commercial districts, a larger number than the average of five for thirty-two other Ohio cities (although the township's zoning districts appear to accommodate a wider range of uses). The township has also authorized a mixed-use district that allows for combining small office and residential uses.

The township has elected to keep vacant land zoned for agricultural use. The township's master plan provides a general guide to suggested development patterns, but these patterns are not codified into the zoning map (Douglas 1997). The township believes this practice gives it more flexibility to accommodate growth and changing development patterns and trends. Zoning for specific uses would be even harder to change once its in place, according to the township planner. Thus, township planners have taken steps to reduce the burden of the rezoning process on new land development.
<table>
<thead>
<tr>
<th>Districts</th>
<th>Number</th>
<th>State Average</th>
<th>Maximum No. Uses</th>
<th>State Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>6</td>
<td>7.3</td>
<td>9</td>
<td>13.5</td>
</tr>
<tr>
<td>Commercial</td>
<td>8</td>
<td>5.0</td>
<td>82</td>
<td>47</td>
</tr>
<tr>
<td>Industrial</td>
<td>2</td>
<td>1.9</td>
<td>29</td>
<td>33.8</td>
</tr>
<tr>
<td>Mixed Use</td>
<td>1</td>
<td>1.2</td>
<td>4</td>
<td>22.1</td>
</tr>
<tr>
<td>Special Districts</td>
<td>1</td>
<td>1.6</td>
<td>18</td>
<td>N/av</td>
</tr>
</tbody>
</table>

Total 18 17 142 116.2

*Source:* Washington Township Zoning Code and survey of 32 and survey of zoning codes in 32 cities in Cuyahoga, Franklin, Hamilton, and Montgomery Counties. For a more complete discussion of the data see Chapters 6 and 7.

**TABLE 5.8: Profile of Washington Township land-use districts**

The minutes of the Washington Township Zoning Commission are unusually detailed and specific, allowing for a more thorough examination of the plan approval process over time. Cases can be easily tracked from initial rezoning application to final site plan approval. This means the sources of transaction costs are more easily identifiable. Identification of objections in the context of development provides a way of exploring their impact on economic growth. For example, Yankee Vineyard Associates submitted a rezoning application in 1992 to develop a mix of single and multi-family housing. The developers speculated that the ultimate size of the project might include ten to fourteen multifamily buildings, fifty two-family units, and seventy-five single-family units (Washington Township 1992a). To accommodate the subdivision, the developer's proposal requested a change from office development to
planned unit residential. The initial rezoning was approved 4-0 by the zoning commission.

Public concerns about the project were relatively minor. Only one citizen (out of twenty-three attending) testified, and he was concerned about the impact of the development on adjacent property values (Washington Township 1992a). Independently, zoning commission members raised concerns about density, the impact of the rezoning on future development, street patterns and traffic, and the cost of added infrastructure to the township. These concerns were addressed after consultation with the planning staff, and commission members indicated they believed the proposed rezoning was an improvement over existing zoning.

The second stage of the development project required the developer to propose street layouts and identify the type and quantity of each housing unit. The second stage proposal plotted out a 71.9 acre subdivision that would contain one hundred multifamily units and ninety-four single-family units (Washington Township 1993d). The zoning commission voiced concerns over the specifications of the cul de sac, street frontage for lots and the amount of green space in the development. The zoning commission tabled the discussion on the proposal until the developer could address these concerns. The following month, the zoning commission approved the project 3-0 subject to certain conditions addressing safety and drainage (Washington Township 1993e).

In another case in 1992, developers proposed a rezoning to accommodate another multifamily project. The developers proposed building 150 multifamily units
on a parcel of land zoned for planned unit office development (PD-O). Building multifamily units would require rezoning the property to planned unit residential, PD-R (Washington Township 1992b). Citizen concerns during the public hearing for this proposal (attended by forty-four people) centered on the potentially negative impact on the development potential of adjacent property, increasing densities, and traffic routing and congestion. Planning commission members raised concerns about spot zoning, access to the site, and the density calculations. Despite these reservations, the rezoning was approved 3-1 by the zoning commission.

Second stage approval was less expeditious. A proposal to build seventy-two garden apartments and seventy-eight townhouse apartments was tabled because the zoning commission had concerns about the use of brick in the buildings and the economic feasibility of the project (Washington Township 1993b). The project was tabled again during the August meeting of the zoning commission so the developers could address additional issues about the masonry used in the project (Washington Township 1993c).

During the commission's September meeting, the project's site plan was rejected on a 3-0 vote (Washington Township 1993d). The decision to reject the proposal was based largely on aesthetic concerns. Some of the buildings did not include enough brick in their design. As a result, the commission believed the buildings were not of the same quality as other buildings in the area. Notably, although the September meeting was attended by twenty-three citizens, none testified on this proposal.
These cases emphasize the length of, and detail involved with, the development approval process. The first stage for most development projects is obtaining the right to develop the property for the intended use through a rezoning request. Even if the rezoning is approved, however, the project still has several more approvals to obtain. In Washington Township, as in other jurisdictions, the trustees control development in two stages: first through the initial zoning of the land and then through the actual development of the site. This two-stage development approval process allows the zoning commission and township trustees to exert substantial control over the type and quality of the development. This approval process shows the potential local planning procedures have to increase transaction costs during plan approval.

The transaction-cost implications of this process are evident. The transactional nature of development approval means most project details are subject to negotiation with city officials. In fact, since the process requires detailed step-by-step approval by local planning authorities, the process increases transaction costs. These costs increase because concept-related transaction costs are encouraged by the approval process.

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14 An initial stage involves the county planning agency, but this agency's role is largely advisory and does not appear to significantly impact development approvals within the township.

15 To the extent the process identifies and mitigates externalities, these effects could be a socially beneficial. Unfortunately, the level of detail in the case studies is not sufficient to determine whether the net benefits of the approval process are positive for the community.
5.3.2 Citizen objections and development approvals

The detail of the minutes from the Washington Township Zoning Commission provides an opportunity to evaluate the importance of different types of concerns in the approval process. These concerns shed light on the effects of concept, process, and incidence on the transaction costs implicit in a project-specific approval process. To simplify the analysis, only cases involving rezonings were analyzed. This obviously truncates the analysis, but it also makes the data analysis manageable and intuitively understandable. Rezonings create the legal right to develop property, but the zoning commission still can exert substantial control over the specific layout and design of the project at later stages.

Concerns raised by citizens and planning commission members for twenty rezoning cases were identified and correlated with the total number of applications considered, the number approved, and the number rejected or tabled for further discussion during 1992, 1993, and 1994. The number of cases rejected or tabled were combined because these represented actions that increased the transaction costs of developing property within the township. A tabled proposal usually required re-engineering or making changes in the project's concept. It also represented uncertainty about the final disposition of the project. Thus, the developer is required to put more work into the proposal's design before the zoning commission will act on it. A rejection implies that the proposal is sufficiently flawed it needs to be significantly or completely reworked.

The planning commission and citizen concerns were categorized into fifteen...
different classifications. These were further subcategorized into the general types of objections: externalities, land use, project design, and process. The first general category of objections reflect concerns over *negative externalities*, costs imposed on third parties not involved in the property's development. This category includes increased traffic congestion, drainage and erosion control, environmental degradation, development impacts on neighboring property owners and residents, the potential costs of new infrastructure (e.g., roads, sewer) and reduced water pressure for current users.

The second type of concerns addressed *land-use issues*. These concerns included whether the development meets the original intent of the zoning map, whether the proposed development is an appropriate use of the property, whether the proposed use is compatible with adjacent uses, whether the project is economically feasible, or whether the project is consistent with the township's density targets.

The third type consisted of concerns over the *project's design*: aesthetics, layout and landscaping.

A final category was created to cover *procedural issues* and a general "Other" category to catch miscellaneous issues and concerns raised during the public hearings.

The results of an analysis of twenty cases considered by the Washington Township Zoning Commission from 1992 through 1994 are contained in table 5.9. Twelve of the twenty cases (60 percent) were approved on the same night of the public hearing. Eight cases were either tabled until the next meeting or rejected after the first public hearing.
<table>
<thead>
<tr>
<th>Concern</th>
<th>Number of Times Raised</th>
<th>Proportion of Applications (%)</th>
<th>All</th>
<th>Approved</th>
<th>Rejected/Tabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Externality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic congestion</td>
<td>11</td>
<td>55</td>
<td>66.7</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Drainage/erosion</td>
<td>8</td>
<td>40</td>
<td>25.0</td>
<td>62.5</td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>7</td>
<td>35</td>
<td>25.0</td>
<td>50.0</td>
<td></td>
</tr>
<tr>
<td>Impact on neighbors</td>
<td>6</td>
<td>30</td>
<td>25.0</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>New infrastructure</td>
<td>6</td>
<td>30</td>
<td>33.3</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>Water pressure</td>
<td>2</td>
<td>10</td>
<td>0.0</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoning intent</td>
<td>7</td>
<td>35</td>
<td>25.0</td>
<td>50.0</td>
<td></td>
</tr>
<tr>
<td>Appropriateness</td>
<td>6</td>
<td>30</td>
<td>25.0</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Compatibility with adjacent uses</td>
<td>6</td>
<td>30</td>
<td>25.0</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Economic feasibility</td>
<td>4</td>
<td>20</td>
<td>16.7</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>4</td>
<td>20</td>
<td>8.3</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aesthetics</td>
<td>6</td>
<td>30</td>
<td>16.7</td>
<td>50.0</td>
<td></td>
</tr>
<tr>
<td>Lay-out</td>
<td>5</td>
<td>25</td>
<td>16.7</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Landscaping</td>
<td>3</td>
<td>15</td>
<td>16.7</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedural</td>
<td>3</td>
<td>15</td>
<td>16.7</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>40</td>
<td>33.3</td>
<td>50.0</td>
<td></td>
</tr>
</tbody>
</table>


**TABLE 5.9:** Issues and concerns raised during plan approval process
The most common concerns addressed potential externalities from the proposed development. More than half the applications were challenged on the potential impact of increased traffic congestion. More than a third of the planning commission members and citizens testifying at these hearings raised concerns about drainage, erosion, and environmental degradation. More than a quarter of the public hearings raised concerns about the impact on neighboring property and potential infrastructure costs.

Land-use issues figured less prominently in the discussions. Slightly more than one third of those voicing concerns over development projects in these hearings raised the issue of zoning intent. Issues of appropriateness and compatibility with adjacent land uses were raised in another 30 percent of the cases. Less than one fifth of the cases were challenged on grounds of economic feasibility or density. Similarly, concerns over project design were relatively less frequent.

Importantly, in almost all cases, objections were more frequent among applications that were rejected or tabled than those that were approved. For most issues, applications that were rejected were more than twice as likely to have these issues raised during the public hearing process. One notable exception was traffic congestion. Approved applications were more than twice as likely to have this concern raised compared to rejected or tabled applications. In fact, with the exception of traffic congestion, specific objections were raised in less than one-third of the approved applications. In contrast, concerns over drainage and erosion, environmental damage, zoning intent, and aesthetics were raised in 50 percent or more of the applications that were tabled or rejected.
5.3.3 Public hearings and rejected applications

From a transaction-cost perspective, the nature of an objection is important only if it lengthens or complicates bargaining, increasing costs. This occurs if deliberations on the application are delayed. Since all proposals were subject to the public hearing process, the initial public hearing is probably considered a "sunk cost." Sunk costs have little or no impact on developer decisions to invest in a community (see the discussion in Chapter Four). The marginal cost component becomes important if transaction costs translate into higher variable costs. This occurs if the project is delayed as a result of the evaluation process. This is potentially growth inhibiting by lengthening the development time table and introducing further uncertainty into the approval process.\(^{16}\)

Distinguishing between applications that were approved or rejected/tabled can provide clues to the factors that lead to a proposal's rejection. Attendance was relatively constant at zoning commission meetings in Washington Township (table 5.10), averaging 22.5 people per meeting, regardless of the outcome.\(^{17}\) The average

\(^{16}\)Thus, politically motivated objections must translate into tangible impacts on the way development applications and approvals are handled through the zoning commission. If meetings were attended by a large number of citizens, but the project is approved anyway (e.g., rubber stamped), the transaction-cost impacts of the public hearing would appear to be minimal (sunk costs would be equal across jurisdictions).

\(^{17}\)Importantly, these data do not differentiate attendees according to the application they are most concerned about. Thus, two applications could be pending before the zoning commission. One may be excellent, raising few objections. The other may be poorly designed or highly objectionable. The minutes do not provide a mechanism for distinguishing the motives for attending the commission meeting.
number of people testifying on specific applications was substantially lower than the
number attending, just 2.5 per application, although approved applications tended to be
associated with more citizen testimony. Of those that did testify, however, the
proportion of those objecting to the proposed rezoning is higher for rejected/tabled
applications than approved ones.

<table>
<thead>
<tr>
<th></th>
<th>Average Attendance</th>
<th>Average No. Testifying</th>
<th>Proportion in Opposition</th>
<th>Average Objection Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Applications</td>
<td>22.5</td>
<td>2.5</td>
<td>25.1%</td>
<td>4.6</td>
</tr>
<tr>
<td>Approved Applications</td>
<td>22.1</td>
<td>2.9</td>
<td>15.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Rejected or Tabled</td>
<td>23.1</td>
<td>1.9</td>
<td>39.0</td>
<td>5.6</td>
</tr>
</tbody>
</table>


TABLE 5.10: Comparison of approved and rejected zoning approvals: Meeting attendance, opposition, and citizen concerns

An "Objection Index" was created to better gauge the quality of each application
with respect to concerns raised by citizens and planning commission members. Each of
the concerns or objections listed in table 5.9 was coded for each rezoning application.
If an objection were raised during the zoning commission's public hearing on the
rezoning application, it was scored a "1." If the issue was not raised, it was scored "0"
for the application. The Objection Index is a straight sum of the number of objections raised during the public hearing.\(^\text{18}\)

Rejected or tabled applications scored higher on the objection index than approved applications (table 5.10). Overall, the applications averaged 4.6 on the Objection Index. In other words, on average, 4.6 objections were raised during the public hearing for each application considered by the township zoning commission. Approved applications scored fewer objections overall than rejected or tabled applications.

Pearson correlation coefficients were then calculated for the Objection Index and the likelihood the application would be approved (table 5.11). \textit{A priori}, attendance, the number of people testifying, and the proportion of citizens testifying against an application should be positively correlated with the Objection Index. Each additional citizen at a public hearing has the potential of raising an objection to the project.\(^\text{19}\) Approval by the zoning commission should be negatively associated with the index.

Attendance was not significantly correlated with the number of objections raised for the average rezoning application. The number of people testifying, the proportion

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\(^{18}\)The individual objections were not weighted for importance so each objection was given equal treatment.

\(^{19}\)The objections will be considered by the planning board who might alter the project. Also, higher attendance and participation in the public hearings might translate into more uncertainty about the outcome of the public hearing or the final cost of the developing the project.
of people testifying in opposition, and zoning commission approval have the expected signs. More importantly, the correlation between the proportion of people testifying against an application and the Objection Index is statistically significant from zero. This suggests that public opposition and the range of the objections raised against an application have an impact on whether the application would be delayed or rejected.

<table>
<thead>
<tr>
<th></th>
<th>Correlation with Objection Index</th>
<th>Correlation with Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendance</td>
<td>-0.0000</td>
<td>-0.0517</td>
</tr>
<tr>
<td>Number of People Testifying</td>
<td>0.3102</td>
<td>0.1833</td>
</tr>
<tr>
<td>Proportion Opposition</td>
<td>0.4415*</td>
<td>-0.3532</td>
</tr>
<tr>
<td>Zoning Commission Approval</td>
<td>-0.4268*</td>
<td>----</td>
</tr>
</tbody>
</table>

*Note:* (*) indicates the correlation coefficient is statistically different from zero, using a two tailed test, at the 10% level of significance (90% confidence level).

**TABLE 5.11: Correlation coefficients for rezoning applications**

A more relevant issue is whether these factors are correlated with approval by the zoning commission. None of the correlation coefficients were statistically significant from zero. Attendance does not appear to be significantly related to the number of people attending planning commission meetings. The number of people testifying also does not appear to be significantly related to the likelihood the zoning
commission will approve the application. However, the proportion of citizens testifying against the application is negatively correlated with approval by the zoning commission. Despite the weakness of these correlations, applications with higher scores on the Objection Index were significantly and negatively related to approval by the zoning commission.

Similar correlation analysis was performed on the individual objection criteria gleaned from the minutes of the planning board meetings (table 5.12). Concerns that were most likely to effect the objection index were concerns over aesthetics (0.7142), concerns about the appropriateness of the development (0.5654), whether the proposed project was consistent with zoning intent (0.4193), the potential rezoning’s impact on neighbors (0.4166), and the potential for increasing infrastructure costs (0.4166). Projects that raised concerns over drainage and erosion, zoning intent, density, and aesthetics were most likely to reduce the chances of commission approval of the rezoning application.
<table>
<thead>
<tr>
<th>Concern</th>
<th>Correlation with Objection Index</th>
<th>Correlation with Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Externality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic congestion</td>
<td>0.1096</td>
<td>0.2872</td>
</tr>
<tr>
<td>Drainage/erosion</td>
<td>0.1948</td>
<td>-0.3750</td>
</tr>
<tr>
<td>Environment</td>
<td>0.1811</td>
<td>-0.0428</td>
</tr>
<tr>
<td>Impact on neighbors</td>
<td>0.4166*</td>
<td>-0.1336</td>
</tr>
<tr>
<td>New infrastructure</td>
<td>0.4166*</td>
<td>0.0891</td>
</tr>
<tr>
<td>Water pressure</td>
<td>0.5152***</td>
<td>-0.4082*</td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoning intent</td>
<td>0.4193*</td>
<td>-0.2568</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>0.5654***</td>
<td>-0.1336</td>
</tr>
<tr>
<td>Compatibility with adjacent uses</td>
<td>0.1190</td>
<td>-0.1336</td>
</tr>
<tr>
<td>Economic feasibility</td>
<td>0.2045</td>
<td>-0.1021</td>
</tr>
<tr>
<td>Density</td>
<td>0.2045</td>
<td>-0.3572</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aesthetics</td>
<td>0.7142***</td>
<td>-0.3563</td>
</tr>
<tr>
<td>Lay-out</td>
<td>0.1575</td>
<td>-0.2357</td>
</tr>
<tr>
<td>Landscaping</td>
<td>0.0127</td>
<td>0.0572</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedural</td>
<td>0.3946*</td>
<td>0.0572</td>
</tr>
<tr>
<td>Other</td>
<td>0.3586</td>
<td>-0.1400</td>
</tr>
</tbody>
</table>

*Source: Minutes from meetings of Washington Township Zoning Commission, January 1992 through December 1994. Asterisks represent correlation coefficients that are statistically different from zero (18 degrees of freedom) at the 90% level of significance (*), 95% level of significance (**), and 98% level of significance (***)。

**TABLE 5.12**: Correlation coefficients for issues and concerns raised during plan approval process
The fact several issues were directly and statistically significant with respect to the Objection Index, but not approval by the zoning commission, suggests the cumulative impact of objections has important implications for the outcomes of commission decisions. While only one of the objections (water pressure) was statistically different from zero for approval, the Objection Index appears to capture the cumulative impact of individual objections on zoning commission decisions. Many of objections that are significantly correlated with the Objection Index are subjective or difficult to forecast and include issues such as aesthetics, appropriateness, zoning intent, impacts on neighbors, and future infrastructure needs.

5.3.4 Summary of development application approvals Washington Township

The Washington Township case provides additional insight into the application of transaction-cost analysis to urban planning and development. By adopting a transactional governance structure, the approval process subjects development projects to a wide range of concept and process related transaction costs. An examination of twenty rezoning cases found a wide variety of concerns and objections raised during the public-approval process. Externality issues tended to be more important in determining rezoning approval while land use and design issues appeared to figure more prominently among concerns raised during public hearings. In general, projects that were subject to a larger number of objections were less likely to be approved.

30 No attempt was made to evaluate the merit of these objections. Further, these statistics represent simple correlations between two variables and do not include controls for other variables or influences.

166
Moreover, the stronger the opposition to the project, the less likely the rezoning would be approved. The transactional governance structure and its attendant bargaining environment tended to increase the costs of development as developers attempted to meet the objections of local planning authorities and citizens. This is the nature of a bargaining process and was evident from the discussion of approvals in Centerville and is implicit in transactional governance structures, generally. Failure to incorporate these concerns can result in rejection of a rezoning application or site plan.

5.4 Planning and development in a large city: Columbus

The problems of urban redevelopment and the practical constraints of planning are illustrated in the next example, also drawn from Ohio. The City of Columbus has experienced substantial growth since the 1960s, becoming Ohio's largest city with more than 633,000 residents in 1990. Like other fast-growing cities in the post-World War II era, Columbus has taken advantage of its geographic position in the center of the nation and at the cross-roads of two major interstate highways (I-70 and I-71) to foster economic growth. As the State's capital, Columbus is particularly well positioned to take advantage of tremendous growth in advanced services (e.g., insurance, corporate and regional headquarters) and government employment (Blair and Kinsella 1991). Combined with an aggressive annexation policy, Columbus has ridden the crest of the most recent wave of urban economic growth (see the general discussion in Rusk 1993).

The city's tremendous recent growth is evident in data on building permits (table 5.13). On average, Columbus has added almost 2,500 units of single family housing each year since 1990. More than 350 building permits for multifamily housing projects and 170
building permits for commercial buildings are issued annually on average.

Like most major urban centers, Columbus has also experienced significant deterioration within its urban core despite its rapid growth. Columbus’s growth has been fueled by the annexation of undeveloped land in areas that were previously independent suburbs. Two inner-city regions that have experienced substantial deterioration and, recently, rejuvenation are the Short North District and the German Village.

The planning process appears to be more involved than in the smaller jurisdictions of Centerville and Washington Township about eighty miles to the southwest. Rezoning and PUD applications take more than four months to process (Reynolds 1997). More than seventeen members of city staff are assigned to handle rezoning and zoning variance-related issues. The city has in place several mechanisms to aid developers through the rezoning process, including a zoning counter that serves as a one-stop shop for rezoning applications. Applications are also tracked with computer assistance. A staff member is assigned to manage each application through the process, and voluntary meetings with staff are encouraged. A more complete description of the rezoning process is described in the following section.
Economic Growth

- No. of single family units, 1990-94 average: 2,446.0
- No. of multifamily building permits, 1990-94 average: 375.0
- No. of commercial units, 1990-94 average: 170.0

Number of staff in zoning area of development division: 17.0

Year Zoning Code Adopted: 1959
- Most Recent Major Revision: 1995

Year Comprehensive Plan Adopted: 1926
- Most Recent Major Revision: 1993

Permit Processing Times (average, months)
- Rezoning Application: 4.3
- Planned Unit Development (after rezoning approval): 4.3

Innovations in Planning Department
- One stop zoning counter
- Computer assisted permit application and tracking
- Voluntary pre-application meetings with staff
- Flow chart for development process

Source: Survey by author.

TABLE 5.13: Profile of Columbus and planning department
Columbus has a relatively weak planning organization and function. While the city was one of the first to adopt a comprehensive plan, it did not overhaul it until the late 1980s. The city pursued an open and aggressive "pro-growth" strategy, catering primarily to the needs of private investment and development markets. Instructively, the city's planning department is a division of the Development Department. The Development Department is even allowed to petition the city council to rezone land to facilitate the city's growth (Columbus Zoning Code §3310.03).

This pattern may be changing. In 1992, the city's Development Department published a new comprehensive plan that provides for increasing citizen participation and decentralizing development and planning control to the neighborhood level. This decision has potentially important implications for transaction costs in the development control process.

5.4.1 Overview of Columbus land-use planning.

Organizationally, the city empowers a Development Commission to supervise and evaluate rezoning applications. In fact, the Development Commission has all the powers designated to planning commissions by the Ohio Revised Code (Columbus Zoning Code §3307.2(D)). The planning department focuses more on strategic planning and long-term goals working closely with members of the development department (Clark 1993).

Some features of the application process tend to streamline rezoning and development application evaluations. While the Development Commission and the City Council must hold hearings on rezonings, the notification process is relatively quick. Ten days are required to notify property owners within 125 feet of the proposed rezoning.
Other features tend to lengthen the application approval process. The zoning code, for example, does not specify a time limit on staff or city council review of applications. Some applications that were tabled have never been cleared from the development commission's docket (Reynolds 1997).

Columbus has also effectively added a layer to the zoning and development plan review process. In Ohio, the rezoning application process in a typical city involves four groups: the applicant, staff, the planning board, and the city council. Rezoning applications are first submitted for staff review, who then make recommendations to the local planning board. After a public hearing, the PB sends its recommendations to the city council for additional public hearings and a final vote to approve or reject the application.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Development</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Commission</td>
<td>Council</td>
</tr>
<tr>
<td>Public Hearing Required</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Public Notification (days)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Public Notice (feet)</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td>Maximum Time Limit</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>


**TABLE 5.14: Profile of Columbus application process**

A different process exists for the City of Columbus. The application is submitted to a Development Commission with broader powers than development regulation. The
Development Commission also makes recommendations on financial incentives and other economic development strategies. The rezoning applicants are required to have the complete text of the ordinance change in place before the application is submitted to the Development Commission. If the rezoning is part of a PUD, a site plan including building locations and access routes must also be included. Since these features are part of the rezoning ordinance, any future changes in lay-out or buildings must be subjected to the zoning evaluation and approval process (Reynolds 1997). In essence, the PUD would be considered a new application if any of these factors changed. Once approved by the Development Commission, the application is forwarded to city council (often with conditions).

Beginning in the 1980s, the city established an additional layer to the rezoning and plan application review process. Several "area commissions" and civic associations were formally included in the development control process to encourage bottom-up citizen participation in policymaking and land-use planning. Once an application is accepted by the development regulation department, staff send copies of the application to the relevant area commission or civic association for comment. In practice, almost all applications for rezonings are reviewed by an area commission or civic association (Reynolds 1997).

Area commissions and civic associations are primarily advisory bodies. The Columbus Zoning Code specifies that "No duty or function of an Area Commission shall invalidate any action of Council" (Columbus Zoning Code §3313.14). Functions of area commissions (Columbus Zoning Code §3313.14) include: creating plans and policies to provide guidelines for development and bringing problems to the attention of government
agencies and residents, and recommending solutions. Area commissions are also expected to facilitate communication between citizens and the city, and actively participate in historical preservation and neighborhood "enhancement" (e.g., parks or recreational areas). The city has six authorized area commissions in place: the Capitol Square Commission (1985), the German Village Commission (1989), the Italian Village Commission (1989), the North Market Commission (1989), the Victorian Village Commission (1989), and the Brewery District Commission (1993).

The area commissions have potentially important impacts on the transaction costs associated with development in Columbus. While they technically serve an advisory role, their formal inclusion means any concerns raised by the commission will be addressed through the approval process. This may mean added costs for the project.

