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Local Land Use Choices: An Empirical Investigation of Development Impact Fees in Florida

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THE FLORIDA STATE UNIVERSITY
COLLEGE OF SOCIAL SCIENCES

LOCAL LAND USE CHOICES:
AN EMPIRICAL INVESTIGATION OF
DEVELOPMENT IMPACT FEES IN FLORIDA

By

MOON-GI JEONG

A dissertation submitted to the
Askew School of Public Administration and Policy
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Degree Awarded:
Summer Semester, 2004

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To my grandmother, mother, and late father

ACKNOWLEDGEMENTS

I would like to thank my grandmother and mother for their patience and unlimited love. I am grateful that they are always praying for me and my future.

Most important, I want to thank my major professor, Dr. Richard Feiock, from whom I learned valuable lessons through classes, research projects, book editing, and journal editing from the beginning of my doctoral degree. The most valuable lessons I learned from him are to have an open mind and to enjoy cooperative work with faculty members as well as students. He also has been, and still is, such an excellent mentor and friend that I intend to keep in touch with him for life.

I am also indebted to the members of my dissertation committee, Dr. Fran Berry, Dr. Robert Bradley, Dr. Keith Ihlanfeldt, Dr. Earle Klay, and Dr. Gabriela Wolfson for their constructive suggestions and comments and their willingness to serve. I offer special thanks to Dr. Berry's warm support for my career development.

Finally, my love toward my wife, Sungsoon, and little baby, Younhee, goes beyond acknowledgements. This dissertation would not have been possible without their love and patience.

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ABSTRACT

What factors account for local institutional choices such as adoption of impact fees? Is there a pattern to impact fee adoptions? These questions are of critical importance, because in the United States, local governments are primarily responsible for defining property rights concerning how people use land and providing basic public services to citizens. The comparative study of impact fee decisions across Florida counties can provide useful insights into local land use practices, because it helps us understand how impact fee arrangements modify new development of land in private markets. The theoretical framework to investigate impact fee adoption combines the political market framework (Crain, 1977; Alston, 1996; Libecap, 1996; Feiock & Lubell, 2003) and the diffusion model of innovation (Mohr, 1969; Walker, 1969; Gray, 1973; Berry & Berry, 1990, 1992, 1999). Empirical analysis focuses on impact fee adoptions in 66 Florida counties from 1977 to 2001, using event history analysis (EHA).

Previous studies viewed impact fees as policy instruments for local planning, growth management, and land use regulation (Frank & Downing, 1988; Nelson, 1988; Yinger, 1998; Ihlanfeldt & Shaughnessy, 2002). This dissertation argues that impact fees can also function as fiscal institutions, because they are prescribed in local ordinances as a means to resolve local fiscal stress and infrastructure deficiencies. This dissertation develops a theoretical framework combining political market approaches based in interest group theories of property rights and diffusion theories of innovation. The framework identifies the local demanders and suppliers, intergovernmental institutions, administrative capacity, diffusion, financial conditions, and geographical factors.

EHA provides useful analytical tools for local decisions on whether or not to adopt impact fees. Using cross-sectional and time-series data of 66 Florida counties

between 1977 and 2001, the empirical analysis examines six types of impact fees: transportation, parks, fire/EMS, police/corrections, school, and library.

The first impact fees were adopted by Broward County in 1977. The first ten adoptions occurred in counties located in the southern and central regions of Florida except for Holmes County, and then spread to the northern counties. The empirical results demonstrate that one half of the impact fee counties located in the north (five counties) adopted the impact fees in the 1990s, while most of the counties located in the southern and central regions adopted impact fees in the 1980s. Most impact fee adoptions occurred during the mid- and late 1980s. The empirical findings indicate that while most types of impact fees were already in place in the 1980s, over 70% of school impact fees were adopted in the 1990s. School impact fees have been highly controversial within the development community. Even counties with impact fee systems in place have been cautious to initiate controversial fee types. Transportation, fire/EMS, and parks impact fees are the most popular in Florida counties. This finding is consistent with the national survey of impact fee adoptions (Leithe & Montavon, 1990).

Once the fees are adopted, the impact fee amounts to be imposed on the development community are not fixed. In other words, counties frequently change impact fee schedules. Parks impact fees have been changed more often than any other type of fees. For the 25-year research period, counties with parks impact fees changed the fee schedules about 4 times on average. In particular, Broward County changed parks impact fees every year since its inception in 1977 by adjusting impact fee schedules based on the consumer price index (CPI).

To identify the determinants of impact fee adoptions, this dissertation estimates seven models. Seven specific conclusions are drawn from this analysis. First, strong support is found for the proposition that economic interests such as high-income citizens and the developers significantly influence local politics and policy decision-making (Molotch, 1976; Schneider, 1989; see also Burns, 1994). Second, motivations of local government decision makers are linked to promotion of controversial fees such as school impact fees. Third, Florida counties experienced a significant increase in impact fee adoptions after the Growth Management Act of 1985 was implemented. This increase was especially large for transportation, fire/EMS, parks, and police/correction facilities.

Furthermore, several case laws in 1983 provided legal grounds for impact fees through the rational nexus standards. Fourth, counties are more likely to adopt impact fees if neighboring counties have adopted impact fees in previous years. Fifth, administrative capacity is a critical resource that influences impact fee adoptions. Counties having employees with professional skills and expertise are more likely to adopt impact fees. Sixth, previous findings that impact fee adoptions are a response to local growth, especially population growth is confirmed. Consistent and strong effects of local growth on impact fee adoptions are reported. Finally, the political market framework is less useful to differentiate choices among impact fees than to explain the general patterns of adoption. Whether the explanatory factors have distinct effects on each fee type is inconclusive, because as counties broaden fee types over time, it becomes more difficult to distinguish effects among various fee types. However, one exception is with the reformed county government structure. Counties with reformed government structures are more likely to adopt controversial fees such as school impact fees. This is consistent with the role of centralized executives in coordination of diverse interests and the distributional consequences resulting from controversial institutional change (Frederickson & Johnson, 2001; Clinger Mayer & Feiock, 2001).

CHAPTER 1

ON THE NATURE OF IMPACT FEES AND LOCAL FINANCE

Impact Fees and Local Finance

Local governments face a dilemma when they seek to sustain economic development without harming the quality of life of local citizens. Ongoing development is particularly valued by government because it enhances the revenue sources in general and the property tax base in particular (Peterson, 1981). Quality of life is linked to protection of the natural environment and amenities. Because quality of life concerns may mobilize local communities, elected officials must balance the potential costs and benefits of growth. Local governments have been creative in establishing new institutional arrangements and producing new policy tools to accommodate those two values. Among these are local development impact fees, which are imposed on new developments to pay for public facilities and help ensure orderly development. There is no unique agreed upon definition of impact fees, but impact fees generally refer to “single payments required to be made by builders or developers at the time of development approval and calculated to be the proportionate share of capital cost of providing major facilities—arterial roads, interceptor sewers, sewage treatment plants, regional parks, etc.” (Frank & Dowing, 1988, p. 3).

Public sentiment regarding local economic development or growth has been changing over the last two decades, as negative consequences of unplanned growth such as deteriorating environment and congestion have become more prevalent.¹ In response to

¹ To define economic growth or development precisely is not easy. Blair (1995) distinguishes economic growth from development. According to Blair, economic development implies the improvement of the welfare or well-being of people. On the other hand, economic growth is “an important element of the economic development process.” (Blair, 1995, p. 14) and includes relatively easily measurable indicators such as jobs, income or wages, wealth, etc (Blair, 1995; White, Bingham, & Hill, 2003, pp. 3-4).

that change, local governments have been changing their strategies in financing the demands for public services and goods. One of those strategies that became popular was impact fee adoption for infrastructure resulting from new development. The growth consequences of impact fees are two-fold, causing both negative and positive consequences for the development community. On the one hand, impact fees provide disincentives to developers and builders because they increase production costs and may lower profits. So, naturally, the development community may oppose impact fees. On the other hand, impact fees may benefit developers because the fees collected can reduce developers' risk and uncertainty through clearer infrastructure planning during the process of development permit and approval (Cervero, 1988; Nelson & Moody, 2003). Furthermore, since general taxes collected from existing residents are less likely to be spent on capital projects required by new growth and impact fee revenues allow for the orderly development of infrastructure, private sharing of infrastructure costs may improve public sentiment about growth.

Research Questions

What factors account for local institutional choices such as adoption of impact fees? This question is of critical importance because in the United States, local governments are primarily responsible for defining property rights² concerning how people use land and providing basic public services to citizens. While several authors have recently examined the politics and impact of economic development incentives, they have paid less attention to growth management institutions and policies, such as impact fees (Nelson & Moody, 2003).

Studies of impact fees have been limited to conceptual and legal discussions (Juergensmeyer, 1988; Nicholas & Nelson, 1988) and cross-sectional analyses of impact fee adoption (Frank & Downing, 1988). Case studies of individual localities have investigated housing price and land price changes that resulted from newly adopted impact fees (Huffman et al., 1988; Yinger, 1998; Ihlanfeldt & Shaughnessy, 2002) and have examined the social policy implications of those impact fees (Connerly, 1988). One

Considering that the welfare of local citizens cannot be ameliorated without job continuation, income, and increased tax base, this dissertation uses the term economic development in a narrow sense. In other words, the term "economic development" is interchangeable with economic growth.

² Property rights are defined as "an actor's rights, which are recognized and enforced by other members of society, to use and control valuable resources" (Alston, Eggertsson, & North, 1996, p. 31).

recent study has examined the economic consequences of impact fees (Nelson & Moody, 2003), but in a somewhat limited way.

Systematic and comparative empirical studies using longitudinal data on impact fee arrangements have been rare. In response, this dissertation raises several unanswered questions regarding impact fees:

- Is there a pattern to impact fee adoptions? Over the last four decades, local governments adopted and implemented diverse types of impact fees. This dissertation identifies characteristics of different fee types and the pattern of their adoptions.
- What are the factors that account for impact fee adoption? This dissertation seeks to identify the key driving forces for impact fee adoptions including political, institutional, economic, and demographic factors.

The comparative study of impact fee decisions across Florida counties can provide useful insights into infrastructure and local land use practices because it helps us understand how impact fee arrangements enhance infrastructure financing and modify new development of land in private markets. Florida counties provide an ideal venue to test theories of impact fee adoption. In 1977, Broward County became the first Florida county to adopt impact fees in an effort to finance infrastructure and control growth (Advisory Council on Intergovernmental Relations [ACIR], 1991). Most of the 66 counties first adopted impact fees during the 1980s (ACIR, 1991), but adoptions continued through the 1990s.³ Empirical analysis will focus on impact fee adoption in 66 Florida counties from 1977 to 2001, using event history analysis (EHA).⁴

Significance of the Research

Counties are dynamic entities in the American federal system. As federal and state governments shift diverse functions and services to local governments, research on local governments has become more salient over the past several decades. One important research lacuna is county government. Many scholars have pointed to a lack of

³ Due to consolidation, consistent data does not exist for Duval County; consequently, it has been omitted in analysis.

⁴ The research units are made up of 66 counties in Florida. Since the purpose of this study is to identify determinants of impact fee adoptions across counties between 1977 and 2001, event history analysis (EHA) is utilized. Berry and Berry (1990, 1992, 1999) argue that EHA is distinctively useful for the study of policy adoptions by units of government.

understanding and research efforts focused on counties as compared to municipal governments (Menzel et al., 1992; DeSantis & Renner, 1994; DeSantis, 2003). However, as counties exert more influence on the daily lives of citizens, several studies have begun to explore diverse facets of counties such as political structures, service delivery, and intergovernmental relations (Snider, 1952; Schneider & Park, 1989; Menzel et al., 1992; Benton, 2002; Feiock & Tavares, 2002; Desantis, 2003). In particular, the research agenda addressed at the national conference on the American county illustrated the significance of the way to manage and expand new revenue bases (Menzel et al., 1992).

Significance of Impact Fees

Problems of deteriorating urban infrastructures, rapid population growth, and fiscal stress have gained increased attention over the last two decades (Altshuler & Gomez-Ibanez, 1993). Cyclical economic downturns have had tremendous effects on local revenues, but the problem of fiscal stress at the local level has become more systematic rather than temporal. First, one of the main own-source revenues, the property tax, has faced continuous challenges from citizens and has resulted in statutory limits on annual increases. Second, reduction in federal grants-in-aid implies that local governments should rely more on own-source revenues to maintain current service levels. Therefore, the dilemma local governments face is how to sustain a high quality of life and the seamless provision and production of public services without imposing onerous burdens on citizens, especially in times of fiscal stress. Among own-source revenues are user charges and fees, which can grow more rapidly than local property taxes and lead to less resistance from citizens (Lee, Johnson, & Joyce, 2004). In the context of the new demand for growth, impact fees have become widely recognized and popular among public officials as an innovative way to finance infrastructure. Impact fees differ from traditional infrastructure financing in that they are based on a “pay-as-you-grow” principle rather than a “pay-as-you-benefit” principle. While impact fees have been cast as an unfavorable regulatory arrangement by the development community, they have become indispensable for orderly development of infrastructure.⁵

⁵ Development communities view impact fees as inevitable payment for business insurance in continuing their business (Soble, 1988).

In summary, the way local governments handle growth has been changing since the 1980s, while “land, growth, and finance” has still centered on local concerns (Ladd, 1998). The feasible compromise is to share the development burden, or social costs, between the beneficiaries of development and the public in general. Impact fees are right on target and have a high potential for success by offering both incentives and constraints to the business community.

Significance of Research Questions

Despite the mixed popularity of impact fees, existing research provides little guidance for understanding their causes. Furthermore, whereas impact fees were widely discussed as growth management tools in the planning community and as regulatory instruments for land and housing markets in economics, analyses of impact fees as fiscal institutions are conspicuously absent. The results of the present research promise to enhance the understanding of the dynamics of impact fee adoptions.

Most studies of impact fee adoptions take a very limited approach to identifying determinants of impact fees by focusing on demographic and economic factors. In addition, those studies have utilized mainly analysis based on cross-sectional designs. This dissertation expands the scope of determinant factors to include political and institutional factors. In particular, by combining the political market and policy innovation theories, this dissertation enhances theoretical developments regarding how existing institutional/administrative arrangements and the actors at stake drive impact fee adoptions. The analysis of impact fee adoptions through event history analysis will also enhance our understanding of the internal and external dynamics of land use decision-making.

The work will be of interest to both practitioners and scholars of local government. The results of the proposed research promise to enhance an understanding of what factors local policy-makers and officials consider in determining impact fee adoptions. Furthermore, a better understanding of impact fees may provide guidance on how to manage and coordinate impact fees in the context of local infrastructure. This dissertation research may also benefit scholars in public budgeting, finance, and urban affairs in that it addresses critical questions of land use policy, local governance and finance, and economic development and provides new insight on these issues.

Impact Fees in Florida

Over the past several decades, the State of Florida has experienced rapid population growth and new development, especially along the coastlines. This consequently increased demands for capital projects, which were typically financed by public money through taxes or bond issues. However, citizens' resistance to tax increases for new capital projects encouraged state and local governments to find new alternatives such as federal aid and user charges. To seek federal aid is burdensome due to complex processes and strings attached to the grants. This strategy also became less feasible after the Reagan administration brought substantial cuts to federal programs, which shifted costs to the state and local governments. As a result, user charges, which reflected the benefit-principle became highly attractive as new revenue sources. Impact fees as one type of user charges did not necessarily mean that there was no resistance from constituents. There were several court battles to determine the legitimacy of impact fees. In Florida, impact fees were understood as a sort of user charge determined by rational nexus standards, imposed on the development community, and collected by the local government on the basis of police power.

Because of several court battles between local governments and developers, the State of Florida conducted several surveys on whether or not state legislation of impact fees was necessary. The Florida Advisory Council on Intergovernmental Relations (ACIR),⁶ created by the Legislature in 1977, investigated the status of development impact fees in 1986, 1989, and 1991. The major recommendation of the ACIR was that action by the State Legislature was not necessary in order for local governments to enact impact fee laws, insofar as case laws and local home rule charters established "the legitimacy of impact fees" (ACIR, 1986, 1989, 1991). As a consequence, the statewide impact fees were, and still are, absent in the State of Florida.⁷

The Plan of This Dissertation

The following chapter develops the theoretical framework for communities' adoption of impact fees. This theoretical framework combines the political market

⁶ The name of the ACIR was changed to the Florida Legislative Committee on Intergovernmental Relations (FLCIR).

⁷ However, as of Spring 2003, Senate Bill 1022 on impact fees was newly drafted and proposed a statewide impact fee, but it did not pass into law.

approach to institutional change with insights from state policy innovation studies developed in economics and political science over the past several decades. This integrated political market approach identifies the sources of institutional change based on demanders and suppliers of innovation and the internal and external forces influencing those actors. The combined model articulates four key sets of variables linked to institutional change: 1) motivations of the demanders and the suppliers, 2) internal resources/obstacles, 3) external competition or emulation modes, and 4) intergovernmental constraints.

Chapter 3 builds the propositions based on the discussions in Chapter 2. Chapter 4 develops working hypotheses and delineates research methods and data analysis. The research units consist of the 66 counties in Florida. Since the purpose of this study is to identify determinants of impact fee adoptions across counties between 1977 and 2001, event history analysis (EHA) is utilized. Berry and Berry (1990, 1992, 1999) argue that EHA is distinctively useful for a qualitative change in actions of individuals or political units' behavior. Chapter 5 provides analysis of findings regarding impact fee adoptions. The final chapter concludes with discussions of the theoretical and policy implications of the findings, limitations, and the future study of impact fees.

CHAPTER 2

THEORETICAL FRAMEWORK

This dissertation examines the causes of institutional change in the form of impact fee adoptions. The theoretical framework to investigate impact fee adoptions combines the political market framework (Crain, 1977; Altson, 1996; Libecap, 1996; Feiock & Lubell, 2003) and innovation studies (Mohr, 1969; Walker, 1969; Gray, 1973; Berry & Berry, 1990, 1992, 1999).

The next section discusses the term “institutions” and explains why impact fees can be viewed as fiscal institutions. Then, this dissertation identifies and discusses key determinant factors for innovation of fiscal institutions such as impact fees.

Impact Fees as Innovative Fiscal Institutions

Definitions of Institutions

As social, political, and economic problems change, institutions evolve, redefine, and reinterpret themselves in response. Schotter (1981) identifies institutional changes as responses to recurrent social problems. However, an understanding of institutions must also encompass dynamic social interactions among fragmented and self-interested individuals on the one hand, and collective and altruistic individuals on the other. It reminds us that defining “institutions” is complex. In fact, little agreement exists on how to define the term “institutions” among scholars and disciplines (Ostrom, 1986, 1999; Crawford & Ostrom, 1995; Scott, 1995). Lack of agreement occurs in part because different disciplines focus on various aspects of social problems (Scott, 1995) as well as the theoretical question of interest, the time scale posited, and the pragmatics of a research project (Crawford & Ostrom, 1995). The differences presently discussed are between the sociological approach and the economic and political approach (Moe, 1990, 1991). To begin, this dissertation briefly traces historical developments of institutional

theory to provide background knowledge of institutions and then defines the term “institutions.”

The institutional approach in sociology dates back to Parsons (1937) and Selznick (1949). In particular, Selznick provided the key concepts of local community, commitment, and a normative approach to institutions. Meyer and Rowan (1977, 1983) developed key ideas for new institutionalism through the field study of education and emphasized loose coupling in higher professional fields. Scott (1995) stressed the cognitive dimensions of institutions. Granovetter (1985) stressed the importance of social relationships or the embeddedness in securing transactions rather than governance structures as emphasized by Williamson (1975). DiMaggio and Powell⁸ (1983) and Scott⁹ contributed to the development of macro perspectives. While there is no agreed-upon definition of institutions among the scholars mentioned above, the sociological approach, in general, views institutions as shared values or norms for social and organizational order (Scott, 1995). The sociological approach provides rich explanations for institutions regarding organizational goals, norms, and values. Furthermore, institutional change is isomorphic and taken for granted. The sociological approach toward institutions focuses on cognitive values like symbols, norms, and myths. However, it lacks explanations for intentional and planned changes of institutions and difficulties arise in how to draw a line between normative and cognitive approaches. In particular, although Scott (1995) distinguishes the normative pillar from the cognitive pillar, these approaches raise questions about the way to distinguish and measure institutions using empirical studies.

Early works regarding institutional theory in economics were developed from the theory of firms. The seminal work by Coase (1937), “The Nature of the Firm,” was revived by Davis and North (1971) and Williamson (1975) in the 1970s, representing the work of New Institutional Economics (Klein, 1999). Institutions are defined as “the rules of the game,”¹⁰ which govern the everyday life of the people by providing a structure of

⁸ DiMaggio and Powell elaborated institutional isomorphism into three dimensions: coercive, mimetic, and normative.

⁹ Scott developed three pillars of institutions: regulative, normative, and cognitive.

¹⁰ In general, economists distinguish institutional environments (the rules of the game which guide individual behavior) from institutional arrangements (specific guidelines for particular exchanges established between specific partners) (Klein, 1999).

daily life (North, 1990) and thus reduce the uncertainty of property rights (Williamson, 1985). Williamson develops an economic view of institutions that focuses on how organizations economize transaction costs. When transaction costs are economized by internal productions rather than market purchases, organizations or hierarchies are formed. In political science, institutions are identified in relation to “who gets what” (Horn, 1995). Political institutions identify and clarify the political processes of the authoritative allocation of values. Crawford and Ostrom (1995) view institutions as “enduring regularities of human action in situations structured by rules, norms, and shared strategies, as well as by the physical world” (p. 582). The effort to define institutions in economics and political science can be, in general, narrowed down to several key concepts: rules of the game (North, 1990); standards of behavior (Schotter, 1981); enduring regularities of human action (Crawford & Ostrom, 1995); and rules about behavior, especially about decision making (Riker, 1982; see also Ostrom, 1986).

Several definitions of institutions in the fields of economics and political science share two distinct features. First, the term “human behavior” appears regardless of whether or not this behavior occurs at an individual or collective level. Second, human behavior does not occur in a void, but is linked with other concepts such as rules, standards, and norms. Prior to defining the term “institutions,” discussion about those two features will give some useful insight into understanding the complexity of the term.

The study of human behavior in the context of institutions is modeled by rational choice and public choice theory. Both theories, centered on a rationalism of human behavior, assume that human beings have their own self-interests and behave opportunistically. Self-interested individuals attempt to maximize their utility given limited information. As a modification of pure rationalism, bounded rationality, developed by Herbert Simon (1947), has gained more significance as an underlying assumption of human behavior; bounded rationality results from cognitive inability and incomplete information. Self-interested and opportunistic behavior may render two-person contractual relationships uncertain and incomplete. Therefore, this behavior places individual property rights in danger. Of significance is information asymmetry, which leads to increased transaction costs in monitoring opportunistic behavior and imposing compliance. In comparison to long-term and repetitive relationships, short-term or one-

time contracts are more likely to cause higher risks and uncertainty, and thus increase transaction costs.

When applied to an n -person or a collective action level, individuals with self-interests seek selective benefits opportunistically, contrary to the seeking of collective goals and benefits. In other words, some participants, if not all, are less involved in pursuing collective goals, while they are enjoying collective benefits (i.e., the problem of free-riders). As a consequence of free-riding, collective goods and benefits may be underproduced and distributed inefficiently. Collective action problems, or free-riding problems, are widely identified in the area of common-pool resources (Ostrom, 1990).

This dissertation refers to institutions as the rules of the game, which structure and provide guidelines of everyday life. Emphasis is especially placed on the formal rules, or institutions, because public officials at the local level are rule-bound in implementing public authority, especially local ordinances. Moe (1991) argues that complex political processes and public administration cannot be explained effectively by informal norms, symbols, myths, rituals and loosely coupled structures (see also Chubb & Moe, 1990). In the context of governmental decision-making, policy makers are constrained under established institutional arrangements until these institutions change. Institutional arrangements should play a mediating role for policy outcomes (Lineberry & Fowler, 1967; Feiock, Jeong, & Kim, 2003) because institutions structure and provide guidelines for human action, including policy decision-making.

In summary, an institutional approach posits that institutions reduce uncertainty in reciprocal transactions by providing structures and guidelines for individual and organizational actions (Williamson, 1985; North, 1990; Ostrom, 1999; Clingermayer & Feiock, 2001).

Definitions of Fiscal Institutions

In public finance and budgeting literatures, the term “fiscal institutions” is used interchangeably with budget institutions, even though there are clear distinctions (see Poterba & Rueben, 1999). Prior to defining “fiscal institutions,” this dissertation discusses budget institutions to help understand and differentiate the meaning of “fiscal institutions.”

Budget institutions refer to “all the rules and regulations according to which budgets are prepared, approved, and carried out” (Alesina & Perotti, 1999, p. 14). Along the same line, Stein, Talvi, and Grisanti (1999) define budgetary institutions as “the set of rules, procedures, and practice according to which budgets are drafted, approved, and implemented” (p. 117).

The basic idea behind budget institutions is that through the strategic design of budgetary processes or structures, such as balanced budget requirements, state and local governments can prevent decision-makers from excessive spending. Budgetary constraints bind decision-makers involved in public budgeting and reduce their opportunistic behavior, which can often be in opposition to the public interest. Several studies suggest that budgetary constraints such as Tax and Expenditure Limits (TEs) reduce government spending and lower state budget deficits (Alt & Lowry, 1994; Poterba, 1994).

Public finance and budgeting literature have widely examined budget institutions in relation to the size of the government, government borrowing, and fiscal deficit issues (Poterba, 1994). In this dissertation, the term “fiscal institutions” is not limited to budgetary rules, procedures, and practices. Rather, the term is employed to include the management and coordination of the private market through an establishment of fiscal constraints and incentives. “Fiscal institutions” used in this dissertation references fiscal rules or ordinances to resolve fiscal stress at the local level and can include a budgetary institution in a broader sense.

Why Institutions?

The critical question of regulatory rules or institutions is what type of rules mitigate (or aggravate) the negative consequences of government intervention in private markets. The answer is complex, and among scholars and practitioners, not easily reached.

Economic theory generally prefers minimum intervention by the government in the market economy. However, when market failure occurs, due to problems of externalities or public goods, these priors are relaxed to support government intervention aimed at remedying those problems. In the context of institutions or rules, certain rules may reduce the negative consequences of government regulations in the private market.

When regulatory rules do not distort private behavior, they minimize the adverse effects incurred from compliance costs. Thompson (1993) claims that institutional arrangements within governments may lead to dissimilar regulatory costs and thus recommends the development of innovative governance systems that fit together with contemporary environments and responsibilities. Feiock and Jeong (2002) suggest that a streamlined permitting system in environmental regulation reduces regulatory uncertainty without imposing onerous burdens on the private sector. The new governance system needs to accommodate the balance between control and incentives. For example, constraints that do not accompany in part the potential benefits of business groups through compliance are not cost-effective (Schick, 1978).

Institutions (or rules) not only constrain actions but also provide incentives to those who interact. For example, while antideficit rules can restrict the actions of policymakers, they may improve the perceptions of the bond market (Poterba & Rueben, 1999). This dissertation argues that impact fees are exactly this type of institution because under an impact fee system, government officials cannot easily nullify a permit or approval of a new development. In addition, the public-private cost sharing of capital projects may lead to better capital improvement plans and reduce the transaction costs of the private developers and builders. Without consideration of the dynamics between institutions and the behavior of public officials, we lack full understanding of policy choices and outcomes.

Impact Fees as Innovative Change of Local Fiscal Institutions

Private sharing of public infrastructure costs such as impact fees evolved from decades of land use zoning and planning practices in U.S. communities. This evolution includes government interventions of land development through comprehensive zoning, on-site and off-site land dedication, in-lieu fees, and cash payment for infrastructure such as impact fees.

The initiation of local land use regulation dates back to the U.S. Supreme Court case, *Village of Euclid v. Ambler Realty Co.* in 1926 and the U.S. Department of Commerce's Standard Planning Enabling Act in 1928. These landmark events in land use regulation followed the explosive development of land after World War I and subsequent infrastructure deficiencies. The U.S. Supreme Court validated the local jurisdictions'

regulation of land use development consistent with local interests and development patterns. In other words, that decision supported government intervention through comprehensive zoning and planning. On the other hand, the Department of Commerce's Standard Planning Enabling Act delineated the local jurisdictions' ability to require development exactions for subdivision development from the development community.

In the early stages of land use regulation, development exactions were mainly implemented in the form of on-site and off-site land dedications. The problems of land dedications emerged due to an insufficient amount of land dedications, which were distinctive in small development (Frank & Rhodes, 1987). One option instead of land dedications was in-lieu fees, which could be pooled and used for paying off-site facility sites such as parks and schools.

Over the next four decades following the Euclid decision and Standard Planning Enabling Act, land use regulation and development exactions were mainly dealt with at the local level (Weschler, Mushkatel, & Frank, 1987). A significant change in land use regulations in general and development exactions in particular occurred during the 1960s and 1970s (Frank & Downing, 1988). First, the "quiet revolution" named by Bosselman and Callies (1971) reflected state and regional involvement in local land use regulations. Second, local communities became more flexible regarding development exactions. Compared to the strict application of comprehensive zoning and planning ordinances, local governments took into consideration negotiations and bargaining when dealing with development exactions. Third, the citizens' resistance to property tax increases pushed local governments to find new alternative revenue sources. Those tax revolts resulted in the state legislation of Proposition 13 in California and Proposition 2 ½ in Massachusetts, which placed great limitations on annual increases in property taxes at the local level.

In the context of development exactions, Frank and Rhodes (1987) argue that land dedication and in-lieu fees as mentioned above were used only for a facility site regardless of whether or not it was located within the boundaries of development. However, land dedication and in-lieu fees could not contribute to the construction of the needed facility. Compared to land dedication and in-lieu fees, impact fees provide the flexibility of development exactions needed by local governments for on-site as well as off-site facility construction. Accordingly, impact fees are characterized as the most

creative and innovative among new infrastructure financing mechanisms for local governments (Kolo & Dicker, 1993; Lee, Johnson, & Joyce, 2004) and have been a popular funding source for new infrastructure construction (Nelson, 1988).

As fiscal institutions, impact fee arrangements coordinate the financial burdens of infrastructures incurred from new development. This financial burden of infrastructure construction is supposed to be shared by the public and private together under the impact fee system. In traditional economic development policy, local as well as state governments utilized financial incentives to attract private investments not only from residing firms but from out-of-state or regional businesses as well. Under the impact fee system, it is assumed that local governments may impose the costs of new development on developers rather than subsidize them. Under the impact fee system, developers and builders are required to pay for growth; that is, impact fees function as fiscal disincentives by imposing a financial burden on the private sector in the provision of public facilities or infrastructures. Economists contend that government intervention or regulation in the private market often has negative consequences, such as deadweight loss. As discussed before, regulatory compliance burdens are linked to increased production costs. The opponents of impact fees underscore the higher development cost, which, they contend, has adverse effects on private investment.

However, what is overlooked in that approach is that impact fees can also reduce the risk and uncertainty of government decision-making for the private investment. Uncertainty over whether local land and housing development can get the government's approval increases the potential risk of private investment. Delay or decline of development permit and approval will result in significant increase in development costs in addition to actual costs of land purchases and construction. These can be considered transaction costs incurred from the contractual relationship, even though this relationship is not formal and explicit. On the government side, impact fees that are measured and collected can bind the future decision-making or approval for the development (Nicholas, 1988; see also Horn, 1995 about commitment cost). Since capital improvement planning based on development impact fees supports the construction of key public facilities such as roads, water, and sewer, government officials are less likely to delay or decline the approval of new development (Nelson & Moody, 2003). The anticipated governmental

behavior, or approval of new development, reduces the risk and the uncertainty of the private investment. On the private investment side, impact fees may be reluctantly considered as a kind of insurance or the price for business activity (Porter, 1988; Soble, 1988). Furthermore, impact fees pay, in part, for the growth of economic development, which may reduce the negative perception—in the local community and local officials alike—of consequences regarding new development, therefore reducing local resistance to growth. Impact fees are identified here as innovative fiscal institutions to finance public infrastructure and to coordinate new development.

Theoretical Framework:

The Political Market Framework and the Diffusion of Innovation

This dissertation combines the political market framework (Libecap, 1996; Lubell et al., 2002; Feiock & Lubell, 2003) with insights from the innovation diffusion literature. In the context of the political market framework, there are two significant forces that drive institutional changes: the supply and demand forces. In other words, the political market framework holds that institutional change is the result of a political process or contract between the demanders and suppliers (Alston, 1996). The focus on the demanders has explained primarily economic incentives and benefits to citizens and interest groups. However, by incorporating the role of government actors as the suppliers, the political market framework expands our understanding of political process.

A key assumption regarding the demanders and suppliers is that both sets of actors attempt to advance their own self-interests through a dynamic political contracting process. Individuals who seek to maximize their benefits attempt to change or adopt new institutions, because institutions as rules of the game provide guidance about which activities are allowed or not.

The demanders may oppose the institutional change if the change has negative consequences for the property rights they previously enjoyed. According to the property rights perspective, demanders will have great resistance to institutional changes that adversely redefine property rights, affect the decision-making regarding resource allocation, and result in negative consequences for their private interests (Libecap, 1989; Eggertson, 1990; Gerber, 2001; Feiock & Lubell, 2003). On the other hand, government actors such as politicians and bureaucrats attempt to maximize their own utility or

benefits, while they are often oriented to public-regardingness (Banfield & Wilson, 1963). It suggests that the product of institutional change may be somewhat different from what the demanders initially intended. This raises distributional conflicts between the demanders and suppliers. The political power of the demanders and suppliers can play a critical role in political bargaining. For that matter, the suppliers can face resistance from the demanders who insist on maintenance of the current status quo. As a consequence, the transaction costs of the suppliers as well as the demanders will increase.

The key to creating new institutions is to overcome the transaction costs between the demanders and suppliers of institutional change (Alston, Eggertsson, & North, 1996; Lubell et al., 2002). Using the case of local watershed partnerships, Lubell et al. (2002) found that local cooperative institutions emerged among local actors to resolve reckless exploitation of common pool resources or watersheds. The underlying rationale for the success of local cooperative institutions is that potential benefits of new institutions are greater than the transactions costs of creating them. The political contract perspective contends that resource availability on the part of the actors can create positive environments to overcome transaction costs in dealing with diverse interests (Riker & Sened, 1996; Lubell et al., 2002).

However, by focusing on the demanders and suppliers, the political market explanation of institutional change is limited, because it does not fully develop how external contextual forces may promote or deter adoption of innovative institutions. Studies of policy innovation focusing on internal and external factors explain how new ideas and programs are adopted. This dissertation draws key insights from adoption of innovative policy and builds on its distinction of internal and external forces. While the demanders and suppliers can be understood as internal, both internal and external forces can shape their preferences and strategies. Regarding external factors, neighboring jurisdictions' adoption of innovations and external competition may put pressure on or provide lessons to decision-makers or politicians (Berry & Berry, 1990, 1992). In addition, intergovernmental constraints affect the local decisions (Feiock & Carr, 2001).

Innovation studies ask why innovations occur or what explains the adoption of new ideas and programs. Internal determinant forces and external diffusion factors are widely chosen to explain the innovation. Initially, studies of innovation examined the

individual and organizational innovation and diffusion of innovations in the areas of education and sociology, and were extended to the spread of municipal reform at the city level (Knoke, 1982) and policy innovation at the state level (Walker, 1969; Berry & Berry, 1990, 1992).

While studies of innovation were initially developed in education and sociology, Walker pioneered the adoption of innovation studies to the state level (Berry & Berry, 1999). Since Walker's seminal work on policy innovation in 1969, many studies of state government innovation have been conducted in political science (Gray, 1973; Berry & Berry, 1990; Mintrom, 1997). Walker (1969) referred to an innovation as "a program or policy which is new to the states adopting it, no matter how old the program may be or how many other states may have adopted it" (p. 881). Therefore, the innovation study focuses on the mechanism of how new programs or ideas are adopted by the states rather than their effect on citizens. Walker (1969) explained why there was an innovation of state policies using two models: the internal determinant model and the diffusion model. Gray (1973) expanded the study of innovation focusing on three policy areas, welfare, and civil rights, and offered the significance of issue- and time-specific factors.

Significant developments in innovation research emerged in the early 1990s. Before the 1990s, most innovation studies including Walker (1969) and Gray (1973) investigated internal determinants and diffusion factors separately. However, Berry and Berry (1990) integrated both models in the investigation of state lottery adoption and introduced event history analysis, which provided more sophisticated analytic tools for innovation studies. Hays and Glick (1997) also stress that innovation should be simultaneously considered by incorporating the public pressure and internal characteristics. The public puts pressure on public officials to respond to substantial problems such as deteriorating infrastructures. In doing so, internal conditions or characteristics should be conducive to the adoption of innovative ideas and programs (Hays & Glick, 1997).

In summary, by incorporating insights from this literature into political market theory, this dissertation emphasizes internal determinant forces including supply- and demand-side as well as external factors influencing the preferences and strategies of the demanders and suppliers. In other words, division of the demanders and the suppliers

provides easily identifiable forces of institutional change. Furthermore, assuming that public authorities, such as elected public officials and bureaucrats, are the primary guardians of public institutions, it is appropriate to regard public authorities as the supply-side forces of institutional change. However, this dissertation argues that the suppliers are not simply characterized as being reactive to the requests of the demanding forces for institutional change. Under certain circumstances, the suppliers can drive institutional change, which may affect the property rights of the private sectors. The suppliers may act as the demanding forces for new institutions to solve growing policy problems such as fiscal stress and deteriorating local infrastructures. As institutional choice scholars persuasively argued, institutional change can result in distributional advantages for the public, which come sometimes at the expense of certain private interests (Clingermayer & Feiock, 2001).

The diffusion of innovation and existing institutional arrangements such as state rules and case laws influence local institutional changes such as ordinances. Libecap (1996) adds that we lack a full understanding of institutional change unless we incorporate the actors at stake as well as the surrounding political, economic, and social conditions. Davis and North (1971) demonstrate that institutional change can be driven by the potential benefits that new institutional arrangements can lead to. As such, there are winners and losers from institutional change and winners may create safety clauses to benefit themselves from future changes in institutions.

The combined framework identifies four key sets of variables: motivations of the demanders and suppliers, internal resources/obstacles, external competition or emulation forces suggested by policy diffusion theory, and intergovernmental constraints/incentives. These sets of explanatory factors are useful in identifying local institutional change. The next section of this dissertation lays out the factors creating institutional change in greater detail.

Internal Influences on Institutional Demand and Supply

When motivation to change institutions becomes strong, local jurisdictions are more likely to adopt institutional innovations. This logic can also be applied to the availability of resources. The higher the availability of resources, the greater the chance of adopting innovative institutions, because resources are useful to overcome obstacles

(Mohr, 1969; Berry & Berry, 1990). Motivations, resources, and obstacles are not mutually exclusive in affecting the adoption of innovation; rather, they interact with one another. The strength of each determinant collectively may influence the likelihood of innovation. For example, if organizations lack motivation to do so, there is little chance of adopting innovations regardless of lower obstacles and a higher degree of resource availability (Mohr, 1969; see also Berry & Berry, 1990).

Motivation of the demanders and suppliers

The important question regarding motivation factors becomes, “Whose motivation drives institutional change?” The political market framework focuses on the demanders and suppliers. Institutional change results from the interplay or bargaining between the suppliers and demanders in a society and is “the product of political process” between them (Alton, 1996, p. 27).

The political market approach identifies citizens, business groups, and other organizational interests as the demanders of institutional change. It assumes that citizens and business groups attempt to maximize their benefits or utility. Furthermore, interest group theory largely developed in political science emphasizes competition among diverse interest groups to attain limited resources (Peterson, 1981; Teske, 1991; Schneider & Teske, 1993). Existing institutional arrangements may not provide benefits to citizens and business groups, and therefore they may seek to form new institutional arrangements (Davis & North, 1971). As a consequence, institutions, as the products of human choice, are designed by those who interact in ways that help them attain their goals or a set of preferred outcomes (Grafstein, 1988). McKelvey and Ordeshook (1984) emphasize that institutions reflect participant preferences for feasible outcomes (see also Grafstein, 1988). Shepsle and Weingast (1984) further contend that human action consists of individual preferences as well as the expectations of others’ preferences and actions. More specifically, institutions, whether explicit or implicit, are created and/or modified by individuals considering their own preferences as well as the uncertain expectations of others.

How institutions are established or arranged can define and affect the property rights of citizens and business groups. To accomplish desirable outcomes, citizens and business groups may drive institutional change or seek to maintain the status-quo.

Clingermayer and Feiock (2001) explain the potential consequences of institutional change on citizens and business groups as follows:

Preferences for particular institutional arrangements are based on the anticipated distributive policy consequences of those choices. Local public leaders and citizens have preferences over institutional arrangements not because those features are viewed as inherently good or evil, but because they believe those characteristics of government lead to certain outcomes that are favored or disfavored (p. 33).

The government acts as the supplier of institutional change. The underlying rationale of the government as the supplier is that the government has “the resources and the will to determine the basic structure of property rights in their territory” (Alston, Eggerstsson, & North, 1996, p. 280; see also Riker & Sened, 1996). Most innovation studies also focus on policy decision-makers or politicians (Berry & Berry, 1990, 1992, 1999; Mooney & Lee, 1995). Theory suggests that they try to maximize their probability of reelection. In seeking reelection, politicians generally avoid controversial policy issues and adopt popular programs, especially in election years (Berry & Berry, 1990). In other words, when politicians intend to increase their chances of reelection, there may be strong motivation to adopt innovative and popular programs.