Since the following discussion focuses on development in the Short North section of the city, the organizational functions and priorities of the two area commissions in the Short North area of the city are worth exploring. The Italian Village Commission (Columbus Zoning Code §3327.005) and Victorian Village Commission (Columbus Zoning Code §3331.005) serve significant portions of the Short North area. They were created to:

- "preserve, stabilize and improve the compact and homogenous district of the city known as Italian Village."
- promote historical preservation.
- "strengthen the economy of the City through the creation of new jobs."
- augment the city's tax base by "encouraging reinvestment in historic buildings."
• protect the "unique historic and architectural character" of their respective areas.
• study the problems and needs for furthering preservation efforts.

Among the commissions' duties (Columbus Zoning Code §3327.031 and §3331.031) are to review, comment and recommend for the Development Regulation Division of the Columbus Development Department applications and notices related to rezonings, special permits, variances, demolitions and zoning appeals for property located within the village boundaries. Moreover, the city's building inspector is not permitted to issue a permit "for the construction, reconstruction, alteration or demolition of any structure or architectural feature . . . unless the application for such permit shall first have been certified as appropriate . . . or as involving no [significant] architectural feature . . ." (Columbus Zoning Code §3327.06 and §3331.06) These commissions operate in addition to the normal zoning code and development control apparatus. Thus, developers must address the concerns of the area commission before the project will be approved.

The Architecture of Land Use in the City of Columbus is more complex than other cities in the state (which are also smaller): Columbus has designated more than thirty-five separate and distinct zoning districts to control land use. Most of these zones define residential districts, many of them very specifically. For example, the city's sixteen residential zones include rural residential, suburban residential districts, manufactured home districts, apartment districts, districts for single family and two-family dwellings, and multiple residential districts differentiated by minimum lot sizes. One mixed-use district consists of apartment and office uses.

Commercial zoning in Columbus is pyramidal. Uses in more restricted districts
are also allowed as of right in more inclusive commercial districts. Commercial districts include neighborhood scale commercial uses, institutional use districts, highway oriented use districts, civic center districts, university-college research park (which is a limited overlay, special district). The city also has four industrial districts which allow a full range of industrial uses.

Although a large number of zones translates into more specialized land-uses in specific general areas, the maximum number of uses permitted within the zoning code is relatively high. Some commercial zones, for example, can legally accommodate up to 127 separate uses, about three times more than the average for thirty-two other Ohio cities used as a comparison. This is a function of the pyramidal structure of the commercial zoning districts.

<table>
<thead>
<tr>
<th>Districts</th>
<th>Number</th>
<th>State Average</th>
<th>Maximum No. Uses</th>
<th>State Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>16</td>
<td>7.3</td>
<td>24</td>
<td>13.5</td>
</tr>
<tr>
<td>Commercial</td>
<td>8</td>
<td>5.0</td>
<td>127</td>
<td>47</td>
</tr>
<tr>
<td>Industrial</td>
<td>4</td>
<td>1.9</td>
<td>142</td>
<td>33.8</td>
</tr>
<tr>
<td>Mixed Use</td>
<td>2</td>
<td>1.2</td>
<td>18</td>
<td>22.1</td>
</tr>
<tr>
<td>Special Districts</td>
<td>5</td>
<td>1.6</td>
<td>4</td>
<td>N/av</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>17</td>
<td>315</td>
<td>116.3</td>
</tr>
</tbody>
</table>

Source: Columbus Zoning Code and survey of zoning codes in 32 cities in Cuyahoga, Franklin, Hamilton, and Montgomery Counties. For a more complete discussion of the data see Chapters 6 and 7.

TABLE 5.15: Profile of Columbus land use districts
One explanation for the larger number of zoning districts is the city's larger size. The number of zoning districts may reflect a more complex development pattern. The organization of Columbus's zoning code suggests new development projects will likely enter a legislative development review process. Combined with the use of area commissions to cultivate public interest in planning-related issues and make recommendations to the development commission and city council, the transaction costs associated with land development and redevelopment in the city of Columbus could be substantial.

5.4.2 Urban revitalization and development in the Short North

The Short North Business District is a subsection of the High Street Corridor. The North High Street Corridor extends north from the downtown area to the southern portions of Ohio State University. The Short North consists of an area bounded by Second Avenue to the north, Goodale Street to the south, the Italian Village to the east, and Victorian Village to the west. The bulk of the investment in the North High Street Corridor, however, is concentrated in the Short North commercial district bounded by Goodale and First Avenue. All buildings and infrastructure in the Short North District exist within the planning districts of either the Italian or Victorian Village. As the next sections detail, the city has had an important impact on the development of this district.

The Short North was a vibrant economic region well into the middle of the twentieth century, capitalizing on its function as a major artery and connector to neighborhoods and villages in the outskirts of the city limits. By the early 1920s, retail,
residential and commercial development over extended local infrastructure and, in 1923, city zoning limited the High Street corridor (which extends to Ohio State University) to commercial and residential development. The Italian Village acquired its name after blue-collar Italian families supplanted the Irish. At the turn of the century, the Italian Village was a solid middle-class residential community. While the Victorian Village tended to retain higher-income families and a more diverse demographic profile, it began a gradual decline in the 1920s.

The suburbanization of residents and jobs in the post-World War II era significantly eroded the economic base of the Short North region in Columbus. Property values plummeted as the average family income of neighborhood residents and a more transient, university-based student population dominated the area. Home ownership rates declined significantly, falling to only 17.1 percent in the 1960s. Single-family homes were subdivided into two and four-family units and rooming houses to meet the needs of lower-income residents, further depressing property values. Property values did not begin to improve until the mid 1970s.

During the 1970s, the City of Columbus, prompted by neighborhood business associations (e.g., the Short North Business Association) and local developers, began a process of renovating and redeveloping the High Street Corridor, including the Short North. The High Street/Short North district was one of six Neighborhood Commercial Revitalization (NCR) districts established by the city in 1981. Since the mid-1980s, the City of Columbus has allocated $2 million for infrastructure improvements along the High Street Corridor, of which $1.4 million was targeted for capital improvements in the Short
Much of this money was funneled through the Economic Development Division of the Department of Development. Planners had a relatively minor role to play in the city's efforts, tending to react to initiatives proposed by local developers and businessmen.

The City of Columbus and Franklin County also provided important assistance to local developers by leveraging commercial loans through the Neighborhood Commercial Revitalization Program (NCRP) and the Industrial Revenue Bond Financing Program (IRBFP). The NCRP allowed the city's Division of Economic Development to funnel money into rehabilitation, purchases of equipment and machinery, and new construction. This money was used primarily to leverage private financing, and the maximum participation allowed for the city is 30 percent of project costs. Moreover, the program's loan ceiling was $100,000.

While the NCR program targets funds for redevelopment in the entire district, North High Street Corridor NCR funds were concentrated in the Short North: seventy-three percent of total dollars in the district have been allocated to businesses and developers in the Short North District between Goodale Street and First Avenue. This area consists of 43 percent of the district's businesses and 48 percent of the total commercial square feet. Over $2.6 million in NCR funds have leveraged over $12 million in private funds according the city's economic development division.

The IRBFP program allows Franklin County to issue tax-exempt bonds to finance facilities and equipment for companies investing in the revitalization district. This program has been used much less intensively within the district.

A third tool used in the city's NCR program is the design center. The Short North
Design Center, located in the revitalization district, provided important consulting services to merchants, business owners and property owners in the district. By providing a convenient, cheap mechanism for developing building/renovation plans and guidance, the design center significantly reduced the regulatory burden associated with basic design and planning processes. The design center also provided input to local district planning boards. While planners have had relatively little influence over the financial aspects of encouraging redevelopment, the establishment and success of the design center provides testimony to the importance of project planning consistent with the planning system operated by the city. The design centers are one of the few major programs run by the city where planners have taken a proactive role in encouraging redevelopment.

The effects of these programs, according to the City of Columbus, have been positive. Property values continue to increase and a survey of commercial office space sponsored by the Short North Design Assistance Center found that the vacancy rate of 11.8 percent in June, 1991 was on par with the county-wide average. Moreover, the vacancy rate was only 7 percent in projects that had received NCR assistance. Thus, an assessment by the city's economic development division observes that the Short North is now "an eclectic mix of restaurants, galleries, boutiques, fine furniture stores and beauty salons that appeal to sophisticated, urbane tastes" (City of Columbus, Neighborhood Commercial Revitalization Program, 3). Nevertheless, redevelopment in the region just north of where the bulk of NCR investment has been targeted (the region between First and Ninth), has been "modest compared to the success of the Short North."
5.4.3 Urban planning in the Short North

Planning authority in Columbus has effectively devolved to the neighborhood level. While rezonings and variances must be approved by the city planning department and the city council (*Columbus Development Guide*), few requests approved by the local zoning boards are turned down. Developers are required to obtain development permission approval from the Victorian and Italian Village planning authorities.

This process can be protracted and highly political. Since both districts are Historic Districts, numerous regulations and design requirements accompany redevelopment projects. Although written guidelines and procedures exist for new development proposals, successful projects require developers to work early and often with members of local zoning boards. Thus, the city's development guide "encourages" applicants for permits, rezonings, or variances to "discuss their plans with each group" concerned with the project before submitting it the city (*Columbus Development Guide*, 19).

The importance of politics in the revitalization process is illustrated by the failure of the McDonald's fast food restaurant at the corner of Second and High Street to obtain permission for a drive-through window (Carr 1993). The restaurant presented plans to the Italian Village review board, but the board "nit-picked" until McDonald's gave up the proposal. In effect, the political costs of attempting to get the plan approved by the local authorities increased transaction costs to the point the project was no longer economically viable. The drive-through would likely have been approved if the managers and architects had discussed the proposal before the formal presentation to ensure the details of the
project were consistent with the views of board members.\textsuperscript{21}

While it still reviews and administers the zoning code, the city's planning
deptartment is moving more toward "strategic planning" while devolving most routine
planning decisions to the neighborhood level (Clark, 1993). Thus, business associations
and neighborhood groups are becoming even more involved in the development process
than in the past. This suggests politics will play an even more prominent role in
development control than in the past. This also may explain why most rezoning
applications are handled through zoning attorneys (Reynolds 1997). The implication is

\textsuperscript{21}Politics in the development process, however, is not as evident in the plan
approval process as in the permit approval process (Allen 1993; Carr 1993). Building
inspectors can be difficult to work with, particularly if building and construction
methods do not conform exactly to code. Contemporary fire codes, for example,
require new buildings to install equipment that is unneeded in older buildings with thick
brick walls. In one case, inspectors refused to sign off on an inspection because the
flooring used around the bar area did not conform to code, even though the flooring
was neither dangerous nor inappropriate in the setting it was used.

The attitudes of building inspectors can also effect the timeliness in which work
is completed. One developer acquired a new site for a restaurant on High Street after
the previous establishment had failed. Building inspectors experienced so much
difficulty with the previous owner (who used political connections to circumvent zoning
and building codes) that the new owner experienced significant delays in permit
processing and inspections. The delays prompted the new owner to reconsider his
investment in the Short North.

The transactions costs associated with permit approvals were effectively
(although not very efficiently) reduced in several ways. After developers complete
several projects in the city, for example, working relationships are established with
some building inspectors. This provides a foundation for giving some developers
leeway in installing equipment or designs that may not conform strictly to the building
codes. In another case, a business owner simply pays for work (e.g., plumbing or
electrical) at a higher than market rate. While the cost is higher, the work gets done,
presumably by "greasing" the wheels of the regulatory system. The design centers
have also provided a mechanism for reducing uncertainty and transaction costs
associated with property development in the Short North.
that the transaction costs of gaining development approval will increase further as layers
are added.

5.4.3 Summary of Columbus

The scale and scope of the planning function in Columbus is significantly greater than
in the other two cases. The city uses a significantly greater number of land use districts to
regulate development. Recently, although rezonings must be approved by the city council,
planning functions and development regulations have been devolved to lower levels of
government. In the case of the Short North, two area commissions, the Italian and Victorian
Village Commissions, now oversee much of this function. The result is a process where
development applications are subject to additional levels of scrutiny, comment and
modification. While expanding citizen participation, the process also increases the
bargaining costs associated with land development, increasing transaction costs. This may
explain why rezoning and PUD applications take almost twice as long for Columbus to
process compared to the smaller jurisdictions of Centerville and Washington Township. This
case also illustrates how transaction costs can be added to the approval process. The added
layer to project approval contributes to transaction costs by altering the process for gaining
development permission. The role of the area commission enhances the likelihood
conceptual issues will drive the approval process. In Columbus, the incidence projects will
be subject to a more uncertain, legislative approval process is enhanced because all most
significant developments will be subjected to this approval process.
5.5 Conclusions

Each of these cases provides insight into different aspects of the development regulation process. Development approval is fundamentally a legislative process, a direct consequence of the choice of transactional governance structure for development control. This governance structure is mandated to some degree by the Ohio Revised Code, but communities have discretion over features of the approval process which can impact transaction costs in land development. By politicizing the approval and evaluation process, property owners are faced with greater uncertainty and longer processing times, indicators of higher transaction costs in the plan approval process.

These cases also show how the land-use regulation process can create transaction costs. Three fundamental sources of transaction costs were identified. On a broad level, conceptual issues must be resolved to bring developments in line with planning board and city council concerns about the scope and character of the development. Many of these concerns revolve around aesthetics, design and lay-out. These issues, as the case of Washington Township demonstrated, are often brought out in public hearings. In the case of Columbus, these issues are incorporated in large part through the application process since developers are required to submit proposed changes in ordinance language. Ignoring these issues also contributed to the rejection of projects in Columbus and Washington Township.

Another source of transaction costs was the evaluation process. To the extent the approval process is subject to wider ranges of public participation, the process may become further politicized. This tends to increase the length of evaluation and increase the transaction costs associated with land development within jurisdictions. To the extent the
process politicizes development application evaluation and approval, uncertainty increases as well. In the city of Columbus, a new layer of consultation was added to the review process — area commissions and civic associations — that significantly increased the transaction costs associated with development.

The final source of transaction costs reflects the likelihood applications will be subject to the public review process. This was considered in light of the Architecture of Land Use as defined in the structure of the jurisdiction’s zoning code. Cities or townships with more complicated zoning codes and specialized land-use designations are more likely to subject development applications to a legislative review processes. In all three cases, larger multi-use projects using PUDs were automatically subject to the public review process.

The case studies also revealed that the legislative process could identify externalities and reduce transaction costs. If externalities are revealed and addressed through the plan approval process, socially beneficial outcomes could emerge. Often, however, the process allows for other types of objections to become a formal part of the bargaining process, increasing transaction and project costs. Unfortunately, the net impact on growth or social welfare could not be estimated through the case studies.

Case studies do not provide an adequate framework for evaluating the effects of land-use regulation on economic growth. Rather, the cases show how land-use regulations impact applications processing and approval and the uncertainties inherent in a system that presumes investments in land are unique and idiosyncratic. A more systemic examination of cities and the types of transaction costs associated with land development is necessary to draw
conclusions about their impact on economic activity. This is the subject of Chapters Six and Seven.
This and Chapter Seven empirically analyze planning procedures and decisions using multivariate quantitative analysis. While multivariate estimation does not have the richness of the case studies and anecdotal analysis, it can help isolate specific aspects of planning procedures, processes and organizational structures that impact urban development across cities. More importantly, a multivariate empirical analysis helps assess the usefulness of the transaction-cost paradigm for generalizing policy recommendations beyond an individual city.

A transaction-cost model of land-use regulation and economic growth suggested the following testable hypotheses from Chapter One (pages 15-8):

1. **Planning programs, procedures and processes can reduce (or increase) planning-related transaction costs in the development process.**

2. **Higher planning-related transaction costs discourage the level of land development and economic growth.**

3. **Uncertainty in the planning process can drive up transaction costs and reduce**
economic growth.

4. **Transaction costs in planning will affect the factor intensity of projects differently as developers shift resources between labor and capital in the proposed project.**

6.1 Data and empirical methods

Testing these hypotheses required assembling an adequate database focusing on economic growth and development. Sources of data included:

- surveys of local planning departments to determine the characteristics of the zoning approval process;
- data on the structure of local zoning codes
- data on the characteristics of the community.

Three separate databases were developed to test the four hypotheses based on their source. The first database used surveys from thirty-four local planning departments to identify internal procedures that could potentially impact the transaction costs of local planning (Section 6.2). A second database built from thirty-five local zoning codes identified the types of ordinance-related procedures used to evaluate development plans and the basic structure of land uses within communities (Section 6.3). The third database used information on zoning referenda from sixty-three cities to gauge the impact of uncertainty on levels of economic activity. Each of these databases was supplemented with Census data and information on building activity in each community. A more complete discussion of the variables and data used in the multivariate empirical analysis is left to Appendix B.
The mean population of the cities used in the following analysis is about 50,000 (table 6.1). The average household income is $36,809, although incomes range from a high of $72,000 to a low of $16,400.

While restricting the analysis to Ohio cities may reduce the external validity of the model, the interpretation of the results is enhanced because political institutions and regional variations in the economy are held constant. Thus, while the differences in political, legal and cultural institutions between Hong Kong, Houston, and Cleveland make intercity comparisons of planning processes problematic, these sources of variation will be minimized by restricting the analysis to one state where political, cultural, economic, and legal institutions can be held constant. Thus, the model should more adequately capture differences in implementing planning rules independent of broader institutional factors.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population, 1992</td>
<td>49,449</td>
<td>107,450</td>
<td>9,000</td>
<td>643,000</td>
</tr>
<tr>
<td>Total housing units, 1990</td>
<td>21,154</td>
<td>47,597</td>
<td>3,500</td>
<td>278,100</td>
</tr>
<tr>
<td>Owner occupied (%), 1990</td>
<td>61.5</td>
<td>15.2</td>
<td>21.7</td>
<td>95.9</td>
</tr>
<tr>
<td>Pop Growth, 1980-90 (%)</td>
<td>8.9</td>
<td>41.6</td>
<td>-12.6</td>
<td>361.5</td>
</tr>
<tr>
<td>Pop Growth, 1980-92 (%)</td>
<td>11.6</td>
<td>47.7</td>
<td>-14.1</td>
<td>361.5</td>
</tr>
<tr>
<td>Median Hhld Income</td>
<td>$36,809</td>
<td>$11,521</td>
<td>$16,400</td>
<td>$72,000</td>
</tr>
<tr>
<td>With bachelor's degree (%)</td>
<td>26.3</td>
<td>14.7</td>
<td>7.1</td>
<td>61.0</td>
</tr>
</tbody>
</table>

*Source: U.S. Bureau of the Census.*

**TABLE 6.1: Descriptive statistics for cities in empirical analysis**
The next step uses the data to develop a suitable empirical model to estimate the impact of transaction costs on urban development.

Local planners and public officials have several mechanisms available to alter the transaction costs associated with development applications and approvals in their community. Many chartered cities, for example, require public hearings at the planning board level as well as the city council level. Chartered cities also have some discretion over notification of public hearings, periods for review, and granting standing for submitting rezoning applications. These are "structural" issues relating to the system established by city council for regulating land use and property development within their jurisdictions. Ordinances, for example, could reduce transaction costs by limiting the amount of time local PBs and city councils can deliberate on an application without making a decision. In some cases, ordinances specify that plan applications are presumed approved unless the PB fails to act on it in a timely manner.

Local planning staff and public officials can adopt other policies that influence transaction costs in land development. The local planning department, for example, may adopt plan evaluation procedures that reduce information and decision costs for developers, such as assigning staff as case workers to each application. In this event, local planning or building department staff are responsible for supervising and advising the applicant on the submission and approval process. This lowers the developer's investment in discovering information about application processing (search costs), or

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1 Ohio Revised Code § 713.12.

189
evaluating the likelihood the project will be approved. More importantly, perhaps, case workers can advise developers on changes to their application or proposed project that are more likely to meet PB, city council, or community approval. This may actually increase planning costs since these costs may be shifted from the developer to the public sector.

Many of these characteristics of the plan approval process can be measured. Using the TC paradigm, local zoning codes, interviews with local planners, and a survey of local planning departments, an "inventory" of factors that could influence the costs of "negotiating" plan approval for property development was created. While these factors are discussed later in this and the following chapter, they can be grouped and analyzed according to whether they were driven by the community, local ordinance, or internal planning staff decisions.

TC-related characteristics of local zoning and planning processes were then evaluated according to their impact on land development. This evaluation proceeded in two stages. The first stage used simple regression analysis to determine whether the variable was significantly correlated with the growth variables and to assess the relative magnitude of the impact of each variable independently of other, broader factors. The second stage incorporated each variable into a general model of economic growth and building activity for each city to determine their robustness. If, after controlling for other variables that might influence economic growth, the TC-related variables were statistically significant, more confidence could be placed in the TC paradigm.

Limiting the population of cities to those with ten thousand or more people
opened the door for potential estimation biases. The sample is truncated: the analysis excludes unincorporated areas (e.g., townships) and cities with fewer than ten thousand people. The omission of small cities and townships is potentially important. The empirical analysis in the next section, for example, reveals that townships have significantly faster processing times for rezoning applications. Small cities are important areas of new growth, and they often employ planning consultants to evaluate plan applications and provide technical advice to citizens or PBs. Statistical biases are most likely to occur if the traditional assumptions underlying Ordinary Least Squares (OLS) regression analysis -- particularly uncorrelated errors and the independence of exogenous variables -- are violated. In almost every case, the regression models used in this analysis suffered from heteroskedasticity (the error terms were correlated with the model's independent variables) and multicollinearity.²

²Heteroskedasticity is particularly important because its presence increases the standard error (Griffiths, Hill and Judge 1993; Kmenta 1988; Hu 1982), thus reducing the likelihood a variable would be statistically significant in the regression. Maddala (1983, 178-9) warns that estimates from truncated regression models with heteroskedasticity present tend to be both inefficient and inconsistent. This means the estimated errors will be larger than the true errors for the model (and variables) and the coefficients will not be reliable even as the number of observations grows. Since the regression models test the usefulness of a paradigm in explaining development activity, the analytical emphasis is on structural interpretation (rather than forecasting). Statistical significance is of paramount importance. In the presence of heteroskedasticity, the analyst may conclude that the variable is not significantly correlated with the dependent variable when, in fact, the variable is significant. Thus, the models will need to be adjusted to improve both the efficiency and consistency of the estimates.

Two tests were used to diagnose heteroskedasticity. The Glejser test (Hu, 1982, 99) regresses an independent variable on the absolute value of the residuals from the estimating model. If an independent variable is systematically correlated with the residuals (using standard significance tests and levels), then heteroskedasticity is
The models were estimated using Generalized Least Squares (GLS). Each model was transformed to correct for heteroskedasticity by assigning an independent variable to the P Matrix for the transformation (Griffiths, Hill and Judge 1993, 502-3). Several models were specified to determine the most robust and consistent estimates. The variable most strongly associated with heteroskedasticity was assigned to the P Matrix to transform the models.

A second statistical problem was multicollinearity. This problem posed important methodological problems. On the one hand, variables with potentially important explanatory power should be included in the analysis. The presence of multicollinearity, however, means that the exogenous variables may not be truly independent from each other, making interpretation of the regression coefficients problematic. In some cases, variable transformations (e.g. log transformations of the variables) can help reduce the degree of multicollinearity. Retaining variables is an important goal because dropping one variable could alter the estimates of the model (Moestellor and Tukey 1977). Preserving degrees of freedom was also important given the small sample size used in the analysis. Each of the independent variables was analyzed to determine which provided the most explanatory power to the model. Variables that did not have theoretical plausibility, or explained little economic growth, present. The second method was visual: the residuals for each regression model were plotted against the dependent variable. These tests were performed for each of the variables in the regression equations to identify which ones were most likely associated with heteroskedasticity.
were dropped.\^3

The general empirical approach identified external variables (E), non-planning policy variables (G), and planning-related policy variables (P). External variables included factors such as the demand for building units, economic composition of the labor force, employment base, cyclical economic effects, and others. Non-planning policy variables included factors local citizens control, such as local government spending, debt levels, or amount spent on infrastructure. Planning-related variables represented factors such as the structure of the zoning code, uncertainty in the zoning and rezoning process, permit processing, or notification of public hearings. Each of these factors could effect the length, detail, and timeliness of the plan approval process and, hence transaction costs, associated with development.

The supply of building permits (B) per capita was used as a proxy for economic development (see the discussion in Appendix B). The general model, then, was specified such that:

\[
(6.1) \quad B = f(E, G, P)
\]

where E, G, and P are vectors for independent variables representing external, non-planning policy, and planning-related policy variables.

\^3 Correlation matrices were used to identify the independent variables most highly correlated with the dependent variable, but least correlated with other independent variables. Multicollinearity was also diagnosed by examining the performance of the models during regression runs. Typically, if two highly correlated independent variables were used, their performance within the model was poor. In general, independent variables highly correlated with other independent variables were dropped from the model to preserve degrees of freedom unless strong theoretical reasons justified their continued use in the model.
6.2 Planning procedures and transaction costs

Chapter Five and earlier sections in this chapter suggested several ways local planning processes and procedures might impact economic growth and development. This section analyzes ways cities reduce planning-related transaction costs by adopting internal processes and procedures related to application processing, staffing, and technology. More specifically, this section tests the first hypothesis (page 186): planning programs, procedures and processes can reduce (or increase) planning-related transaction costs in the development process.

As Chapter Two emphasized, several studies have suggested ways planners could streamline the permit processing and decisionmaking process. Some of these are structural and examined more fully in the next section. Other policies that could reduce transaction costs are internal. One-stop permit processing, for example, can reduce the amount of time developers spend locating, interpreting, and processing forms. Computer-assisted permit processing can help cities track applications and evaluations, preventing them from becoming "buried" in red tape. Computer-assisted land-use modeling can more accurately forecast market trends and reduce the conflict

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Salins (1993), for example, argues that cities could reduce planning complexity by adopting pyramidal, rather than exclusionary, zoning districts. This would allow a richer mixture of uses in particular zones that would also encourage economic growth and development. Importantly, several tests using the data on zoning codes found that exclusionary zoning was more often associated with higher levels of building activity. Interpreting this result is difficult, however. Many cities may include exclusive use language in their zoning code, but not explicitly identify the uses as building on previous zone designations. Moreover, many zoning codes also have general "escape clauses" that allow a PB to permit any other use considered compatible with existing uses in the zone as a conditional use.
between markets and an outdated comprehensive plan or zoning map. Other "innovations" such as case workers and time limits on staff review have already been discussed. Each of these innovations can potentially reduce the transaction costs of working with a local planning department and can be adopted unilaterally by planning staff.

Whether these innovations impact land development is largely an empirical question albeit supported by the TC paradigm and framework developed in Chapters Three and Four. If, in fact, these policies reduce the TC associated with land development in a community, these innovations should facilitate economic development.

Unfortunately, data on planning processes, procedures, and departments are not available in a centralized database or other source. Data on these policies were generated through a survey of planning departments.  