By incorporating government actors as the suppliers in the model, the political market approach offers a more realistic explanation regarding institutional change (Riker & Sened, 1996). It is assumed that the government does not provide institutional change without considering the costs and benefits resulting from change. In other words, institutional change produced by the government may not always follow the decision the demanders intended. For that matter, Riker and Sened (1996) argue persuasively that the neoclassical model, which focuses only on economic activity of the demanders, is incomplete.

The motivation factor posits that the demanders and suppliers drive institutional change to increase their benefits and reduce costs. The key issue is the ability to overcome the opposing forces of institutional change.

Internal resources/obstacles

Local governments and organizations facing obstacles are less likely to adopt new programs and institutions. Obstacles function as resisting forces to change because they increase the transaction costs of institutional change for both suppliers and demanders. By analyzing innovation at the organizational level, Mohr (1969) identifies poor readiness resulting from lack of materials, time, and personnel as obstacles to innovation.

On the other hand, resources will help localities overcome transaction costs such as the uncertainty and risk resulting from the adoption of innovative institutions and program, which may have adverse effects on citizens' and business groups' property rights. Resource availability is considered a prerequisite to seek and adopt new ideas and programs. Furthermore, as implementation of innovations requires funding sources, resource availability is a critical determinant for innovation. In general, innovation studies focus on two types of resources: 1) financial and administrative capacity, and 2) policy entrepreneurs (Walker, 1969; Schneider, Teske, & Mintrom, 1995; Mintrom, 1997; Berry & Berry, 1999).

Increased financial resources are understood as higher expenditures for new programs, public services, and personnel. It is suggested that financial resources are closely linked to administrative capacity and thus provide more chances to adopt the innovation (Mohr, 1969; Berry & Berry, 1990). Another stream of resources comes from policy entrepreneurs and their influences on innovations. Policy entrepreneurs are understood as high demanders of institutional change who have the energy, persistence, and resources to push new ideas and programs continuously until they are adopted. Policy entrepreneurs are found to be critical not only in agenda setting but also in the initiation of school choice programs (Kingdon, 1996; Mintrom, 1997). Entrepreneurs are not limited to politicians and bureaucrats. Recent work has identified the role of "institutional entrepreneurs" in institutional change. For example, Feiock and Carr (2001) identify boundary entrepreneurs such as public officials as well as residents/citizen organizations and business associations. The identification of policy entrepreneurs depends on perception. Survey methods have been widely used to identify whether there are

entrepreneurs and if so, who they are (Schneider, Teske, & Mintrom, 1995; Mintrom, 1997).¹¹

External Influences on Institutional Demand and Supply

The diffusion of innovation

The policy diffusion explanation of innovations posits that individual units or states emulate new ideas or policies adopted by other states, by which policy makers reduce the risk of new policy-making (Berry & Berry, 1990). Diffusion is defined as “the process by which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 2003, p. 5). Of significance in diffusion models are the reasons for diffusion and diffusion channels, which explain why and how individual jurisdictions emulate innovation.

The diffusion model suggests that diffusion of new ideas and programs results from two important processes: learning and competition.

First, policy-makers facing complex alternatives learn from others successful experiences (Berry & Berry, 1999). They follow the examples of success in complex issues and seek shortcuts (Walker, 1969). In a similar vein, organization theory provides useful insights for diffusion of institutional change. DiMaggio and Powell (1983) contend that when tasks and situations are new and uncertain, and organizations need to build consensus between organizational members, organizations mimic widely accepted and successful practices from other agencies or organizations, which is known as “mimetic isomorphism.” By doing so, the organization can minimize the internal conflict or ex ante disagreement for an uncertain future as well as trials and errors, which may have substantial influence on an organization’s survival.

Second, states and individual jurisdictions compete with each other to take advantage of innovations (Berry & Berry, 1999). The rationale behind competition is that there exist widely accepted standards or laws at the national level. In order to attain a competitive advantage or to avoid disadvantage, states and individual jurisdictions may adopt those standards (Berry & Berry, 1999). In a similar way, this idea is supported and articulated in organization theory by DiMaggio and Powell (1983). To legitimize

¹¹ It is especially difficult to analyze the role of entrepreneurs in the case of longitudinal and cross-sectional data analysis. The survey method has limitations due to lack of memory of respondents. Due to this limitation, this dissertation does not include entrepreneurs in the later discussion and analysis.

occupational autonomy and to identify work conditions and production markets, organizations follow professional norms, which are shared in professional alliances and associations (DiMaggio & Powell, 1983). Professional norms are related to the recognition or belief in appropriate behavior internalized in individuals or organizations. DiMaggio and Powell (1983) describe these professions as normative pressures, and two sources account for why normative isomorphism occurs: 1) formal education and training may provide organizational norms, which are acquired by professional managers, and 2) regional or national networks of professional associations allow managers or organizations to share similar occupational values and norms.

While identification of these two processes aids in understanding the underlying rationale of innovation diffusion, it is difficult to sort the processes out in practice. Several forms of diffusion models are based on different diffusion channels: the regional diffusion model, the national interaction model, the leader-laggard model, and the vertical influence model (Berry & Berry, 1999).¹² This dissertation employs the regional diffusion model and the national interaction model to emphasize neighboring effects and statewide competition.¹³

The regional diffusion model focuses on how geographically proximate jurisdictions influence the adoptions of policy innovation. Berry and Berry (1999) describe a regional diffusion model that includes *the neighbor model* and *the fixed-region model*. The neighbor model of diffusion focuses on neighboring jurisdictions' influence on the adoption of innovation. On the other hand, the fixed region-model first identifies several regional areas and assumes that diffusion occurs within the same region following within-jurisdictions' adoption of innovations. This classification of the regional diffusion model provides a sophisticated explanation for the regional diffusion process, but it is difficult to draw the boundaries of the fixed-region. Furthermore, as Berry and Berry (1999) addressed, it is hard to explain neighboring jurisdictions' effects, which are not included in the same fixed region. The regional diffusion model provides a useful

¹² Berry and Berry summarized several forms of diffusion models comprehensively.

¹³ In the national interaction model, a unit of the policy innovation study is an American state. This dissertation focuses on Florida counties and thus the term 'the national interaction model' is analogous with "the state interaction (or state diffusion) model."

supplement to the political market theory by defining the process by which states emulate their neighboring states' innovative ideas or programs.

In addition, the national interaction model holds that the emulation across counties statewide may have influence on a county's institutional choice. The insight is driven from the study of policy diffusion at the state level in political science (Gray, 1973; Berry & Berry, 1999) and institutional isomorphism in organization theory (DiMaggio & Powell, 1983). It is assumed that state officials are exposed to new ideas and practices through participation in national associations (Berry & Berry, 1999). Organization theory argues that participation in national associations and conferences enhances organizational legitimacy (DiMaggio & Powell, 1983). Organizations follow professional norms, which are shared in professional alliances to legitimize occupational autonomy and to identify work conditions and production markets (DiMaggio & Powell, 1983). This dissertation asserts that through media attention, professional alliances, and conferences, organizations or states may internalize professional norms as well as new ideas and practices that are widely accepted and successful from other states or organizations.

Intergovernmental constraints

Within a political market, the rules and/or institutional arrangements used may promote or hinder the adoption of new institutions. It is notable that in the American federal system, local governments are nested under state government (Clingermayer & Feiock, 2001; McCabe & Feiock, 2001). Since lower-level institutions or rules are embedded and constrained by higher-level institutions, institutional change at the lower level needs to incorporate the intergovernmental context. For example, local charters and ordinances are nested in and influenced by state constitutions, statutes, and case laws. State constitutions define how a set of rules at the local level can be created and changed. Ostrom (1999) explains nested rules as follows: "All rules are nested in another set of rules that define how the first set of rules can be changed" (p. 58). For example, Ostrom identifies three levels of rules: 1) operational rules influence daily decisions of participants and can easily be changed, 2) collective-choice rules affect the operational rules and activities, and 3) constitutional-choice rules provide guidelines for crafting and

changing choice rules. The rational nexus standards developed through case laws have significant impact on local land use rules.

CHAPTER 3

PROPOSITION BUILDING

This chapter lays out testable propositions based on the modified political market framework discussed in Chapter 2. These propositions will be operationalized as hypotheses in Chapter 4.

The framework, which combines the political market framework and innovation studies, identifies four sets of variables that affect impact fee adoptions at the local level. The variables include motivations of the demanders and suppliers, internal resources/obstacles, external incentives for competition or emulation, and intergovernmental constraints/incentives. For motivations, this dissertation identifies the suppliers and demanders focusing on elected public officials, citizens, and the development community. Internal resource factors relate to institutional/administrative capacity and fiscal conditions. External factors include incentives created by a pattern of previous adoption and intergovernmental constraints/incentives. Intergovernmental constraints/incentives are discussed in the context of the Growth Management Act of 1985, the Save Our Homes (SOH) Amendment (or Amendment 10), and case laws in Florida.

Based on four sets of variables, this dissertation develops propositions regarding the factors that explain the adoption of impact fees.

Determinants of Impact Fee Adoptions

Internal Influences on Institutional Demand and Supply

Motivations of the suppliers and demanders

Motivations of the suppliers facilitate the adoption of innovative fiscal institutions. Political market theory identifies politicians and public officials as the suppliers of institutional change (Alston, 1996; Riker & Sened, 1996). With regard to

motivation of those institutional suppliers, political structures or systems are assumed to provide dissimilar incentives and constraints to local politicians and public officials (DeSantis & Renner, 1994; Morgan & Kickham, 1999; Clingermayer & Feiock, 2001). In particular, the reform movement of county governments has brought lively debate about local decision maker's incentives and motivations regarding revenue options, expenditures, and service delivery. The reform movement at the county level has been represented by modernized forms of government such as commission-administrator (or manager) and commission-elected chief executives (or mayor) as well as home rule authority (or charter). This dissertation articulates two reformed forms of governments and continues to discuss home rule authority in order to examine motivations of the suppliers.

Reformed county government followed a different path than municipal reform government (Feiock & Tavares, 2002). At the turn of the 20th century, the municipal reform movement attempted to weaken the role of the political machines or mayoral power within local politics. The professional manager position institutionalized in the council-manager type of government emerged to replace the political machine. However, reform efforts at the county level have been different in that counties emphasized the separation of power from traditional commission form of government. It attempted to shift the commission form to commission-administrator and commission-elected chief executives. In doing so, the reformed county underscores centralized leadership, professional management, and accountability (Benton, 2002). While there are variations between two reformed forms of governments, the bottom line is that the reformed form of county governments offers different motivations, incentives, and constraints to local decision-makers than non-reformed county commission government. The discussion largely benefits from the study of municipal reform movement, because the study of county government structures and their consequences are rare.

The mayor under the mayor-council forms of government¹⁴ is expected to have strong incentives—high-power incentives (Frant, 1996)—to adopt popular programs or institutions. Mayors are highly sensitive to reelections. As a consequence, they are not

¹⁴ The International City/County Management Association (2003) identifies three forms of county government: commission, council-administrator, and council-elective executive.

likely to risk promotion of unpopular and controversial programs, which will increase the transaction costs on the part of elected officials. Instead, as long as the new program and institutions can be visible and enhance political credit claiming in that local government is responsible to the citizens, the mayor will push adoption and implementation of innovation (Clingermayer & Feiock, 2001). For example, elected public officials are unlikely to increase general taxes, which will be used for infrastructure, because they will impose a fiscal burden on existing residents and thus have negative consequences in the next reelection. Rather, they may prefer user fees or impact fees, which will be paid by the development community or incoming new residents. The rationale is that the fiscal burden incurred from the impact fee system may be shifted to developers or new residents (Huffman et al., 1988). While the final incidence of the fiscal burden is still debatable, existing residents assume minimal or almost negligible financial burdens as a result of impact fees (Frank & Downing, 1988). Local politics determines the extent to which communities leverage impact fees.

Furthermore, the local leadership can make a significant difference in the innovation adoption, because strong leadership can coordinate diverse local interests regarding growth management (Frederickson & Johnson, 2001). In other words, a leadership can lower the transaction costs resulting from coordination problems between diverse interests in local land use. The accumulation of knowledge in political institutions in general, and local political structures in particular, identifies the role of local leadership in solving conflicts of interest at the local level (Schneider & Teske, 1993; Frederickson & Johnson, 2001). A study conducted by the International City/County Management Association (ICMA, 1995) found that what is important in political institutions is adequate leadership, which reduces conflicts and strengthens problem solving. Furthermore, several studies identify the increasing role of leadership in handling diverse interests embedded in land use at the local level (Frederickson & Johnson, 2001; see also Svara, 1990). In a similar vein, Clingermayer and Feiock (2001) also contend that elected mayors may function as growth management entrepreneurs. Criticizing the growth machine approach which views both elected officials and local business groups as growth machines, Schneider and Teske (1993) identify that in New York, strong elected executives emerged as antigrowth entrepreneurs.

The main thrust of commission-administrator form is that there is a centralized professional executive who is in charge of daily county administration. The administrator (or manager) has been characterized as supporting values of professionalism and efficiency enhancement for the county. This professional norm or standard of administration underscores the significance of the role of planning in local land use and financial management.

Home rule authority may also provide dissimilar motivations, incentives, and constraints for local decision-makers. Home rule authority can allow the county to redefine the judicial, legislative, and administrative power and motivations as long as the changes are not in violation of the state statutes. Before home-rule authority, county governments could be created and abolished by state law and function as administrative arms or political subdivisions of the state (Benton, 2002). Accordingly, county authority under “Dillon’s Rule” was limited in the context of electoral, judicial, legislative, and administrative power (Feiock & Tavares, 2002). In general, the term “charter” refers to the set of laws forming the basis of all levels of U.S. government (Kemp, 2003). While the word “constitution” is widely used at the state and federal level, this dissertation uses and limits home-rule charter as laws, which form the basis of county government.

Until the early 20th century, county governments were depicted as incompetent political machines (DeSantis, 2003). In contrast, Snider (1952) argues that county governments assumed more responsibility and experienced greater expansion of their role in service delivery by the mid-20th century. While there has been controversy regarding the role of counties, several studies have noted that counties experienced significant changes in political structure, service functions, and fiscal administration over the century (Benton, 2002; DeSantis, 2003). In particular, significant changes occurred from adopting a charter.

The key characteristic of a home-rule charter is that a charter county can exercise “all powers of local self-government” which should be consistent with the state law. In other words, states have allowed more independent power in the delivery of public services and the management of fiscal administration. This is a significant turn in the American federalist system.

The primary reasons for shifting more self-governing power to counties were associated with the growing complexity of local affairs resulting from demographic, geographic, and economic changes (DeSantis & Renner, 1993; DeSantis, 2003). Included among these complex problems is fiscal administration, for which the home-rule charter county provides more flexibility to deal with new revenue sources and fiscal control (DeSantis, 2003). DeSantis reports that through home-rule authority, counties could make flexible use of revenue sources compared to prior forms of governance. Therefore, public officials under the home-rule authority system may have greater latitude and flexibility to initiate new revenue sources through institutional change.

In 1968, the Florida Constitution allowed county governments to adopt home-rule charter authority. Article VIII in the Florida Constitution distinguishes charter government from non-charter government as follows:

(f) NON-CHARTER GOVERNMENT. Counties not operating under county charters shall have such power of self-government as is provided by general or special law. The board of county commissioners of a county not operating under a charter may enact, in a manner prescribed by general law, county ordinances not inconsistent with general or special law, but an ordinance in conflict with a municipal ordinance shall not be effective within the municipality to the extent of such conflict.

(g) CHARTER GOVERNMENT. Counties operating under county charters shall have all powers of local self-government not inconsistent with general law, or with special law approved by vote of the electors. The governing body of a county operating under a charter may enact county ordinances not inconsistent with general law. The charter shall provide which shall prevail in the event of conflict between county and municipal ordinances (Article VII, Section.1).

The Florida state law prescribes that counties that intend to initiate home-rule authority create a “Charter Commission.” The Charter Commission is in charge of “comprehensive study of the operation of county government and of the ways in which the conduct of county government might be improved or reorganized” (Statutes, 125.63). Through a referendum election and majority vote of the electors, the county will adopt a county charter.

In summary, counties have traditionally provided limited services such as welfare and corrections, which were largely prescribed in state laws. This limited interpretation of county functions was problematic, because economic and demographic change resulting from urbanization accompanied new demands in the areas of growth management, traffic, parks, and schools. To cope with these problems, reformed forms of government emphasize centralized executive leaderships. Furthermore, counties with a home-rule charter have more latitude to initiate new governing rules, as long as the rules are not inconsistent with state laws. Without a doubt, increased demands made county governments seek new revenue sources for those optional services in creative ways.

Proposition 1: Modernized (or reformed) counties are more likely to adopt innovative fiscal institutions such as impact fees.

As mentioned before, impact fees are considered both as growth management tools and new local financing mechanisms that affect the development community as well as citizens. The political market approach posits that local constituents such as citizens and business groups demand institutional change or current status-quo in order to protect their property rights (Alston, 1996; see also Feiock & Lubell, 2003). Accordingly, this dissertation focuses on developers' and citizens' motivations through their characteristics and demand for new developments.

The demanders are expected to have different interests and values regarding regulatory fiscal institutions in general and impact fees in particular. For example, the development community may oppose new regulatory rules, but citizens who value a higher quality of life may seek innovative regulation or impact fees to cope with rapid economic development and consequent deterioration of public facilities.

Impact fees are imposed on developers who enhance the use of land and thus increase demand for new infrastructure. Impact fees have several characteristics. First, under the impact fee system, infrastructure is financed by developers rather than local governments. Second, impact fees are imposed on new developments that require new infrastructure construction. Accordingly, previously built infrastructures are beyond the impact fee application. The question, then, becomes, "Why are impact fees levied on developers and new developments and new infrastructures?" Kelly (1997) stresses the underlying logic of impact fees:

The service cost of new development may often be shared by all the citizens of the community rather than assessed to the developer or his client, but the cost is real and the benefit is particular. That is, while there may be some indirect benefit to the community at large from new development, there is a direct and quantifiable benefit to the developer when the community services are extended to the new site (pp.1600-1601).

However, local land use regulation is intended to coordinate economic interests in the private market with the public interests. Development impact fees were intended to reduce unplanned local growth and impose part of the fiscal burden resulting from new development on the businesses, i.e., developers and builders. This implies that government intervention in the private development market can constrain the economic benefits of developers and builders. Empirical evidence suggests that growth management policy constrains local economic growth and has an adverse effect on local housing markets (Feiock, 1994; Anthony, 2000).

The growth machine literature contends that local policy is largely determined by the development interests of local business sectors (Molotch, 1976; Logan & Molotch, 1987; see also Peterson, 1981). The growth machine model emphasizes the selective benefits of growth elites rather than collective or public benefits of the entire community. In other words, development benefits serve “a subpopulation of influential local elites” or growth machines including developers, builders, real estate companies, and local business groups (Molotch, 1976; Goetz, 1990, 1994). Those small numbers of business groups are in “the privileged position” in local politics (Schneider & Teske, 1993). As a result, the growth machine and/or regime is small but well organized and has financial resources to facilitate business-friendly policies and programs. Motivations of the development community also have a significant influence on the choices of local policy decision-makers (Molotch, 1976; Schneider, 1989; see also Burns, 1994).

Proposition 2: The greater the political power of the business groups, the lower the likelihood of adoption of impact fees.

On the other hand, antigrowth coalitions may support impact fees. Antigrowth regimes¹⁵ typically consist of local neighborhood groups and environmental groups that emphasize public costs of growth such as traffic congestion and environmental deterioration (Schneider, 1992; Schneider & Teske, 1993). Most antigrowth regimes are reactive to urban growth and also less organized and powerful than growth coalitions. The primary obstacle to form and continue an antigrowth regime can be explained by collective action problems due to “a diffuse set of interests” (Schneider & Teske, 1993, p. 724; Burbank, Heying, & Andranovich, 2000, p. 338). Using case studies of Los Angeles, Atlanta, and Utah for Olympic development, Burbank et al. (2000) found that opposition to Olympic-related development was piecemeal, meaning that opposition was intended to “divert development from a specific location or mitigate negative consequences” rather than to block development (p. 352). However, the main body of antigrowth politics literature suggests that wealthy and educated residents are active in mobilizing antigrowth movements with great success (Logan & Molotch, 1987; Logan et al., 1997). Clark and Goetz (1994) provide empirical evidence showing strong antigrowth sentiments in localities with higher incomes and educated residents.

Proposition 3: Communities with strong anti-growth constituencies are more likely to adopt impact fees.

The citizens’ ideology may direct local governments to actively deal with growth management or impact fees. Republican party ideology, which emphasizes individual economic freedom and less intervention of governments in private markets, may decrease the likelihood of impact fee adoption. On the other hand, Democratic party ideology holds its values in line with environmental policies and conservations and thus supports increased roles of governments in growth management (Feiock & Lubell, 2003).

Proposition 4: Democratic political ideology in particular will have a positive effect on impact fee adoptions.

In addition to additive effects of the demanders and suppliers to institutional choice or impact fee adoptions, interactive effects between the form of government and the demanders are examined. I posit that the commission form of government may be

¹⁵ In light of the strength of opposition to growth, Burbank, Heying, and Andranovich (2000) identified two aspects of the antigrowth regime: opposition as antigrowth movement and opposition as piecemeal resistance.

more responsive to interest group (or demanders) activism than the reformed form of county. The underlying rationale is that the reformed county emphasizes professional management and centralized administration, which is implemented by chief executives with backgrounds in professional training and technical experience (Feiock, Jeong, & Kim, 2003). In other words, the professionalism in daily administration insulates local decision-making from political pressures of interest groups (Lineberry & Fowler, 1967; Lyons, 1978; Sharp, 2002; Feiock, Jeong, & Kim, 2003; Feiock & Lubell, 2003). This argument underscores the interactive effects of form of government on local institutional choice in relation to the demanders' interest. Research also shows that form of government plays a mediating role for local policy outcomes in the area of economic development incentives (Feiock, Jeong, & Kim, 2003) and local morality policies (Sharp, 2002).

Proposition 5: Motivations of the demanders in non-reformed county are more likely to drive the adoption of impact fees than motivations of those in reformed county.

Internal resources/obstacles

Local governments having higher administrative capacity¹⁶ can overcome the costs of institutional change. The logic supporting this proposition is that impact fee systems require complicated formulas to calculate the amount of fees and technical complexity to implement diverse fee types (ACIR, 1986, 1991). Therefore, administrative capacity is assumed to be a prerequisite to formulating impact fee formulas and resolving technical complexity. By doing so, local governments can reduce the transaction costs in the process of political bargaining with the demanders as well as implementing the fees. According to the 1986 survey of the Florida Advisory Council of Intergovernmental Relations (ACIR), larger counties had more tendencies to utilize impact fees (ACIR, 1986) because those counties had higher administrative capacity than smaller ones.

The study of institutional capacity has been conducted primarily at the state level, focusing on state institutional capacity and its economic consequences. This dissertation illustrates the significance of administrative capacity using the case of legislative

¹⁶ In this dissertation, administrative capacity is interchangeable with institutional capacity.

professionalism and the role of administrative capacity on policy outcomes. Then, key insights are drawn and applied to local institutional capacity.

Institutional capacity may be explained by effective management systems (Brace, 1993; Elkins et al., 1996). Governments with an effective managerial capacity will encourage the improvement of state economies by adopting “stimulative economic policies” (Brace, 1991). For example, over the last three decades, state legislatures implemented a great number of policy innovations not only in welfare policies but also in economic development policies. Bowman and Kearney (1988) stress that the increased capacity of state legislatures has been distinctive. In general, enhanced legislative capacity is characterized by legislative professionalism. For policy formation, professionalized legislatures that devote more time and energy to conduct research and develop policies, are less vulnerable to diverse demands of interest groups, especially business groups (Brace, 1993; Elkins et al., 1996). Previous studies utilized legislative professionalism with internal expenditures of individual legislators (Brace, 1991, 1993; Elkins et al., 1996). That is to say, legislative bodies with higher institutional capacity tend to have more staff members and financial resources and produce more bills to promote economic development policies.

The significance of administrative arrangements is also seen in the context of environmental policy outcomes (Feiock & Stream, 2001). The assumed tradeoff between the environment and the economy has been challenged by several studies, which identified the potential economic benefits of environmental regulation (Goetz, Ready, & Stone, 1996; Feiock & Stream, 2001). State and local governments may benefit from an improved quality environment without harming their economy where institutional structures and administrative arrangements play mediating roles. For example, one stop permitting can reduce the steps of administrative procedures for private firms and increase regulatory compliance without harming business activities (Feiock & Jeong, 2002). Feiock and Stream (2001) suggest that state environmental regulation is embedded in administrative arrangements that shape the context of regulatory uncertainty and risk of private firms. Using 50 states from 1983-94, they report that certain administrative arrangements can enhance state economic activities by reducing the risk and the

uncertainty and thus providing a more favorable environment to firms' profit maximization.

Increasing demand for growth management at the local level has made fiscal administration and planning capacity more significant. DeGrove (1986) suggests that local governments face a variety of challenges from the citizens' demands for growth management. Among the most conspicuous of these challenges is local government capacity. While the term "local government capacity" is ambiguous, the underlying message is clear in that local administrative capacity does matter in coping with local needs and in promoting the innovative rules and policies.

Based on a national survey regarding sewer impact fees, Frank and Downing (1988) posit that larger communities are more likely to employ sewer impact fees. Using a national survey of 658 counties in 1995, Steel and Lovrich (2000) suggest that "county governments are important in the growth management policy process—both as innovators and implementers of state-level statutes" (p. 16).

Proposition 6: Counties with higher administrative capacity are more likely to adopt impact fees than smaller counties.

Poor financial conditions drive communities to consider innovative fiscal institutions (Kolo & Dicker, 1993; Lee, Johnson, & Joyce, 2004). The construction of infrastructure requires long-term financial plans and a great amount of funding. In order to share the financial burden with future generations, the principle of "pay-as-you-benefit" provides the rationale for borrowing money from future generations for capital projects by issuing bonds. Yet, the abuse of tax-exempt bond issuances for private activities during the 1970s and early 1980s led to federal restrictions on tax-exempt bond issues of local governments through the enactment of the Tax Reform Act of 1986. Limits on tax-exempt bonds and general obligation (GO) bonds boost the cost of bonds for local governments. With tax-exempt bonds, local governments can issue bonds with lower costs, since bondholders enjoy federal income tax exemptions. The Tax Reform Act in 1986 substantially constrained the financing of GO bonds forcing localities to be less reliant on tax-exempt bonds for the construction of infrastructure. Instead, special districts such as housing and education were more actively involved in long-term tax-

exempt bonds. Those districts issued over one half of all long-term tax-exempt bonds in the years following enactment of the reform (Peterson, 1991).

Kolo and Dicker (1993) stress that impact fees can act as an alternative to bond issues in the construction of infrastructure. This implies that when localities intend to rely less on debt financing while maintaining current infrastructure services, local governments are more likely to adopt impact fee systems.

Proposition 7: Poor financial conditions facilitate localities to adopt innovative fiscal institutions such as impact fees.

External Influences on Institutional Demand and Supply

External competition or emulation from the diffusion

The regional diffusion explanation assumes that local jurisdictions' choices are influenced by the geographically proximate jurisdictions' innovation adoptions. The diffusion channel is regional and diffusion occurs through learning and competition. As discussed before, local governments in the state of Florida experienced several legal challenges from the development community in adopting impact fees. In other words, public officials in several jurisdictions faced a risk and uncertainty in changing current practices of growth management or impact fees.

However, neighboring jurisdictions' experiences of impact fees may provide useful lessons to the jurisdictions considering impact fee adoptions. Through neighboring jurisdictions' experiences, they can learn the specific types of impact fees available, their effects on revenues and infrastructures, and complex formulas.

The competition explanation is somewhat controversial in that impact fees may function as disincentives by imposing financial burdens on the development community. Instead of achieving a competitive advantage from innovation adoption, impact fees may result in economic disadvantages to the local jurisdictions. A market model of demand for growth emphasizes increased production costs of private firms, that is, government regulation of private markets will result in an increase in production costs and as a consequence have an adverse effect on private investment (Siegel & Johnson, 1993; Feiock, 1994; Goetz, Ready, & Stone, 1996). Disincentives resulting from regulatory burdens will suppress new private investment of not only residing business groups but also out-of-state (or regional) businesses. The adverse business environment may cause

the firms to reduce new production or search for new business sites in other business friendly states. On the other hand, while some scholars do not disagree with production cost arguments, they contend that this argument does not convincingly explain business decision-making (Feiock & Stream, 2001). However, in another stream of arguments lie the positive consequences of impact fees. Institutional and/or administrative arrangements adopted by local governments can mitigate the effect of increased production costs by reducing the risk and uncertainty of private investments (Feiock & Stream, 2001). Nelson and Moody (2003) add that impact fees reduce the risk and the uncertainty of development for the development community.

Impact fee adoption across counties has not occurred simultaneously. Rather, since the initial adoption by Broward County in 1977, impact fees have been an ongoing local issue over the past three decades. Regional diffusion theory adds useful insights in the explanations of impact fee adoption. For these reasons, local jurisdictions may emulate impact fees already initiated by neighboring jurisdictions allowing the risk of impact fee adoptions to be reduced and new enactments to be more easily justified to the public.

Proposition 8: When the border counties have already adopted impact fees, a county is more likely to adopt impact fees.

In addition to neighboring counties' experiences, counties may also internalize the statewide experiences of impact fee practices. The national interaction model articulated by Berry and Berry (1999), even though it is developed in the study of state policy diffusion, can be applied to diffusion among counties within a state. At the state level, several institutional arrangements facilitate the dissemination of ideas and practices through interactions between county officials. These institutions include the Florida City and County Management Association, the Florida Association of Counties, the Florida Government Finance Officers Association, and the Florida Chapter of American Planning Association. Organization theory adds that by mimicking or learning other organization's experiences, norms, and practices in professional associations, uncertainty in institutional change is reduced. Interestingly enough, Abrahamson and Rosenkopf (1993) utilized "bandwagon pressures" as driving forces for institutional change and bandwagon pressures stems mainly from a desire of legitimacy and the threat of lost competitive

advantage. Referring to competitive advantage, Abrahamson and Rosenkopf (1993) note that “Adopting an innovation is very tempting to organizations because adopters’ performance will approach the average whether the innovation succeeds or fails” (p. 493). This bandwagon pressure promotes diffusion of particular organizational structures and thus increases mimetic organizational change, since organizations are embedded in organizational fields and as a consequence, they are more likely to take those changes for granted (Abrahamson & Rosenkopf, 1993).

Proposition 9: Statewide adoptions of impact fees are likely to have a positive influence on the county’s adoption of impact fees.

Intergovernmental constraints

Intergovernmental institutions may function as incentives or constraints on local institutional change (see Ostrom, 1999). State growth management rules guide and coordinate local land use and development. In Florida, state requirements of capital improvement plans make local governments identify innovative ways of growth management and control. With regard to tax and expenditures, state statutes constrain an annual increase in local property tax. Case laws developed through several court battles between development communities and local governments also prescribe the rational nexus standard for local land use exactions.

Land use and growth management policy is traditionally initiated and implemented by local governments. Since the early 1970s, however, population growth, traffic congestion, and urban sprawl at the local level have all resulted in the active involvement of state governments in supervising and coordinating unplanned growth. For example, Oregon was a forerunner in state growth management legislation in 1973 (Steel & Lovrich, 2000). Several states including California and Florida followed in the 1980s. In the early 1990s, 12 states initiated statewide growth management plans, which coordinated and provided guidelines for local land use and growth management policy and planning (Steel & Lovrich, 2000). The primary purpose of state growth management is to reduce precarious and unplanned growth or urban sprawl with the state institutionalization of growth management regulations. Of significance is that state growth management enhances regulatory power over local land use, in general, and local growth actions, in particular. The extent to which states are involved in local growth

management varies from having no requirements to having state approval of local growth management changes.

Florida enacted the Local Government Comprehensive Planning Act (LGCPA) in 1975, which required local governments to adopt comprehensive plans, but the lack of funding and enforcement mechanisms made the LGCPA difficult to implement (Feiock, 2004). However, the Florida Growth Management Act of 1985 took a strict position, requiring a state agency or the Department of Community Affairs (DCA) to review the local comprehensive plans and to approve local land use changes. In addition, local governments should follow concurrency requirements, which mean that infrastructure should be in place when new developments are completed. Therefore, without incorporating intergovernmental institutions at the state level in our model, it is difficult to gain a full understanding of local land use and growth management choices. It could be argued that state growth management statutes might reduce the uncertainty of the local initiation of impact fees.

Tax and Expenditures Limitations (TEs) at the state level also constrain an annual increase in the amount and rate of local taxes and expenditures. In the midst of a series of restrictions, public agencies favored impact fees that could expand revenues despite the rejection of tax revenue growth (Lee, Johnson, & Joyce, 2004).

Previous surveys on TEs emphasized state control for local finance during the 1970s and 1980s (Mullins & Joyce, 1996). The control stems mainly from the fact that localities continue to grow, which has been accompanied by a continuing increase in taxes, especially local property taxes. Tax revolt in the mid-1970s in California represents a citizens' anti-tax increase movement. As a result of increasing resistance to soaring local tax rates and bases, California adopted Proposition 13, which constrained levels of increase in local property taxes in a given year. This was a significant step for a state to control the fiscal practice of localities (King-Meadows & Lowery, 1996). Most states, though varying in characteristics, have adopted and implemented TEs that had an impact not only on states but also localities (McCabe & Feiock, 2001). As of the early 1990s, four-fifths of states had passed constitutions and statutes or both, regarding limits to states' and localities' taxing power (ACIR, 1995). These TEs varied substantially in

reducing and limiting increase in annual growth of government revenues and expenditures.

Florida has imposed a variety of constitutional and statutory limitations on taxing and spending. These limitations include specific property tax rate limits, assessment increase limits on property tax, and full disclosure provisions for county, municipality, and school district at the local level. Table 3-1 presents enactment dates of TELs on local government in Florida. While overall specific property tax rate limits apply to all local governments within the state, specific property tax rate limits vary with the type of local governments or specific functions. These specific limits are the most widely used mechanism (ACIR, 1995). Florida restricts the growth of property value assessment, and tax payers are supposed to be aware of rate increase proposal and participate in public hearings through the full disclosure provision. For limitations on assessment increases, the Save Our Homes (SOH) Amendment was passed by Florida citizens in 1992 and effective in 1995. the SOH Amendment limited the annual assessment of homestead property as follows: “1992 initiative constitutional amendment limited assessments on homestead property to the lower of (1) 3 % of prior-year assessment or (2) the percent increase in CPI” (ACIR, 1995, p. 41).

Table 3-1

Tax and Expenditures Limitations in Florida

	Specific Property Tax Rate Limit	Full Disclosure	Assessment Increase Limit
County	1968	1974	1995
Municipality	1968	1974	1995
School District	1855	1974	1995

Note. ACIR, 1995. Tax and Expenditure Limits on Local Governments.

Impact fees have resulted in legal battles in several states between developers and local governments, although these disagreements vary according to individual circumstances (Kolo & Dicker, 1993).¹⁷ The controversy can be narrowed down to two

¹⁷ Juergensmeyer (1988) offered an excellent summary on the legal battles between Florida municipalities and the development community.

issues: 1) the rationale behind impact fees, that is, impact fees as taxes or regulations, and 2) the timing of impact fees. The first issue is whether or not impact fees are a type of tax. Early court decisions in Florida viewed impact fees as a tax imposed on land development (*Venditti v. City of Hollywood*, 1975; *Broward County v. Janis Development Corp.*, 1975) and invalidated the impact fee ordinance of the City of Miami, which lacked the specifications for earmarking of funds (*City of Miami Beach v. Jacobs*, 1975). However, later court decisions upheld impact fees as a local police power and emphasized the rational nexus standard. Among the legal battles is the case of *City of Dunedin*, Florida for which the Second District Court of Appeals supported impact fees in 1979 for the first time after a three-year battle with *Contractors & Builders Association of Pinellas County* (Juergensmeyer, 1988). The substantial expansion of impact fees followed three court decisions in 1983, which widely recognized the reasonable nexus tests first identified in the case of *City of Dunedin* mentioned above (Juergensmeyer, 1988).¹⁸ Nicholas and Nelson (1988) discuss the rational nexus test with two underlying principles:

First, there must be a reasonable connection between community growth that new development generates and the need for additional facilities to serve that growth. Second, there must be a connection between the expenditure of the fees collected from contributing development and the benefits that development enjoys. In other words, the rational nexus test calls upon local government to show that growth will result in a need for the new or expanded facilities that impact fees assessed against new development will finance (p.171).

Second, even though there is controversy about one-time payments, this is less salient than the former issue. As mentioned before, impact fees are imposed upon developers on the issuance of approvals for new developments. In doing so, operating costs are excluded from impact fees. Instead, those costs are paid from user fees or other types of revenues (Peiser, 1988).

¹⁸ Three court rulings include *Hollywood, Inc. V. Broward County*, *Town of Longboat Key v. Land End*, and *Home Builders Association v. Board of County Commissioners of Palm Beach County* (Juergensmeyer, 1988).

The taxing power of local governments is limited by state statutes or home rule charters. Nonetheless, court decisions of impact fees as a regulatory mechanism rather than tax for new developments broaden the opportunities of impact fee adoptions (Frank & Downing, 1988).

In summary, the Growth Management Act of 1985 emphasizes capital improvement plans through concurrency requirements in local land use, and the SOH Amendment constrains an annual assessment increase of homestead property. As a consequence, it becomes more important for local governments to find new revenue sources for infrastructure. In addition, case laws prescribe the rational nexus standards and clarify local regulatory power regarding impact fees.

Proposition 10: State legislation regarding growth management and an assessment of homestead property, as well as case laws, are likely to increase the adoption of impact fees.

Control Variables

Rapid population growth results in a wide variety of social problems in the areas of transportation, housing, environments, and crime rates. It also raises the most significant concerns including a higher demand for newly constructed houses and the consequent increased demand for new infrastructure constructions and/or the expansion of existing public facilities.

Previous studies on impact fees directly link population growth to impact fee adoptions. Frank and Downing (1988) stress that states which experience greater population growth account for a large number of impact fee systems, especially California and Florida. Even though population growth has some influence on impact fee adoptions, this dissertation incorporates population growth as well as the demands on new development. The logic behind impact fee adoptions needs to address two distinct steps. First, rapid population growth certainly places a higher demand on new developments such as new housing and buildings. Second, the demand for new developments will require increased financial resources such as impact fees to accompany infrastructure construction. Connerly (1988) argues that governments determine the amount of impact fees in light of the estimated demand for infrastructures accompanied by new developments. In the same vein, a community that demands new

development and infrastructure tends to employ impact fee systems and generates more money from diverse types of impact fees (Frank & Downing, 1988). Accordingly, this study incorporates population growth as well as needs for residential developments.

Proposition 11: Localities experiencing rapid growth in the context of population and residential developments are more likely to initiate impact fee systems.

As a result of the rapid expansion of economic development, environmental conservation has been a critical issue in Florida (Holcombe, 1990), especially along coastal zones. In Florida, the way to handle growth demand and environmental conservation along coastal zones is distinctive in the local comprehensive planning process required by the Growth Management Act of 1985. It is expected that counties containing coastal zones will actively seek to balance demands in new developments and growth management than non-coastal counties.

Proposition 12: Coastal counties are more likely to adopt impact fees.

CHAPTER 4

HYPOTHESES, DATA, AND METHODS

This chapter develops hypotheses to test those propositions developed in Chapter 3 and discerns data sources, measurement of variables, and statistical methods. The following section operationalizes four key sets of variables identified in the integrated framework, presents hypotheses based on the propositions introduced in the previous chapter, and develops an empirical model. Event history analysis is employed to analyze impact fee adoptions, using 66 Florida counties from 1977 to 2001.

Data, Measures, and Hypotheses

Dependent Variable

The dependent variable in this dissertation is impact fee adoption. Fee adoption is operationalized by an effective year, which is measured by dichotomous values; if an impact fee ordinance is effective in a certain year, that year and the years later are coded as 1 and otherwise 0. In fact, since the event history analysis focuses on the time of event occurrence, the later years are dropped off in the final data sets. Adoptions in Florida counties have not occurred simultaneously. Among Florida counties, Broward County was a forerunner in the adoption of impact fee systems in 1977. Since the initial adoption of Broward County, impact fee systems have been widespread across counties, especially in the 1980s. During this period, half of the counties launched impact fee systems (ACIR, 1991).

Developers or builders are supposed to pay impact fees on a wide range of new developments such as residential, commercial, and industrial developments to name a few. Among them are residential developments for which local governments impose diverse types of impact fees.¹⁹ In other words, while there are variations depending on

¹⁹ This dissertation utilizes impact fees collected from single-family residential development.

counties, residential developments require more types of fees to contribute to public facilities than commercial and industrial developments. For example, residential development including single-family and multi-family housing units typically imposes impact fees for transportation, water/sewer, police, fire, and parks. The fee amount for residential developments is generally calculated on the basis of interior square footage or the number of rooms, although flat fee schedules are used in some cases. The square feet method is used for fees of commercial and industrial development.