The survey asked each planning/zoning department director whether she (or her

\[\text{\textsuperscript{5}}\text{During the Summer and Fall of 1995, cities with populations over ten thousand in five major urban counties in Ohio were surveyed to determine what policies they adopted, if any, to streamline the planning process. The survey was sent to the planning director or other public official (e.g., building commissioner) with the primary responsibility for zoning decisions. Unlike the analysis of the zoning codes in the next chapter, respondents to the survey included townships. The study initially intended to include townships. Since building permit data were unavailable for unincorporated areas of counties, and building permit data provided with the returned surveys were inconsistent and unreliable, townships were dropped from the multivariate tests on economic growth. Since data on permit activity were not available for townships, the analytical methods used to test for the impact of these innovations on economic activity were more limited. Only twenty-five cities out of a potential sixty-seven returned surveys. (Nine townships returned surveys.)}\]
department) had adopted any one of twelve innovations (table 6.2). These innovations were identified through discussions with planning officials, developers, and an analysis of advertisements in planning publications targeted toward practitioners. While this list is not exclusive, the intent was to gather information about the aggressiveness of local planning departments in adopting reforms that could increase the efficiency of — and reduce the transaction costs associated with — plan evaluation and processing.

Thirty-four surveys from cities and townships returned surveys. These jurisdictions varied in size from 10,000 to 180,000. Thus, the state's largest cities — Columbus, Cleveland, and Cincinnati — were not among the survey respondents. Slightly more than half, 55.6 percent, reported information about land uses within their jurisdiction. Sixteen percent reported less than 25 percent of their land in residential use. About half, 47.4 percent, indicated between 25 percent and 50 percent of their land was used for residential purposes. Only 10.5 percent reported more than 75 percent of their land devoted to residential uses.
<table>
<thead>
<tr>
<th>Innovation</th>
<th>Description</th>
<th>% Using</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 34)</td>
<td>VOL. STAFF Voluntary meetings with planning staff</td>
<td>67.7</td>
</tr>
<tr>
<td></td>
<td>COM-PERMIT Computer-assisted permit processing</td>
<td>61.8</td>
</tr>
<tr>
<td></td>
<td>MAX TIME Maximum time limit on staff review of plan applications</td>
<td>47.8</td>
</tr>
<tr>
<td></td>
<td>SUBSCRIPTION Subscription service for zoning and planning changes</td>
<td>47.8</td>
</tr>
<tr>
<td></td>
<td>ONE STOP One stop permit processing</td>
<td>41.2</td>
</tr>
<tr>
<td></td>
<td>VOL. BOARD Voluntary meetings with planning board</td>
<td>41.2</td>
</tr>
<tr>
<td></td>
<td>MAND STAFF Mandatory meetings with planning staff</td>
<td>26.5</td>
</tr>
<tr>
<td></td>
<td>CASE WORKER Case worker assigned to plan applications</td>
<td>25.9</td>
</tr>
<tr>
<td></td>
<td>FLOW CHART Flow chart of the plan approval process</td>
<td>23.5</td>
</tr>
<tr>
<td></td>
<td>MAN. BOARD Mandatory meetings with planning board</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td>BONUS Performance incentives to encourage conformance of plans to design standards</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td>COM-MODELING Computer-assisted land-use modeling</td>
<td>2.9</td>
</tr>
</tbody>
</table>

**TABLE 6.2:** Planning innovations covered by survey of Ohio planning departments
All cities and townships reported less than one-fifth of their land was devoted to commercial uses. Two jurisdictions (10.5 percent) indicated their jurisdictions did not have any land devoted to industrial uses. Two-thirds indicated between 1 percent and 10 percent of their land was classified as industrial. Another 15.8 percent indicated that between 10 percent and 25 percent of their land was industrial. Thus, most jurisdictions reported relatively heavy concentrations of residential use, but also included land developed for commercial and industrial uses. The average number of full-time staff for the survey respondents was 2.7, although planning staff ranged from 0 to 21.

At least one city reported using each of the innovations listed in the survey. Space was provided for cities to identify additional innovations in the form of two blank "other" questions, but none of the cities responded to these questions. The most common innovation reported by cities responding to the survey was voluntary review of plan applications by planning staff. More than two-thirds of the respondents indicated this was a feature of their plan review process. The second most common innovation was computer-assisted permit processing. These were also the only two innovations used by more than half the responding cities.

Innovations such as maximum time limits on staff review, subscription services for zoning amendment and regulatory changes, one-stop permit processing, and voluntary meetings with planning boards were all used by more than one-third of the cities responding to the survey. About one quarter of the respondents indicated they assigned case workers to plan applications, mandated meetings with planning staff, or
used flow charts. The innovations least likely to be used were mandatory meetings with the planning board, bonus systems for plan applications, or computer assisted land-use modeling. In each case, however, the adoption of the innovation should reduce processing times and uncertainty in the plan-approval process, reducing transaction costs.

Average processing time was used to proxy for transaction costs in the plan evaluation and approval process. In principle, a city adopting the innovations identified through the survey could streamline or otherwise expedite its development application and zoning approval system. A more streamlined, efficient planning system would have lower transaction costs, and these lower costs would translate into faster approval for development applications. In other words, the hypothesized relationship between application processing and the adoption of each of the planning innovations is negative.

Unfortunately, average processing time is not an indicator of economic growth or economic development. Several unsuccessful attempts were made to determine whether average processing times were significantly correlated with building permit activity and population growth. Data limitations, unfortunately, undermine confidence

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Average rezoning application processing time was also used as an independent variable in the general models using building unit data. A logit regression analysis was done by categorizing each community as "high growth" or "low growth." High growth communities were cities with new building units above the average for the entire sample. Average rezoning processing time was regressed on the bivariate high growth variable and was insignificant ($\beta = 0.0598$, t-value = 0.96).

Each of the planning innovation variables was regressed against building permits per capita in a simple regression. None of the innovations were significantly related to the level of building permit activity. None of the regression models were
in these results.\footnote{Building permit data were only available for incorporated areas through the Ohio Department of Development. While questions on the survey asked each of the respondents to report building permit activity, the data were inconsistent and unusable for this analysis. Cities and townships did not consistently report whether they were reporting new structures, accessory units, or additions and alterations to existing structures. Thus, townships, which often have more permissive zoning codes, were dropped from the analysis. Only twenty-three observations had complete data available for each regression (33.8 percent of the total number of cities), reducing the degrees of freedom in the simple regressions to twenty-one. Moreover, permit data measure growth, but not necessarily transaction costs in the planning process.}

6.2.1 Estimating model for the impact of planning innovations

A multiple regression framework was used to test the impacts of the individual planning innovations on rezoning application processing times. Correlational analysis was used to determine which variables from the survey were most strongly associated with zoning application processing times. The relatively small sample size ($N=23$)\footnote{Eleven observations were dropped because of missing data.} required adopting a parsimonious estimation model to preserve degrees of freedom.

The estimation model was specified:

\begin{equation}
T = \alpha + \beta_1 \text{ADOPT} + \beta_2 \text{PLAN} + \beta_3 \text{STAFF} + \beta_4 \text{TWP} - \beta_5 \text{INNOVATION} + \epsilon
\end{equation}

Where $T$ is the average processing time for rezoning applications measured in weeks and the independent variables are defined in table 6.3. TWP and INNOVATION are dummy variables representing whether a jurisdiction is an unincorporated area or affected by heteroskedastic error terms. Interestingly, some of the variables (e.g., one-stop permit processing) were negatively correlated with average processing time.
whether the planning process used one of the individual planning innovations defined in table 6.3.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADOPT</td>
<td>Year zoning code was adopted</td>
</tr>
<tr>
<td>PLAN</td>
<td>Year of latest major revision of comprehensive plan</td>
</tr>
<tr>
<td>STAFF</td>
<td>Total number of planning staff (full and part-time)</td>
</tr>
<tr>
<td>TWP</td>
<td>Dummy variable for whether community is a township</td>
</tr>
</tbody>
</table>

TABLE 6.3: Variables used in multiple regression analysis of average zoning application processing times

The empirical estimates for dummy variables are interpreted differently compared to continuous variables. Dummy variables are dichotomous (0 or 1), representing a shift in the regression line. The regression coefficient, then, represents the estimated impact of presence of the characteristic rather than the impact of a unit change in an independent variable (e.g., number of planning staff) on the dependent variable (e.g., average processing time).

T is measured in weeks. The average number of weeks a rezoning application was processed varied from slightly more than a month to a year (table 6.4). The average for the sample was fourteen weeks. Most zoning codes have been in place since the early 1960s, but the earliest code adoption was in 1929. On average, comprehensive plans have been in place 17.7 years, but some cities still do not have a
comprehensive plan. While some cities reported zero staff devoted to planning-related issues, cities reported having an average of 3.74. The largest city in the sample reported twenty-one staff members in its planning department.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>14.813</td>
<td>9.726</td>
<td>4.3</td>
<td>52.0</td>
</tr>
<tr>
<td>ADOPT</td>
<td>63.9</td>
<td>13.5</td>
<td>29.0</td>
<td>95.0</td>
</tr>
<tr>
<td>PLAN</td>
<td>17.65</td>
<td>12.7</td>
<td>0.0</td>
<td>42.0</td>
</tr>
<tr>
<td>STAFF</td>
<td>3.74</td>
<td>4.43</td>
<td>0.0</td>
<td>21.0</td>
</tr>
</tbody>
</table>

**TABLE 6.4: Descriptive statistics for variables in multiple regression analysis of average zoning application processing times**

The first step in the analysis was to plug each of the planning innovations into the general multiple regression model separately as a dummy variable. An examination of the initial OLS model revealed heteroskedastic errors. The general model was thus estimated using GLS by assigning PLAN to the P-matrix. In all cases, the estimated effects of the variables were negatively related to average zoning processing time. In only one case, the presence of one-stop permit processing, was an individual planning innovation significantly correlated with reductions in zoning application processing times. The adoption of one-stop permit processing was associated with a nine week reduction in processing times on average.

Although implementing an innovation independently may not significantly
reduce transaction costs, the *cumulative impact* of implementing these innovations may be more important. This was evident in the analysis of objections to rezoning applications in Washington Township in Chapter Five. Although very few individual objections were significantly correlated with whether a rezoning application would be rejected or tabled by the township zoning commission, the cumulative impact of several objections was statistically significant. Similarly, the cumulative impact of several innovations may be larger and statistically identifiable if the analysis were expanded to include an index of the number of planning innovations used.

The responses to each of these questions permitted the creation of a crude index for each city (INDEX). The index is additive, similar in construction to the index used in Chapter Five. Each time a community indicated it had adopted one of the innovations, it was scored "1." The more innovations a community adopted, the higher its index would be. Thus, a community that used one-stop permit processing, required mandatory meetings with planning staff, and had a flow chart for the planning process would have an index of "3." The innovations were not calibrated through weighting since neither the survey instrument nor previous research provide reliable estimates of their relative importance in the plan approval process. To maintain consistency, the analysis used mandatory meetings with the PB or planning staff rather than voluntary meetings. Mandatory meetings would be more likely to reduce transaction costs because developers would be required to interact with key decision makers in the planning process before submitting rezoning requests or development plans for approval. The average number of innovations used by the jurisdictions in the model

203
was 2.4 and the median was 2, ranging from a minimum of 0 to a maximum of 6.

6.2.2 Impacts of planning innovations on application processing

The general model explains about 40 percent of the variation in rezoning application processing time (table 6.5). The largest impacts on average processing times were whether the city was a township and the number of innovations used by the cities. Both variables reduced the average processing time reported by planning departments.\textsuperscript{10} Township designation was associated with an eight-week reduction (on average) in rezoning processing times. This suggests that township planning processes are generally more expeditious than municipal jurisdictions.

An examination of the partial correlation coefficients for the model revealed that the innovation index was more strongly associated with processing times than the other independent variables. The adoption of an additional planning innovation was associated with a five-week reduction in average processing times. Empirically, this means that the "average" jurisdiction could cut rezoning processing time by more than one third, from fourteen weeks to nine weeks, by adopting an additional planning innovation.

\textsuperscript{10}The innovation index was also regressed against building units per 1,000 population in an OLS simple regression model as well as a logit model differentiating between high and low growth communities. In both equations, the coefficients were the correct sign but statistically insignificant. In the OLS regression, $\beta = -0.0086$ and the t-value was -0.31. In the logit model, $\beta = -0.209$ and the t-value was -0.62. These results are consistent with the general observations of Wakeford (1990).
<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficients (t-values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=23)</td>
<td></td>
</tr>
<tr>
<td>ADOPT</td>
<td>0.349</td>
</tr>
<tr>
<td></td>
<td>(2.27)**</td>
</tr>
<tr>
<td>PLAN</td>
<td>0.397</td>
</tr>
<tr>
<td></td>
<td>(2.02)*</td>
</tr>
<tr>
<td>STAFF</td>
<td>0.3533</td>
</tr>
<tr>
<td></td>
<td>(0.57)</td>
</tr>
<tr>
<td>TWP</td>
<td>-7.926</td>
</tr>
<tr>
<td></td>
<td>(-2.20)**</td>
</tr>
<tr>
<td>INDEX</td>
<td>-5.228</td>
</tr>
<tr>
<td></td>
<td>(-3.98)**</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-2.976</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.409</td>
</tr>
<tr>
<td>F</td>
<td>4.04**</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.863</td>
</tr>
</tbody>
</table>

Notes: Regression model transformed by assigning PLAN to the P Matrix. Confidence levels for t-values, with 17 degrees of freedom and a two-tailed test, are: 2.567 for 98% (**), 2.11 for 95% (**), and 1.74 for 90% (*). F values for F(5,17) where 2.81 for 95% and 4.34 for 98% confidence levels.

TABLE 6.5: GLS estimates of the impact of planning innovations on the average processing time for rezoning applications
This result should be interpreted with caution, however. A linear extension of the analysis suggests that adopting three additional innovations would effectively eliminate processing time. This would be statutorily impossible without rescinding the local communities zoning code, or defining zoning districts so broadly virtually all proposed developments would be considered "as of right." (Neither of these options were included on the survey as an "innovation.")

This suggests a nonlinear relationship between average processing time and planning innovations. Plotting average processing times against planning innovations revealed a concave, negative asymptotic relationship. Nonlinear transformations of the independent variable were estimated but the results were less satisfactory.  

The most plausible explanation for the significance of the innovation variable is that planning departments adopting several innovations may instill a culture that reduces processing times (and transaction costs). The data are not well suited for sorting out the effectiveness of specific types of innovations (e.g., the effectiveness of one-stop permit processing versus computer tracking of permits). Thus, the empirical results confirm that planning innovations and reforms can reduce transaction costs (Hypothesis No. 1 on page 186) although the specific mechanisms used to achieve these results were

\[ \text{A log linear transformation of INNOVATE was estimated. The model performed relatively well (adjusted } R^2 = 0.316) \text{ and the log of INNOVATE was statistically significant (} t=-3.373). \text{ The coefficient indicated substantially higher impact (} \beta = -13.830). \text{ An alternative specification used the inverse of INNOVATE. The model performed less well (} R^2 = 0.231) \text{ and the inverse of INNOVATE was statistically significant (} t=-2.872). \text{ The magnitude of the impact, however, was even higher (} \beta = -28.54). \text{ In other words, adding one more innovation would effectively eliminate processing times.} \]
not immediately identifiable.

Higher average processing times were also associated with newer zoning codes. Similarly, cities that revised their comprehensive plan recently were more likely to have higher average processing times. These results may suggest that more recent zoning codes and comprehensive plans may be more detailed and specific about the purposes of land uses and their pattern, necessitating longer review and approval times. Thus, the transaction costs for land development may be even higher in these communities, reducing prospects for economic growth (Hypotheses Nos. 2 and 3 on pages 186-7).

6.3 Plan evaluation, transaction costs and urban development

The way in which a city chooses to evaluate and approve plans or rezoning applications may effect the transaction costs of land development within communities. Public hearings, decision rules concerning how PB decisions are overruled, or notification requirements may effect the length and uncertainty of the planning approval process. They also may reflect concerns about values other than efficiency and economic growth. Nonetheless, they potentially impact transaction costs in the planning process.

These costs are a result of a community's choice of governance structure to control land development. A market (classical) governance structure would have few mechanisms for citizen participation or opportunities for intervention during the development permission process. Land-use decisions would be made administratively through the market. A transactional governance structure, on the other hand, includes
multiple opportunities for non-market interests (i.e., citizens, grassroots groups, or PB's) to influence the outcomes of the approval process.

Using data from zoning codes, this section explores the relationship between planning procedures and economic growth more fully. More specifically, this section tests Hypothesis No. 2 (page 286): *higher planning-related transaction costs discourage the level of land development and economic growth*. This hypothesis is tested through an analysis of the zoning-code mandated procedures used to approve proposed rezonings and development plans.

### 6.3.1 The zoning approval process

How communities structure their plan or zoning approval process could shorten, or lengthen, deliberations over specific projects. The more politicized the process, the more likely delays will occur. Property development in these communities will have higher levels of risk and uncertainty, reducing the likelihood developers will invest in the community *ceterus paribus*. In most cities, for example, proposed amendments to the zoning map (rezoning applications) require two public hearings: one at the PB level and the other at the council level. Thus, public opposition could be infused into the process at two different places. Citizens also have the legal right to contest zoning changes in court, another point where public opposition could delay land development.

Despite the inherently politicized nature of the plan approval process, local communities have a variety of mechanisms available to streamline or expedite the process. On one extreme, applications and amendments could be fast tracked by placing maximum time limits for review. Communities could also create a
presumption in favor of the application in the event the PB or council fails to act. On
the other extreme, cities can prohibit certain types of changes. Kettering, Ohio, for
example, prohibits rezoning property from residential to industrial uses. Cities could
also impose higher burdens of proof before the PB or council can approve an
application. Miamisburg, Ohio requires all rezoning requests to provide a market study
proving demand exists for the new development and existing property zoned for that
use could not satisfy the demand. Still other communities discourage rezoning
applications by requiring community-wide referenda on all rezoning requests.

Zoning codes for thirty-two cities in Ohio were obtained and analyzed to
determine which features of the zoning and application process could potentially impact
transaction costs and economic growth (table 6.6). Nine separate variables measuring
public hearings, notification, and formal legal constraints on plan and zoning
applications were identified for the analysis. One variable, ACCESS, was constructed
to capture the number of different parties that could initiate a zoning change or
development application.

Each of the variables was selected because it potentially impacts the scope,
depth, and length of the bargaining process during zoning and plan approval. In
general, characteristics of the zoning approval process could increase the number of
opportunities for third parties to alter the project and were expected to increase
transaction costs. Variables that limited the ability of citizens, staff and the PB to
change or influence the proposed development were expected to reduce transaction
costs.
<table>
<thead>
<tr>
<th>Variables Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCMAXD</td>
<td>Dummy variable for whether the city has a maximum time limit for planning commission deliberation</td>
</tr>
<tr>
<td>PCMIND</td>
<td>Dummy variable for whether the city has a minimum time limit for planning commission deliberation</td>
</tr>
<tr>
<td>ACCESS</td>
<td>Variable representing how many independent parties can propose zoning amendment changes</td>
</tr>
<tr>
<td>NOTIFICATION</td>
<td>Number of feet specified for notification of property owners when a rezoning application is submitted</td>
</tr>
<tr>
<td>PCHEARING</td>
<td>Dummy variable representing whether the planning commission is required by ordinance to hold a public hearing on rezoning applications</td>
</tr>
<tr>
<td>OVERRIDE</td>
<td>Size of majority required if city council wants to override a planning commission decision</td>
</tr>
<tr>
<td>PRESUMPTION</td>
<td>Whether the city has a presumption in favor of the applicant if the planning commission fails to act on a rezoning application in a timely manner</td>
</tr>
<tr>
<td>PCDAYS</td>
<td>Number of days notification required preceding a planning commission hearing on a rezoning application</td>
</tr>
<tr>
<td>CCDAYS</td>
<td>Number of days notification required preceding a city council hearing on a rezoning application</td>
</tr>
</tbody>
</table>

**TABLE 6.6:** Variables used to estimate transaction costs in the plan approval process
Planning commission hearings and negotiations could have a positive or negative effect on economic growth (table 6.7). On the one hand, PB hearings might be another obstacle for developers and a source of uncertainty in the development permission process. This suggests zoning ordinances that require hearings at the PB level, irrespective of its potential impact on the community, would tend to discourage development activity. On the other hand, the hearing process could serve the potentially valuable function of identifying externalities and other market failures that may not be evident in the plan application. This was evident in the case studies from Chapter Five. Since city councils are statutorily required to hold hearings on each rezoning application, PB hearings and deliberations are an important step in the approval process where potential areas of public concern can be highlighted and resolved before moving to the council level. A developer, for example, could use this period to identify and address all major obstacles or concerns about the project to streamline the council hearing process. So, PB hearings could also have a positive impact on property development since they likely reduce transaction costs and serve as an information gathering mechanism. Whether the effects of PB hearings have a positive or negative impact on land development is primarily an empirical question.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected Sign</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCMAXD</td>
<td>+/-</td>
<td>Reduces time and uncertainty, but could be negative if this truncates negotiation process</td>
</tr>
<tr>
<td>PCMIND</td>
<td>-</td>
<td>Lengthens negotiation and decision process</td>
</tr>
<tr>
<td>ACCESS</td>
<td>+</td>
<td>Reduces dependency on one group for a rezoning proposal to enter the application process</td>
</tr>
<tr>
<td>NOTIFICATION</td>
<td>+/-</td>
<td>Positive if it allows objections to be heard early in the process, negative if it further politicizes the application process</td>
</tr>
<tr>
<td>PBHEARING</td>
<td>+/-</td>
<td>Hearings allow problems to emerge early in development application/design process</td>
</tr>
<tr>
<td>OVERRIDE</td>
<td>-</td>
<td>Reduces ability of applicant to counter adverse decision at planning commission level</td>
</tr>
<tr>
<td>PRESUMPTION</td>
<td>+</td>
<td>Speeds up application processing time without requiring planning commission to truncate negotiation process</td>
</tr>
<tr>
<td>PCDAYS</td>
<td>+/-</td>
<td>Allows problems to emerge early in the application/design process; alternatively, it could increase likelihood of objections that may delay the project</td>
</tr>
<tr>
<td>CCDAYS</td>
<td>-</td>
<td>Potentially exposes application to further objections by increasing notification time</td>
</tr>
</tbody>
</table>

**TABLE 6.7: Expected signs for transaction cost-related variables in zoning codes**
Notification requirements that include many community interests, and thus widening standing among potential objectors, would also lengthen the negotiation process and increase transaction costs. This is because the number of parties that may object to the applicant increases even though the most significant impacts are felt by neighbors adjacent or close to the proposed development (Pogodzinski and Sass 1991). Thus, we would expect wider public notification and hearings to reduce economic growth by further politicizing the zoning application process, particularly at the council level.

A presumption in favor of development is expected to increase economic growth since it reduces the likelihood of delay. A maximum time limit on deliberations by the PB should also shorten the deliberation process and reduce transaction costs. However, if these time limits constrain the amount of information about community interests and opposition by truncating the deliberation process, time limits could increase uncertainty at the council level by making council decisions even more highly politicized.

6.3.2 Estimated impacts of individual ordinance requirements

The impact of these variables on building permits and residential housing growth was estimated using multiple regression analysis. Housing unit growth from 1980 to 1990 was used to determine whether characteristics of the zoning approval process could have an impact over a long period of time, controlling for the influence of other, non-planning related characteristics of communities that might also explain economic growth.

The model was specified such that:

213
\[(6.3) \quad EG = \alpha + \beta_1 \text{POPGRO} - \beta_2 \text{DENSITY} - \beta_3 \text{MFGEMP} - \beta_4 \text{CLEVELAND} + \beta_5 \text{COLUMBUS} + \beta_6 \text{PLANNING} + \epsilon\]

where \(EG\), the dependent variable, is a measure of economic growth (housing units or building permits, see Appendix B). Population growth from 1980 through 1990 (POPGRO) controls for an increase in the demand for housing in each of the cities studied. Population density (DENSITY) controls for the amenities of the city and, following conventional theories of suburbanization, assumes people prefer less dense environments to more dense environments. The economic base of the city is captured by the proportion of residents employed in manufacturing (MFGEMP). The manufacturing sector plays a vital role in the Ohio economy, providing the primary source of export-related jobs and income (Burgess 1991).

Regional factors that could impact growth in a particular city are controlled for using a dummy variable for whether the city was in the Cuyahoga County (CLEVELAND) or in Franklin County (COLUMBUS). The foundation of the Cleveland area economy is traditional manufacturing enterprises, so the impact on a city in Cleveland should be negative. Franklin County, in contrast, is growing, and the positive impacts of regional economic growth should enter into the model as a positive influence on economic activity in specific cities. These dummy variables also help factor out significantly different characteristics of the economic base. For example, of the major metropolitan areas in Ohio, Columbus relies the least on manufacturing (Blair and Kinsella 1991).

Finally, the individual characteristics of the zoning ordinance are entered into
each equation individually and separately (PLANNING) and then together in a comprehensive multivariate equation.

An important limitation of the model is specification bias. While every attempt was made to test the validity of the variables selected in the model, some independent variables were not incorporated because of high levels of multicollinearity or the lack of data. For example, a potentially important determinant of building permit activity may be development patterns within the community. An attempt to gather these data from local communities did not generate useful information for a large enough number of cities to be incorporated into this analysis. Similarly, general community attitudes toward economic growth, particularly city council and planning board members, help determine the overall climate for growth. These data were also unavailable. In this case, however, data on zoning referenda provide a measure of local concern over growth, and this issue is explored further in the next section. Other factors that could drive local economic growth would include annexation activity, the quality of local education, and the pace of suburbanization within the metropolitan area. This model, however, is not intended to specify a general model of urban development. Rather, the focus is on the importance of planning-related variables on economic activity within cities, controlling for as many external factors as practicable.\(^{12}\)

\(^{12}\)The evidence from Chapter Five also suggested that the legislative nature of the approval process creates transaction costs regardless of community concerns. By establishing a bargaining relationship between local officials and developers, the process creates uncertainty and a bias toward higher costs. The case studies revealed, for example, that staff typically add conditions to development applications and developers attempt to meet concerns voiced by a relatively small number of citizens at
Descriptive statistics for each of the variables used in the multivariate analysis are found in table 6.8. The size of the cities in the sample varies significantly, ranging from 11,100 to more than 500,000. Some cities experienced a substantial population decline, while others experienced a substantial increase. The average number of building permits authorized from 1990 through 1994 was 516, but at least one city issued only 15. Housing unit growth seemed to vary significantly as well, averaging 1,773 for the cities in the sample from 1980 to 1990.

Using a multivariate framework, each variable was entered into the general model using GLS estimation. Unfortunately, most planning-related variables were not statistically significant. To conserve space, only the variables that were statistically significant are reported and discussed. Cities that imposed maximum time limits on how quickly PBs could deliberate on rezoning applications, increased the number of parties that could initiate rezonings of property, and had fewer days notification for public hearings all experienced lower rates of housing unit growth, contrary to the predictions of transaction-cost theory (table 6.9). Similarly, when building permit growth was analyzed, cities that had fewer days for notification of public hearing, expanded access to the rezoning process, and required public hearings at the PB and city council level experienced lower growth (table 6.10). Cities that maintained a presumption in favor of rezoning or plan approval experienced higher levels of growth although this result was not robust when other key planning variables were included in public hearings. Both tendencies drive up costs.
So, how do these results conform to expectations based on the transaction cost theory of planning and urban development? Overall, the results provide weak support for Hypothesis No. 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (1992)</td>
<td>47,947.0</td>
<td>92,087.0</td>
<td>11,100.0</td>
<td>502,500.0</td>
</tr>
<tr>
<td>Pop. Growth (%)</td>
<td>5.89</td>
<td>18.1</td>
<td>-11.89</td>
<td>54.44</td>
</tr>
<tr>
<td>Housing Growth (1980-90)</td>
<td>1,773.4</td>
<td>2,122.9</td>
<td>60</td>
<td>9,857</td>
</tr>
<tr>
<td>Permit Growth (1990-94)</td>
<td>515.97</td>
<td>635.25</td>
<td>15</td>
<td>2,145</td>
</tr>
<tr>
<td>Population Density</td>
<td>3.168</td>
<td>1.609</td>
<td>0.617</td>
<td>6.580</td>
</tr>
<tr>
<td>Mfg. Employm’t (%)</td>
<td>17.3</td>
<td>4.7</td>
<td>7.99</td>
<td>24.0</td>
</tr>
<tr>
<td>PCDAYS</td>
<td>6.73</td>
<td>7.03</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>ACCESS</td>
<td>4.6</td>
<td>9.36</td>
<td>2</td>
<td>54</td>
</tr>
<tr>
<td>NOTIFICATION</td>
<td>112</td>
<td>167.76</td>
<td>0</td>
<td>500</td>
</tr>
</tbody>
</table>

**TABLE 6.8: Descriptive statistics for zoning application evaluation procedures**
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth</td>
<td>1.9548</td>
<td>-0.6179</td>
<td>2.0672</td>
<td>1.1375</td>
</tr>
<tr>
<td></td>
<td>(20.69)***</td>
<td>(-0.590)</td>
<td>(1.787)*</td>
<td>(1.109)</td>
</tr>
<tr>
<td></td>
<td>(-0.76)</td>
<td>(-1.784)</td>
<td>(-0.768)</td>
<td>(-1.035)</td>
</tr>
<tr>
<td></td>
<td>(-3.832)***</td>
<td>(-2.26)**</td>
<td>(-1.975)*</td>
<td>(-3.986)***</td>
</tr>
<tr>
<td>Cleveland</td>
<td>-76.324</td>
<td>59.321</td>
<td>-5.8761</td>
<td>-34.816</td>
</tr>
<tr>
<td></td>
<td>(-1.101)</td>
<td>(0.843)</td>
<td>(-0.081)</td>
<td>(-0.53)</td>
</tr>
<tr>
<td>Columbus</td>
<td>-230.44</td>
<td>-36.822</td>
<td>-63.831</td>
<td>-204.52</td>
</tr>
<tr>
<td></td>
<td>(-2.478)**</td>
<td>(-0.463)</td>
<td>(-0.759)</td>
<td>(-2.383)**</td>
</tr>
<tr>
<td>PCMAXD</td>
<td>-128.49</td>
<td>---</td>
<td>---</td>
<td>-100.40</td>
</tr>
<tr>
<td></td>
<td>(-3.591)***</td>
<td>---</td>
<td>---</td>
<td>(-2.733)***</td>
</tr>
<tr>
<td>PCDAYS</td>
<td>---</td>
<td>6.3571</td>
<td>---</td>
<td>4.6093</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.76)***</td>
<td>---</td>
<td>(2.251)**</td>
</tr>
<tr>
<td>ACCESS</td>
<td>---</td>
<td>---</td>
<td>-1.5555</td>
<td>-0.04158</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-2.321)**</td>
<td>(-0.664)</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>787.59</td>
<td>324.91</td>
<td>310.80</td>
<td>721.83</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>R²</td>
<td>0.343</td>
<td>0.23</td>
<td>0.169</td>
<td>0.452</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>3.525**</td>
<td>2.443</td>
<td>1.985</td>
<td>3.989</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.465</td>
<td>0.914</td>
<td>1.128</td>
<td>1.451</td>
</tr>
</tbody>
</table>

Notes: OLS regression models transformed by assigning POPGRO to the P-Matrix. Significant levels for t-values (using two-tailed test): *** for 98%, ** for 95%, and * for 90%. F values for model F(1,28) where at 5% level, F=4.20 and at 1% level, F=7.64.

TABLE 6.9: GLS regression estimates of transaction cost-related features of zoning codes on housing unit growth per 1,000 population, 1980 to 1990
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=30)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Growth</td>
<td>0.9704</td>
<td>-0.7054</td>
<td>-0.5971</td>
<td>-0.7051</td>
</tr>
<tr>
<td></td>
<td>(3.492)***</td>
<td>(-2.319)**</td>
<td>(-1.206)*</td>
<td>(-1.898)*</td>
</tr>
<tr>
<td></td>
<td>(-1.91)*</td>
<td>(-3.36)***</td>
<td>(-2.69)***</td>
<td>(-3.186)***</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>8.8039</td>
<td>10.552</td>
<td>11.365</td>
<td>8.9418</td>
</tr>
<tr>
<td></td>
<td>(6.755)***</td>
<td>(6.917)***</td>
<td>(5.227)***</td>
<td>(4.755)***</td>
</tr>
<tr>
<td>Cleveland</td>
<td>-5.8877</td>
<td>38.992</td>
<td>27.347</td>
<td>32.865</td>
</tr>
<tr>
<td></td>
<td>(-0.337)</td>
<td>(1.842)*</td>
<td>(0.905)</td>
<td>(1.317)</td>
</tr>
<tr>
<td>Columbus</td>
<td>97.322</td>
<td>184.01</td>
<td>140.43</td>
<td>120.64</td>
</tr>
<tr>
<td></td>
<td>(4.816)***</td>
<td>(7.061)***</td>
<td>(4.050)***</td>
<td>(4.279)***</td>
</tr>
<tr>
<td>ACCESS</td>
<td>-1.1627</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>(-7.219)***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOTIFICATION</td>
<td>----</td>
<td>0.1103</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5.397)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCHEARING</td>
<td>----</td>
<td>----</td>
<td>26.952</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(1.718)*</td>
<td></td>
</tr>
<tr>
<td>PC DAYS</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>3.076</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(3.764)***</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-139.55</td>
<td>-197.71</td>
<td>-183.87</td>
<td>-142.34</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>R²</td>
<td>0.918</td>
<td>0.882</td>
<td>0.764</td>
<td>0.835</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>55.339***</td>
<td>37.235***</td>
<td>16.611***</td>
<td>25.450***</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.907</td>
<td>2.035</td>
<td>2.094</td>
<td>1.958</td>
</tr>
</tbody>
</table>

(continued)

TABLE 6.10: GLS regression estimates of transaction cost-related features of zoning codes on building permits per 1,000 population, 1990 to 1994
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Growth</td>
<td>-0.1133</td>
<td>0.35979</td>
</tr>
<tr>
<td></td>
<td>(-0.286)</td>
<td>(1.174)</td>
</tr>
<tr>
<td>Density</td>
<td>-11.010</td>
<td>-8.7754</td>
</tr>
<tr>
<td></td>
<td>(-1.86)*</td>
<td>(-3.17)***</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>12.722</td>
<td>7.2051</td>
</tr>
<tr>
<td></td>
<td>(5.444)***</td>
<td>(6.699)***</td>
</tr>
<tr>
<td>Cleveland</td>
<td>6.6808</td>
<td>15.119</td>
</tr>
<tr>
<td></td>
<td>(0.125)</td>
<td>(0.958)</td>
</tr>
<tr>
<td>Columbus</td>
<td>136.15</td>
<td>111.8</td>
</tr>
<tr>
<td></td>
<td>(4.039)***</td>
<td>(5.511)***</td>
</tr>
<tr>
<td>ACCESS</td>
<td>-0.85981</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-5.616)**</td>
<td></td>
</tr>
<tr>
<td>NOTIFICATION</td>
<td>0.04192</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.417)</td>
<td></td>
</tr>
<tr>
<td>PBHEARING</td>
<td>-17.83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.465)**</td>
<td></td>
</tr>
<tr>
<td>PCDAYS</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.338)***</td>
<td></td>
</tr>
<tr>
<td>PRESUMPTION</td>
<td>26.542</td>
<td>-4.3049</td>
</tr>
<tr>
<td></td>
<td>(1.885)*</td>
<td>(-0.388)</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-210.37</td>
<td>-122.54</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>R²</td>
<td>0.769</td>
<td>0.968</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>87.086***</td>
<td>88.895***</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>2.18</td>
<td>2.691</td>
</tr>
</tbody>
</table>

Notes: OLS regression models transformed by assigning POPGRO to the P-Matrix. Significant levels for t-values (using a two-tailed test): *** for 98%, ** for 95%, and * for 90%. F values for model F(6,23) where at 5% level, F=2.53 and at 1% level, F=3.71.

TABLE 6.10: GLS regression estimates of transaction cost-related features of zoning codes on building permits per 1,000 population, 1990 to 1994
A summary of the empirical results for zoning procedures is contained in table 6.11. These results are not adjusted for size, but the appropriate units of analysis are included in an annualized description of the effects. Overall, the empirical models identified and tested nine characteristics of local zoning ordinances that could impact transaction costs in the rezoning process. Seven of these factors were statistically significant. Only three variables, however, were statistically significant and supported the transaction-cost theory of urban development: whether the PB was required to hold a public hearing (PBHEARING), whether the city had a statutory presumption in favor of a proposed rezoning application (PRESUMPTION), and the number of days required for notification of public hearings by the planning board (PBDAYS).

Importantly, PRESUMPTION was not statistically significant in the more comprehensive multivariate model. The number of feet required for notifying neighboring property owners (NOTIFICATION) was statistically significant in the single procedure model, but the interpretation of the results did not clearly support, or reject, the transaction-cost theory.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistical Significance</th>
<th>Do Results Support TC</th>
<th>Estimated Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Time Limit For PB</td>
<td>98% no</td>
<td></td>
<td><strong>1980-90 Housing Unit Data:</strong> Reduces annual building unit growth 10.0 to 12.8 housing units per 1,000 residents</td>
</tr>
<tr>
<td>Minimum Time Limit</td>
<td>not significant</td>
<td></td>
<td><strong>1980-90 Housing Unit Data:</strong> Not significant</td>
</tr>
<tr>
<td>Statutory Access to Zoning Process</td>
<td>95% no</td>
<td></td>
<td><strong>1980-90 Housing Unit Data:</strong> Expansion of one group reduces growth by less than one housing unit per 1,000 population, but is insignificant in comprehensive model.</td>
</tr>
<tr>
<td>Notification of Neighbors</td>
<td>98% inconclusive</td>
<td></td>
<td><strong>1990-94 Building Permits:</strong> Increase notification by one foot increases building permit growth by 1.2 to 3.1 permits per 1,000 population but insignificant in comprehensive model.</td>
</tr>
<tr>
<td>PB Hearing Required</td>
<td>90% yes</td>
<td></td>
<td><strong>1990-94 Building Permits:</strong> Public hearing requirement for PB increased annual building permit growth by 6.7 permits per 1,000 population; but reduced annual building permits by 4.5 units per 1,000 population in the comprehensive model.</td>
</tr>
<tr>
<td>Supermajority Override Required</td>
<td>not significant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 6.11: Summary of the annual impact of zoning procedures on building permit growth**

222
### TABLE 6.11: Summary of the annual impact of zoning procedures on building permit growth

<table>
<thead>
<tr>
<th>Presumption Favors Zoning Request</th>
<th>Days Required Notification for PB Hearing</th>
<th>1990-94 Building Permits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>90% yes</td>
<td>98% yes</td>
<td>Presumption in favor of rezoning request increases annual growth by 6.6 per 1,000 population, but insignificant and negative in more the comprehensive model.</td>
</tr>
</tbody>
</table>

1980-90 Housing Units:  
An increase of 1 day results in an increase of 3.1 to 4.28 housing units per 1,000 population

1990-94 Building Permits:  
An increase of 1 day results in an increase of 3.7 to 5.2 building permits annually per 1,000 population

Days Required Notification for City Council Hearing: not significant
6.3.3 Interpreting the regression results for planning procedures

How should these results be interpreted? The regression results measure the impact on building permits per 1,000 population for each unit increase in the independent variable, all other variables held constant. A summary of the estimated impacts of the planning variables is found in table 6.12 for a city with the average population for the sample of about 48,000.

The average city issued 515 building permits from 1990 to 1994, or 129 annually. This is about 2.7 permits per 1,000 each year. The planning variables clearly have potentially large impacts on economic growth in the average city. Requiring a hearing at the PB level, for example, imposes a "growth penalty" of 214 building permits annually, almost twice the average number issued, all other variables held constant. Similarly, an increase in the number of days PBs were required to give to notify citizens of a public hearing increases building permits by 177 permits, or almost one and one half times the number of building permits issued annually. The variable with the largest negative growth impact, however, is whether a city imposes a maximum time limit on PB deliberations. Cities that imposed this limit experienced a 482 unit "growth penalty," contrary to expectations from the transaction-cost theory of development. From 1980 to 1990, the average city grew by 1,773 housing units, or 177 permits annually (3.69 units per 1,000 population). The growth penalty is more than 2.5 times the annual building unit growth for the average city.
TABLE 6.12: Estimated impacts of planning variables on economic activity for a city with characteristics of the sample mean

Taken independently, however, this results could be misleading. Multiple regression analysis estimates each independent variable's impact on building activity holding all other variables constant. In the real world, of course, these other variables change continuously. Some add to building permit activity and others subtract from building activity. The net impact for a particular city will depend on how these other factors balance out in the real world.

Table 6.13 illustrates these effects for the variables from equation 6, table 6.10 and the consequences for interpreting the coefficients for a statistically "average" city of 48,000 in the Cleveland area. (Thus, the dummy variable representing the city's
location in Cuyahoga County is "1" and the dummy variable for Franklin County is "0". The data are for the growth in building permits from 1990 to 1994. The columns representing the four-year impact and the annualized data are for permits per 1,000 population. The last column represents estimates for the hypothetical "average city" of 48,000.

The average actual net permit growth for the cities in the sample was 129. This differs from the model's estimated growth of -183 permits for the same period after all variables (including the statistically insignificant variables) were included. In the real world, negative permit growth is statistically impossible since building permits are issued only for new buildings, not to eliminate existing ones. Statistically, this result represents the deviation from the actual permit growth, and does not necessarily imply that permit growth was negative. Thus, the model underestimated permit growth by 302 permits annually. The size of the deviation, however, suggests the interpretation of the model's results should be made cautiously, particularly for cities with low growth rates.
### TABLE 6.13: Estimated impacts of planning variables in model for building permit growth per 1,000 population for a Cleveland area city with the characteristics of the sample mean

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Unit</th>
<th>β</th>
<th>Four year Impact per 1,000</th>
<th>Annualized Impact per 1,000</th>
<th>City of 48,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population growth</td>
<td>people</td>
<td>0.36</td>
<td>2.12</td>
<td>0.53</td>
<td>25</td>
</tr>
<tr>
<td>Density*</td>
<td>people/mile</td>
<td>-8.78</td>
<td>-27.82</td>
<td>-6.95</td>
<td>-334</td>
</tr>
<tr>
<td>Mfg employment*</td>
<td>percent</td>
<td>7.21</td>
<td>124.73</td>
<td>31.18</td>
<td>1,496</td>
</tr>
<tr>
<td>Cleveland</td>
<td>dummy</td>
<td>15.12</td>
<td>15.12</td>
<td>3.78</td>
<td>181</td>
</tr>
<tr>
<td>Columbus*</td>
<td>dummy</td>
<td>111.8</td>
<td>0.00</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>ACCESS*</td>
<td>scaled</td>
<td>-0.86</td>
<td>-3.96</td>
<td>-0.99</td>
<td>-48</td>
</tr>
<tr>
<td>NOTIFICATION</td>
<td>days</td>
<td>0.04</td>
<td>4.70</td>
<td>1.18</td>
<td>57</td>
</tr>
<tr>
<td>PCDAYS*</td>
<td>days</td>
<td>2.2</td>
<td>14.74</td>
<td>3.69</td>
<td>177</td>
</tr>
<tr>
<td>PRESUMPTION</td>
<td>dummy</td>
<td>-4.31</td>
<td>-4.31</td>
<td>-1.08</td>
<td>-52</td>
</tr>
<tr>
<td>Constant</td>
<td>-----</td>
<td>-122.54</td>
<td>-122.54</td>
<td>-30.64</td>
<td>-1,471</td>
</tr>
</tbody>
</table>

Actual average permit growth       -----  10.76  2.69  129
Estimated permit growth from model ----- -14.96 -3.74 -183

**Note:** * indicates statistically significant variable in comprehensive multivariate model.
The combined effects of a city's population density, presumption in favor of development and PB hearing requirement reduced building permit activity by 648 building permits. The constant alone reduced activity by 1,471 permits. The combined effects of the variables adding to local development resulted in 1,936 new permits each year. The city's concentration in manufacturing employment had large statistical impacts on building permit activity, although its effect was almost completely offset by the effects of the constant. Population density also had large negative impacts on building permits.

Of the planning variables, only the requirement for holding a public hearing by the local PB had a large impact on economic activity relative to other factors. The hearing requirement imposed a growth penalty more than the net change in building permits, and accounts for one third of the estimated decline from other independent variables in the model. The planning related variable with the next largest impact is PCDAYS, and accounts for 9.1 percent of the estimated increase in building permits and is less than the estimated net change in building permits.

The gap between the model's predicted net growth (-3.74 permits per 1,000 population) and the actual net growth (2.69 permits per 1,000 population) seriously undermines the credibility of the model, however. In principle, the model should predict, with a fair level of precision, outcomes derived from the data it manipulates. This precision is clearly lacking in this case.

Two potential explanations exist for the divergence between the predicted and actual values of the analysis:
• **Multicollinearity** may prevent an precise interpretation of the regression coefficients. This problem could be mitigated by expanding the dataset to include more cities or transforming the model in other ways. As previous sections explained, however, the GLS estimating technique was adopting to minimize the effects of heteroskedasticity, and models using other transformations (e.g., logarithmic models) did not perform as well as the GLS models.

• **The sample means do not accurately represent the cities in the sample.** In this case, outliers may skew the average so that the sample mean does not accurately represent the cities in the sample population. Given the large standard deviations (see table 6.8), this is likely.

This latter problem can be investigated further by using cases from the dataset. Estimates were calculated for three cities from the sample as a comparison to the estimates for the sample mean: Cleveland Heights in Cuyahoga County, Westerville in Franklin County, and Kettering in Montgomery County (table 6.14). Cleveland Heights was chosen as a city near the statistical mean for the population, Westerville was chosen as a city lower than the statistical mean in a growing region (Franklin County), and Kettering was chosen as a city larger than the statistical mean outside Cuyahoga County (Cleveland) and Franklin County (Columbus). The regression coefficients from table 6.10, equation 6 are used to estimated the impact of each independent variable on building permits per 1,000 issued in each city annually.

One measure of the accuracy of the model is to compare the estimated results to
the actual outcomes. If the model's predicted outcomes deviate substantially from actual building permit growth, confidence in the model would be undermined. The standard deviation is a common statistical measure of dispersion, and we would expect the results from the model to be within one standard deviation of the mean. The standard deviation for building permit growth is 3.3 building permits per 1,000 population annually.

Clearly, in the case of the sample mean, the estimated impacts are greater than one standard deviation. This is also true for Cleveland Heights, a declining suburb (in terms of population growth) just outside of the central city of Cleveland. Predicted growth, on the other hand, is within one standard deviation for the cities of Westerville and Kettering. Thus, the model provides a generally accurate estimation of the determinants of overall permit growth for two of the three cities chosen from the sample. Given the small sample size (thirty cities), this suggests interpretations of the regression coefficients solely in terms of the sample mean must be made cautiously. Moreover, care must be used in applying the regression coefficient to a particular city.

The large standard deviations for the estimates significantly limits the ability of the model to accurately predict the magnitude of the effects for planning procedures. While the model appears to accurately estimate the direction of the changes, it lacks precision concerning the magnitude of the impact. This lack of precision creates significant uncertainty concerning the applicability of the results to public policy.
<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Mean</th>
<th>Cleveland Heights</th>
<th>Westerville</th>
<th>Kettering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>47,947</td>
<td>53,300</td>
<td>32,500</td>
<td>60,200</td>
</tr>
<tr>
<td>Population growth</td>
<td>0.53</td>
<td>-0.37</td>
<td>2.62</td>
<td>-0.09</td>
</tr>
<tr>
<td>Density*</td>
<td>-6.95</td>
<td>-14.44</td>
<td>-8.70</td>
<td>-7.07</td>
</tr>
<tr>
<td>Manufacturing employment*</td>
<td>31.18</td>
<td>22.63</td>
<td>21.35</td>
<td>38.51</td>
</tr>
<tr>
<td>Cleveland</td>
<td>3.78</td>
<td>3.78</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Columbus*</td>
<td>0.00</td>
<td>0.00</td>
<td>27.95</td>
<td>0.00</td>
</tr>
<tr>
<td>ACCESS*</td>
<td>-0.99</td>
<td>-1.08</td>
<td>-0.65</td>
<td>-0.86</td>
</tr>
<tr>
<td>NOTIFICATION</td>
<td>1.18</td>
<td>0.01</td>
<td>0.01</td>
<td>2.10</td>
</tr>
<tr>
<td>PBHEARING*</td>
<td>-4.46</td>
<td>0.00</td>
<td>-4.46</td>
<td>-4.46</td>
</tr>
<tr>
<td>PCDAYS*</td>
<td>3.70</td>
<td>0.00</td>
<td>3.85</td>
<td>5.50</td>
</tr>
<tr>
<td>PRESUMPTION</td>
<td>-1.08</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Constant</td>
<td>-30.64</td>
<td>-30.64</td>
<td>-30.64</td>
<td>-30.64</td>
</tr>
</tbody>
</table>

Actual permits growth per 1,000 population: 2.69 0.07 8.73 0.57
Estimated permit growth per 1,000 population: -3.74 -20.38 11.08 2.52
Difference between actual and estimated permit growth: 6.43 20.45 -2.43 -1.95

Note: * indicates statistically significant variable in comprehensive multivariate model.

TABLE 6.14: Comparison of estimated annual impacts on building permits per 1,000 population for planning procedures for the sample mean, Cleveland Heights, Westerville, and Kettering
6.4 Uncertainty, zoning referenda and urban development

Uncertainty in local planning procedures is also a potentially important factor in land development (Evans 1983; Titman 1985; Wiltshaw 1986; Mayo and Shephard 1991). Uncertainty, then, is one of the more important sources of transaction costs. This section explores more fully the impact of planning-related uncertainty on economic growth in Ohio cities by testing Hypothesis No. 3 (page 186-7): uncertainty in the planning process can drive up transaction costs and reduce economic growth.

A direct indicator of uncertainty would be a measure of the probability plan or zoning applications are rejected (holding the quality of projects constant). These data, however, are only available at the city level and require extensive, detailed knowledge of plan applications and deliberations over an extended period of time. This was evident in Chapter Five where detailed data were available in only one of the three cases (Washington Township). A survey was sent to city planning departments to gather these data, but response rates were sufficiently low on this portion of the survey they could not be used in the empirical analysis. Moreover, the nature of the plan approval process suggests application rejections may not be the most appropriate measure of uncertainty. The case studies in the previous chapter suggested that the attitudes of planning boards and local citizens, and the nature of objections during the public-hearing process, were also important factors that determined how quickly and decisively a local planning board (and city council) might act.

An indicator of uncertainty in the planning process is the likelihood zoning decisions will be subjected to referenda from citizens. In some cases, cities require all
rezoning decisions and/or "upzonings" (i.e., rezoning commercial to residential, multi-family residential to single family residential, or industrial to residential) to public votes or referenda. Citizens can also petition city councils to place zoning and planning decisions on the ballot by initiative. In practice, referenda are more likely than initiatives. Voter approval of local zoning and planning decisions, also called "ballot-box zoning," has become increasingly popular, particularly in California (Caves 1992).

In most cases, referenda are used to overturn a rezoning approved by the local planning board and city council. The planning literature (e.g., Caves 1992) has tended to view the growth of ballot-box zoning positively, a healthy extension of citizen participation in planning and democratic governance. An alternative view suggests that referenda may also come with a cost: higher transaction costs lead to lower levels of economic growth and development.

Data on zoning referenda and initiatives between 1984 and 1994 were obtained from the Ohio Secretary of State for cities in five major urban counties in Ohio: Cuyahoga (Cleveland), Hamilton (Cincinnati), Franklin (Columbus), Summit (Akron) and Montgomery (Dayton). This created a statistical population of sixty-seven cities.

13While important legal distinctions exist between initiatives and referenda, the terms are used interchangeably in this analysis. Legally, referenda prevent a legislative action from being implemented. Initiatives install or repeal existing ordinances.

14Referenda and initiatives were classified according to whether local citizens approved a change in land-use or whether they overturned an approval by the local city council. A simple count of the number of zoning decisions challenged would be inappropriate. Referenda could address either a decision to approve or disapprove a zoning or planning-related decision by the local city council. Zoning and planning related referenda and initiatives that did not involve a rezoning of property (i.e.,
and a sample population of sixty-three cities. (Townships were excluded because reliable data on building permits were not available.)

Twenty-two of the cities (34.9%) in the sample reported zoning-related referenda on their ballots between 1984 and 1994 (table 6.15). About one quarter of the cities passed or rejected zoning-related referenda. Thirteen cites (60 percent of the cities with referenda on local ballots) reported more than one initiative. Of those cities with one or more zoning related issues on the ballot, the pass rate averaged 54.8 percent. Thus, when given a choice, voters tended to approve zoning changes. Eight cities experienced multiple referenda that passed and failed. Seven cities reported more than ten zoning referenda during this period. These were typically cities with statutory requirements for voter approval for zoning decisions.

<table>
<thead>
<tr>
<th>Number of Cities</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities with zoning referenda</td>
<td>22</td>
</tr>
<tr>
<td>Cities passing referenda</td>
<td>15</td>
</tr>
<tr>
<td>Cities rejecting referenda</td>
<td>16</td>
</tr>
<tr>
<td>Average pass rate</td>
<td>22</td>
</tr>
</tbody>
</table>

TABLE 6.15: Data on zoning referenda in Ohio cities

updates to zoning codes or passage of a zoning ordinance) were excluded from the analysis.