There are various types of impact fees depending on states and local governments. At the national level, Leithe and Montavon (1990) undertake a survey that reports that there are three types of fees—sewer/water, transportation, and parks—that were widely used by local governments. In the State of Florida, one survey identifies over several dozen types of impact fees (ACIR, 1991). While there are no clear-cut criteria for classification of fee types, the ACIR report groups fee types in Florida into seven categories:²⁰

- Transportation²¹: roads, transportation, right-of-way, median strip
- Water/Sewer: water, sewer, wastewater, plant connection
- Parks/Recreation/Culture: local or regional park; parks and recreation; recreation; bike path; library; cultural facilities.
- Fire/EMS: fire and emergency medical services, EMS, public safety, fire impact surcharge
- Police/Corrections: police or law enforcement or sheriff; correctional facility
- Physical Environment/Other: solid waste, river water management, beautification/environmental, sanitation, land acquisition, conservation, storm water, reclaimed water, electric, new construction.
- Other Types: schools; education; public buildings, administrative facilities, etc. (ACIR, 1991, p. 6).

²⁰ The ACIR report includes combinations of impact fees, which overlap in the same category. This dissertation eliminates overlapping fee types in each category.

²¹ Transportation impact fees are also called road impact fees, transit impact fees or traffic impact fees. This dissertation uses the term “transportation impact fees.”

The empirical analysis will examine six types of impact fees: transportation, parks, fire/EMS, police/corrections, school, and library. Parks and library fees are separated since local communities clarify and categorize them separately. In addition, water/sewer and physical environment categories are excluded due to unclear definitions of fee types across counties.²² Over the last several decades, as the number of communities adopting impact fees has grown, so has the number of fee types. The fee types have expanded from transportation and sewer/water fees to schools, parks/recreation, and low-income housing (Downing & McCaleb, 1987).

Impact fee adoption data for 66 counties in Florida are collected from several sources. First, the DeVoe Moore Center at Florida State University makes comprehensive efforts to contact 66 Florida counties to collect information (Burge, 2004). Prior to this effort, there had never been a comprehensive and systematic longitudinal data set covering impact fee adoptions in Florida. While the Department of Financial Services in Florida have collected the amount of impact fees as a type of revenue source since 1991, more detailed data for a long term period (1977-2001) are collected and used in this dissertation. In addition, the data sets are unique in that they focus on the impact fee schedules prescribed in local ordinances rather than the fees collected. Second, to enhance data reliability, the impact fee data are cross-checked with reports produced by the Florida Advisory Council on Intergovernmental Relations (ACIR). The ACIR has made ongoing efforts to survey current practices of impact fee in local governments since 1985. In particular, the Florida Impact Fees Report of 1991 includes a wide variety of topics in relation to administration of impact fees. Among them are category of impact fees and the effective date of impact fee legislation by local governments, which are used to compare the data on adoptions prior to 1991 (ACIR, 1991).

Explanatory Variables

To explain the adoption of impact fees, the integrated framework identifies four sets of variables: motivations of the demanders and suppliers, internal resources/obstacles, diffusion forces, and intergovernmental institutions.

²² In particular, charges for water/sewer facilities are classified in several ways such as tap fees, connection fees, system development charges, and impact fees. The main reason to exclude water/sewer fees is that local governments must change local ordinances to change impact fees, while other types of water/sewer fees can be changed by local resolution. In general, the purpose of water/sewer charges may be more or less similar regardless of the terminology used, but the change is more difficult for impact fees.

Differences in local political structures may lead to dissimilar motivations on the part of public officials (Clingermayer & Feiock, 2001). Following this line of reasoning, this dissertation operationalizes the supply-side determinants using political structures represented by reformed versus non-reformed county government. A reformed or modernized county is typically characterized by both centralized executive (mayor or manager) and home rule authority power (Benton, 2002).

In Florida, there are three forms of government at the county level: commission-elected executive, commission-administrator, and commission. At their inception, all Florida county governments were established under the commission form of government, in which the executive and legislative power was not separated. The Board of Commissioners exerted both powers in the early days of county administration and still does in many counties. Under the commission form of government, there is not a centralized administrative position in charge of daily county administration. Each commissioner is in charge of certain agencies or departments. Heads of departments reported daily administration to each commissioner or a designated commissioner for each agency. This structure of county administration is often criticized for its lack of centralized administration and coordination (telephone interview with county officials in Putnam County, May 2004).

At the city level, the discussion of municipal reform movement focuses on council-manager and commission forms compared to mayor-council government. Since the municipal reform movement at the turn of 20th century attempted to reduce the political machine influence within local politics, the separation of power and enhancement of professional management were fundamental. However, this dissertation argues that one should be cautious in generalizing from the municipal reform movement to county reform. For counties, the reform effort was channeled through centralized executives, which included both commission-administrator (or manager) and commission-elected executive (or mayor) forms. In most studies, reformed or modernized forms of government are referenced by those two forms. It is the commission form of government rather than the elected executive form that is considered “unreformed” at the county level (Morgan & Kickham, 1999; Benton, 2002). The common theme of reformed or modernized forms of county government focuses on executive power and

accountability (Benton, 2002). Under the commission-administrator type of government, the county administrator (or manager) is typically appointed by the Board of Commissioners and administers daily county administration at the commissioners' will. Additionally, the elected chief executive under commission-elected executive (or mayor) system plays key executive roles including budget preparation and appointment of department heads under less control of commissioners.

Charter adoption also brought significant change to counties' decision-making for service delivery and new revenue options. Under Dillon's Rule, counties as administrative arms of states provided limited services—welfare, transportation, health, and judicial services—identified in state statutes, but the home rule authority allows counties to expand the scope of those services to traditional municipal services such as utility services, libraries, and fire services (Benton, 2002). It reflects increased service demands resulting from change in local geography such as urbanization of counties (Schneider & Park, 1989; Menzel et al., 1992; Menzel, 1996). Home rule charter allows local policy makers greater discretion and opportunities to initiate new revenue options, as long as those options are not in violation of the state statutes. As a consequence, this dissertation argues that home rule authority offers different political motivations compared to non-charter county government.

The reformed county structures to measure motivations of the suppliers are divided into four categories using two-by-two matrix as reported in Table 4-1: 1) non-charter and commission government, 2) non-charter and commission-administrator government/elected executive, 3) charter and commission government, and 4) charter and commission-administrator government/elected chief executive. Then, each category is encoded using ordinal values.²³ One note that should be addressed is that assuming that home rule authority provides higher opportunities or motivations to initiate new financial options than form of governments, higher values are placed on charter and commission governments than non-charter and commission-administrator (or elected executive)

²³ Here, the ordinal values do not represent the exact interval between the numbers. Rather, counties with the higher values imply that they have a relatively more modernized system than counties with lower values. Benton (202) measured the degree of reformed county using three categories: 1) non-charter and commission, 2) non-charter and commission-administrator or elected executive, and 3) charter and commission-administrator or elected executive. This dissertation includes charter/commission in the third category and charter/commission-administrator or elected chief executive in the fourth category.

governments. Furthermore, the data sets indicated that the charter county with the commission form changed its form of government into commission-administrator form within a couple of years.

Table 4-1

Measures of the Reformed versus Non-Reformed County Structures

		Form of Government	
		Commission	Commission-administrator or elected chief executive
Charter Status	Non-Charter	1	2
	Charter	3	4

Hypothesis 1: Counties with both centralized executive and home rule authority are more likely to initiate impact fees.

Form of government data are obtained from several sources: the Municipal Year Book, local ordinances, and a telephone interview with county officials conducted by the author in April and May 2004. The International City/County Management Association (ICMA) conducts a survey regarding form of government, which is contained in the Municipal Year Book 2003. However, two issues emerged in incorporating this information in the datasets. First, it does not provide historical information in terms of changes in the form of governments. Second, significant gaps between information collected by the ICMA and current form of government in 66 Florida counties are found. Hence, I cross-check with the county ordinances and conducted telephone interviews with county officials. The most significant gap relates to the commission-elected chief executive form of governments. In fact, there are two counties which have adopted the elected chief executive system: Duval and Miami-Dade.²⁴ Both counties elect the mayor and have the county manager (or administrator) appointed by the mayor at the consent of the Board of Commissioners. Charter county data are collected from the Florida Association of Counties Directory 2004. This directory is annually published and contains information regarding county commissioners and district elections.

²⁴ As mentioned before, Duval County is excluded from research units.

Table 4-2 presents the form of government and adoption year of counties' current form of government. As of 2001, two-thirds of counties or 44 adopted commission-administrator form of government, and Miami-Dade County had the elected chief executive (or the mayor) and commission.

Table 4-2

Form of Government and Adoption Year

County	Form of Gov.	Year	County	Form of Gov.	Year
Alachua	1	1990	Lee	1	1971
Baker	1		Leon	1	late 1960s
Bay	1	1979	Levy	3	
Bradford	3		Liberty	3	
Brevard	1	1985	Madison	3	
Broward	1	1975	Manatee	1	1991
Calhoun	3		Marion	1	1983
Charlotte	1	1986	Martin	1	1974
Citrus	1	1981	Miami-Dade	2	1957
Clay	1	1999	Monroe	1	1978
Collier	1	1970	Nassau	3	
Columbia	1	2002	Okaloosa	1	1993
De Soto	1	1980	Okeechobee	1	1992
Dixie	3		Orange	1	1987
Duval	2	1968	Osceola	1	1992
Escambia	1	1977	Palm Beach	1	early 1970s
Flagler	3		Pasco	1	1973
Franklin	3		Pinellas	1	1964
Gadsden	1	1989	Polk	1	1998
Gilchrist	3		Putnam	1	1974
Glades	1	1987	Saint Johns	1	1990
Gulf	1	1995	Saint Lucie	3	
Hamilton	3		Santa Rosa	1	1989
Hardee	1	1983	Sarasota	1	1971
Hendry	3		Seminole	1	1988
Hernando	1	1983	Sumter	1	1974
Highlands	1	1991	Suwannee	3	
Hillsborough	1	1984	Taylor	3	
Holmes	3		Union	3	
Indian River	1	1982	Volusia	1	1971
Jackson	1	1984	Wakulla	1	1985
Jefferson	3		Walton	1	2000
Lafayette	3		Washington	3	
Lake	1	1984			

Note. Blank means that there have been no changes in the form of governments.

1: commission-administrator; 2: commission-elected chief executive (or mayor); 3: commission.

Source: The Municipal Year Book, 2003, ICMA and Telephone Interview by Author, April 2004

Table 4-3 shows counties with home rule authority and their adoption of home rule charter. Through 2004, 18 counties adopted home rule authority.

Table 4-3

Home Rule Charter County and Year of Adoption

County	Year of Adoption
Miami-Dade	1957
Sarasota	1971
Volusia	1971
Broward	1975
Pinellas	1980
Hillsborough	1983
Palm Beach	1985
Charlotte	1986
Alachua	1987
Orange	1987
Seminole	1988
Clay	1991
Osceola	1992
Brevard	1994
Lee	1996
Polk	1998
Columbia	2002
Leon	2002

Note. Source: Florida Association of Counties Directory, 2004

The demanders of institutional change include citizens and the development community. This dissertation assumes that certain groups of citizens defined in terms of wealth and ideology will have dissimilar preferences regarding impact fees. For the wealth of citizens, per capita personal income is employed.²⁵ Higher income citizens who

²⁵ In addition, the educational level of citizens is widely used to identify citizens' characteristics (see Feiock & Lubell, 2003). However, the education variable was not included in the analysis. First, education and income are found more or less to be highly correlated. Second, no consistent data for education is available across counties during the research period.

seek to protect their quality of life from growth will actively participate and voice their concerns in local policy decision-making process and work to impose new regulatory rules. Data on personal income are retrieved from the Florida Statistical Abstract over various years. Citizens' ideology is measured by the proportion of registered Democratic party voters. One note for registered voters is that they have been collected biennially in even years and consequently, the measures in odd years are interpolated. The development community's organizational strength, which potentially influences local politics, is also examined. When the development community is better organized and has political power, there may be higher likelihood to defeat the impact fee proposals. There is no clear-cut and consistent measurement for developers' political strength. As a proxy, this dissertation utilizes the proportion of development establishments²⁶ with over 50 employees. County Business Patterns collect annual data on business activities across the counties.

Hypothesis 2: Localities with larger populations of high-income constituents are more likely to adopt impact fees.

Hypothesis 3: Counties with higher proportions of registered Democrat voters are more likely to adopt impact fees.

Hypothesis 4: The higher the percentage of development establishment with over 50 employees, the lower the likelihood of impact fee adoptions.

The form of government is expected to mediate the influence of the demanders (or the interest groups) on the impact fee adoptions. The interactive effect is measured in the context of the commission form of government, which is used as a 1 and otherwise a 0. Then, it is multiplied by three indicators regarding the demanders.

Hypothesis 5: The effect of high-income citizens on impact fee adoptions is greater in counties with the commission form of government than counties with the reformed form of government.

Hypothesis 6: The effect of registered Democrat voters is greater in counties with the commission form of government.

Hypothesis 7: The effect of the development establishments with over 50 employees is greater when counties have the commission form of government.

²⁶ The development establishments relate to building, developing, and general contracting.

Administrative capacity implies the ability to handle and implement complicated impact fee formulas. There are no clear-cut measures available for administrative capacity. Hence, the administrative capacity is operationalized by two indicators: 1) expenditures in financial and planning departments, and 2) the budget presentation award/certificate for excellence in financial reporting. First, as a proxy of administrative capacity, higher expenditures imply that planning and financial departments may have more personnel and resources to deal with complex formulas. Second, the state and local governments submit the budget presentation and financial reporting practices to the Government Finance Officers Association (GFOA), which is the professional national association in the area of budgeting and financial management. Both programs are intended to promote the high quality budget preparation and financial reporting process, which will ultimately help local decision-makers and citizens (GFOA, 2004). Participation in these programs provides opportunities to share nationally renowned financial practices and enhance professionalism in local finance. Furthermore, these awards indirectly indicate the higher professionalism in county administration. Expenditure data are retrieved from data files of the Department of Financial Services, which requires annual reports of county financial information. The budget presentation awards and financial reporting certificate data are retrieved from the GFOA website (GFOA, 2004). They are measured by dichotomous values: if counties are awarded with both of them, counties are coded as a 1 in that year and otherwise a 0.

Hypothesis 8: More expenditure in financial and planning department will increase the likelihood of impact fee adoption and implementation.

Hypothesis 9: Counties awarded with the budget presentations and financial reporting are more likely to adopt impact fees.

Local financial conditions are employed to operationalize resources/obstacles. Financial conditions were measured by two indicators: per capita debt expenditures and debt millage rates. Per capita debt expenditures imply the debt burden by the citizens and include principal and interest payments together. Debt millage rates are used to pay for debt expenditures, which implies that as counties impose higher debt millage rate, counties demand more financial resources and seek new revenue sources. Data regarding fiscal characteristics are retrieved from the Florida Statistical Abstract.

Hypothesis 10: Higher per capita expenditures on debt finance will increase the likelihood that counties adopt impact fees.

Hypothesis 11: Higher debt millage rates will increase the likelihood of impact fee adoptions.

Following Berry and Berry (1999), this dissertation identifies the two types of diffusion: the regional diffusion and the state diffusion.²⁷ The regional diffusion variable is measured by counting the number of neighboring jurisdictions that had impact fee systems in previous years. In contrast, the state diffusion variable focuses on the statewide counties' adoption of impact fees. The state diffusion is calculated by the number of all counties with impact fees in previous years.

Hypothesis 12: Neighboring border counties with impact fees in previous years may have positive effect on the likelihood of a county's choice of impact fees.

Hypothesis 13: When there are more impact fee counties statewide in previous years, the county is more likely to adopt impact fees.

Intergovernmental institutions emphasize the role of state statutes and case laws developed through legal battles between development communities and county governments. First, the effect of state statutes is operationalized by the state legislation, which is known as the Growth Management Act (GMA) of 1985. The GMA of 1985 required that local governments should develop their own comprehensive plans by the early 1990s. In particular, the GMA of 1985 includes concurrency requirements in local planning, which implies that new developments should accommodate infrastructures concurrently. The GMA legislation is measured using dummy values; the years before legislation of the GMA of 1985 are coded as 0 and otherwise 1. Second, the Save Our Homes (SOH) Amendment reflects citizens' resistance to property tax increases in Florida. This amendment constrains an annual assessment increase of homestead property. Therefore, local governments are expected to find new revenue options, such as impact fees, to cope with fiscal problems. The SOH Amendment was effective in 1995 and thus, this dissertation evaluates the post-1995 effect using dichotomous values: Pre-1995 periods are coded as 0 and otherwise 1. Third, case laws focus on three legal cases

²⁷ Berry and Berry (1999) used the term 'the national diffusion', but this dissertation renamed it as 'the state diffusion', because the research unit in this dissertation is Florida county.

of 1983.²⁸ While case laws are established through several court battles, 1983 cases clarified and established the rational nexus standard for local impact fees. The case laws variable is measured by dummy variables and this dissertation estimates post-1983 effects on impact fee adoptions.

Hypothesis 14: The GMA of 1985 increases the likelihood of impact fee adoptions.

Hypothesis 15: The SOH Amendment of 1995 is likely to increase impact fee adoptions.

Hypothesis 16: The legal decisions of 1983 increases the likelihood of impact fee adoptions.

Demands of local development are operationalized by development permits and population growth. While there are several types of development permits such as residential, commercial, and industrial permits, this study focuses on residential development permits. Development permits for housing indicate a variety of demand on local infrastructure and provide unique and consistent annual data.²⁹ There are two types of residential permits: single- and multi-family housing permits. Another proxy for local development is population growth, which is measured by the annual change in population. Data on housing permits and population change are taken from the Florida Statistical Abstract.

Hypothesis 17: Counties experiencing rapid development in single- and multi-family housing may have a higher likelihood to establish impact fee systems.

Hypothesis 18: Higher annual increases in population size increase the likelihood of the adoption of impact fees.

The coastal zone variable represents whether or not counties include coastal zones and is measured using dichotomous values; if the county includes coastal zones, it is coded as a 1 and otherwise a 0.

Hypothesis 19: Counties with coastal zones are more likely to initiate impact fees.

The hypotheses developed above can be applied to aggregate impact fees as well as to different specific types of fees. Nonetheless, the following analysis differentiates the

²⁸ Three court cases are *Hollywood, Inc. v. Broward County*, *Town of Longboat Key v. Land's End*, and *Home Builders Association v. Board of County Commissioners of Palm Beach County*. See pp. 42-43 in detail.

²⁹ Demand in new development might also include industrial and commercial developments and so on. However, annual data in those developments were not available.

effects of some explanatory variables on different types of fees. The underlying rationale is that the characteristics of each fee type may be more or less distinct and thus some explanatory variables may have different effects on certain fees. Except for the study of sewer impact fees by Frank and Downing (1988), the research regarding impact fee adoptions could not explain different segments of impact fees in a comprehensive way. In other words, no study has provided solid theoretical guidance on which factors are more likely to influence different fee types. Despite this lack of direct linkages, the accumulation of knowledge may provide some insight to differentiate the effects of some explanatory variables. This dissertation presumes that the effects of determinants vary more or less depending on the characteristics of public facilities. In this vein, this dissertation focuses on the development community's reaction to diverse fee types, reformed county, administrative capacity, and local financial conditions. One caveat that deserves mention is that this differentiation is relative rather than absolute.

First, the effect of explanatory variables will be dissimilar depending on the extent to which new development can be linked to infrastructure requirements in the rational nexus standard. Communities have a long history of charging exactions for road construction, water/sewer facilities, and parks (Downing & McCaleb, 1987; Purdum & Frank, 1987). In addition, it will be relatively easy for local governments to verify that new development results in demands for those facilities compared to facilities for school, libraries, police, and fire services, because the service target group such as new residents, not the whole community, is easily identifiable. Hence, impact fees for transportation and parks may result in less resistance from the development community. As mentioned before, the school impact fee provides a good example of the development community's resistance in Florida. In this vein, a reformed county is more likely to adopt controversial impact fees among diverse interest groups, because the centralized leadership and management plays a key role to coordinate diverse interests (Frederickson & Johnson, 2001). In the context of technical complexity, administrative capacity may have dissimilar effects on the types of impact fees. Transportation impact fees accompany complicated calculation of daily flow of vehicles, road capacity, and level of services, that is, transportation facility is categorized as engineering facility (Purdum & Frank,

1987). Thus, local governments' planning and financial capacity are expected to be particularly important to the initiation of transportation impact fees.

Second, to what extent does each public facility have local service characteristics? This dissertation assumes that as public services are primarily provided by local governments, local financial stress is more likely to drive impact fee adoptions for those facilities. Services for police, fire, library, and school are typically provided by local governments with local financial resources (Lee, Johnson, & Joyce, 2004). With reduced local financial resources, local governments are expected to seek new revenue options such as impact fees to pay for those services.

Table 4-4 summarizes and presents measurements of variables and data sources in greater detail.