234
A multivariate framework was adopted to test the importance of ballot-box zoning on economic activity in these jurisdictions. Since the sample population was larger than the previous analyses, an alternative estimating model was developed to capture non-zoning related effects on economic growth. The general model was specified such that:

\[ H = \alpha + \beta_1 \text{MEDHSHDY} + \beta_2 \text{POPGROWTH} + \beta_3 \text{TRANSPORT} - \beta_4 \text{DEBT} + \beta_5 \text{CLEVELAND} + \beta_6 \text{SOUTH} - \beta_7 \text{REFERENDA} + \epsilon \]

where the variables and their expected signs are described in table 6.16 and \( \epsilon \) represents error in the model. Descriptive statistics for each of the continuous variables are provided in table 6.17. The dependent variable, \( H \), represents housing-unit growth in each municipal jurisdiction.\(^{15}\) Housing-unit growth was measured over three different periods to test the robustness of the estimates over time and among datasets: 1980 to 1990, 1980 to 1994, and 1984 to 1994.

Median household income is expected to exert a positive influence on building permits, since higher incomes may signal a positive amenity value (table 6.16). Population growth should also have a positive influence on building activity since it should reflect the demand for land in the community. Transportation spending should positively impact building activity since it reflects an community’s investment in physical infrastructure -- roads and sewers -- critical to property development. Debt, in

\(^{15}\)Building permit data were available only for a four-year period, 1990 through 1994. Given the availability of data, the longer time horizon was chosen as a more suitable test of the impact of referenda on economic growth.
contrast, should reduce building activity for two reasons: a) the community may be unwilling to take on new projects to facilitate land development because it already services debt and b) higher debt may imply higher future taxes and a less attractive community. Dummy variables for Cleveland and whether the city was located in the Southern portions of the state were included to capture regional variations in economic activity.

A dummy variable (REFERENDA) was used to capture the impact of citizen initiatives on uncertainty in the zoning process for several reasons. First, a relatively small number of cities experienced very high levels (ten or more referenda) of citizen activity on zoning issues. Thus, a small number of very active cities could distort the impacts of ballot box zoning on economic growth for most of the sample.

Second, the results of a statistical analysis using a simple count of the number of referenda and initiatives in each city was difficult to interpret. Strong negative relationships were found between referenda and building-permit activity regardless of whether citizens passed or rejected the initiatives. For example, a GLS model for housing-unit growth from 1980 to 1990 found the referenda variable significant at the 99 percent level of significance, regardless of whether referenda were approved ($\beta = -264.06; t$ statistic $= -4.859$) or failed ($\beta = -279.35; t$ statistic $= -5.338$). At first glance, this result appears paradoxical: high pass rates on referenda that accommodate development would be expected to neutralize the negative impact of ballot-box zoning on economic growth or have a positive impact.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Expected Sign (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDHSHDY</td>
<td>Median household income, 1989</td>
<td>positive</td>
</tr>
<tr>
<td>POPGROWTH</td>
<td>Population growth, 1980 to 1990</td>
<td>positive</td>
</tr>
<tr>
<td>TRANSPORT</td>
<td>Transportation spending per capita, 1992</td>
<td>positive</td>
</tr>
<tr>
<td>DEBT</td>
<td>Debt per capita, 1992</td>
<td>negative</td>
</tr>
<tr>
<td>CLEVELAND</td>
<td>Dummy variable for whether city is in Cuyahoga County</td>
<td>unknown</td>
</tr>
<tr>
<td>SOUTH</td>
<td>Dummy variable for whether city is in Hamilton or Montgomery Counties</td>
<td>unknown</td>
</tr>
<tr>
<td>REFERENDA</td>
<td>Dummy variable for whether city had at least one zoning-related referendum or initiative on the ballot</td>
<td>negative</td>
</tr>
</tbody>
</table>


**TABLE 6.16:** Description of variables in referenda regression models
This paradox, however, is resolved using the transaction-cost theory of urban planning and development. Developers are reacting to the uncertainty (and higher transaction costs) surrounding potential delays for their projects in more highly politicized environments, not the likelihood a community will approve their zoning request once it is on the ballot. The mere fact citizens are willing to challenge zoning decisions at the ballot box creates uncertainty for property owners and developers. Thus, even though voters may eventually vote to accommodate growth, the project is delayed through the referendum process. The historical presence of citizen referenda or initiatives appears to signal to developers a higher likelihood of delay and level of uncertainty compared to cities without a history of ballot-box zoning.

A dummy variable was thus used to estimate the impact of ballot-box zoning on economic growth and development within cities. The use of the dummy variable implies that the politicized nature of the local planning environment (rather than pass or
rejection rates) has an impact on the level of economic activity in a city. Also, a continuous variable (e.g., the number of referenda) would imply that unit changes in referenda had marginal impacts on the level of economic activity. In other words, using the results reported above to illustrate, an increase of one zoning referenda on the ballot in one city would reduce annual housing-unit growth by between 26.4 and 28.0 units per 1,000 population on average. A more intuitively plausible and consistent explanation is that the general environment is more important than the number of zoning-related referenda and citizen initiatives in any particular city.

The results of the GLS estimation\textsuperscript{16} of the impact of zoning-related referenda (using the dummy variable) are reported in table 6.18. The model captures 80 percent of the variation in the growth in housing units among the cities in the sample and the results are robust across time periods. Median household income and transportation spending had substantial impacts on the growth of housing units. For the equation estimating housing unit growth from 1980 to 1990, a $1,000 increase in median household income was associated with an increase of 6.7 housing units per 1,000 population. An increase in $1 per capita in transportation spending increased housing unit growth by about 11.7 units per 1,000 population. Whether the city is located in the Cuyahoga County does not influence the level of housing unit growth during either the time periods. A city's location in either of the two southern counties (Hamilton or Montgomery), however, appeared to negatively impact growth in housing units.\textsuperscript{17}

\textsuperscript{16}Preliminary OLS estimations of the model revealed heteroskedasticity.
The presence of zoning-related referenda on the ballot has a consistent, negative impact on economic growth in the cities examined. Communities appear to experience a 19.4 to 28.7 ballot-box "penalty" for every 1,000 population if they have a history of subjecting zoning-related issues to public vote. If the penalty is adjusted for the size of the city, the impact of referenda is relatively large. The average city in the sample had a population of 50,000 and annual housing growth of about 321 units from 1980 to 1994, or 89.09 units per 1,000 population. Using the regression estimates for this period, the model estimates a city of 50,000 would suffer a penalty of -271 housing units over the period, or 19.4 units each year. This is more than six times the estimated increase of 2.93 units each year, and three times the actual average increase of 6.36 units each year.

\[\text{In a model not presented here, a dummy variable for Columbus was also included but was not significant.}\]
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=63)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Household Income</td>
<td>6.667</td>
<td>6.522</td>
<td>5.828</td>
</tr>
<tr>
<td></td>
<td>(2.96)***</td>
<td>(2.81)***</td>
<td>(2.46)***</td>
</tr>
<tr>
<td>Population Growth</td>
<td>-0.374</td>
<td>0.093</td>
<td>-0.070</td>
</tr>
<tr>
<td></td>
<td>(-0.45)</td>
<td>(0.11)</td>
<td>(-0.80)</td>
</tr>
<tr>
<td>Transportation spending</td>
<td>1.662</td>
<td>1.700</td>
<td>1.723</td>
</tr>
<tr>
<td></td>
<td>(5.94)***</td>
<td>(5.9)***</td>
<td>(5.85)***</td>
</tr>
<tr>
<td>Debt</td>
<td>-0.902</td>
<td>-0.885</td>
<td>-0.919</td>
</tr>
<tr>
<td></td>
<td>(-5.74)***</td>
<td>(-5.46)***</td>
<td>(-5.56)***</td>
</tr>
<tr>
<td>Cleveland (dummy)</td>
<td>9.680</td>
<td>-42.433</td>
<td>-42.513</td>
</tr>
<tr>
<td></td>
<td>(0.14)</td>
<td>(-0.61)</td>
<td>(-0.60)</td>
</tr>
<tr>
<td>South (dummy)</td>
<td>-241.12</td>
<td>-286.17</td>
<td>-298.69</td>
</tr>
<tr>
<td></td>
<td>(-3.48)***</td>
<td>(-4.00)***</td>
<td>(-4.09)***</td>
</tr>
<tr>
<td>Referenda (dummy)</td>
<td>-286.97</td>
<td>-271.42</td>
<td>-272.95</td>
</tr>
<tr>
<td></td>
<td>(-5.94)***</td>
<td>(-5.45)***</td>
<td>(-5.37)***</td>
</tr>
<tr>
<td>Constant</td>
<td>-60.358</td>
<td>-10.151</td>
<td>0.777</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.821</td>
<td>0.806</td>
<td>0.798</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>41.559***</td>
<td>37.779***</td>
<td>36.088***</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>2.209</td>
<td>2.028</td>
<td>2.023</td>
</tr>
</tbody>
</table>

Notes: Model transformed by assigning transportation spending to the P Matrix. Significance levels (using two-tail tests): *** for 98%, ** for 95%, and * for 10%. F values for model F(7,55).

TABLE 6.18: *GLS estimates of impact of zoning referenda on housing unit growth per 1,000 population*
Once again, the divergence between the actual unit growth and the predicted unit growth is large. While the size of the sample population is larger than for planning procedures — sixty-three cities versus thirty — a closer examination of the regression coefficients is in order. Three cities were once again selected from the sample population — Cleveland Heights (Cuyahoga County), Worthington (Franklin County), and Kettering (Montgomery Count) — to compare to the estimates to the statistical mean. Worthington was selected as an example of a city with a history of zoning-related referenda since both Cleveland Heights and Kettering do not. The results of the comparison are in table 6.19.

The standard deviation for annual growth in housing units per 1,000 population over this period was 9.2. Predicted annual housing unit growth was within one standard deviation for the sample mean, Cleveland Heights, and Kettering. The predicted growth in housing deviated by more than one standard deviation for Worthington, and in this case the model predicted higher economic growth. The estimates for the ballot-box penalty, then, do not appear to impose a downward bias in the model’s ability to predict overall economic growth in this community.

Thus, communities that are more likely to have zoning and planning decisions subjected to referenda are more likely to have lower levels of building activity. This supports Hypothesis No. 3 (page 186-7) since the existence of zoning referenda injects an important element of uncertainty into the development approval process. These results also support Hypothesis No. 2 (page 186) because uncertainty is an important source of transaction costs: higher transaction costs reduce levels of economic activity.
Implicitly, these results also support the fifth hypothesis from Chapter One (page 17-8). To the extent zoning-related referenda reflect community values (e.g., a more open planning process), the higher transaction costs associated with the process translate into reduced land development. This is clearly the case in cities where all rezoning cases are subject to automatic referenda through local ordinances.
<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Mean</th>
<th>Cleveland Heights</th>
<th>Worthington</th>
<th>Kettering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>50,573</td>
<td>53,300</td>
<td>15,200</td>
<td>60,200</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>24.19</td>
<td>23.48</td>
<td>32.54</td>
<td>22.50</td>
</tr>
<tr>
<td>Population growth</td>
<td>0.09</td>
<td>-0.04</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Transportation spending</td>
<td>11.92</td>
<td>7.99</td>
<td>15.47</td>
<td>13.94</td>
</tr>
<tr>
<td>Debt per capita</td>
<td>-8.60</td>
<td>-7.08</td>
<td>-1.42</td>
<td>-9.82</td>
</tr>
<tr>
<td>Cleveland</td>
<td>-4.24</td>
<td>-4.24</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>South</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>-28.62</td>
</tr>
<tr>
<td>Referenda</td>
<td>-27.14</td>
<td>-27.14</td>
<td>-27.14</td>
<td>0.00</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.02</td>
<td>-1.02</td>
<td>-1.02</td>
<td>-1.02</td>
</tr>
<tr>
<td>Actual permits growth per 1,000 population</td>
<td>6.36</td>
<td>0.57</td>
<td>16.11</td>
<td>0.22</td>
</tr>
<tr>
<td>Estimated permit growth per 1,000 population</td>
<td>2.93</td>
<td>-5.18</td>
<td>5.47</td>
<td>0.09</td>
</tr>
<tr>
<td>Difference between actual and estimated permit growth</td>
<td>3.43</td>
<td>5.75</td>
<td>10.64</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Note: * indicates statistically significant variable in comprehensive multivariate model.

**TABLE 6.19**: Estimated impacts of zoning referenda on annual housing unit growth per 1,000 population from 1980 to 1994 for the sample mean, Cleveland Heights, Worthington, and Kettering
6.5 Summary and Conclusions

This chapter tested three hypotheses about planning and urban development derived from a transaction-cost approach:

1. **Planning programs, procedures and processes can reduce (or increase) planning-related transaction costs in the development process.** (Section 6.2)

2. **Higher planning-related transaction costs discourage the level of land development and economic growth.** (Section 6.3 and Section 6.4)

3. **Uncertainty in the planning process can drive up transaction costs and reduce economic growth.** (Section 6.4)

The results from zoning related referenda also provided an indirect test of the fifth hypothesis concerning community values and transaction costs. While the case studies from Chapter Five revealed several aspects of the plan-approval process that could influence transaction costs in land development, this chapter specified more completely the nature and impacts of those transaction costs on development approval and economic growth.

One institutionalized element of the development permission process is the structure of the plan and rezoning approval process set out in the Ohio Revised Code and local ordinances. The impacts of planning innovations were examined to determine whether they increased or decreased the transaction costs associated with economic development. With the exception of one-stop permit processing, none of the individual planning innovations appeared to impact transaction costs as measured by the average
processing time for rezoning applications. However, further analysis found that the use of multiple innovations significantly lowered average processing times. More specifically, the addition of one additional innovation was associated with a five-week reduction in rezoning application processing time. Thus, the cumulative impact of these innovations could, in fact, reduce application processing times, and hence transaction costs, although the impacts of individual innovations could not be ascertained. These results were consistent with the insights gleaned from the analysis of rezoning cases in Washington Township and provided empirical support for Hypothesis No. 1.

This chapter also evaluated a second set of propositions concerning the impact of transaction costs on economic activity in cities. Zoning ordinances were used to determine specific characteristics of rezoning application approval procedures. Limited evidence was found suggesting that higher transaction costs from rezoning evaluation procedures could reduce economic activity (table 6.18). Cities that required PB hearings experienced a reduction in growth of about five permits per 1,000 population in a comprehensive model that included multiple planning variables. Although the result was not robust, cities with a presumption in favor of economic development experienced higher levels of economic growth in the single planning variable multiple regression model. Thus, limited support was found for Hypothesis No. 2 when planning procedures specified in local zoning codes were analyzed empirically. But many of these results were not robust or statistically significant when examined as part of a comprehensive multivariate empirical model.
| **Presumption favors development** | Increases economic activity by about 6.6 building permits per 1,000 population but this result was not robust. |
| **Requirement for PB hearing** | Requirement reduces economic activity by about 4.5 building permits per 1,000 population in comprehensive model. |
| **Notification for PB hearings** | Increase of 1 day increases housing unit growth by between 3 and 5 building permits per 1,000 population annually. |
| **Planning innovations** | Use of one additional innovation reduces average rezoning application processing times by 5 weeks |
| **Ballot-box zoning** | Reduces housing unit growth by 19 to 28 units per 1,000 population |

**TABLE 6.20:** *Summary of impacts of transaction-cost related variables.*

Further analysis of uncertainty in the planning process confirmed insights provided by the TC paradigm and provided support for Hypotheses Nos. 2 and 3. Cities that subjected zoning changes to public referenda experienced significantly lower levels of property development in the range of nineteen to twenty-eight housing units per 1,000 population. This result was robust over several time periods. The results also suggested communities that value principles other than efficiency may experience a growth penalty, providing indirect support for Hypothesis No. 5.
CHAP E R 7

TRANSACTION COSTS, ZONING AND
THE ARCHITECTURE OF LAND USE

This chapter further extends the empirical analysis in Chapter Six to test Hypotheses Nos. 2 and 3 from Chapter One (pages 15-7) through an analysis of a community's Architecture of Land Use (ALU).

- Higher planning-related transaction costs discourage the level of land development and economic growth.
- Uncertainty in the planning process can drive up transaction costs and reduce economic growth.

From a transaction-cost perspective, the critical issue is whether property development requires an administrative or political process for approval. Land developed for uses consistent with its underlying zoning district is usually processed administratively. The project will proceed as long as the developer obtains the necessary permits and approvals from an administrative agency (e.g., building department) using criteria specified in city ordinances and administrative procedures.
In most cases, the property owner has a legal right to develop the property for the specified use (as long as it conforms to the existing zoning classification).

If, on the other hand, the project involves land uses inconsistent with existing zoning -- changing from a residential use to a commercial use -- then permit approval is subjected to a legislative process. The developer's plan will be subject to public hearings and negotiations with local planning boards (PBs), Boards of Zoning Appeals (BZAs) and city councils. Administrative rules play a smaller role in this process, and approval may depend on broader, more general criteria such as community or public interest, estimated impacts on neighbors, and community attitudes. This was evident in Chapter Five where projects were modified extensively by staff and PB recommendations as a result of the public hearings and deliberations. Thus, legislative processes are inherently more uncertain and bargaining is more intensive. The "rules of the game" governing project approval are less concrete and more subjective in a legislative process.

7.1 Estimating the impact of ALU

Zoning codes from thirty-five Ohio cities were collected and analyzed to test the application of the transaction-cost paradigm within the context of the Architecture of Land Use. Demographic and fiscal data were collected for each of the cities as well. As in Chapter Six (see Section 6.1), the small sample size required adopting a parsimonious model that preserved degrees of freedom.
The general estimating model was defined in the following way:

\[
EG = \alpha + \beta_1\text{POPGRO} + \beta_2\text{DENSITY} + \beta_3\text{MFGEMP} - \beta_4\text{CLEVELAND} + \beta_5\text{COLUMBUS} + \beta_6\text{DISTRICTS} - \\
- \beta_7\text{USES} + \beta_8\text{MUNO} + \beta_9\text{MUUSES} + \epsilon
\]

Building permits per 1,000 population measured the level of economic activity in each city and was used as the dependent variable (EG) (table 7.1; see also Appendix B). Population growth between 1980 and 1990 (POPGRO) controls for the increase in the demand for housing. Population density (DENSITY) is used to control for amenities such as congestion within a local community, and the proportion of residents employed in the manufacturing sector (MFGEMP) controls for the economic base of the community. Dummy variables for whether the city was located in Cleveland or Columbus were included because almost half of the zoning codes used in the analysis were from Cuyahoga County, and Franklin County is a high growth region of the state.

Once again, the potential for misspecifying the model must be considered. Two factors that influence the complexity of local zoning are the age of the zoning code and the complexity of development patterns. Empirical evidence for the Dayton metropolitan area found that age was an important determinant of zoning district complexity (Dando 1989). Unfortunately, a survey of planning departments was unable to generate consistent data for a large enough sample of cities to incorporate these variables into the analysis (see also the discussion in Chapter Six, Section 6.3.2).

Zoning maps were obtained for several cities in the sample with the expectation of developing a measure of the complexity of land development. But this required
detailed historical knowledge of each community. Zoning maps provide a guide to
current and future development, but rarely provide information about the historical
nature of development within the zones. Some cities may zone an area for commercial
development, but the land itself may be vacant, or transitional (e.g., residential to
commercial). Indirectly, the independent variable DENSITY should capture some of
these effects since more dense urban environments are characterized by more complex
development patterns.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Expected Sign (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POPGRO</td>
<td>Population growth, 1980 to 1990</td>
<td>positive</td>
</tr>
<tr>
<td>DENSITY</td>
<td>Population density, 1992</td>
<td>negative</td>
</tr>
<tr>
<td>MFGEMP</td>
<td>Proportion of employment in manufacturing</td>
<td>negative</td>
</tr>
<tr>
<td>CLEVELAND</td>
<td>Dummy variable for whether city is in</td>
<td>unknown</td>
</tr>
<tr>
<td></td>
<td>Cuyahoga County</td>
<td></td>
</tr>
<tr>
<td>COLUMBUS</td>
<td>Dummy variable for whether city is in</td>
<td>positive</td>
</tr>
<tr>
<td></td>
<td>Franklin County</td>
<td></td>
</tr>
<tr>
<td>DISTRICTS</td>
<td>Total number of zoning districts in city</td>
<td>negative</td>
</tr>
<tr>
<td>USES</td>
<td>Maximum number of uses permitted in</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>a zoning district</td>
<td></td>
</tr>
<tr>
<td>RNO</td>
<td>Total number of residential districts</td>
<td>negative</td>
</tr>
<tr>
<td>RUSES</td>
<td>Maximum number of uses permitted in</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>a residential district</td>
<td></td>
</tr>
<tr>
<td>MUNO</td>
<td>Total number of mixed use districts</td>
<td>negative</td>
</tr>
<tr>
<td>MUUSES</td>
<td>Maximum number of uses permitted in</td>
<td>positive</td>
</tr>
<tr>
<td></td>
<td>a mixed use district</td>
<td></td>
</tr>
<tr>
<td>CNO</td>
<td>Total number of commercial districts</td>
<td>negative</td>
</tr>
<tr>
<td>CUSES</td>
<td>Maximum number of uses permitted in</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>a commercial district</td>
<td></td>
</tr>
<tr>
<td>INO</td>
<td>Total number of industrial districts</td>
<td>negative</td>
</tr>
<tr>
<td>IUSES</td>
<td>Maximum number of uses permitted in</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>an industrial district</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Data for median household income and population growth from U.S. Bureau of the Census, 1990. Data for transportation spending and debt from the Ohio Public Expenditure Council, *City Government Finances in Ohio* (Columbus, OH: OPEC). Data on referenda and initiatives from Ohio Secretary of State.

**TABLE 7.1:** Description of variables in zoning code regression models
The cities in the sample are large relative to previous analyses, averaging more than 65,000 people (table 7.2). Nonetheless, they constitute a varied group, ranging from cities with under 9,000 to 643,000. (Major cities in the sample included Cleveland, Columbus, Cincinnati, Dayton and Akron.) The average population growth of the cities in the study was 7.5 percent between 1980 and 1990, ranging from a decline of 11.9 percent to growth of 54.4 percent. Population densities for the cities also varied, ranging from less than 1,000 people per square mile to 6,600, and averaging about 3,000 people per square mile. About 17.4 percent of local residents were employed in the manufacturing sector, but this ranged from less than 10 percent to almost one quarter of the population.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=32)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population (1992)</td>
<td>65,281</td>
<td>138,150</td>
<td>8,492</td>
<td>643,000</td>
</tr>
<tr>
<td>Population Growth (%)</td>
<td>7.46</td>
<td>17.73</td>
<td>-11.89</td>
<td>54.44</td>
</tr>
<tr>
<td>Density</td>
<td>3,121</td>
<td>1,608</td>
<td>617</td>
<td>6,580</td>
</tr>
<tr>
<td>Mfg Employment (%)</td>
<td>17.42</td>
<td>4.57</td>
<td>8.49</td>
<td>24.49</td>
</tr>
</tbody>
</table>

**TABLE 7.2: Descriptive statistics for control variables**
Population growth is included in the basic model because the lagged impact of population growth should have significant impacts on current building activity. Including population growth, however, meant adjusting for heteroskedasticity. The models were estimated using generalized least squares (GLS), transforming the equation by assigning population growth to the P Matrix. Unfortunately, as the following sections detail, population growth was not consistently significant (statistically) in the transformed models. Since the lagged impact of population growth is an important explanatory variable a priori, it was retained in the models.

ALU was measured in two ways. First, the number of zones in a community was calculated. In general, the more zones a community had, the more likely their zones were targeted toward narrower classes of land uses. For example, communities with fewer commercial zones were more likely to have zones that included a broader range of uses. Thus, the more zones, the more restrictive land development would be, and the more likely a developer would need to rezone property for its intended use. The number of zones, then, should be negatively related to the number of building permits issued per 1,000 population.

---

1 In preliminary ordinary least squares (OLS) regressions, population growth was consistently a significant predictor of development activity.

2 Other variables were also used to transform the model. Transforming the model using population density resulted in lower overall model performance (although population growth retained its statistical significance). The model was also transformed using the number of zoning districts and the maximum number of uses. In these cases, the number of zoning districts was not statistically significant ($\beta = -0.463$, $t = -0.86$) nor was the number of uses ($\beta = -0.036$, $t = -1.14$).
The second measure was the number of uses permitted within a zone. Typically, some land uses are designated "as of right" or "always permitted use." These land uses are permitted at any time within the zone and are usually handled administratively without public hearings. An alternative designation is "conditional use." These are uses requiring PB approval. In many cases, uses are designated as "conditional" when planners and PBs want to exercise more control over the design, location, and quality of the particular use (e.g., convenience stores in a predominantly residential district). In principle, the more uses allowed in a zone, the less likely land development will require detailed PB or city council approval.

The number of zoning districts and designated land uses within zones varied significantly within the sample. The fewest number of zoning districts was eight but one city's zoning code identified thirty-five separate districts (table 7.3). The average number of zoning districts was seventeen. Breaking the zoning districts down by land-use subcategories, the cities in the sample averaged 7.3 residential districts, 5.0 commercial districts, 1.9 industrial districts, and 1.2 mixed use districts. All cities had at least one zoning district, while some cities did not have any commercial districts, industrial districts or mixed-use districts.

When the cities were analyzed by the number of uses specified in their zoning ordinance, variations within the sample appeared to be significant. The minimum number of uses specified in the zoning code was twenty-seven overall. The maximum number was 368. Inspection of the zoning codes revealed that each city defined uses differently. Some cities, such as Upper Arlington, identified uses with very specific,
technical language. In other cities, uses were defined generally. Rather than
designating specific types of professional offices (e.g., doctors, lawyers, real estate
agents, or accountants), the codes used broad language such as "professional offices."
In several cases, language was inserted to allow any other use consistent with the listed
use or considered appropriate by the local PB. Generally, zoning codes with fewer
land-use designations used more general language to define uses within the zone.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of Districts</td>
<td>17.28</td>
<td>5.49</td>
<td>8.00</td>
<td>35.00</td>
</tr>
<tr>
<td>Max. No. of Uses</td>
<td>116.28</td>
<td>77.12</td>
<td>27.00</td>
<td>368.0</td>
</tr>
<tr>
<td>No. of Residential Districts</td>
<td>7.25</td>
<td>2.50</td>
<td>3.00</td>
<td>16.00</td>
</tr>
<tr>
<td>Max. No. of Resid. Uses</td>
<td>13.47</td>
<td>7.42</td>
<td>2.00</td>
<td>30.00</td>
</tr>
<tr>
<td>No. of Mixed Districts</td>
<td>1.22</td>
<td>1.39</td>
<td>0.00</td>
<td>6.0</td>
</tr>
<tr>
<td>Max. No. of Mixed Uses</td>
<td>22.06</td>
<td>29.46</td>
<td>0.00</td>
<td>94.00</td>
</tr>
<tr>
<td>No. of Comm. Districts</td>
<td>5.03</td>
<td>2.12</td>
<td>0.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Max. No. of Comm. Uses</td>
<td>46.97</td>
<td>31.8</td>
<td>13</td>
<td>164.0</td>
</tr>
<tr>
<td>No. of Industrial Districts</td>
<td>1.94</td>
<td>1.37</td>
<td>0.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Max. No. of Indus. Uses</td>
<td>33.78</td>
<td>37.79</td>
<td>0.00</td>
<td>142.0</td>
</tr>
</tbody>
</table>

TABLE 7.3: Descriptive statistics for zoning variables

3Uses, for example, were defined according to Standard Industrial Classification
(SIC) codes issued by the U.S. Department of Commerce.
This created a paradox: more restrictive cities tended to have more uses specified in their zoning codes while more permissive cities tended to adopt general language and specify fewer uses. General language often accommodates a wider and more varied range of uses. Thus, the variable USES, which measures the number of uses permitted within the zone, should be inversely (negatively) related to building-permit growth, reflecting these permissive definitions of use.

Commercial zones often contained the largest number of uses specified in the zoning district. The average number of uses in commercial districts was 46.9, but they ranged from just 13 to 164. The large number reflects the pyramidal feature of many zoning codes.4

Most zoning codes also included mixed-use zones which allowed for a variety of residential, commercial, and industrial uses. The most common type of mixed-use zone permitted the co-existence of residential and commercial uses in a neighborhood or downtown district. Since mixed-use districts permit a wider variety of land uses, the number of mixed-use districts (MUNO) should be positively correlated with the level of building permit activity. Similarly, the number of uses (MUUSES) should be

Pyramidal zoning codes allow uses in higher (more restrictive) zones to be used in lower (less restrictive zones). In a completely pyramidal zoning system, the highest and most restrictive zoning category is single-family residential. As zoning designations move down the zoning "pyramid" to commercial and industrial uses, the base of the pyramid expands as more uses are added. So, in residential zones, only residential uses may be permitted. In commercial districts, the next step down in the zoning pyramid, residential and commercial uses may be allowed. At the lowest level, industrial districts, virtually any type of land use may be permitted. The cumulative impact of a pyramidal structure to a zoning code could be districts with hundreds of permitted uses in some districts (e.g., heavy industrial districts).
negatively related to building permit activity to account for the more general language specifying uses in these districts.

The number of zones and uses were calculated for total building permits, residential permits, commercial permits, and industrial permits (table 7.4). Cities in the sample averaged 893 building permits over the four-year period, mostly in the residential market. While the average number of single-family building permits issued was 773, one city reported more than 9,000 units added between 1990 to 1994. In contrast, cities issued about fifty commercial building permits on average during the same period. The impacts of zoning procedures and processes then will impact development activity primarily through its impact on the residential housing market.

The number of building permits issued per 1,000 population between 1990 and 1994 was used as the dependent variable as a measure of economic growth. This helped adjust for the effects of scale in analyzing economic development activity. Estimating equations were run for total building permit activity, residential building permit activity, commercial building permit activity, and industrial building permit activity. The models were estimated using GLS procedures to account for heteroskedasticity.
### TABLE 7.4: Descriptive statistics for building permit variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of Permits</td>
<td>893.88</td>
<td>2,081.00</td>
<td>15</td>
<td>11,783</td>
</tr>
<tr>
<td>Single Family Permits</td>
<td>773.12</td>
<td>1,744.10</td>
<td>4</td>
<td>9,784</td>
</tr>
<tr>
<td>Multifamily Permits</td>
<td>60.19</td>
<td>202.02</td>
<td>0</td>
<td>1,154</td>
</tr>
<tr>
<td>Commercial Permits</td>
<td>50.53</td>
<td>119.47</td>
<td>1</td>
<td>683</td>
</tr>
<tr>
<td>Industrial Permits</td>
<td>10.03</td>
<td>29.44</td>
<td>0</td>
<td>162</td>
</tr>
</tbody>
</table>

The results for total building permit activity are reported in table 7.5. Two models were estimated independently to test the general, or global, structure of the ordinance: the total number of districts and the total number of uses in these cities. Both models explain more than three quarters of the variation in building-permit activity in the cities. As expected, population density was negatively related to the level of building permit activity, suggesting that economic growth was more evident in less dense areas. The concentration of jobs in manufacturing is unexpectedly positive. This result, however, is consistent with the belief that manufacturing wages and incomes still drive much of Ohio's economy. Whether a city is in Cuyahoga County (CLEVELAND) was not significantly related to building permit activity. Whether a city was in Franklin County (COLUMBUS) was significant, suggesting regional growth factors may contribute to a city’s level of building activity.
<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 32)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Growth</td>
<td>-0.0429</td>
<td>0.2888</td>
<td>0.238</td>
</tr>
<tr>
<td></td>
<td>(-0.116)</td>
<td>(0.793)</td>
<td>(0.636)</td>
</tr>
<tr>
<td>Density</td>
<td>-15.027</td>
<td>-10.251</td>
<td>-11.379</td>
</tr>
<tr>
<td></td>
<td>(-2.693)***</td>
<td>(-1.943)*</td>
<td>(-2.049)*</td>
</tr>
<tr>
<td>Mfg. employ (%)</td>
<td>8.912</td>
<td>8.482</td>
<td>8.05</td>
</tr>
<tr>
<td></td>
<td>(3.879)***</td>
<td>(4.035)***</td>
<td>(3.649)***</td>
</tr>
<tr>
<td>Cleveland</td>
<td>22.363</td>
<td>5.247</td>
<td>5.853</td>
</tr>
<tr>
<td></td>
<td>(0.872)</td>
<td>(0.208)</td>
<td>(0.23)</td>
</tr>
<tr>
<td>Columbus</td>
<td>122.99</td>
<td>106.39</td>
<td>104.55</td>
</tr>
<tr>
<td></td>
<td>(3.91)***</td>
<td>(3.479)***</td>
<td>(3.374)***</td>
</tr>
<tr>
<td>Total districts</td>
<td>-2.462</td>
<td>-1.016</td>
<td>-1.016</td>
</tr>
<tr>
<td></td>
<td>(-1.910)*</td>
<td>(-0.722)</td>
<td></td>
</tr>
<tr>
<td>Maximum uses</td>
<td>----</td>
<td>-0.206</td>
<td>-0.162</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.811)***</td>
<td>(-2.04)*</td>
</tr>
<tr>
<td>Constant</td>
<td>-86.814</td>
<td>-109.46</td>
<td>-81.219</td>
</tr>
</tbody>
</table>

Notes: Model transformed by assigning population growth to the P Matrix. Confidence levels for 25 degrees of freedom: *** for 98% confidence level, ** for 95% confidence level, and * for 10% significance level, using two-tailed tests. Critical values for F value F(6,25) are 2.49 for 5% significance level and 3.63 for 1% significance level.

TABLE 7.5: GLS estimates for impact of zoning code structure on building activity: total building permits, 1990-94
Both variables measuring ALU were statistically significant and the expected sign when estimated separately. In equation 1, for example, adding one more zoning district reduced the number of building permits by 10.6 per 1,000 population.

The interpretation of the maximum number of uses is less intuitive, but also important. A reduction in the number of uses specified in the zoning code increases the number of building permits although the magnitude of the impact is smaller. If the average number of uses is ten, for example, then a reduction in the number of uses to nine will result in an increase of six building permits per 1,000 population on average based on the results from equation 2. A more consistent interpretation would simply note that the adoption of general, rather than specific, language about uses tends to increase economic activity in cities. Again, this probably reflects the permissive nature of the general language used in the local zoning code.

When the two variables are included in a more comprehensive model (equation 3), total districts is no longer significant. Although the number of uses remains significant at the 90 percent level, the impact is smaller. For a city with a population of 65,000, this translates into a reduction of 71.3 building permits per year for each additional zoning district added to its code. The average city issued 893 building permits between 1990 and 1994, or 223 each year. The estimated reduction represents 32 percent of the total permits issued based on the results from equation 3.

These results, however, should be interpreted within the context of the multiple regression analysis. Regression analysis estimates each independent variable's impact on building activity holding all other variables constant. The other variables in the
model, as well as variables not included in the model, change continuously. The net impact depends on how these other factors balance each other. Table 7.6 illustrates these effects for the model estimating the variable TOTAL DISTRICTS and USES (equation 3 from table 7.5) and the consequences for a city of 65,281, the sample mean. The results are consistent with those obtained in Chapter Six for planning procedures.

Overall, the model predicts a net decline of 86 building permits compared to an actual increase of 223. The city's concentration in manufacturing employment has the largest statistical impact on building permit growth, adding 35 permits per 1,000 population annually. This translates into 2,288 building permits each year although these effects are offset by the constant. Population density, as in the case for zoning procedures in Chapter Six, reduced building permit activity by more than 500 building permits annually for the "average" city.

The impacts of the planning variables were relatively small. Adding one more zoning district reduced total building permits by 287 permits in the hypothetical city. This represents 24.4 percent of the decline in building permits among the independent variables specified in the model and 11.5 percent of the total decline. Adding one more use classification to the zoning code reduces building permit growth by 307 permits, representing 12.3 percent of the total decline.
<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Unit</th>
<th>β</th>
<th>Four Year Impact per 1,000</th>
<th>Annualized Impact Per 1,000</th>
<th>City of 65,281</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth</td>
<td>percent</td>
<td>0.238</td>
<td>1.78</td>
<td>0.44</td>
<td>29</td>
</tr>
<tr>
<td>Density*</td>
<td>people/mile</td>
<td>-11.379</td>
<td>-35.51</td>
<td>-8.88</td>
<td>-580</td>
</tr>
<tr>
<td>Mfg. employ*</td>
<td>percent</td>
<td>0.008</td>
<td>140.21</td>
<td>35.05</td>
<td>2,288</td>
</tr>
<tr>
<td>Cleveland</td>
<td>dummy</td>
<td>5.853</td>
<td>5.85</td>
<td>1.46</td>
<td>95</td>
</tr>
<tr>
<td>Columbus*</td>
<td>dummy</td>
<td>104.55</td>
<td>0.00</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>Total districts</td>
<td>number</td>
<td>-1.016</td>
<td>-17.56</td>
<td>-4.39</td>
<td>-287</td>
</tr>
<tr>
<td>Maximum uses*</td>
<td>number</td>
<td>-0.162</td>
<td>-18.84</td>
<td>-4.71</td>
<td>-307</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>-81.219</td>
<td>-81.22</td>
<td>-20.30</td>
<td>-1,325</td>
</tr>
</tbody>
</table>

Note: * indicates statistically significant variable in comprehensive estimating equation.

TABLE 7.6: Estimated impacts of variables in model from equation 3 for a city with characteristics of the sample mean

Once again, care should be taken when interpreting these results. Multiple regression estimates the impact of increasing each variable one unit holding all other variables constant. Since these variables change continuously, and refinement of the model could alter its specification, these results should not be considered definitive. Moreover, multicollinearity makes interpreting the variable impacts problematic.

As in the analysis with Chapter Six, the fact the model's estimated growth rate deviates significant from actual building permit growth suggests the results should be interpreted with caution. The cities of Cleveland Heights, Westerville, and Kettering were again used to compare the impacts of the regression coefficients for the model (table 7.7). The average annual growth for the entire sample of thirty-two cities was 5.8 building permits per 1,000 population with a standard deviation of 7.9 permits over
the four year period. The estimated impacts on overall economic growth were within one standard deviation for the sample mean, Westerville, and Kettering, but not Cleveland Heights. Once again, this suggests care should be taken in interpreting the results for any specific case.

7.2 Effects on residential, commercial and industrial development

The residential sector was the first subcategory of building permits analyzed. Six separate regressions were run, entering each of the variables measuring ALU separately. The use of sub-categories permitted a test of the global effects of zoning as well as specific types of zones. Testing the model on subsectors of the local economy has the additional benefit of assessing the way communities treat specific subcategories of land use and estimating the subsequent impact on the level of economic activity for sectors of the local economy.

All the models explain at least three quarters of the variation in residential building permit activity. The first two equations (table 7.8) examined the impact of the global structure of the zoning code, testing for the effects of the total number of zones and total number of uses specified in the zoning code. Another set of equations tested for the impacts of the number of residential zones and uses and the number of mixed use zones and permitted uses on economic activity. All variables were included in a comprehensive multivariate analysis (equation 8).
<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Sample Mean</th>
<th>Cleveland Heights</th>
<th>Westerville</th>
<th>Kettering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (1992)</td>
<td>65,281</td>
<td>53,300</td>
<td>32,500</td>
<td>60,200</td>
</tr>
<tr>
<td>Population Growth</td>
<td>0.44</td>
<td>-0.24</td>
<td>1.73</td>
<td>-0.06</td>
</tr>
<tr>
<td>Density*</td>
<td>-8.88</td>
<td>-18.72</td>
<td>-11.27</td>
<td>-9.16</td>
</tr>
<tr>
<td>Mfg. employ (%)*</td>
<td>35.05</td>
<td>24.95</td>
<td>23.54</td>
<td>42.46</td>
</tr>
<tr>
<td>Cleveland</td>
<td>1.46</td>
<td>1.46</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Columbus*</td>
<td>0.00</td>
<td>0.00</td>
<td>26.14</td>
<td>0.00</td>
</tr>
<tr>
<td>Total districts</td>
<td>-4.39</td>
<td>-3.56</td>
<td>-5.08</td>
<td>-3.05</td>
</tr>
<tr>
<td>Maximum uses*</td>
<td>-4.71</td>
<td>-5.51</td>
<td>-4.82</td>
<td>-6.89</td>
</tr>
<tr>
<td>Constant</td>
<td>-20.30</td>
<td>-20.30</td>
<td>-20.30</td>
<td>-20.30</td>
</tr>
</tbody>
</table>

| Actual building permit growth per 1,000 | 5.80 | 0.07 | 9.83 | 0.57 |
| Estimated permit growth per 1,000 population | -1.32 | -21.91 | 9.93 | 3.00 |
| Difference between actual and estimated permit growth | 7.12 | 21.98 | -0.10 | -2.43 |

Note: * indicates statistically significant variable in comprehensive estimating equation.

TABLE 7.7: Estimated versus actual impacts of zoning variables on total annual building permits per 1,000 population for the sample mean, Cleveland Heights, Westerville, and Kettering
<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth</td>
<td>-0.089</td>
<td>0.2510</td>
<td>0.1422</td>
<td>0.1594</td>
</tr>
<tr>
<td></td>
<td>(-0.244)</td>
<td>(0.701)</td>
<td>(0.610)</td>
<td>(0.563)</td>
</tr>
<tr>
<td></td>
<td>(-2.596)***</td>
<td>(-1.834)*</td>
<td>(-3.586)***</td>
<td>(-3.259)***</td>
</tr>
<tr>
<td>Mfg. employ (%)</td>
<td>8.7541</td>
<td>8.2651</td>
<td>5.0048</td>
<td>4.9686</td>
</tr>
<tr>
<td></td>
<td>(3.836)***</td>
<td>(3.996)***</td>
<td>(3.27)***</td>
<td>(3.115)***</td>
</tr>
<tr>
<td>Cleveland</td>
<td>22.804</td>
<td>5.0477</td>
<td>7.640</td>
<td>6.7604</td>
</tr>
<tr>
<td></td>
<td>(0.895)</td>
<td>(0.203)</td>
<td>(0.473)</td>
<td>(0.370)</td>
</tr>
<tr>
<td>Columbus</td>
<td>120.52</td>
<td>103.07</td>
<td>84.924</td>
<td>83.283</td>
</tr>
<tr>
<td></td>
<td>(3.857)***</td>
<td>(3.425)***</td>
<td>(3.175)***</td>
<td>(3.279)***</td>
</tr>
<tr>
<td>Total districts</td>
<td>-2.466</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>(-1.926)*</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Maximum uses</td>
<td>-----</td>
<td>-0.1956</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>-----</td>
<td>(-2.932)***</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Residential districts</td>
<td>-----</td>
<td>-----</td>
<td>-8.0906</td>
<td>-8.0889</td>
</tr>
<tr>
<td></td>
<td>-----</td>
<td>-----</td>
<td>(-6.899)***</td>
<td>(-6.76)***</td>
</tr>
<tr>
<td>Maximum Uses in residential districts</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-0.0725</td>
</tr>
<tr>
<td></td>
<td>-----</td>
<td>-----</td>
<td>(-0.112)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-87.151</td>
<td>-108.04</td>
<td>4.4556</td>
<td>6.471</td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>25</td>
<td>24</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.754</td>
<td>0.790</td>
<td>0.903</td>
<td>0.899</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>16.864***</td>
<td>20.444***</td>
<td>49.015***</td>
<td>40.355***</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>2.325</td>
<td>2.153</td>
<td>2.456</td>
<td>2.450</td>
</tr>
</tbody>
</table>

(continued)

TABLE 7.8: GLS estimates for impact of zone types on building permit activity per 1,000 population: residential units, 1990-94

266
<table>
<thead>
<tr>
<th>Variables</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth</td>
<td>-0.0036</td>
<td>0.7566</td>
<td>0.5579</td>
<td>0.4669</td>
</tr>
<tr>
<td></td>
<td>(-0.01)</td>
<td>(2.066)**</td>
<td>(1.963)*</td>
<td>(1.372)</td>
</tr>
<tr>
<td></td>
<td>(-2.012)**</td>
<td>(-1.631)</td>
<td>(-2.982)**</td>
<td>(-2.30)**</td>
</tr>
<tr>
<td>Mfg. employ (%)</td>
<td>11.237</td>
<td>9.1424</td>
<td>4.7604</td>
<td>4.3674</td>
</tr>
<tr>
<td></td>
<td>(5.382)**</td>
<td>(5.095)***</td>
<td>(3.095)***</td>
<td>(2.707)***</td>
</tr>
<tr>
<td>Cleveland</td>
<td>28.668</td>
<td>0.0470</td>
<td>-5.3972</td>
<td>-5.0624</td>
</tr>
<tr>
<td></td>
<td>(1.133)</td>
<td>(0.213)</td>
<td>(-0.3225)</td>
<td>(-0.325)</td>
</tr>
<tr>
<td>Columbus</td>
<td>140.43</td>
<td>101.45</td>
<td>71.555</td>
<td>64.918</td>
</tr>
<tr>
<td></td>
<td>(4.648)***</td>
<td>(3.785)***</td>
<td>(3.034)***</td>
<td>(2.93)***</td>
</tr>
<tr>
<td>Total districts</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>4.0195</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(2.97)***</td>
</tr>
<tr>
<td>Maximum uses</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>-0.0791</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-0.565)</td>
</tr>
<tr>
<td>Residential districts</td>
<td>---</td>
<td>---</td>
<td>-6.7803</td>
<td>-11.610</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-5.27)***</td>
<td>(-4.69)***</td>
</tr>
<tr>
<td>Maximum uses in residential districts</td>
<td>---</td>
<td>---</td>
<td>0.0481</td>
<td>-0.4642</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.083)</td>
<td>(0.588)</td>
</tr>
<tr>
<td>Mixed use districts</td>
<td>-8.7974</td>
<td>5.0822</td>
<td>7.28</td>
<td>1.493</td>
</tr>
<tr>
<td></td>
<td>(-1.852)*</td>
<td>(0.941)</td>
<td>(1.932)*</td>
<td>(0.35)</td>
</tr>
<tr>
<td>Maximum uses in mixed use districts</td>
<td>---</td>
<td>-0.5987</td>
<td>-0.3579</td>
<td>0.0078</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-3.689)***</td>
<td>(-2.942)***</td>
<td>(0.026)</td>
</tr>
<tr>
<td>Constant</td>
<td>-190.28</td>
<td>-153.58</td>
<td>-6.1379</td>
<td>-25.249</td>
</tr>
</tbody>
</table>

Notes: Model transformed by assigning population growth to the P Matrix. Confidence levels for 25 degrees of freedom: *** indicates significance at the 98% confidence level, ** for 95% confidence level, and * for 10% significance level, using two-tailed tests. Critical values for F value F(6,25) are 2.49 for 5% significance level and 3.63 for 1% significance level.

TABLE 7.8: GLS estimates for impact of zone types on building permit activity per 1,000 population: residential units, 1990-94
The general model results are similar to the estimates for total building permit activity. This result is not surprising since residential building activity is a significant component of total development activity in these cities. The most important explanatory variables were population density, the city's concentration of employment in manufacturing, and whether the city was located in the Columbus region. Clearly, geography once again played an important role in determining residential economic growth. Density exerted a negative impact on population growth, as residential building activity took place in less dense areas (although population density is insignificant in equation four).

The planning-related variables had mixed effects and impacts. The total number of zoning districts and number of uses were statistically significant for residential building permit activity and had the expected signs. The magnitude of impact was close to the estimates for the more general model, suggesting the general structure of zoning in communities impacts residential growth. This, of course, is likely since most of the building permit growth occurred in the residential sector (see table 7.4). However, the sign on total number of districts changed from negative (equation 1) to positive (equation 8). This paradox may be resolved by examining the effects of residential districts on economic growth.

The number of residential districts also significantly impacted building activity in these cities. As the number of residential districts increased, the level of building activity fell (equations 3, 4, 7 and 8). In the comprehensive multivariate model, an increase of one residential zone was associated with an annual decline of twenty-one
building permits per 1,000 population. An increase in the number of residential zones has the predicted impact while an increase in the total number of zones does not. This probably may reflect the fact the total number of districts includes commercial, industrial, and mixed-use zones. Thus, when land uses for residential development are defined narrowly, transaction costs for residential development increase, reducing levels of residential building activity. The positive sign on TOTAL DISTRICTS may suggest that residential growth is positively associated with a more diverse or complex development patterns. Rather than looking for communities with narrowly defined land uses, such as exclusive residential bedroom communities, residential development is attracted by commercial uses as well.

This interpretation is somewhat weakened by the results from the number of mixed-use zoning districts. While this variable was statistically significant in equation five, it had an unexpectedly negative impact on residential building growth. In fact, the magnitude of the impact was similar to the impact for residential zones. This may suggest that residential development is attracted to communities with a diverse land use pattern, but new housing development avoids close proximity to non-residential uses within the community. The number of mixed-use districts became positive, although statistically insignificant, in the more inclusive regression models.

While this may have been a result of relatively few mixed-used residential districts in the sample, the number of land uses in these districts was statistically significant and the expected sign. Once again, as the number of uses declined in mixed-use districts, the rate of building activity increased. The relative impact of the
number of uses, as measured by the regression coefficient, was half the level estimated in the model for total districts. Thus, overall, the results of the model for residential growth tend to support the transaction-cost theory of planning and urban development.

The impact of planning related variables can be seen by calculating the impact of each variable on residential building permits for a city with the characteristics of the sample mean (table 7.9). The estimates are derived from table 7.8, equation 8. Overall, the model predicts a net increase of 1,067 building permits for a city with 65,281 people. Five variables combine to produce a reduction of 2,437 residential building permits annually. More than half, 56.4 percent, of the decline is attributable to the number of residential districts. The number of mixed-use districts was associated with a small increase in residential building units, but this variable was not statistically significant. Six variables contribute to an increase of 3,504, although the growth is spread relatively evenly among the city’s concentration in manufacturing employment, whether the city is located in Columbus, and the total number of districts. Combined, these three variables account for 97.8 percent of the increasing in building permits.

Once again, the average increase in building permits differs significantly from the predicted value from the model. The actual average annual growth is 341 residential building permits per year, less than one third the level estimated by the model.

Regression analysis, however, does not allow for a direct, precise comparison of the effects of specific variables within models or between models. Thus, comparisons should be made cautiously.
The three comparison cities of Cleveland Heights, Westerville, and Kettering (see Chapter Six) were used again to gauge the general plausibility of the model (table 7.10). The actual average annual increase in residential building permits derived from the sample is 5.23 per 1,000 population with a standard deviation of 7.5. Importantly, the model's estimated growth in residential building permits based on the sample mean is 16.34 annually, a difference that exceeds one standard deviation. The difference between the actual and estimated growth also differs by more than one standard deviation for Cleveland Heights as well. The differences for Westerville and Kettering, on the other hand, fall within one standard deviation.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Unit</th>
<th>β</th>
<th>Impact</th>
<th>Annualized</th>
<th>City of 65,281</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pop. Growth</td>
<td>percent</td>
<td>0.4669</td>
<td>2.75</td>
<td>0.69</td>
<td>45</td>
</tr>
<tr>
<td>Density*</td>
<td>people/mile</td>
<td>-7.7156</td>
<td>-24.44</td>
<td>-6.11</td>
<td>-399</td>
</tr>
<tr>
<td>Mfg. employ*</td>
<td>percent</td>
<td>4.367</td>
<td>75.55</td>
<td>18.89</td>
<td>1,233</td>
</tr>
<tr>
<td>Cleveland</td>
<td>dummy</td>
<td>-5.0624</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Columbus*</td>
<td>dummy</td>
<td>64.918</td>
<td>64.92</td>
<td>16.23</td>
<td>1,060</td>
</tr>
<tr>
<td>Total districts*</td>
<td>number</td>
<td>4.0195</td>
<td>69.42</td>
<td>17.36</td>
<td>1,133</td>
</tr>
<tr>
<td>Maximum uses</td>
<td>number</td>
<td>-0.0791</td>
<td>-9.20</td>
<td>-2.30</td>
<td>-150</td>
</tr>
<tr>
<td>Residential districts*</td>
<td>number</td>
<td>-11.610</td>
<td>-84.17</td>
<td>-21.04</td>
<td>-1,374</td>
</tr>
<tr>
<td>Maximum uses in</td>
<td>number</td>
<td>-0.4642</td>
<td>-6.25</td>
<td>-1.56</td>
<td>-102</td>
</tr>
<tr>
<td>residential districts</td>
<td></td>
<td>1.493</td>
<td>1.82</td>
<td>0.46</td>
<td>30</td>
</tr>
<tr>
<td>Mixed use districts</td>
<td>number</td>
<td>0.0078</td>
<td>0.17</td>
<td>0.04</td>
<td>3</td>
</tr>
<tr>
<td>Maximum uses in</td>
<td>number</td>
<td>-25.249</td>
<td>-25.25</td>
<td>-6.31</td>
<td>-412</td>
</tr>
<tr>
<td>mixed use dist.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>-25.249</td>
<td>-25.25</td>
<td>-6.31</td>
<td>-412</td>
</tr>
</tbody>
</table>

Notes: * indicates statistically significant variable in comprehensive equation.