Table 4-4

Description of Expected Variables and Data Sources, 1977-2001

Variables	Measures	Sources
Dependent Variable		
Impact Fee Adoption	-Adoption of impact fees in certain year and county (adoption: 1; non-adoption: 0)	- Burge, 2004, impact fee data collection. - ACIR, 1991 Impact Fees Report
Explanatory Variables		
Institutional Suppliers	- Four ordinal values 1: non-charter and commission 2: non-charter and commission-administrator 3: charter and commission 4: charter and commission-administrator/mayor	- Municipal Year Book - Telephone interview by author
Institutional Demanders - Citizens' Wealth - Citizens' Ideology - Political Strength of Development Community	- Per capita personal income (\$) - Proportion of registered Democrat voters (%) - Proportion of business establishment with over 50 employees (%)	- Florida Statistical - Abstract County Business Patterns

Table 4-4 Continued

Variables	Measures	Sources
Administrative Capacity		
- Department Expenditure	- Expenditures of financial and planning departments (\$)	-Department of Financial Services, Florida
- Budget Presentation Award and Financial Reporting Certificate	- Both winners: 1; otherwise: 0	-GFOA website
Financial Conditions		
- Debt Millage	- Debt millage at the county level	- Florida Statistical Abstract
- Debt Financing	- Per capita debt expenditures (\$)	- Local Government Financial Report (Dept. of Financial Services)
Intergovernmental Institutions		
- The GMA Act	- State Growth Management Act of 1985 (pre-1985: 0; otherwise: 1)	
- The SOH Amendment	- The SOH Amendment of 1995 (pre-1995: 0; otherwise: 1)	
- Case Laws	- State court rulings in 1983* (pre-1983: 0; otherwise: 1)	
Diffusion		
- Regional Diffusion	- # of neighboring counties with impact fees system in previous years	
- State Diffusion	- # of counties statewide with impact fees system in previous years	
Local Growth		
- Housing Permits	- Housing building permits issued by counties (single- and multi-family housings)	- Florida Statistical Abstract
- Population Growth	- Annual change in population (%)	
Coast Zones		
	Counties including coastal zones (Yes: 1; others: 0)	

Note. * *Hollywood, Inc. V. Broward County, Town of Longboat Key v. Land's End, and Home Builders Association v. Board of County Commissioners of Palm Beach County* (Juergensmeyer, 1988).

- All dollar values are adjusted using Florida consumer price index (base year: 1983).

Methods

The inquiry on the determinants of impact fees is examined using event history analysis (EHA). EHA has been widely used to explain state policy innovation using pooled cross-sectional and time-series data (Berry & Berry 1990, 1992). While Berry and Berry (1990, 1992) use a qualitative change or event through policy innovation at the state level, this dissertation applies EHA to impact fee adoption at the county level. In consideration of longitudinal variations across counties, EHA provides useful analytical tools for local decisions on whether or not to adopt impact fees.

Among all counties, Broward County was a vanguard for innovative impact fee adoption in 1977. Accordingly, the time period in question runs from 1977 to 2001. The hypotheses will be tested in two stages. First, to examine the inception of impact fee ideas, this dissertation does not distinguish between fee types; rather, this dissertation examines aggregate impact fees for each county in the first stage. This is because once the impact fee system is institutionalized, it is highly implausible that impact fees will be abandoned. The underlying rationale ties to the fact that considering deterioration of infrastructure and financial problems, localities are less likely to abandon attractive funding sources. As a consequence, impact fee adoption is regarded as a single and non-repeatable event. Second, this dissertation identifies each type of fee and analyze whether explanatory variables have dissimilar effects on diverse fee types, which include transportation, fire/EMS, parks, school, police/corrections, and library.

General Model of Event History Analysis

Event history analysis³⁰ in policy innovation studies asks how many years it takes for individual governments to adopt innovative policies and what factors influence the occurrence of events or policy adoptions. In a broader sense, event history analysis attempts to model the relationship between duration of events and the effect of covariates.

The key issue in event history analysis is that for some subjects, failures or events may not be observed no matter how long the subsequent follow-up is made (Singer & Willet, 1993). The events may not occur or the subject may experience other events, which are not taken into consideration for the purposes of research, for example, death

³⁰ Event history analysis is also known as “duration model” in economics and “survival analysis” in biostatistics and engineering.

from a car accident in the study of the duration effect of cancer drugs on the patient's survival. Those observations are called 'censored data' and censoring is assumed to be independent from the risk set, which consists of observations that have not experienced the event or failure until the given time (Singer & Willet, 1993).

Event history data have been widely analyzed in the context of a continuous time framework (Beck, 1999). The following section discusses the key issues to understanding event history analysis using the continuous time framework and then expands to the analytical model for impact fee adoptions using discrete-time framework.

Event history analysis focuses on the hazard rate, which functions as a dependent variable in the empirical model. The hazard rate is defined as "the instantaneous risk of having the event at time t , *given that the event did not occur before time t* " (Yamaguchi, 1991, p. 9). This definition incorporates both the probability density function and survival function. The probability density function implies the unconditional probability density of the occurrence of the event. On the other hand, survival function refers to "the probability of not having the event prior to time t " (Yamaguchi, 1991, p. 10).

In general, the hazard rate $h(t)$ (Cox, 1972) is defined as:

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{P(t + \Delta t > T \geq t | T \geq t)}{\Delta t} = \frac{f(t)}{S(t)}$$

where $P(\bullet)$ is the probability that the event occurs between the time t and $t+\Delta t$ given that the adoption did not occur prior to time t (see also Yamaguchi, 1991). Here, T is a positive random variable regarding the time of transition and Δt is infinitesimal interval.

The integrated hazard rate $H(t)$ that represents the total accumulated risk by time t is given as:

$$H(t) = \int_0^t h(u) du$$

The probability density function of adopting impact fees at T is defined as:

$$f(t) = \lim_{\Delta t \rightarrow 0} \frac{P(t + \Delta t > T \geq t)}{\Delta t}$$

The survival function $S(t)$ is the probability that the local government has not adopted impact fees by time t and is formulated as:

$$S(t) = P(T \geq t) = \exp\left[-\int_0^t h(u)du\right] = \exp[-H(t)]$$

The formulas mentioned above can be rewritten as follows:

$$S(t) = P(T \geq t) = \exp[-H(t)]$$

$$F(t) = 1 - P(T \geq t) = 1 - \exp[-H(t)]$$

$$F(t) = 1 - S(t)$$

where $F(t)$ is cumulative distribution function.

In practice, event history analysis employs the hazard rate model compared to $f(t)$ or $S(t)$. Yamaguchi (1991) provides three underlying rationales of the hazard rate $h(t)$ as follows:

- (a) It is substantially important to consider the risk attached to a person at a given time, given that the person has not had the event by that time;
- (b) if such a risk depends on certain time-dependent covariates, it is easy to model the effects of the “current” values of the covariates on hazard rates;
- and (c) a particular class of models, called proportional hazards model, can be employed without specifying a functional form for the effects of time (or duration) on hazard rates (p. 10).

In case of high possibility of tied events, i.e. adoption of impact fees in the same year, discrete-time event history analysis is highly recommended (Yamaguchi, 1991). As a rule of thumb, if more than 5% of the subjects at risk are in ties, Prentice and Farewell stress that the partial likelihood estimates are problematic (as cited in Yamaguchi, 1991).

Therefore, Yamaguchi (1991) recommends the use of maximum likelihood method with discrete-time models. Discrete-time analysis assumes that the events or failures occur at a discrete time. The basic model employed in this dissertation is now discussed.

In discrete-time analysis (Yamaguchi, 1991), the probability of having an event or impact fee adoptions at time t is as given:

$$f(t) = \Pr(T = t)$$

The survival function is:

$$S(t) = \Pr(T \geq t)$$

The discrete-time hazard function, $h(t)$ is the conditional probability of experiencing impact fee adoption at time t , given that the county did not adopt impact fees prior to time t .

$$h(t) = \Pr(T = t | T \geq t) = \frac{f(t)}{S(t)}$$

Here, the discrete-time hazard function is formulated using only time t . The hazard probability $h(t)$ can also be explained by independent variables or covariates such as time-variant and time-invariant variables. The more generalized model having covariates is as follows:

$$h(t) = \Pr(T = t | T \geq t; \alpha, X\beta)$$

where, T : duration variable

α : baseline probability

β : column vector of parameters

X : row vector of covariates

In general, the logit model of discrete-time data assumes that the odds of the event at each discrete-time are proportional to the baseline odds, which are given as:

$$\frac{h_i(t; X)}{1 - h_i(t; x)} = \frac{h_0}{1 - h_0} \exp(X\beta)$$

where, h_i : conditional probability of having the event at time t

β : column vector of parameters

X : row vector of covariates

h_0 : the baseline hazard

In a logistic regression, the formula above is as follows:

$$\ln\left[\frac{h_i(t; X)}{1 - h_i(t; X)}\right] = \alpha + X\beta$$

The advantage of discrete-time analysis is that it can be analyzed by extending the logit or probit models, which are widely used in social sciences (Beck, 1999).

Model Specification

The previous discussion of the key determinants of impact fee adoption and control variables leads to the development of a model to help formulate the factors of impact fees at the county level. Equation 1 specifies the relationship between impact fee adoption and explanatory variables.

$$\begin{aligned} \text{FeesAdoption}_{it} = & a_0 + a_1 \text{ReformedCounty}_{it} + a_2 \text{PersonalIncome}_{it} \\ & + a_3 \text{DemocratVoters}_{it} + a_4 \text{BusinessStrength}_{it} + a_5 \text{GFOAaward}_{it} \\ & + a_6 \text{PlanningExpenditures}_{it} + a_7 \text{FinanceExpenditures}_{it} + a_8 \text{DebtFinancing}_{it} \\ & + a_9 \text{DebtMillage}_{it-1} + a_{10} \text{GMAct}_{it} + a_{11} \text{SOHAmendment}_{it} + a_{12} \text{CaseLaw}_{it} \\ & + a_{13} \text{RegionalDiffusion}_{it} + a_{14} \text{NationalDiffusion}_{it} + a_{15} \text{SingleHousingPermit}_{it-1} \\ & + a_{16} \text{MultiHousingPermit}_{it-1} + a_{17} \text{PopulationGrowth}_{it-1} + a_{18} \text{CoastZone}_{it} \\ & + a_{19} \text{Commission*PersonalIncome}_{it} + a_{20} \text{Commission*DemocratVoters}_{it} \end{aligned}$$

$$+ a_{21}\text{Commission}*\text{BusinessStrength}_{it} + a_{22}\text{TimeCounter}_{it} + e_{it} \quad (1)$$

Where,

a_0 : constant

i : each county (1-66)

t : time period (1977-2001)

e_{it} : error term

FeesAdoption_{it} on the far left-hand side in Equation 1 represents the dependent variable, which is the probability that each county will adopt impact fees each year.

For the institutional suppliers, the **ReformedCounty_{it}** variable is employed using four ordered values (see Table 4-1). Citizens' wealth is represented by **PersonalIncome_{it}**. The **DemocratVoters_{it}** variable represents the portion of registered Democrat voters. The **BusinessStrength_{it}** variable represents development community's strengths including building, developing, and general contracting.

Administrative capacity is operationalized by three indicators: 1) the **BudgetAward_{it}** indicator measures the budget presentation/financial reporting certificate, 2) **PlanningExpenditure_{it}** measures expenditures of planning department or agency, and 3) The **FinanceExpenditure_{it}** indicator is expenditures of financial department. Administrative capacity in the previous year may drive the adoption. However, the budget presentation/financial reporting award indicator in current year reflects in itself the previous year's experience and capacity. In addition, since counties' fiscal year begins from October in the previous year, expenditures indicators are not lagged by one year. Fiscal characteristics are operationalized by two indicators: per capita debt expenditures and debt millage rates. Per capita debt expenditures (**DebtFinancing_{it}**) indicate the dollars of principal and interest payments, and debt millage rates (**DebtMillage_{it-1}**) used for debt expenditures are property tax rates per 1000 dollars. Assuming that financial conditions in the previous year are reflected in decision-making, the debt millage rate is measured in the previous year. However, debt expenditures are not lagged by one year, because counties' fiscal year begins from October in the previous year.

The **GMA_{it}** variable indicates the passage of the Growth Management Act (GMA) of 1985, which, as intergovernmental institutions, mediate local institutional choices. Under the concurrency requirements of the GMA, infrastructure should be in place when new developments are completed. This variable is measured using dichotomous values (pre-1985: 0; otherwise: 1). The **SOHAmendment_{it}** variable measures the post-effect of the Save Our Homes Amendment in 1995 (pre-1995: 0; otherwise: 1). The case law variable is also measured by dummy values (pre-1983: 0; otherwise: 1).

The regional diffusion variable (**RegionalDiffusion_{it}**) used to identify the regional effect is measured by the number of neighboring counties having impact fee systems in previous years. On the other hand, the national diffusion (**NationalDiffusion_{it}**) variable is measured by the number of counties statewide in previous years.

In addition, control variables include local growth and geographic factors. Local growth is operationalized by single-family housing permits (**SingleHousingPermits_{it-1}**), multi-family housing permits (**MultiHousingPermits_{it-1}**), and population growth (**PopulationGrowth_{it-1}**). Local growth indicators are measured in the previous year to ensure that local growth causes the adoption. Population growth is an annual change in population (%). The coastal zone (**CoastZone_{it}**) is measured using dichotomous values (coastal counties: 1; otherwise: 0).

Three interaction terms between the commission form and motivations of the demanders are included using three indicators: **Commission*PersonalIncome_{it}**, **Commission*DemocratVoters_{it}**, and **Commission*BusinessStrength_{it}**.

Event history analysis concerns “the time to the occurrence of an event” (Cleves, Gould, & Gutierrez, 2002). The time reminds us of the significance of an ordered observation of events. Duration of impact fees means the time until the impact adoption. Whether time should be included or not is important in the model design process. Cleves, Gould, and Gutierrez (2002) assume that the time factor plays a role in the hazard rate and that time should be added. In that case, time functions as a proxy variable for the effects that “we do not fully understand, cannot measure, are too expensive to measure, or are unknown” (Cleves, Gould, & Gutierrez, 2002, p. 25). Duration dependence will be

measured in two ways: time counter and natural log time counter. Each will be included using **TimeCounter_{it}**.

CHAPTER 5
ANALYSIS AND FINDINGS:
PATTERNS AND DETERMINANTS OF
AGGREGATE IMPACT FEE ADOPTIONS

The propositions derived from the framework were tested using 66 Florida counties over the period 1977-2001. In the standard design of state policy adoption, a beginning or on set time is chosen the first year that any state adopted a policy.

Prior to empirical tests of the propositions, patterns of impact fee adoptions are examined to discover historical change and variations in impact fees among 66 counties. This descriptive analysis identifies the numbers of counties that adopted impact fees, diverse fee types, and the frequency of fee amount change. As was explained in the previous chapter, the parks impact fee in Broward County was the first among various types of impact fees. Following this descriptive analysis, this chapter examines what factors explain the adoption of *aggregate impact fees*. The following chapter breaks down aggregate impact fees into six categories and analyzes dissimilar effects of explanatory variables on separate types of fees. Explanatory variables in the framework include key actors in local politics, socioeconomic, institutional, and diffusion factors.

Before moving into the analyses, three issues deserve being addressed. First, due to measurement issues, motivations of the suppliers are limited to institutional arrangements, which are assumed to bring dissimilar incentives and constraints to local decision-makers. The aspects of career public officials are dealt with by focusing on the financial and planning department or agencies. As identified in the framework, the model takes them into consideration as resources in institutional change. Second, as mentioned before in brief, the State of Florida did not take state level action defining and providing guidance to local disputes regarding impact fee adoption and implementation. The

Growth Management Act (GMA) of 1985 lacks the discussion of impact fees. However, the GMA of 1985 had tremendous influence on local decisions amid continuous growth and state infrastructure requirements. With strict requirements for infrastructure concurrency and the associated fiscal commitments, the GMA contributed to the consideration of innovative funding mechanisms. The third issue is that the analysis of impact fees is implemented at the county level. The model focuses on unincorporated areas and excludes incorporated areas such as cities and townships. This design has an advantage in that it emphasizes the role of political actors and interest groups in counties for which several studies critically noted the lack of research (Morgan & Kickhan, 1999; Benton, 2002).

Findings and Analysis

Patterns of Impact Fee Adoptions

Patterns of impact fee adoptions reveal whether there have been temporal or spatial patterns or variations in impact fee adoptions across counties. Table 5-1 presents the counties and the year of aggregate impact fee adoptions. As of 2001, 37 counties have adopted impact fees with varying years of adoption.

The first issue that should be noted is that Broward County's initial parks impact fee was followed by two southern and central counties: Palm Beach (1979) and Orange (1983). A rapid increase in adoption occurred during the 1980s. The pace of spread became slower in the 1990s as many counties were already using impact fee systems.

Second, Table 5-1 shows locational differences among counties.³¹ In Florida, the counties with impact fees are mainly located in the southern part of the state. Considering that population growth and consequent development were especially distinctive in the southern area, it is understandable and consistent with previous studies (Nelson, 1988). Furthermore, the table reflects that the early adoption of impact fees were the cases of the southern counties. Through late the 1980s and 1990s, counties located in other regions also followed the adoptions.

³¹ The Department of Community Affairs in Florida is in charge of local comprehensive planning and divides the state into five planning regions: southeast, southwest, central, northeast, and north.

Table 5-1

Temporal and Spatial Patterns of Impact Fee Adoptions

County	Adoption Year	Region
Broward	77	Southeast
Palm Beach	79	Southeast
Orange	83	Central
Collier	85	Southwest
Hillsborough	85	Central
Holmes	85	North
Indian River	85	Southeast
Lake	85	Central
Lee	85	Southwest
Charlotte	86	Southwest
Dixie	86	North
Lafayette	86	North
Manatee	86	Central
Monroe	86	Southwest
Pasco	86	Central
Saint Lucie	86	Southeast
Volusia	86	Central
Citrus	87	Central
Hernando	87	Central
Martin	87	Southeast
Nassau	87	Northeast
Pinellas	87	Central
Seminole	87	Central
Saint Johns	88	Northeast
Brevard	89	Central
Leon	89	North
Miami-Dade	89	Southeast
Osceola	89	Central
Sarasota	89	Southwest
Wakulla	89	North
Flagler	90	Northeast
Marion	90	Central
Polk	90	Southwest
Alachua	92	North
Walton	93	North
Putnam	95	Northeast
Gilchrist	99	North

Note. From impact fee data collected by Burge, 2004. Adapted with permission.

The hazard rate for county adoption of impact fees is presented in Table 5-2. As mentioned in Chapter 4, the hazard rate of impact fees refers to the probability of any county to adopt impact fees in each year during the 25-year research period, given that counties have not yet adopted impact fees. Counties that already adopted impact fees are excluded from the risk sets. The hazard rate was calculated by denomination of number of adoption counties with the risk set each year. The event of impact fee adoption was significantly increased after the state legislation of the GMA of 1985.

Table 5-2

Estimated Hazard Rate for County Adoption of All Impact Fees

Year	Number of Counties at Risk (Risk Sets)	Number of Counties Adopting Fees	Hazard Rate
1977	66	1	.0152
1978	65	0	0
1979	65	1	.0154
1980	64	0	0
1981	64	0	0
1982	64	0	0
1983	64	1	.0156
1984	63	0	0
1985	63	6	.0952
1986	57	8	.1404
1987	49	6	.1224
1988	43	1	.0233
1989	42	6	.1429
1990	36	3	.0833
1991	33	0	0
1992	33	1	.0303
1993	32	1	.0313
1994	31	0	0
1995	31	1	.0323
1996	30	0	0
1997	30	0	0
1998	30	0	0
1999	30	1	.0333
2000	29	0	0
2001	29	0	0

Note. From impact fee data collected by Burge, 2004. Adapted with permission.

Figure 5-1 illustrates the cumulative hazard rate of all impact fees between 1977 and 2001. Through the early 1980s, impact fee adoption was relatively slow, thus, the slope is flat. However, it shows rapid increase during the mid- and late 1980s. Consistent with Table 5-2 above, the probability of an event or impact fee adoptions increases in the mid- and late 1980s. This confirms the social learning process of *s*-curve (Mooney & Lee, 1995; Rogers, 2003).