**TABLE 7.9:** Estimated impacts of variables in residential building unit model from equation 8 for a city with characteristics of sample mean in Columbus area

271
<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Sample Mean</th>
<th>Cleveland Heights</th>
<th>Westerville</th>
<th>Kettering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (1992)</td>
<td>65,281</td>
<td>53,300</td>
<td>32,500</td>
<td>60,200</td>
</tr>
<tr>
<td>Population Growth</td>
<td>0.69</td>
<td>-0.48</td>
<td>3.39</td>
<td>-0.11</td>
</tr>
<tr>
<td>Density*</td>
<td>-6.11</td>
<td>-12.69</td>
<td>-7.64</td>
<td>-6.21</td>
</tr>
<tr>
<td>Mfg. employ (%)*</td>
<td>18.89</td>
<td>13.54</td>
<td>12.77</td>
<td>23.04</td>
</tr>
<tr>
<td>Cleveland</td>
<td>0.00</td>
<td>-1.27</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Columbus*</td>
<td>16.23</td>
<td>0.00</td>
<td>16.23</td>
<td>0.00</td>
</tr>
<tr>
<td>Total districts</td>
<td>17.36</td>
<td>14.07</td>
<td>20.10</td>
<td>12.06</td>
</tr>
<tr>
<td>Maximum uses*</td>
<td>-2.30</td>
<td>-2.69</td>
<td>-2.35</td>
<td>-3.36</td>
</tr>
<tr>
<td>Residential districts</td>
<td>-21.04</td>
<td>-20.32</td>
<td>-23.22</td>
<td>-20.32</td>
</tr>
<tr>
<td>Residential uses</td>
<td>-1.56</td>
<td>-2.55</td>
<td>-1.16</td>
<td>-1.97</td>
</tr>
<tr>
<td>Mixed-use districts</td>
<td>0.46</td>
<td>2.24</td>
<td>0.37</td>
<td>0.37</td>
</tr>
<tr>
<td>Mixed-use uses</td>
<td>0.04</td>
<td>0.11</td>
<td>0.02</td>
<td>0.15</td>
</tr>
<tr>
<td>Constant</td>
<td>-6.31</td>
<td>-6.31</td>
<td>-6.31</td>
<td>-6.31</td>
</tr>
</tbody>
</table>

| Actual residential permit growth per 1,000 pop | 5.23 | 0.02 | 9.43 | 0.36 |
| Estimated permit growth per 1,000 pop.        | 16.34 | -16.35 | 12.20 | -2.67 |

| Difference between actual and estimated permit growth | -11.11 | -16.37 | -2.77 | -3.03 |

Note: * indicates statistically significant variable in comprehensive estimating equation.

**TABLE 7.10:** Estimated versus actual impacts of zoning variables on annual residential building permits per 1,000 population for the sample mean, Cleveland Heights, Westerville, and Kettering
The results suggest, once again, caution should be used interpreting the results of the model. The estimates of the planning variables on economic growth cannot be determined with precision, and alternative models combined with a larger sample size may yield more precise estimates.

An examination of commercial building permits provided less support for the TC theory of planning and urban development (table 7.11). Population growth and population density apparently drive much of the variation in commercial building activity. For the most part, however, the structural models performed poorly. Although they captured more than 40 percent of variation in commercial building permit activity, the planning-related variables were not statistically significant. None of the planning-related variables appeared to have statistically significance.⁶

Planning-related variables seemed to have more influence over industrial building permit activity (table 7.12). These models also captured about 40 percent of the variation in industrial building permit activity. Generally, population density, manufacturing employment, and whether the city was located in the Cleveland area exerted the most powerful effects on industrial activity. In each case, industrial activity tended to be lower in cities with higher population densities, higher concentrations of manufacturing employment, and close proximity to Cleveland.

While industrial activity was not related to the total number of districts or uses, ⁶

---

⁶This is puzzling. The generally poor performance of the variables in the model and relatively high $R^2$ suggests the presence of strong multicollinearity. An examination of the partial correlation coefficients indicates that the independent variables are not significantly related to each other.
it was positively correlated with the number of industrial and mixed-use districts (table 7.12). An increase in the number of industrial uses was negatively correlated with industrial building permit activity, as expected, but not significant with respect to land uses in mixed-use districts. The positive relationship may have been a reflection of the fact industrial zones already tended to allow a wide range of mixed uses and may also have vacant or developable land. Many industrial districts may be considered mixed use because of the wide range of uses permitted as of right. The magnitude of the impacts, however, was small, a reflection of the small average number of industrial permits approved during this period.

In sum, the models provide evidence consistent with the TC theory of urban planning and growth, particularly for overall growth and residential development. Little evidence, however, suggests the TC approach to zoning codes is important for explaining either commercial or industrial growth within these communities.
<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth</td>
<td>0.0157</td>
<td>0.0156</td>
<td>0.0169</td>
<td>0.017</td>
</tr>
<tr>
<td></td>
<td>(2.009)**</td>
<td>(2.018)**</td>
<td>(2.15)**</td>
<td>(2.12)**</td>
</tr>
<tr>
<td>Density</td>
<td>-0.1950</td>
<td>-0.1963</td>
<td>-0.1679</td>
<td>-0.1656</td>
</tr>
<tr>
<td></td>
<td>(-2.895)**</td>
<td>(-2.884)**</td>
<td>(-2.224)**</td>
<td>(-2.141)**</td>
</tr>
<tr>
<td>Mfg. employ (%)</td>
<td>0.0063</td>
<td>0.0058</td>
<td>0.0012</td>
<td>-0.0005</td>
</tr>
<tr>
<td></td>
<td>(0.293)</td>
<td>(0.275)</td>
<td>(0.056)</td>
<td>(-0.023)</td>
</tr>
<tr>
<td>Cleveland</td>
<td>0.0217</td>
<td>0.0378</td>
<td>-0.0180</td>
<td>-0.0605</td>
</tr>
<tr>
<td></td>
<td>(0.072)</td>
<td>(0.120)</td>
<td>(-0.060)</td>
<td>(-0.18)</td>
</tr>
<tr>
<td>Columbus</td>
<td>0.0381</td>
<td>-0.0280</td>
<td>-0.1802</td>
<td>-0.2385</td>
</tr>
<tr>
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<td>(0.01)</td>
<td>(-0.072)</td>
<td>(-0.427)</td>
<td>(-0.504)</td>
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<td>Total districts</td>
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<td>-----</td>
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<td></td>
<td>(-0.052)</td>
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<td></td>
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</tr>
<tr>
<td>Maximum uses</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(0.138)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial districts</td>
<td>-----</td>
<td>-----</td>
<td>0.0338</td>
<td>0.0377</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.746)</td>
<td>(0.785)</td>
</tr>
<tr>
<td>Maximum uses in</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-0.0009</td>
</tr>
<tr>
<td>commercial districts</td>
<td></td>
<td></td>
<td></td>
<td>(-0.298)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.3550</td>
<td>1.3243</td>
<td>1.2291</td>
<td>1.3172</td>
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<tr>
<td>Degrees of freedom</td>
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<td>25</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.446</td>
<td>0.446</td>
<td>0.458</td>
<td>0.438</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>5.159***</td>
<td>5.165</td>
<td>5.366***</td>
<td>4.444***</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.615</td>
<td>1.64</td>
<td>1.788</td>
<td>1.774</td>
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</table>

(continued)

TABLE 7.11: GLS estimates for impact of zone types on building permit activity per 1,000 population: commercial units, 1990-94

275
<table>
<thead>
<tr>
<th>Variables</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
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<tbody>
<tr>
<td>Population Growth</td>
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<tr>
<td></td>
<td>(1.624)</td>
<td>(1.68)</td>
<td>(1.873)*</td>
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<tr>
<td>Density</td>
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<td>-0.2294</td>
<td>-0.2158</td>
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<tr>
<td></td>
<td>(-2.679)**</td>
<td>(-2.744)**</td>
<td>(-2.356)**</td>
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<tr>
<td>Mfg. employ (%)</td>
<td>0.0126</td>
<td>0.0112</td>
<td>0.0166</td>
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<td></td>
<td>(0.524)</td>
<td>(0.463)</td>
<td>(0.511)</td>
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<td>Cleveland</td>
<td>0.0521</td>
<td>-0.0396</td>
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<tr>
<td></td>
<td>(0.174)</td>
<td>(-0.124)</td>
<td>(-0.392)</td>
</tr>
<tr>
<td>Columbus</td>
<td>0.1013</td>
<td>-0.0483</td>
<td>-0.1933</td>
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<tr>
<td></td>
<td>(0.222)</td>
<td>(-0.0993)</td>
<td>(-0.338)</td>
</tr>
<tr>
<td>Total districts</td>
<td>----</td>
<td>----</td>
<td>-0.05 (-1.388)</td>
</tr>
<tr>
<td>Maximum uses</td>
<td>----</td>
<td>----</td>
<td>0.0007 (0.277)</td>
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<tr>
<td>Commercial districts</td>
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<td>----</td>
<td>0.1034 (1.514)</td>
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<tr>
<td>Maximum uses in commercial</td>
<td>----</td>
<td>----</td>
<td>0.0032 (0.478)</td>
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<tr>
<td>districts</td>
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<td></td>
</tr>
<tr>
<td>Mixed use districts</td>
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<td>0.1432</td>
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<tr>
<td></td>
<td>(0.555)</td>
<td>(0.940)</td>
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<td>----</td>
<td>-0.0035</td>
<td>-0.0068</td>
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<tr>
<td>use districts</td>
<td></td>
<td>(-0.900)</td>
<td>(-1.208)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.529</td>
<td>1.445</td>
<td>1.501</td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>25</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.453</td>
<td>0.449</td>
<td>0.422</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>5.273***</td>
<td>4.601***</td>
<td>3.055**</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.686</td>
<td>1.662</td>
<td>1.895</td>
</tr>
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</table>

Notes: Model transformed by assigning population growth to the P Matrix. Confidence levels for 25 degrees of freedom: *** indicates significance at the 98% confidence level, ** for 95% confidence level, and * for 10% significance level, using two-tailed tests. Critical values for F value F(6,25) are 2.49 for 5% significance level and 3.63 for 1% significance level.

TABLE 7.11: GLS estimates for impact of zone types on building activity per 1,000 population: commercial units, 1990-94

276
<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
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<tbody>
<tr>
<td>(N=32)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Growth</td>
<td>-0.0003</td>
<td>0.0002</td>
<td>-0.0009</td>
<td>-0.0031</td>
</tr>
<tr>
<td></td>
<td>(-0.122)</td>
<td>(0.073)</td>
<td>(-0.383)</td>
<td>(-1.286)</td>
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<tr>
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<td>-0.0376</td>
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<td>-0.0371</td>
<td>-0.0300</td>
</tr>
<tr>
<td></td>
<td>(-1.866)*</td>
<td>(-2.129)**</td>
<td>(-1.946)*</td>
<td>(-1.622)</td>
</tr>
<tr>
<td>Mfg. employ (%)</td>
<td>0.0009</td>
<td>0.0017</td>
<td>-0.0088</td>
<td>-0.0098</td>
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<tr>
<td></td>
<td>(0.145)</td>
<td>(0.257)</td>
<td>(-1.167)</td>
<td>(-1.362)</td>
</tr>
<tr>
<td>Cleveland</td>
<td>-0.075</td>
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<td>-0.0823</td>
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</tr>
<tr>
<td></td>
<td>(-0.836)</td>
<td>(-0.599)</td>
<td>(-0.974)</td>
<td>(-1.056)</td>
</tr>
<tr>
<td>Columbus</td>
<td>-0.0733</td>
<td>-0.0411</td>
<td>-0.1645</td>
<td>-0.1363</td>
</tr>
<tr>
<td></td>
<td>(-0.643)</td>
<td>(-0.343)</td>
<td>(-1.432)</td>
<td>(-1.237)</td>
</tr>
<tr>
<td>Total districts</td>
<td>0.0079</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>(1.697)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum uses</td>
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<td>-----</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.198)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial districts</td>
<td>-----</td>
<td>-----</td>
<td>0.0521</td>
<td>0.0995</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2.455)**</td>
<td>(3.124)**</td>
</tr>
<tr>
<td>Maximum uses in</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-0.0016</td>
</tr>
<tr>
<td>industrial districts</td>
<td></td>
<td></td>
<td></td>
<td>(-1.921)*</td>
</tr>
<tr>
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<td>0.4025</td>
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</tr>
<tr>
<td>Degrees of freedom</td>
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<td>25</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.213</td>
<td>0.1702</td>
<td>0.293</td>
<td>0.362</td>
</tr>
<tr>
<td>F (from mean)</td>
<td>2.400</td>
<td>2.060</td>
<td>3.141**</td>
<td>3.509**</td>
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<tr>
<td>Durbin-Watson</td>
<td>1.753</td>
<td>1.770</td>
<td>1.738</td>
<td>1.668</td>
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</table>

(continued)

TABLE 7.12: GLS estimates for impact of zone types on building activity per 1,000 population: industrial units, 1990-94
<table>
<thead>
<tr>
<th>Variables</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth</td>
<td>-0.0020</td>
<td>-0.0020</td>
<td>-0.0053</td>
</tr>
<tr>
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<td>(-0.824)</td>
<td>(-0.799)</td>
<td>(-1.941)*</td>
</tr>
<tr>
<td>Density</td>
<td>-0.0713</td>
<td>-0.0715</td>
<td>-0.0534</td>
</tr>
<tr>
<td></td>
<td>(-2.951)***</td>
<td>(-2.886)***</td>
<td>(-2.201)**</td>
</tr>
<tr>
<td>Mfg. employ (%)</td>
<td>0.0098</td>
<td>0.0098</td>
<td>0.0022</td>
</tr>
<tr>
<td></td>
<td>(1.395)</td>
<td>(1.359)</td>
<td>(0.229)</td>
</tr>
<tr>
<td>Cleveland</td>
<td>-0.0629</td>
<td>-0.0653</td>
<td>-0.042</td>
</tr>
<tr>
<td></td>
<td>(-0.719)</td>
<td>(-0.693)</td>
<td>(-0.432)</td>
</tr>
<tr>
<td>Columbus</td>
<td>0.0897</td>
<td>0.0859</td>
<td>0.0707</td>
</tr>
<tr>
<td></td>
<td>(0.676)</td>
<td>(0.595)</td>
<td>(0.431)</td>
</tr>
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<td>Total Districts</td>
<td>-----</td>
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<td>0.0029</td>
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<td></td>
<td></td>
<td>(0.344)</td>
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<tr>
<td>Maximum uses</td>
<td>-----</td>
<td>-----</td>
<td>0.0004</td>
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<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Industrial districts</td>
<td>-----</td>
<td>-----</td>
<td>0.088</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2.541)***</td>
</tr>
<tr>
<td>Maximum uses in industrial</td>
<td>-----</td>
<td>-----</td>
<td>-0.0027</td>
</tr>
<tr>
<td>districts</td>
<td></td>
<td></td>
<td>(-1.297)</td>
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<td>0.0374</td>
<td>0.0383</td>
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</tr>
<tr>
<td></td>
<td>(2.160)**</td>
<td>(1.848)*</td>
<td>(1.469)</td>
</tr>
<tr>
<td>Maximum uses in mixed</td>
<td>-----</td>
<td>-0.0001</td>
<td>-0.0007</td>
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<td>use districts</td>
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<td>Constant</td>
<td>0.1775</td>
<td>0.1827</td>
<td>0.1118</td>
</tr>
</tbody>
</table>

**Notes:** Model transformed by assigning density to the P Matrix. Confidence levels: *** indicates significance at the 98% confidence level, ** for 95% confidence level, and * for 10% significance level, using two-tailed tests. Critical values for F value are ** for 5% and *** 1% significance levels.

**TABLE 7.12:** GLS estimates for impact of zone types on building activity per 1,000 population: industrial units, 1990-94
7.3 Impacts on building valuation

The Architecture of Land Use can alter other characteristics of a local land market. The transaction costs of property development in cities may change the incentives for developers to invest in certain jurisdictions. This would effect the overall level of building activity. Transaction costs, as Chapter Four discussed, may also impact the type and quality of projects in communities. In essence, transaction costs can alter the "input mix" of land development.

Developers may choose more capital intensive projects in high-transaction cost environments because they are forced to make trade-offs about the most efficient use of existing resources. Labor hours consumed in the planning process represent resources that cannot be used for other purposes such as the construction or design of homes or office buildings. While data on the changes in the proportion of capital, land, and labor were unavailable for the building permits in this analysis, inferences can be drawn about the possible impacts of transaction costs on land development by adopting a few simple assumptions about their impact on building project values.

Builders and architects interviewed for this research (Lennon 1996; Delray 1996; Yagley 1997; Newnam 1997) indicated that the cost of land is a relatively fixed proportion of the total market value of a unit, about 25 percent of the price of a residential and commercial development. This means builders are more likely to alter the amount of labor or capital in a project to adjust for changes in costs rather than land (usually the land has already been purchased and platted before building begins). When faced with higher than
anticipated costs, builders will often make adjustments to the price of the units they intend to build. Maintaining profitability will likely require higher priced units if transaction costs are higher.

The amounts of labor and capital, however, are not used in fixed proportions, regardless of the size of the building. In some cases, along a range of construction, increasing the size of a structure may either require equal increments in inputs or more capital in terms of raw inputs, equipment or building materials. For smaller structures, labor typically accounts for about 40 percent of the cost of a building according to architects interviewed for this research (e.g., Lennon 1996).

As the structure becomes larger, however, the labor-capital ratio changes. Typically labor becomes a larger share of the construction costs. In fact, the labor-capital ratio sometimes reverses: at higher building values, the share of labor may approach 60 percent of the total cost or higher (Lennon 1996). This is the result of choices over materials and design in the construction process. Higher value buildings and homes typically adopt custom design and construction characteristics. Developers and owners often prefer designs, fixtures, and details that require higher quality materials, finer craftsmanship, or more attention to detail. Thus, the labor content of the project increases in level as well as a the proportion of total construction costs.

The zoning code data collected for the thirty-five Ohio cities provides an opportunity to test for these effects using ALU as a core reference. Three cities were dropped from the analysis because of incomplete data on average building valuations. The first step was to test for specific relationships between average project values and zoning
districts and uses. This was achieved by using simple OLS regression analysis to estimate the effects of each variable describing the ALU in each city on the average value of building permits in each city. The results were disappointing. The impact of the total number of districts on average residential home values was the only independent variable with statistically significant impact on home values. In most cases, however, the impact on permit values was negative, consistent with the implications of higher transaction costs in planning and urban development. A more thorough discussion of the empirical results is provided in Appendix C.

### 7.4 Conclusions and Implications

This chapter extended the transaction-cost theory of planning and urban development to ALU determined from local zoning codes. Empirical analysis of local zoning codes found evidence consistent with the TC theory of planning and urban development (table 7.13). Based on the estimates from the multiple regression model, adding one additional zoning district reduces building development in a city by four building permits per 1,000 population each year. This translates into about 287 building permits for a city of 65,281 people (the sample mean), although this result was not statistically significant when combined with the number of uses. Adding one additional residential district reduced residential permits by 21.04 per 1,000 population, or 1,371 permits for a city consisting of 65,281 people. The results for the number of uses specified in the zoning code also supported the transaction cost theory of urban development, although the results were not statistically significant in most estimating equations.
### A. Zoning Districts

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<tr>
<th>Development Type</th>
<th>Total Permits</th>
<th>Residential</th>
<th>Mixed Use</th>
<th>Commercial</th>
<th>Industrial</th>
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<tr>
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<td>-----</td>
<td>0.04</td>
<td>0.13</td>
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</tr>
<tr>
<td>Industrial</td>
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<td>-----</td>
<td>-0.04</td>
<td>-----</td>
<td>0.04*</td>
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### B. Zoning Uses

<table>
<thead>
<tr>
<th>Total Permits</th>
<th>Residential</th>
<th>Mixed Use</th>
<th>Commercial</th>
<th>Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
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<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Residential</td>
<td>-2.30</td>
<td>-1.56</td>
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</tr>
<tr>
<td>Commercial</td>
<td>0.02</td>
<td>-----</td>
<td>-0.04</td>
<td>0.04</td>
</tr>
<tr>
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<td>-----</td>
<td>-0.000</td>
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</tr>
</tbody>
</table>

*Note:  * indicates statistically significant in comprehensive multivariate model.

**TABLE 7.13:** Estimated impacts from comprehensive multivariate equations on building permits per 1,000 population based on a city's Architecture of Land Use
CHAPTER 8

CONCLUSION AND POLICY IMPLICATIONS

Land-use regulation and development controls have potentially significant impacts on the pace and pattern of urban economic development. The ways in which these development controls impact economic development, however, are not well understood. Contemporary research has found measurable effects, primarily in housing values, but failed to develop an adequate framework for assessing the impacts of development controls and planning within the context of economic development. This dissertation has attempted to fill this void in the literature.

8.1 The transaction-cost approach

The transaction cost (TC) paradigm provides a comprehensive framework for exploring the theoretical and practical implications of development regulation on economic activity in urban areas. Land development in the U.S. is governed by a system that requires approval of development projects from local government before land can be improved. While development is largely private sector initiated and implemented, the public sector plays a significant role in determining the time, shape, and content of
economic development through land-use regulation.

Land development can thus be viewed as the product of a contract between two parties: the private developer wishing to make improvements to land and the local government which must grant permission to allow the development to take place. The governance structure adopted by most communities is transactional, considering each development project as a unique and idiosyncratic investment. This governance structure implies high levels of transaction costs as developers engage in lengthy negotiations and bargaining with local planning boards (PBs). Given a choice, a developer operating in a private market will choose the cost minimizing production method. This implies choosing a jurisdiction with regulatory costs lower than alternative jurisdictions.

More importantly, cities can alter procedures and standards for approving projects and determine whether projects will be subjected to administrative or legislative review and approval. These decisions effect the transactions costs of land development in communities, and influence the spatial pattern of growth within regions.

### 8.2 Hypotheses and empirical evidence

The TC theory of land development regulation and economic growth was tested using two general approaches to empirical analysis:

- **Case studies** provided detailed evidence of transaction costs in development regulations. Many of concerns voiced in public hearings on rezoning applications addressed issues of lay-out, project design, aesthetics, and land-use planning. Other concerns focused on potential externalities, costs imposed on neighbors or adjacent property owners.
- Multicity databases tested for differences among zoning codes and planning-related uncertainty on economic activity within communities. The impacts of transaction cost-related features of the zoning code and development permission process were estimated using multivariate regression analysis.

Combined, these two approaches provide a first step toward evaluating five hypotheses about the relationship between land-use regulation and economic development using a transaction-cost approach.

_Hypothesis 1: Planning reform can impact transaction costs and economic activity within communities._

Planning departments may be able to reduce processing times by adopting specific planning innovations to track and guide applications through the rezoning and application approval process. While empirical tests of specific innovations did not reveal a statistically significant impact, an index that included eleven possible innovations suggested the cumulative impact of innovations may reduce average processing times. Adding one addition planning innovation was associated (statistically) with a five-week reduction in rezoning application processing times, although it was unlikely these reductions could be sustained linearly. Moreover, the empirical analysis was unable to determine which innovations were more effective in reducing transaction costs, although one-stop permit processing was statistically significant when entered as the only innovation in a multiple regression equation.
Hypothesis 2: Local planning processes with higher transaction costs will experience lower rates of economic development, all other things held constant.

According to the TC theory of development regulation and economic growth, communities that impose rezoning and plan-approval systems that incur higher transaction costs relative to other cities will tend to grow more slowly. This hypothesis was tested by analyzing specific procedures in the zoning code that would tend to increase transaction costs (Chapter Six) and the likelihood a projects would be subjected to a legislative review process (Chapter Seven).

The empirical analysis of planning procedures yields weak support for the transaction-cost approach. Ten planning variables were included in a multivariate analysis of building unit growth in 33 cities in Ohio. Three were statistically significant and consistent with the transaction cost theory. In a multivariate regression analysis that included all planning-related variables,

- a requirement to hold public hearings on rezoning applications at the PB-level reduced residential development by 4.5 units per 1,000 population.
- increasing public notification requirements for PB hearings of one day increases housing unit growth by between 3 and 4 housing units per 1,000 population.

A presumption in favor of development appeared to increase building unit activity by 606 permits per 1,000 population when entered independently in a multiple regression analysis, but was insignificant when included with other planning-related independent variables.

The fact most procedures outlined in the zoning code were not statistically
significant may reflect the possibility these aspects of the approval process are already well
known before the application is submitted. Developers may factor the approval process
into their decisions as sunk costs rather than marginal costs. Since developers enter the
process recognizing that these costs are inherent in the approval process, these features of
the planning system may not be as evident in the systemic empirical analysis.

Stronger evidence was found for the effects on land development of the likelihood
a project would be subjected to a legislative review process. This result is implicit in
Washington Township's decision to keep undeveloped property zoned for agricultural use.
Codifying the master plan by applying specific zoning districts would reduce the
township's flexibility in adjusting to growth trends in the area. Development patterns are
unlikely to conform to the zoning map, in part due to lags in updating the maps. This
result is also consistent with additional empirical literature suggesting zoning is
endogenous, tending to follow market trends.

Based on estimates from a comprehensive multivariate analysis of ALU in thirty-
two Ohio cities,

- adding one more zoning district to a local zoning code reduced the number of
  building permits by 4.4 permits per 1,000 population although this result was not
  statistically significant when combined with permitted uses,
- adding one more residential district reduced residential building activity by 21.0
  residential building permits per 1,000 population.
- adding one more district to the total number in a community increased residential
  building activity by 17.4 permits per 1,000 population, suggesting that
communities with mixed-use economic bases attract residential housing projects.

- communities with more inclusive zoning districts, accommodating a wider range of uses, appeared to have positive impacts on building activity, although the results were not statistically significant in most cases.

- ALU appeared to have little impact on commercial or industrial development activity in communities

**Hypothesis 3:** *Uncertainty in the planning process drives up transaction costs and negatively impact rates of economic growth and development.*

Stronger empirical evidence was also found supporting the impact uncertainty plays in reducing economic growth in Chapter Six. Cities where zoning decisions were subject to public referenda experienced lower levels of building activity. In areas where citizen activists challenged local land-use decisions using referenda and initiatives, housing unit growth fell by between 19 to 28 units per 1,000 population.

**Hypothesis 4:** *Local planning processes influence the "factor intensity" of land development.*

Empirical analysis of this hypothesis (Appendix C) did not find evidence supporting the TC theory of planning and urban development. Estimates from multiple regression analysis found that a larger number of zoning districts increased the average value of building permits. This result suggests the segregating uses within land-use categories has a positive impact on value, implicitly increasing the labor intensity of the
Hypothesis 5: The "character" of a community (i.e., residential dependence, employment diversity, or community values) might also effect the local planning process, and hence transaction costs, associated with land development in different communities.

This hypothesis was suggested by not tested thoroughly in the empirical analysis. The case studies revealed that different communities approach urban development differently, and choices about planning rules can influence the transaction costs associated with property development. Adopting broader zoning designations, for example, allowed Washington Township to accommodate a wider range of land uses and projects. Columbus increased transaction costs by requiring zoning applications to include specific ordinance language that would subject projects to a legislative rezoning process even if minor changes were made.