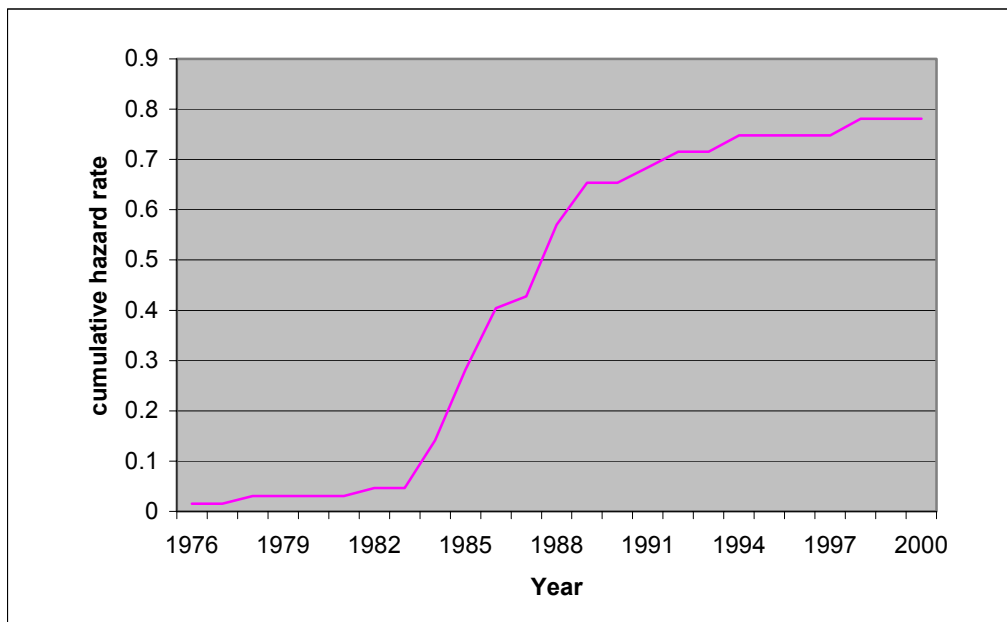


Figure 5-1. Cumulative Hazard Rate of Aggregate Impact fees (1977-2001)

Frequency of Change in Impact Fee Amounts

This section analyzes how often each county has changed its impact fee schedules and to what extent there are variations among different fee types. As there exists a wide range of variations regarding the amounts across counties, the fee change imposed on the development community, regardless of whether it occurs annually or not, varies widely. Table 5-3 presents the frequency of the fee schedule changes in the impact fee counties. The parks impact fee schedules for Broward County have changed every year since the inception of 1977. Three counties, Manatee, Monroe, and Gilchrist, have never changed

impact fee schedules regardless of fee types. Undoubtedly, there are variations in the frequency among different fee types. Parks fee schedules, on average, experienced the most frequent changes, which amounted to 3.6 per county during 25 years and was followed by road impact fees with 2.3 per county. On the other hand, for police/corrections and library fees, counties have been less enthusiastic in the fee changes.

Table 5-3

Frequency of Change In Impact Fees³²

County	Transportation	School	Police/ Corrections	Fire/EMS	Parks	Library
Broward	95	79-93			77*	
Palm Beach	79-85-89 -97-98-00		89-97-98-00	89-97-98-00	89-97-98-00	
Orange	86-99-00-01	93-94 -95-99	83-86-99-00	85-88-99		
Collier	85-90-92-00	92	99	91-92-00	89-91-99	89-91-00
Hillsborough	85-86-89-91			88	85	
Holmes	85-89-99					
Indian River	85-89-99					
Lake	85-90-95-99	91-92-94 -95-96		96		
Lee	85-89-90-00			89-95-97-00	85-89-90-01	
Charlotte	86		86	90	86	94
Lafayette				86-98		
Manatee	86		90	86	90	
Monroe	86		86	93	86	93
Pasco	86-88-90-93	2001				
Saint Lucie	86-90-96 -97-98-00	89		2000	96-97 -98-00	96-97 -98-00
Volusia	86-89 -90-91**	93-94-95 -96-97 -99-00-01		89-91-94 -95-97-98 -99-00-01	90*	
Citrus	87-91-01	87	88	88	87-91-01	
Hernando	87-94-95-97		87-94-95-97	87-94-95-97	87-97	87-94 -95-97

³² Dixie and Walton Counties have other types of impact fees and thus were excluded in this analysis

Table 5-3 Continued

County	Transportation	School	Police/ Corrections	Fire/EMS	Parks	Library
Martin	89-91-94-99	95	91-94-99	91-94-99	87-91 -94-99	91-94-99
Nassau	87-90-00		89-00	89-00		
Pinellas	87-91					
Seminole	87-90	92		87-89		91
Saint Johns	88-89-94-99	88-89-99			88-89 -94-99	
Brevard	89-01		89-01	89-01		2001
Leon	89-95***					
Miami-Dade	89-95	95	90-94	89-90-94	90-91 -93-94	
Osceola	89	92-99-00				
Sarasota	89-91-94- 96-98-99-00				89-94-99	91-99
Wakulla	89-97					
Flagler	90				90-94	
Marion	90-96-97 -98-99-00					
Polk	90-99		90	90		
Alachua	92-94***					
Putnam	95-97***	95-97***	95-97***	95-97***	95-97***	95-97***
Gilchrist	99					
Frequency of change	71	19	14	29	61	11
Change per county	2.3	1.5	1.1	1.5	3.6	1.2

Note. Numbers are the years of change.

*Counties changed the amount every year since then.

**Counties changed the amount every year since then, except for 96-99 periods.

*** Counties repealed impact fees in that year.

Types of Impact Fees

Table 5-4 presents types of impact fees and numbers of adoption counties on the basis of five-year intervals during the 25 years. The most popular are transportation impact fees, which were adopted by 34 counties. Approximately, half of all counties constituting adoptions established transportation fees during 1987-1991. Fire/EMS and parks impact fees are ranked second and third individually. Most of these fees were also

in place during the late 1980s. As of 2001, 14 counties collected impact fees for school and police/corrections facilities. While police/corrections adoption was popular in the late 1980s, school impact fees were widely in place during 1992-1996. It indicates that compared to the other types of fees, school fees follow the later adoption. Furthermore, library fees were at a peak in the late 1980s, and ten counties collected those fees. Overall, except for school fees, impact fee adoption mainly occurred during 1987-1991 and continued with less frequency during the 1990s.

Table 5-4

Types of Impact Fees

	Number of Adoption Counties					Total
	77-81	82-86	87-91	92-96	97-01	
Transportation	1 (2.9)	13 (38.2)	16 (47.1)	3 (8.8)	1 (2.9)	34
Fire/EMS	0 (0)	3 (14.3)	13 (61.9)	4 (19.0)	1 (4.8)	21
Parks	1 (5.6)	4 (22.2)	11 (61.1)	2 (11.1)	0 (0)	18
School	1 (7.1)	0 (0)	4 (28.6)	8 (57.1)	1 (7.1)	14
Police/Corrections	0 (0)	3 (21.4)	9 (64.3)	1 (7.1)	1 (7.1)	14
Library	0 (0)	0 (0)	5 (50.0)	4 (40.0)	1 (10.0)	10

Note. Numbers in parentheses are percentage.

Determinants of Impact Fee Adoptions

This section examines the determinants of impact fee adoptions in county governments. Impact fee adoptions are examined in terms of whether the county adopted a new impact fee system in a given year. The analyses of fee adoption are conducted in two stages using a logit maximum likelihood approach. The first stage is designed to explore what factors determine the local decision of impact fee adoptions regardless of fee types. Following this portion of the empirical analysis, the second stage examines a wide variety of fees in Chapter 6. These include transportation, school, library, parks, police/corrections, and fire/EMS.

Summary statistics

Table 5-5 presents summary statistics of aggregate impact fee adoptions and explanatory variables. The index of reformed (or modernized) county or 1.47 indicates that Florida counties are on average located between non-charter/commission and non-

charter/commission-administrator form. Adjusted personal income using 1983 as a base amounts to 11887.3 on average between 1977-2001. The proportion of development establishments with over 50 employees is small across counties and accounts for 1.58 percent. The same interpretation can be applied to the remaining variables.

Table 5-5

Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
All fees	1158	0.03	0.17	0	1
Reformed county	1158	1.47	0.73	1	4
Personal Income	1158	11887.30	4475.76	3425	27674
Democrat voters	1158	75.76	18.54	8.38	99.29
Business strength	968	1.58	2.84	0	33.33
GFOA awards	1158	0.04	0.21	0	1
Planning expenditures	1158	380798	1529740	0	4.6E+07
Finance expenditures	1158	3093580	7624916	0	7.9E+07
Debt financing	1158	34.89	141.28	0	4585.98
Debt millage _{t-1}	1158	0.06	0.23	0	2.12
GMA of 1985	1158	0.50	0.50	0	1
SOH amendment	1158	.25	.435	0	1
Case laws	1158	0.61	0.49	0	1
Regional diffusion	1158	0.77	1.30	0	6
State diffusion	1158	15.39	15.04	0	37
Single housing permits _{t-1}	1107	654.11	1064.87	0	8200
Multi-housing permits _{t-1}	1107	335.10	1098.84	0	20833
Population growth _{t-1}	1158	4.89	29.47	-48.071	979.496
Coastal zones	1158	0.42	0.49	0	1
Time counter	1158	10.82	6.99	1	25
Log time counter	1158	0.91	0.37	0	1.398
Commission*Income	1158	7003.04	6081.06	0	23822
Commission*Democrat	1158	53.09	40.95	0	99.29
Commission*Business	968	0.79	2.44	0	33.33

Estimation procedure

In Chapter 4, this dissertation discussed event history analysis and key issues in modeling and analyzing the event history data. Box-Steffensmeier and Jones (1997,

2004) mention that event history analytic techniques should fit into research questions, characteristics of data, and analytical tools. Before examining impact fee adoptions and determinants, it is worth discussing several issues associated with estimation procedures.

The first issue that should be noted is to determine whether the events or impact fees adoption occur in continuous-time or discrete-time process. In this dissertation, a discrete time process is employed to explain impact fee adoptions due to two reasons: the nature of the study and tied events. Some studies suggest that the choice between continuous and discrete-time analysis depends on the nature of research questions, that is, while the exact time of the event occurrence may be obtained, the nature of the study may put more relevance on discrete-time analysis rather than the continuous-time model (Box-Steffensmeier & Jones, 1997; Berry & Berry, 1999). This is because the interest of the study is to identify the relative time of the event occurrence rather than the exact time of the event occurrence. The dependent variable, impact fee adoption, is measured on annual basis, because even though the exact day and month can be identified, measures of covariates are often available only on annual basis. Furthermore, in anticipation of the high probability of tied events, this dissertation uses discrete-time event history analysis. In reality, the data of impact fee adoptions indicate that in 1985, 1986, 1987, and 1989, several counties adopted impact fees during the same year. In the case of tied discrete-time framework, Yamaguchi (1991) suggests that the analysis should employ the maximum likelihood method rather than the partial likelihood method.

Second, explanatory variables include both time-invariant and time-variant covariates. Since the value of time-invariant covariates does not change over the research period, it is more or less easy to interpret the effects. However, more caution is necessary to interpret the effects of time-variant covariates.

Third, the dependent variable is measured by dichotomous values, that is, if the county adopts an impact fee, it is coded 1 in that year and 0 for previous years. The point in the data structure is that when a county adopts impact fees, it will be removed from the datasets and is no longer in the risk set. By emphasizing the inception of impact fee systems, the empirical analysis is limited to one time event, also known as a non-repeated event. In reality, there were three counties that repealed the impact fee systems: Alachua,

Leon, and Putnam.³³ The inquiry of why three counties withdrew the system would also be an important research topic, but it would need a different research question and analytic tools, such as repeated events analysis. This dissertation includes those counties in the data analysis by focusing only on the inception of impact fee systems.

Fourth, duration dependence implies that the risk of having an event depends on the time, that is, the hazard rate varies with time. Ignoring duration dependence in binary event history data may result in highly inefficient estimates, even though parameter estimates are still consistent (Beck, Katz, & Tucker, 1998). Duration dependence is modeled by and large in two ways. Some studies include dichotomous time variables (Mintrom, 1997; Mintrom & Vergari, 1998). The dichotomous variable approach is useful when the research period is short. Box-Steffensmeier and Jones (2004) note that dummy variables are problematic when the research period is long, because they affect the degrees of freedom. Instead, a time counter can be included in model specification (Box-Steffensmeier & Jones, 2004).³⁴ This dissertation utilizes a time counter and the natural log of the time counter. Accordingly, the model design includes three model specifications: no duration dependence, linear duration dependence with time counter, and log duration dependence with natural log of time counter. To compare those models, a likelihood ratio (LR) test will be implemented (Green, 2003; Box-Steffensmeier & Jones, 2004).

Analysis of aggregate impact fees

To test the hypotheses developed in Chapter 4, this dissertation presents seven models.³⁵ The first model is examined using aggregate data of diverse fee types. The underlying assumption of this model is that the impact fee system as one of innovative institutions may be new to counties. By ignoring the type of fees, once a county adopts impact fees, it is regarded as an occurrence of an event or new ideas. In the following chapter, this dissertation breaks down impact fees into six categories and runs the remaining six models for transportation, parks, fire/EMS, school, police, and library

³³ Alachua County established only transportation impact fees in 1992 and repealed them two years later. Leon County also adopted transportation fees in 1989, which were repealed in 1995. On the other hand, Putnam County adopted several fee types such as transportation, school, police/corrections, fire/emergency services, parks, library, and building facilities. All fees were repealed in 1997.

³⁴ They introduce several ways to consider duration dependence such as time counter, natural log of time counter, and splines functions.

³⁵ STATA 8 is used to run seven logit regression models.

impact fees. The assumption made in these models is that the innovation process may not be the same across fee types.

A logit maximum likelihood approach, which is useful to analyze binary cross-sectional and time series data, is employed to explain the determinants of aggregate impact fee adoptions. In order to diagnose the duration dependency, this dissertation conducts likelihood ratio (LR) tests between no duration dependence model and two duration dependence models individually. This analysis finds that the probability of local consideration and approval of impact fee adoptions is influenced by a linear time counter.³⁶ Accordingly, the analysis is based on the linear duration dependence model.

The logit model has a modest goodness of fit of .34. Overall, the empirical findings suggest that local demanders do matter for impact fee adoptions, although the results are mixed. The political strength of the development community measured by the ratio of establishment with over 50 employees provides empirical support for the explanation that development community's political strength reduces impact fee adoptions. With regard to citizens, the Democratic ideology of the community and income variable has no significant effect. Counties with higher administrative capacity are more likely to adopt fees. The Growth Management Act of 1985 has a positive influence on local decision and approval of impact fees. The diffusion variable shows that neighboring counties with impact fees have a positive influence on counties' adoption, while statewide adoption has no effect. In addition, demand in local growth increases the likelihood of impact fee adoptions. Nevertheless, local institutional suppliers, financial conditions, case laws, the Save Our Homes Amendment, and interactive effects between commission form and demanders failed to provide empirical support to explain impact fees adoption. These results and robust standard errors are presented in Table 5-6 and discussed in depth below.

³⁶ In general, LR test uses the following formula: $LR = -2(\log_r - \log_u)$, where r: restricted model and u: unrestricted model (Green, 2003). LR statistic is tested using Chi-square test. For aggregate impact fees, the computed value (11.2) is larger than the critical value (3.84) at the .05 significance level. Hence, the hypothesis is rejected, that is, linear duration model is significantly different with no duration dependence model. However, in the case of the log duration dependence model, it was not statistically significant: the computed value was 3.8, which is less than 3.84.

Table 5-6

Logit Estimates of Duration Dependence in Aggregate Impact Fee Adoptions

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Reformed county	0.1981	0.398	0.1002	0.393	0.117	0.365
Personal Income	0.00007	0.0001	0.00023	0.0002	0.00016	0.00013
Democrat voters	-0.0075	0.022	0.0033	0.026	0.0017	0.0242
Business strength	-0.324**	0.159	-0.445***	0.159	-0.329**	0.159
GFOA awards	2.0715***	0.569	2.3089***	0.563	2.10***	5.7E-1
Planning expenditures	8.4E-8*	4.7E-8	8.7E-8	5.6E-8	8.3E-8*	4.8E-8
Finance expenditures	1.3E-9	2.3E-8	1.6E-8	2.3E-8	1.1E-8	2.2E-8
Debt financing	-0.0001	0.0005	0.00019	0.0005	2.5E-5	0.0005
Debt millage t_{-1}	-0.2846	0.931	-0.8473	1.0071	-0.667	0.969
GMA of 1985	2.6277***	0.675	2.0274***	0.776	2.596***	0.7007
SOH of 1995	0.0752	0.486	-0.0345	0.485	0.067	0.471
Case laws	0.970	0.898	2.0019*	1.048	2.399	1.652
Regional diffusion	0.3461**	0.143	0.2789**	0.136	0.331**	0.137
State diffusion	-0.1356***	0.034	-0.0048	0.055	-0.105***	0.040
Single housing permits t_{-1}	0.0003	0.0002	0.00036*	0.0002	0.0003	0.0002
Multi-housing permits t_{-1}	-0.00004	0.0001	-4.7E-5	0.0001	-2.6E-5	0.0001
Population growth t_{-1}	0.0626*	0.039	0.1384**	0.061	0.0964**	0.042
Coastal zones	1.2314*	0.655	1.0008	0.663	1.1142*	0.66
Commission*Income	0.00012*	7.3E-5	0.00011	7.9E-5	0.00013	7.9E-5
Commission*Democrat	-0.0279	0.0188	-0.027	0.019	-0.0297	0.018
Commission*Business	-0.0294	0.295	-0.0103	0.313	-0.0441	0.299
Time counter			-0.4275***	0.16		
Natural log time counter					-4.027*	2.200
Constant	-5.6958	2.16	-5.986	2.47	-5.031	2.15
N	931		931		931	
Log likelihood	-102.48		-96.87		-100.55	
Chi2	84.5		84.08		80.68	
Pseudo R2	0.297		0.336		0.311	

Note. *P= < .1; **P= < .05; ***P= < .01. Two-tailed significance tests.

Factors relating to local institutional suppliers generally fail to explain impact fee adoption in Florida counties. The direction of the coefficient estimate is positive as predicted, but it is not statistically significant.

The demander variables have mixed empirical results in terms of statistical significance. First, per capita income demonstrates a positive influence on impact fee adoptions as predicted, but lacks statistical significance. Second, the positive sign associated with the proportion of registered Democrat voter variable indicates that counties with Democratic ideology are more likely to adopt impact fees, but it is not significant. Third, the political power of development community has a negative effect on impact fee adoptions. The estimate of the proportion of development establishment with over 50 employees presents a negative sign and is statistically significant at the .05 significance level. That is to say, a one percent increase in the proportion of development establishments on the mean value decreases the probability of impact fee adoptions by .003, when the remaining explanatory variables are held constant on the mean values.³⁷

Administrative capacity does matter for impact fee adoptions. While the finance and planning department expenditure variables are not statistically significant, financial reporting certificate/budget presentation practices to national associations such as the Government Finance Officials Association (GFOA) resulted in statistically significant effect on the adoption of impact fees. As expected from the 1986 survey by ACIR in Florida, counties with more professional and higher administrative capacity in the context of financial reporting/budgeting and planning are more likely to be involved in impact fees than other counties. In other words, the probability of adopting impact fees is higher by .058 than the probability of counties without those practices. Technical sophistication and implementation issues might function as barriers for less professional counties to initiate impact fees.

The statistical results do not support role for fiscal characteristics measured by debt millage and per capita debt expenditures and signs of both fiscal factors are in opposite directions. Unlike the theoretical expectation that high millage rate and debt financing encourages counties to adopt impact fees, counties with higher millage rate and per capita debt expenditures seem to less likely to adopt impact fees. However, the results are not statistically significant.

³⁷ First, this dissertation calculates predicted log odds ratio, holding the remaining variables constant on the mean. Then, I take the anti log of odds ratio, which produces predicted probabilities of impact fees on the mean.

As far as local growth management is concerned, state growth management legislation was intended to provide coordinated regulation of local land use and prevent local governments from unplanned local development and environmental degradation. I posit that the GMA of 1985 would increase local adoption of impact fees. The empirical results in Table 5-6 demonstrate that Florida counties experienced a significant increase in impact fee adoptions after comprehensive state growth management legislation in 1985. This provides a strong confirmation that state institutions matter for local choice of impact fees. Furthermore, the case law variable also gains empirical support, but the Save Our Homes Amendment of 1995 fails to gain statistical significance.

Impact fee adoption in neighboring counties might provide favorable and positive environment when counties intend to adopt new initiatives or impact fees. The results provide strong evidence for innovation of diffusion, especially for the regional diffusion model. The estimate shows a significant and positive influence on the adoption at the .05 significance level. In other words, one additional neighboring county on the mean value may increase the likelihood of impact fee adoptions by approximately .002, given that the remaining covariates are held constant on the mean values. However, statewide impact fee adoptions in previous years lack statistical significance.

Population change and development permits issued by counties represent the strength of demand for new developments in counties. Population growth and single-family housing permits in the previous year encourage counties to adopt impact fees. The estimate shows that a one percent increase in population in the previous year increases the probability of fee adoptions by .0009, holding the other explanatory variables constant on the mean values.

For geographical characteristics, this dissertation hypothesized that counties including coastal zones would be more active in growth management or impact fee adoptions. That is, coastal counties are more likely to adopt impact fees than non-coastal counties. However, while it has a positive sign as predicted, it is not statistically significant.

Three indicators regarding interactive effects between commission form of government and the demanders fail to explain the adoption of impact fees.

Finally, the empirical result supports the duration dependence of impact fee adoptions. The negative sign implies that the probability of impact fee adoption decreases over time.