The data from zoning referenda provided an indirect test of a way community values could impact transaction costs. Communities that adopt more open, legislative review procedures or encourage citizen participation in land development decisions increase transaction costs in land development. Communities that required zoning-related decisions be subject to public referenda increase development-related transaction costs, discouraging property development in the community. Communities with a history of ballot-box zoning were associated with a "growth penalty" of 19 to 28 housing units per 1,000 population.
8.3 Caveats and qualifications

Several important qualifications must be considered when interpreting the results of the empirical analysis.

First, the sample size was small for all empirical analyses. Zoning codes for only thirty-five cities were obtained, and three cities were dropped because of insufficient data, producing a sample of only thirty-two cities. This introduced problems of estimation and specification bias in the multivariate equations. While the multivariate equations performed relatively well -- they explained a significant amount of variation in building activity and several variables were robust -- multicollinearity prevents a clear interpretation of the regression coefficients variables and the magnitude of each variable's impacts. In some cases, planning-related variables were not robust across model specifications and time periods. Also, the estimates of building permit growth deviated from actual values for the sample mean and individual cities, a result expected when using multiple regression analysis. In some cases, however, these deviations exceeded one standard deviation from actual growth, undermining confidence in the results. The small sample size also prevented the use of multiple datasets from different sources -- zoning codes, surveys of planning departments, census data -- to test hypotheses.

In some cases, reliable data on variables such as the amount of vacant land in a city, age of zoning codes, or complexity of development patterns were not available in sufficient amounts and could not be used. In other cases, variables were too highly correlated with each other (e.g., income and income taxes) and had to be dropped from the model. Some, but not all, of these factors were controlled through the selection of
cities used in the study. For example, only cities in built up, urban counties were used, and their populations varied between 10,000 and 643,000.

Increasing the sample size and the supplementing existing datasets with more detailed information could help mitigate these statistical problems. These problems could also be minimized by expanding the databases over time and using pooled cross sectional estimating techniques.

Second, the data were not finely calibrated to measure specific hypotheses directly. The analysis was unable to distinguish between the impacts and costs of specific types of planning innovations. This was most clearly evident in analysis of planning innovations where the data did not allow for direct tests of the relative importance of specific planning innovations. Thus, the analysis was unable to determine which planning innovations may have had the most impact on reducing transaction costs, or determining the relative cost or ease of implementing the innovations.

Some elements of transaction costs were also inferred, rather than measured directly. For example, the Architecture of Land Use suggests higher transaction costs implicit in land development although direct measures of transaction costs were not used in the analysis. These problems could be mitigated by follow up surveys to planning departments that determined the relative cost of implementing different innovations, their timing in the application process, and their level of use by planning staff and developers.

Third, regression analysis, like other statistical methods, cannot disentangle cause and effect easily or directly. For example, a negative correlation was found between the number of zoning districts and building permit activity. The nature and
unpredictable pattern of market activity and land development suggests that land use trends will not necessarily conform to zoning maps with a larger number of specialized zoning districts. The more common zoning districts become within cities, the more likely land redevelopment will also be accompanied by rezoning applications and procedures. The theory driving this research suggests entering the zoning and plan application process increases the transaction costs associated with land development because the new plans will be evaluated by planning staff, planning boards, and the local city council through a legislative process. Thus, the more likely land redevelopment requires local planning attention and evaluation, the more likely transaction costs will increase, discouraging property development within the city.

An alternative explanation for the negative correlation might be built up cities tend to have a larger number of zones by virtue of their age and history of property development (using per capita data controls for differences in size). Suburban and rural areas will have fewer districts because they are newer and have less complex development patterns. Moreover, development of undeveloped land with broad zoning classifications (e.g., agriculture) may be both easier and more practical than developing existing, built-up property and rezoning from one built-up use to another (e.g., residential to commercial).

8.4 Policy implications

While the empirical results cannot be interpreted as definitive support, they are, by and large, consistent with the TC theory of planning and growth developed in previous chapters. In other words, the results show necessary but not sufficient
evidence that a TC approach is a useful framework for analyzing the impact of land-use planning on urban economic growth.

The TC theory of development regulation suggests planners consider bargaining and negotiation costs imposed by urban planning. While citizen participation is widely considered a benefit of planning, the transaction costs it creates and the impacts it has on development are rarely considered. The evidence presented in this research suggests planners interested in promoting economic growth and development should pay more attention to the elements of their planning systems that increase transaction costs in the land-development process.

The transaction-cost paradigm also represents a new way to think about land-use regulation and its impact on economic development. This approach moves beyond questions of providing better service such as adopting Total Quality Management techniques and strategies. The TC paradigm is not just customer (applicant) oriented. Rather it provides a general framework through which development regulations can be assessed, implemented and reformed. The TC paradigm also emphasizes the impact of process and the cumulative impact of regulations on economic development.

A number of potential innovations in the structure and application of local planning and development control systems can help to reduce transaction costs without reducing quality. One-stop permit processing is one reform that has been advocated in the literature (e.g., Atash 1990) as well as by developers (e.g., Carr 1993). This procedure was statistically significant in the empirical research as well.

More importantly, perhaps, the empirical evidence suggests the cumulative
impact of planning innovations is more important than the impact of any individual innovation. Among the innovations localities could adopt to reduce transaction costs are:

- adopting broader land-use categories as the basis of zoning policy
- using administrative rather than legislative processes to approve routine zoning applications
- One-stop permit application and processing.
- Pre-application reviews and input from staff and local planning boards.
- Assigning case workers to each application during the review process, providing constant feedback to the applicant.
- Instituting maximum time limits on reviews by staff before they are submitted to planning boards for review.
- Including a presumption in favor of approving development applications in the event the PB or city council fails to act on the application in a timely manner.
- Instituting maximum time limits for review by PBs and city councils.
- Computer-assisted permit processing.
- Flow charts for applicants to illustrate the development review and approval process.
- Automatic access to changes in the zoning code through subscription services.
- Computer-assisted land-use modeling.

Uncertainties in the redevelopment process can also be reduced by establishing clear, well-written guidelines that are followed consistently. One of the benefits of
flexible zoning in Fort Collins was the use of criteria and formulas that were published and followed. This system also allows developers to evaluate alternative ways of achieving community and planning goals.

Presumably, planners are interested in economic development because a growing and expanding economy increases the quality of life and standard or living of local residents. Planning systems must thus be willing to accommodate growth and facilitate development projects. If one of the principle objectives of planning is to stimulate meaningful economic development, then one of the principle clients and beneficiaries of planning should be the businesses and landowners renovating or redeveloping property. By identifying problems clients have with the services provided by the planning agency, weak links in the regulatory system can be identified.

8.5 Directions for future research

The research and analysis presented in the previous chapters suggests that a TC approach to land-use regulation and urban development is a potentially productive lens through which land-use policy can be evaluated. Nevertheless, the scope of the research is limited. Future research should focus on more fully identifying the transaction-cost elements of local planning procedures. More specifically, future research should attempt to identify the elements of the planning process that reduce transaction costs most effectively without compromising quality. A more complete database would greatly facilitate comparisons of cities and development regulations. A more expansive database would also allow for the use of more sophisticated empirical tools, such as pooled time series, cross-sectional databases.
An issue unexplored in this study is the impact of regional and statewide growth management initiatives on local planning processes. Ohio is a strong home-rule state, reserving a substantial amount of power to local government discretion. Other states, most notably California, Oregon, Florida and New Jersey, have strengthened their regional planning initiatives. Regional growth management initiatives impose new procedures and processes on local decisionmaking with implications for transaction costs in land development. The TC paradigm might be useful in understanding how development responds to the imposition of state or regional growth controls within regions as well as among different regions and states.

Finally, additional case study research could be instrumental in more clearly differentiating between cause and effect in development regulation. Land-use planning is a highly individualized endeavor. Cities modify zoning codes to meet specific concerns and needs, and they are rarely overhauled in a comprehensive way. Case studies can fruitfully explore the complex interaction between developers, planning staff, planning boards, and interest groups. Similarly, additional case study research could more fully explore the role planning rules play in decisions to invest or develop property in particular communities.
SOLUTION FOR CONSTRUCTION LABOR

To solve for construction-related labor, $L_C$, equation 4.5 from Chapter 4 is differentiated with respect to $K$. The partial derivatives are as follows:

\[
\frac{\delta \mathcal{L}}{\delta K} = \alpha \Phi K^{s-1} L_C^{\phi} L_T^{r} = \lambda(r)
\]

(4.6a)

For non-planning labor, we differentiate the general equation with respect to labor ($L_C$) and get:

\[
\frac{\delta \mathcal{L}}{\delta L_C} = \beta \Phi K^{s} L_C^{\phi} L_T^{r} = \lambda(w)
\]

(4.7a)

For planning-related labor, we differentiate the general equation with respect to labor ($L_T$) and get:

\[
\frac{\delta \mathcal{L}}{\delta L_T} = \gamma \Phi K^{s} L_C^{\phi} L_T^{r} = \lambda(t)
\]

(4.8a)

Differentiation with respect to the constraint yields:

\[
\frac{\delta \mathcal{L}}{\delta \lambda} = C - rK - wL_C - tL_T - A = 0
\]

(4.9)

Since transactions cost are reflected in $L_T$, and we want to understand how transaction costs effects other inputs in the property development, we want to solve for inputs $K$ and $L_C$. This can be accomplished by dividing (4.6a) and (4.7a) by (4.8a), solving for $K$ and $L_C$. 

297
independently, and substituting them into the constraint.

To solve for construction-related labor, \(L_C\), we need to define \(K\) and \(L_T\) in terms of \(L_C\).

Solving for \(L_T\) in terms of \(L_C\) requires dividing equation 4.8a by equation 4.7a such that:

\[
\begin{align*}
\frac{\delta \mathcal{Q}/\delta L_T}{\delta \mathcal{Q}/\delta L_C} &= \frac{\gamma \Phi K^* L_C^\theta L_T^{-1}}{\beta \Phi K^* L_C^{\theta -1} L_T^{-1}} = \frac{\lambda(t)}{\lambda(w)} \tag{4.13}
\end{align*}
\]

Equation 4.13 can be rearranged, and canceling \(\Phi, K^*\), and \(\lambda\) (since \(\Phi/\Phi=1\), etc.), yielding:

\[
\begin{align*}
\frac{\gamma L_C}{\beta L_T} &= \frac{t}{w} \tag{4.13a}
\end{align*}
\]

or,

\[
\begin{align*}
L_T = L_C(\gamma/\beta)(w/t) \tag{4.13b}
\end{align*}
\]

Thus, as the implicit price of transaction cost related labor \((t)\) increases, transaction cost labor \((L_T)\) declines. Similarly, as the construction-related labor takes on a more important role in the production process \((\beta\) increases), transaction cost labor also falls.

Similarly, solving for \(K\) in terms of \(L_C\) means dividing (4.6a) by (4.7a) such that,

\[
\begin{align*}
\frac{\delta \mathcal{Q}/\delta K}{\delta \mathcal{Q}/\delta L_C} &= \frac{\alpha \Phi K^{* -1} L_C^\theta L_T^{-1}}{\beta \Phi K^* L_C^{\theta -1} L_T^{-1}} = \frac{\lambda(r)}{\lambda(w)} \tag{4.14}
\end{align*}
\]

Rearranging and cancelling \(\Phi, L_T^{-1}\), and \(\lambda\) yields

\[
\begin{align*}
\frac{\alpha L_C}{\beta K} &= \frac{r}{w} \tag{4.14a}
\end{align*}
\]

or,

298
Thus, as the cost of capital \((r)\) increases, the amount of Capital used in the construction process \((K)\) also falls.

To show the impacts of capital and transaction cost related labor used in the production process, equation 4.13b can be substituted for \(L_T\) and equation 4.14b can be substituted for \(K\) in the production constraint (equation 4.9) such that:

\[
(4.9) \quad C - rK - wL_c - tL_T - A = 0
\]

or,

\[
(4.9a) \quad C = rK + wL_c + tL_T + A
\]

which, through substitution, yields:

\[
(4.15) \quad C = r[L_c (\alpha/\beta)(w/r)] + wL_c + t[L_c (\gamma/\beta)(w/\gamma)] + A
\]

Solving for \(L_c\), yields the following substitutions and cancellations,

\[
(4.15a) \quad C = wL_c + wL_c(\alpha/\beta) + wL_c(\gamma/\beta) + A
\]

\[
(4.15b) \quad C = wL_c[(1 + (\alpha/\beta) + (\gamma/\beta)] + A
\]

\[
(4.15c) \quad L_c = C/(w[(1 + (\alpha/\beta) + (\gamma/\beta)]) - A
\]
The research in this dissertation explores the effects of land-use regulation on urban economic development and growth. Thus, the dependent variables should represent measures of land development activity. Unfortunately, a consensus has not emerged in the literature identifying one variable as the "best" indicator for economic development and growth. Some researchers have used population growth, others have used income growth, still others have focused on employment growth. This study is interested in the impact of planning policy on land development, suggesting that measures such as population, income, or employment growth may not be the most appropriate. Since many cities in the U.S. and the State of Ohio are residential communities, employment growth may not capture other aspects of development such as higher home values or land redevelopment. In fact, none of these measures will necessarily capture the level of development activity.

More direct measures of land development and economic activity are changes in the number of new buildings or units. Fortunately, data on housing unit growth is available through
the U.S. Bureau of the Census. Building permit activity is also collected by the Ohio Department of Development (ODOD) at the city level. In addition, cities record and report the average value of buildings developed in each community over time. Building permit data should provide an indicator of the level of development activity as well as the factor intensity (capital versus labor intensity) of the average building project in each city. By evaluating the impact of planning processes on different classes of buildings (e.g., commercial versus residential) or different dependent variables (census data on housing units versus building permits), a more complete picture of the role local planning plays in the land development process should be more evident. If the planning and transaction cost related variables are significant across data sets and time periods, the empirical results should be "robust," increasing confidence in their relevance to urban land development.

Time series data would be preferred. Unfortunately, most planning data are not available as time series. Data on local planning and zoning codes and procedures were generated using a survey of planning departments and an analysis of each city's zoning code. Unfortunately, the sequence of data gathering for planning procedures and zoning codes did not allow for a direct comparison of zoning codes with department surveys. Zoning codes were collected for thirty-seven cities in the Cleveland, Columbus, and Dayton metropolitan areas (table B.1). The Cincinnati, Akron and Cleveland metropolitan areas did not have a central location for local zoning ordinances, significantly hampering data collection. Zoning codes for nineteen cities were purchased to allow a detailed comparison between cities. Zoning codes for ten cities in Franklin County, and eight cities in Montgomery County were analyzed using local regional planning agency libraries. A centralized location for zoning codes in Hamilton and Summit Counties does
not exist, ultimately resulting in the exclusion of cities and their regions from the analysis.

Data on local planning departments and procedures were collected through a survey sent to planning departments in all cities and townships with populations over 10,000 in Cuyahoga, Franklin, Hamilton, Montgomery, and Summit Counties. Thirty four surveys were returned (a 33 percent return rate). The survey asked planning departments about the general organizational structure of their department, average processing times for zoning applications, and planning procedures adopted to facilitate the plan approval process. Unfortunately, the nature of the survey instrument limited its usefulness in testing the transaction-cost paradigm in a way methodologically consistent with the analysis of zoning code data.
<table>
<thead>
<tr>
<th>Cuyahoga County</th>
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<th>Montgomery County</th>
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</tr>
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</table>

*Note: * cities eventually excluded because of missing data.

**TABLE B.1:** City zoning ordinances included in analysis
Despite these data limitations, the planning-related research constitutes a "snap shot" of zoning codes and planning procedures in each of the cities analyzed. These data are useful for analyzing the structural or institutional nature of development control in these cities, an element that could not be measured well through the earlier case studies. Although the Ohio Revised Code establishes certain minimum criteria for public meetings and local zoning approval, most Ohio cities (and all the ones in the sample) have adopted a self governing charter. Charter cities have substantial discretion over planning and zoning requirements. Variations in planning practice should alter transaction costs in cities, impacting economic activity. Thus, the usefulness of the transaction-cost paradigm in evaluating the interaction between local planning processes and development activity can be tested empirically. The nature of the data, however, requires the use of cross-sectional analysis as the primary method for analyzing the data.  

Fortunately, the dependent variables can incorporate a dynamic element by using either growth rates or absolute changes in the number of building permits (which can then be "standardized" to a per capita measure). The following variables were used as dependent variables for the multivariate analysis:

- Growth in residential housing units. These data were obtained from the U.S. Bureau of the Census and the ODOD. Combining these two data sources means residential housing unit growth can be calculated for the periods 1980 to 1990, 1990 to 1994, and 1980 to 1994.

---

1. This clearly creates analytical difficulties. By its nature, growth is a dynamic and time dependent concept. Nevertheless, a cross-sectional analysis that focuses on the change in economic indicators and controls sufficiently for external influences such as regional growth, population size, and existing levels of wealth, should help identify the characteristics of the planning system, including transaction costs, that either negatively or positively influence building activity. Future research should build on this foundation by tracking changes in planning rules over time.
Building permit growth for residential, commercial, and industrial buildings from 1990 to 1994 provided by the ODOD.

Average building valuation for residential, commercial, and industrial buildings from 1990 to 1994 using data provided by ODOD.

Whenever possible, the statistical analysis was performed on all three dependent variables. Data limitations meant that a complete analysis could not be performed on each variable or aspect of transaction costs in the planning system at each stage of the analysis.

The independent (or exogenous) variables in the analysis should capture all of the influences upon land development from economic, political and planning elements in each of the cities analyzed. These are the variables causally linked as explanatory variables for each of the dependent variables. One class of variables proxy for the economic environment in which development takes place, measuring national, regional and local influences on development activity. Variables might include the state of the overall economy as measured by unemployment rates or regional growth rates. Economic influences would also include factors that might drive development activity (and hence economic growth) such as the demand for sites in a particular city, the education level of the work force, or industry concentrations in the local labor market. All jurisdictions are influenced by general trends in economic growth, and these variables should hold these effects constant.

Different time periods were used to check the robustness of the results for different data sets. Housing unit data from 1980 to 1990 were obtained from the U.S. Bureau of the Census. Data from 1990 to 1994 were obtained from ODOD. In principle, however, the data sets should derive from the same source, individual cities.
The local political environment should introduce another category of variables that might influence development activity in cities. These variables should proxy for many of the "public goods" aspects of local government policy such as infrastructure investment, overall tax burden, or total spending by government. Importantly, these variables are also policy variables: they can be directly influenced or controlled by local public officials.

The planning environment constitutes the third major category of variables in this analysis. These variables are also policy variables but are differentiated from other political variables by their direct impact on the pace and pattern of development activity. Since this study attempts to determine the role transaction costs play in the development process, with particular reference to local planning processes, structures, and procedures, the planning environment should be captured by variables which directly or indirectly measure the impacts of planning-related transaction costs on development activity. These variables should include uncertainty in local planning, the size of planning staff, complexity of planning processes, degree planning departments use "innovations" (e.g., one-stop permit processing, informal conferences, or flexible zoning criteria), and the "development friendliness" of the community (e.g., the rate of plan approvals or the likelihood of litigation).

The planning variables are the critical elements of this analysis and deserve more detailed consideration. The case studies in Chapter Five showed that local planning is a richly complex system. Input from planning staff can influence the type and nature of conditions attached to project approval. The public hearing process adds costs because developers attempt to secure approval by meeting citizen concerns and demands. Moreover, development approval can be an illusive goal if the developer fails to pay attention to the political climate.
Nevertheless, there may be structural aspects to the local development control process that provide clues to more general features of local planning and zoning, particularly those that impact development activity.

Three planning "dimensions" were used to provide a framework for collecting and organizing data on local planning systems. The first dimension is the _complexity_ of the formal approval system. This aspect is implied in the structure of the plan approval process and the detail of local zoning plans. For example, communities with a large number of specialized zoning districts are likely to impose higher transaction costs on development by subjecting more projects to a legislative approval process. New projects are unlikely to conform to existing zoning classifications unless the local market has very clear and very precise development patterns, or the local community's comprehensive plan is a highly accurate forecaster of future land development patterns. In urban and suburban environments zones can be very specific (e.g., medium density residential) even though a parcel of land may be suitable for a variety of different uses (e.g., low or moderate density commercial, office development, high density residential, neighborhood business, or light manufacturing). In less complex systems, where zoning districts are more broadly defined, a wider variety of uses may be tolerated, reducing the transaction costs related to land development. A broadly defined residential zone, for instance, may allow residential developments at several densities, or even mixed uses. These aspects of the local zoning code, the "Architecture of Land Use," are explored in detail in Chapter Seven.

A second dimension of the planning process revolves around the _uncertainty_ inherent in planning and captures aspects of implementation. For example, since, in most cases, plan
applications are considered refused until they are approved by the PB or Board of Zoning Appeals (BZA), development cannot proceed until the application is reviewed, analyzed and debated, most often as part of a legislative process. In most cases, review will occur twice: once at the planning board level and another at the city council level. In principle, a PB could refuse an application simply because it believes the development project is inappropriate for the community or neighborhood. Shopping malls and cinemas have been opposed by local community groups because they "threaten" the quality of life by attracting young persons who may be more prone to loitering, vandalism and petty crime. As the plan approval becomes more politicized through the legislative process, uncertainty increases. In plan approval and deliberation, the attitudes of staff, discretion of the planning authority and staff, and the willingness to use discretionary approval power can have important impacts on the pace and pattern of land development.

The third dimension of planning concerns the experience and history of the PB in the development process. Developers and property owners make investment decisions based on their expectations about the profitability of different projects (see the discussions in Chapters Four and Five). These expectations will be influenced by their experience and knowledge of the planning process in different communities. Data about planning history can be gathered through direct experience, indirectly through the experiences of friends, a developer's involvement in facets of a larger project, or observation by third parties. Ultimately, the developer will form an opinion about the likelihood of project approval based on the history of the planning authority.

Data to test the influence of planning procedures and processes on economic activity
were gathered for cities in Ohio with populations over 10,000 in the State's five major urban counties: Cuyahoga (Cleveland), Franklin (Columbus), Hamilton (Cincinnati), Montgomery (Dayton) and Summit (Akron). Restricting the data set to cities in these counties has several advantages. First, data are available for a wide range of variables through the Ohio Secretary of State, ODOD, and the U.S. Bureau of the Census. Much of this information, particularly permit activity and planning data, were not available for unincorporated areas such as townships. Second, these cities are large enough to have planning staffs capable of providing data about their planning departments and the plan approval processes. Third, restricting the analysis to large urban counties enhances the likelihood that the differential impact of planning rules in different cities on urban economic development can be identified. Cities within the county are spatially concentrated, creating a competitive land market among cities with different planning processes and procedures. Fourth, since much of the data on zoning codes and planning procedures must be obtained from each city independently, this restriction makes data gathering manageable. Fifth, the five urban counties have substantial populations and economic activity that minimize the impact of economic trends outside the state (i.e., Detroit or Pittsburgh). This created a potential statistical population of sixty-seven cities.

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3 Building permit activity is reported by individual jurisdiction to ODOD. Township building permit data are not broken out separately within counties.

4 In the cases of Toledo and Youngstown, economic development may be significantly impacted by public policy and land-use trends outside the state (Michigan and Pennsylvania). Canton and Springfield were excluded primarily because their metropolitan areas were relatively small and integrated thoroughly into larger MSAs (Dayton and Akron).
Appendix C

Estimates for Building Valuation

Chapter Four considered transaction costs as another component of the labor costs of development. Local planning and regulatory systems that increased the transaction costs of land development resulted in more capital intensive developments, all other things held constant. This is because labor expended through the transaction costs of land development were not be available for use in the construction process. Thus, increases in planning-related transaction costs will lower the average value of buildings built within communities with more uncertain, onerous, and detailed zoning and planning systems.

Ironically, many local planning ordinances are intended to encourage higher-valued buildings by requiring minimum lot sizes, or planned-unit developments that encompass large multi-use projects, detailed landscaping regulations, etc. These land use controls are intended to ensure a high "quality" of development. Yet planning systems with high transaction costs may, in fact result in smaller, capital intensive projects that have lower average values. Thus, higher property values in communities may be driven by factors independent of local planning, such as a general increase in the demand for local housing.

Several of the regressions, however, were heteroskedastic, raising the possibility the
impacts of these variables were underestimated. A second, multivariate regression model using the demographic and fiscal data from earlier sections for this population of cities was developed. Once again a parsimonious model was used to minimize the loss of degrees of freedom. The general model was specified such that:

\[ (7.2) \quad \text{VALUE} = \alpha + \beta_1 \text{DENSITY} + \beta_2 \text{PCTMFG} + \beta_3 \text{PCPROPTAX} \]

\[- \beta_4 \text{ZONES} - \beta_5 \text{USES} + \epsilon \]

The definitions of the variables are the same as in previous sections and chapters. This model, however, used the average value of the building units constructed over a four year period (1990 to 1994) as the only dependent variable. Per capita property tax levels were added as a local fiscal policy independent variable.

A larger number of zones is expected to increase transaction costs, reduce the amount of labor used in the construction process, and reduce the average value of building units (reflecting smaller projects). Similarly, a lower number of uses should be associated with lower transaction costs (since zoning codes use more general and inclusive language when they specify fewer uses). These lower transaction costs should result in higher valued, more labor intensive projects. Therefore, inverse relationships are expected between planning-related variables and the average value of buildings constructed in cities. The models were estimated using GLS procedures rather than the more traditional OLS estimating procedure to control for heteroskedasticity.

\[ \text{Population growth was dropped from the equation since it was highly correlated with density. Preliminary regressions revealed that average building values were not effected by the geographic location of the city. Thus, dummy variables for the main metropolitan areas were dropped from the equation to preserve degrees of freedom.} \]
None of the regressions testing for the impact of zoning code structure on total building permit activity or residential building permit activity yielded statistically significant results. An application to commercial building generated mixed results (table C.1). While the total number of commercial and mixed-use districts impacted the average value of building permits, the effects contradicted the TC theory of planning. The average value of commercial projects increased as the number of zones increased in the communities studied. The average value declined as the number of mixed use districts increased (equation three).\(^2\) This suggests segregating uses may be important for higher value commercial projects. The variables representing number of specified uses have the correct signs, but are not statistically significant.

In sum, little evidence supports that the transaction-cost paradigm as it relates to average building project valuations. The most important statistical impacts appear to be for commercial building permits, where a larger number of commercial districts was associated with larger, more labor intensive projects.

\(^2\)This result may also reflect the fact mixed-use districts tended to include built-up areas in downtown areas where development projects were more likely to be smaller anyway.
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Notes: Equations transformed by assigning Density to the P-Matrix. Confidence levels for 24 degrees of freedom: *** indicates significance at the 98% confidence level, ** at the 95% confidence level and * at the 90% confidence level. Critical values for F(5,24) are 2.62 for 5% significance level and 3.90 for 99% significance level.

TABLE C.1: Impact of zoning codes on average building valuation: commercial units, 1990 to 1994
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