Implications

The empirical results demonstrate that changes in local financial institutions such as impact fees are complex. This is because diverse channels of interests, resources, and external incentives/constraints are melded in local decision-making. Change in local financial institutions or current status quo has critical consequences for property rights. It is not difficult to imagine that those whose property rights are affected by the change may raise their concerns and resist the change or impact fee adoptions. On the other hand, public officials who must cope with new developments, infrastructures, and local fiscal stress in daily administration seek new revenue options. Consequently, they attempt to create new financial institutions such as impact fees through ordinance changes. The framework identifies and classifies those two forces as the demanders and the suppliers of institutional change or internal determinants.

The empirical results suggest that motivations of the demanders (or interest groups) play more significant roles in change or status quo of financial institutions such as impact fees than the motivations of the suppliers. In particular, the political strength of the development community plays a significant role against the adoption of impact fees. The results suggest that a one percent increase in the proportion of development establishments on the mean value decreases the probability of the adoption by .003, given the other explanatory variables held constant on the means values. This finding confirms that local business groups exert great influence on local politics and policy-decision making (Molotch, 1976; Logan & Molotch, 1987; Goetz, 1994). However, the interest of citizens and interactive effects between commission form and motivations of the demanders fail to gain statistical support. With regard to motivation of the suppliers, reformed county with centralized executives and home rule authority does not make a difference in local choice of financial institution such as impact fees.

In addition to internal actors in local decision-making, administrative capacity provides critical resources for institutional change. One indicator, the budget presentation/financial reporting, gets strong statistical support. This finding confirms the

study conducted by the Advisory Council on Intergovernmental Relations (ACIR, 1991). As shown in the legal battles and consequently the rational nexus standard, the administrative burdens to verify the rationale of fee amounts, schedules, and the linkages between fees and capital facilities are totally on the county governments. Hence, without administrative capacity in terms of professional and skilled experts in planning and financial management, it is not easy to create controversial financial impact fee systems. Both indicators regarding financial conditions failed to explain the adoption of impact fees.

The empirical results also suggest that external environments make a difference in local choice of impact fees. Florida counties increased significantly the adoption of impact fees after the GMA of 1985. It is consistent with Ostrom's institutional constraints of upper level rules, that is, county ordinances of impact fees as nested rules are constrained by upper level rules such as state statutes (Ostrom, 1999). While the GMA of 1985 was implicit, case laws evolved through several legal battles to produce the rational nexus standard providing legal grounds for local adoptions of impact fees. The empirical finding demonstrates that the case laws as one intergovernmental institution increase the likelihood of impact fee adoptions. The study of the state policy diffusion (Berry and Berry, 1990, 1992, 1999) suggests that as demonstrated in the regional diffusion model, states emulate the innovation of policy in neighboring states to reduce political costs. The empirical results provide strong evidence that the adoption of innovation in neighboring counties encourages the county's adoption of innovative financial institutions. For example, as one additional neighboring county adopts impact fees in the previous years, it will increase the probability of a certain county's adoption of impact fees by .002, holding the remaining variables constant on the mean values. Counties seem to learn from other counties' experiences.

The findings of local growth are consistent with Nelson's (1988) and Frank and Downing's (1988) study. The empirical results indicate that single-family housing permits and population growth hold the positive direction of their effect on the adoption as predicted. These results suggest that in the midst of rapid local growth, local governments should find a new creative way to resolve fiscal problems and infrastructure deficiencies.

CHAPTER 6
ANALYSIS AND FINDINGS:
DETERMINANTS OF DISAGGREGATE IMPACT FEES

In Chapter 5, this dissertation does not distinguish among different fee types. That is to say, if the county adopted impact fees in a certain year, it is regarded as the adopting year regardless of the types of fees. However, the indicator of aggregate impact fees does not consider variations between diverse fee types and dissimilar influences of explanatory variables. The following sections break down aggregate impact fees into six types and examine the effects of explanatory variables on different fee types. As discussed earlier, extant theory and empirical work provides little guidance in formulating hypotheses regarding differences across fee types. Thus, the analysis of specific fees is exploratory and tests the general impact fee model from Chapter 5 rather than constructing unique specifications for each fee type.

Transportation Impact Fees

This section examines the determinants of transportation impact fee adoption, employing a logit maximum likelihood approach for binary cross-sectional and time series transportation data. A likelihood ratio (LR) test is implemented to diagnose the duration dependence and found that no duration dependency model is significantly different with linear duration dependence model.³⁸ The following analysis is based on linear duration dependence model.

Overall, the logit estimates suggest that internal demanders such as citizens' wealth and the political strength of development community influence impact fee adoptions compared to the suppliers. The budget presentation/financial reporting capacity

³⁸ The computed values for linear duration dependence and log duration dependence models are 9.78 and 2.76 individually. The former is bigger than the critical value of 3.84 at the .05 significance level.

and higher debt burden motivate counties to adopt new innovative system. Both intergovernmental institutions have significant positive effects on transportation impact fees. The empirical results provide evidence for regional diffusion and local growth demand. In the context of interactive effects, commission form of government is more responsive to the demanders such as citizens' wealth. Table 6-1 presents logit estimates using transportation impact fees as the dependent variable, and in-depth analysis follows below.

Table 6-1

Logit Estimates of Duration Dependence in Transportation Impact Fee Adoptions

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Reformed county	-0.171	0.411	-0.1249	0.416	-0.1899	0.408
Personal Income	0.0002	0.0001	0.0003**	0.00014	0.00023*	0.00013
Democrat voters	-0.0034	0.023	0.0068	0.0276	0.0016	0.025
Business strength	-0.2133	0.172	-3.6E-1**	1.6E-1	-0.235	0.169
GFOA awards	2.2751***	6.2E-1	2.70***	6.9E-1	2.4058***	0.638
Planning expenditures	-2.2E-7	2.9E-7	-3.9E-7	3.6E-7	-2.6E-7	3.2E-7
Finance expenditures	5.0E-9	3.4E-8	3.1E-8	3.7E-8	1.7E-8	3.4E-8
Debt financing	0.00077	0.0005	0.0011*	0.0006	0.0009*	0.0005
Debt millage t_{-1}	-0.6228	0.846	-1.634	1.1465	-1.085	0.941
GMA of 1985	2.5627***	0.757	1.9484**	0.838	2.518***	0.787
SOH of 1995	0.3094	0.518	0.125	0.537	0.242	0.523
Case laws	1.64799	1.152	2.9674**	1.251	3.925	2.596
Regional diffusion	0.5450***	0.208	0.4359**	0.197	0.5069**	0.2055
State diffusion	-0.1713***	0.041	-0.0135	0.066	-0.118**	0.052
Single housing permits t_{-1}	0.0005*	0.0003	0.0006**	0.0002	0.00049*	0.0003
Multi-housing permits t_{-1}	-7.8E-6	0.0001	-1.4E-5	0.00011	-2.1E-6	0.0001
Population growth t_{-1}	0.09426**	0.037	0.191***	0.0702	0.122***	0.0418
Coastal zones	0.9513	0.743	0.7235	0.697	0.8567	0.735
Commission*Income	0.0002***	8.3E-5	0.0002**	8.5E-5	0.0002***	8.1E-5
Commission*Democrat	-0.0585**	0.026	-0.0599**	0.028	-0.0594**	0.026
Commission*Business	-0.4152	0.319	-0.3641	0.302	-0.4207	0.314
Time counter			-0.4875**	0.221		
Natural log time counter					-5.5165*	2.864
Constant	-7.609	2.626	-7.769	2.984	-5.927	2.544

Table 6-1 Continued

	No Duration Dependence	Linear Duration Dependence	Log Duration Dependence
N	989	989	989
Log likelihood	-82.89	-78	-81.51
Chi2	89.44	85.84	85.41
Pseudo R2	0.4	0.434	0.41

Note. *P= < .1; **P= < .05; ***P= < .01. Two-tailed significance tests.

While the effect of the suppliers is not significant, the demanders result in mixed consequences on the adoption of transportation impact fees. As predicted, higher income citizens exert their power to adopt impact fees. In the same vein, the development community opposes the adoption of transportation fees. Both indicators get statistical support in affecting transportation impact fees at the .05 significance level. However, citizens' ideology is not successful in explaining transportation fees. The commission form seems to respond to the demander's interest. Two indicators regarding interactive effects gain statistical significance. As predicted, the effect of wealthy citizens on impact fees is greater in the commission form than the reformed form of government. For citizen ideology indicator, the sign of the coefficient estimate is opposite to expectation, which needs further explanation later.

Administrative capacity results in mixed findings. Only budget presentation and excellence in financial reporting indicator reports positive influence on impact fees. The sign of financial and planning expenditures is negative but is not statistically significant. With regard to financial condition, communities with higher debt burdens are more likely to adopt impact fees as predicted.

Road construction and improvement is one of the primary concurrency requirements prescribed in the Growth Management Act of 1985. In particular, local comprehensive planning should demonstrate the future plan of road improvements and funding sources. The estimate supports the positive influence of state act on impact fee adoptions. For example, the probability of impact fee adoptions after the GMA of 1985 increases by .004 compared to pre-GMA periods, holding the remaining variables constant. Furthermore, the case laws developed through legal battles between counties and development communities have positive effects on the adoptions of transportation

impact fees. However, the sign of the SOH Amendment variable is positive as predicted, but fails to achieve statistical significance.

The regional diffusion factor does matter for local adoption of transportation impact fees. Neighboring counties that have transportation impact fees influence the local transportation impact fees. The coefficient estimate of diffusion factors implies that a one unit increase in the neighboring counties with transportation fees on the mean value increases the probability of transportation fees adoption by .001, when the other explanatory variables are held constant.

Furthermore, the empirical results indicate that demands for new development drive counties to adopt transportation impact fees. Population growth and single-family housing permits show significant positive signs, even though multi-family housing permits lack statistical significance. A one percent increase in population on the mean value in the previous year increases the probability of fee adoptions by .0003, holding the remaining explanatory variables constant on the mean values.

However, coastal zones failed to explain impact fee adoptions.

Fire/Emergency Medical Services (EMS)³⁹

This section examines the determinants of impact fee adoption in the area of fire/EMS employing a logit maximum likelihood approach. As of 2001, 21 counties had adopted those fees, which were used to improve infrastructure for fire/EMS. The likelihood ratio (LR) statistic indicates that no duration dependence model is significantly different with linear duration dependence model at the .1 significance level.⁴⁰ Hence, the linear duration dependence model is chosen and used to analyze the effects of determinant factors.

The logit model has a modest goodness of fit of .31. The empirical findings suggest that administrative capacity, the state act, diffusion factors, and geographic factor explain the adoption of fire/EMS impact fees. However, both demanders and suppliers and financial conditions do not get statistical support. These results are presented in Table

³⁹ With regard to the adoption of fire/EMS impact fees, the statistical result in STATA 8 notes that the case laws indicator predicts the adoption perfectly and thus is dropped automatically in the estimation process.

⁴⁰ The computed values are 3.34 and 1.08 individually. The former is larger than the critical value of 2.71 at the .10 significance level.

6-2 and discussed in depth below. Several models with different duration dependence are formulated and examined to isolate the time effects.

Table 6-2

Logit Estimates of Duration Dependence in Fire/EMS Impact Fee Adoptions

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Reformed county	-0.4763	0.460	-0.541	0.415	-0.5085	0.433
Personal Income	-4.6E-5	7.4E-5	-1.5E-5	0.0001	-2.8E-5	9.0E-5
Democrat voters	-0.0284	0.0243	-0.026	0.026	-0.027	0.0259
Business strength	0.00079	0.274	0.0236	0.289	0.0125	0.286
GFOA awards	2.0734***	0.624	1.961***	0.609	2.0065***	0.622
Planning expenditures	-1.97E-7	2.0E-7	-2.5E-7	2.1E-7	-2.2E-7	2.1E-7
Finance expenditures	4.6E-8**	2.1E-8	5.5E-8**	2.5E-8	4.97E-8**	2.3E-8
Debt financing	-0.0005	0.0019	-7.5E-5	0.001	-0.0003	0.001
Debt millage t_{-1}	0.4303	1.0642	0.0293	1.180	0.2404	1.099
GMA of 1985	2.1039**	0.934	2.239**	0.917	2.5493**	1.059
SOH of 1995	-0.737	0.670	-0.901	0.785	-0.8152	0.731
Regional diffusion	0.9877***	0.356	0.9841***	0.352	0.9827***	0.354
State diffusion	-0.16***	0.049	0.0287	0.105	-0.0106	0.146
Single housing permits t_{-1}	0.00052**	0.0002	0.0006***	0.0002	0.00056**	0.0002
Multi-housing permits t_{-1}	-0.00043	0.0003	-0.0005	0.0003	-0.00046	0.0003
Population growth t_{-1}	0.01785	0.065	0.00415	0.093	0.01422	0.079
Coastal zones	1.6807*	0.892	1.6322*	0.874	1.6428*	0.89
Commission*Income	1.98E-5	4.4E-5	4.1E-5	4.4E-5	2.8E-5	4.2E-5
Commission*Democrat	-0.0096	0.019	-0.0137	0.0185	-0.01099	0.018
Commission*Business	0.11124	0.2999	0.05995	0.327	0.0827	0.317
Time counter			-0.3539	0.246		
Natural log time counter					-9.159	9.752
Constant	-3.709	2.457	-1.06443	2.449	4.592185	8.027
N		888		888		888
Log likelihood		-67.95		-66.28		-67.41
Chi2		87.28		87.98		88.57
Pseudo R2		0.29		0.31		0.3

Note. *P= < .1; **P= < .05; ***P= < .01. Two-tailed significance tests.

Administrative capacity does matter for fire/EMS impact fees adoptions. While the expenditure variable of planning department is not statistically significant, budget

presentation/financial reporting award and financial department expenditures result in both positive and statistical significance on impact fees.

The empirical results of the state act variable report that Florida counties experienced significant increase in fire/EMS impact fee adoptions after the state legislation of the Growth Management Act in 1985. Compared to pre-1985 period, the probability of adopting fire/EMS impact fees increases by .009, given that the remaining explanatory variables are held constant on the mean values. The Save Our Homes Amendment variable fails to explain impact fee adoptions.

The impact fee adoptions in neighboring counties might provide a positive environment when counties intend to adopt the fire/EMS impact fees. The results provide strong evidence for innovation of diffusion, especially the regional diffusion model. As one county in neighboring areas increases impact fee adoptions in previous years on the mean value, the probability of impact fee adoptions goes up by .003, holding the other variables constant on the mean values. However, statewide impact fee adoptions in previous years have no influence on counties' probability of adopting impact fees.

Local growth has mixed empirical explanation. Only single-family housing permits explain the adoption of fire/EMS impact fees with statistical significance. Population change and multi-family housing permits issued by counties do not show statistically significant effects on impact fee adoptions.

With regard to geographical characteristics, counties including coastal zones are more likely to initiate the fees than non-coastal counties.

Contrary to the hypothesized expectations, the coefficient estimates regarding demander variables as well as supplier variables result in opposite directions, but all of them fail to get statistical support. In addition, interactive effects between the commission form and the demanders are not statistically significant. The statistical results do not support the fiscal conditions hypotheses.

Parks Impact Fees⁴¹

This section analyzes parks impact fee adoption and its determinants employing logit maximum likelihood approach. As of 2001, there are 18 counties with parks impact

⁴¹ The statistical result in STATA 8 notes that the interaction term between the commission and the political strength indicator predicts the event perfectly and thus is dropped automatically in the estimation process.

fees in Florida. Like transportation impact fees, parks impact fees have a relatively long history compared to other types of fees. Overall, the logit model has modest goodness of fit of .44. The results show that several key explanatory variables including local demanders, planning expenditures, intergovernmental institutions, and regional location have significant effects on parks fee adoptions. However, the suppliers, diffusion factors, local growth, and financial conditions do not get statistical support. Table 6-3 reports logit estimates using parks impact fees as the dependent variable. In-depth analysis is provided in the following. Several models with different duration dependence are formulated, but a likelihood ratio (LR) test indicates that there is statistical difference between no duration dependence model and the linear duration dependency models.⁴² As a consequence, the linear duration model is chosen and used for the analysis.

Table 6-3

Logit Estimates of Duration Dependence in Parks Impact Fee Adoptions

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Reformed county	0.8345	0.565	0.9355	0.611	0.81626	0.531
Personal Income	-0.0001	0.0001	-3.6E-5	0.0002	-5.2E-5	0.00015
Democrat voters	-3.5E-2	2.6E-2	-0.0241	0.0296	-2.9E-2	2.7E-2
Business strength	-6.5E-1**	2.8E-1	-6.0E-1**	2.7E-1	-6.0E-1**	2.9E-1
GFOA awards	0.5193	1.439	3.2E-1	1.5E+00	3.3E-1	1.5E+00
Planning expenditures	1.9E-7***	6.5E-8	1.7E-7***	5.6E-8	1.8E-7***	6.0E-8
Finance expenditures	-5.3E-8	3.9E-8	-5.3E-8	4.1E-8	-5.5E-8	4.3E-8
Debt financing	-0.0169	0.013	-1.7E-2	1.2E-2	-0.016	0.012
Debt millage _{t-1}	0.18085	2.333	-0.2927	2.542	-0.175	2.351
GMA of 1985	1.9512**	0.925	1.7128*	0.97	2.113***	1.025
SOH of 1995	-0.6847	1.035	-0.9071	1.088	-0.7273	0.97
Case laws	2.2179*	1.2112	4.0663***	1.206	9.8759**	4.68
Regional diffusion	0.74898**	0.3697	0.6344	0.421	0.6582*	0.396
State diffusion	-0.1642**	0.0717	0.1087	0.15	0.0524	0.142
Single housing permits _{t-1}	0.0002	0.0003	0.00013	0.0003	0.00016	0.0003
Multi-housing permits _{t-1}	0.00013	0.0002	0.00017	0.0002	0.00017	0.0002
Population growth _{t-1}	0.0721	0.074	0.12525	0.115	0.1109	0.087
Coastal zones	3.6627***	1.208	3.273***	0.971	3.3658***	1.050

⁴² The computed likelihood ratio is 3.32, which is larger than the critical value (2.71) at the .10 significance level.

Table 6-3 Continued

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Commission*Income	0.0003***	8.8E-5	0.0003***	9.8E-5	0.0003***	8.96E-5
Commission*Democrat	-0.062***	0.023	-0.077***	0.0201	-0.067***	0.022
Time counter			-0.4043*	0.242		
Natural log time counter					-10.47*	6.244
Constant	-6.1633	2.819	-6.3948	3.652	-5.290	2.988
N	977		977		977	
Log likelihood	-49.34		-47.72		-47.68	
Chi2	159.24		144.17		177.8	
Pseudo R2	0.42		0.44		0.44	

Note. *P= < .1; **P= < .05; ***P= < .01. Two-tailed significance tests.

Reformed counties with both commission-manager and home rule authority are hypothesized to be more likely to initiate the parks fees. The coefficient estimate of suppliers implies that a charter county with commission-manager form of government is more likely to establish a parks fee system than a non-charter county with commission form, but the p-value (.13) is slightly higher than the critical p-value (.1) at the 90 % confidence level.

The demander variables have mixed empirical results in light of statistical significance. As predicted, the development community dislikes regulatory burdens resulting from parks impact fees. The empirical results indicate the negative influence of the political strength of the development community on the likelihood of parks fee adoptions. As one percent increase in the proportion of business establishment with over 50 employees on the mean value, counties are less likely to adopt parks impact fees by .0006, given the other covariates held constant on the mean values. With regard to citizens' aspects, neither indicator is statistically significant. However, the commission form may be more responsive to the interests of wealthy citizens in the context of the parks impact fees than the reformed form of county. This is also the case for citizens' ideology, but the direction is opposite.

Planning capacity does matter for impact fee adoptions. While the expenditure variable in financial department and budgeting/financial reporting capacity are not statistically significant, higher expenditures in the planning department result in both positive and statistical significance on impact fees.

The statistical results do not provide support for fiscal characteristics as well as housing permits. Both financial condition indicators and housing permits lack statistical significance.

Intergovernmental institutions have a strong influence on local decision and approval of parks fees. Growth management legislation in 1985 emphasized coordinated efforts in local land use to prevent unplanned local development and environmental degradation. The Growth Management Act had significant effects on parks impact fee adoptions compared to pre-GMA periods: that is, the probability of impact fee adoptions in post-GMA periods increases by .0012 compared to pre-GMA periods. Furthermore, the case laws also had significant effects on parks fees. Nonetheless, the Save Our Homes Amendment failed to explain impact fee adoptions. Diffusion factors have positive signs as predicted, but cannot get statistical significance.

Local growth fails to get a statistically significant effect on impact fee adoptions. With regard to geographical characteristic, coastal zones are more active in parks impact fee adoptions. It has a significant and positive sign as predicted.

School Impact Fees

This section examines determinants of school impact fees employing a logit maximum likelihood approach. One issue needs to be noted prior to discussing the findings. A higher correlation exists between the state act and the case law measures ($r = .83$). Therefore, the model design dropped the case law variable.⁴³

As mentioned before, 14 counties adopted the system in Florida. Overall, while the supply-side factor explains the adoption well, the demand side factors have mixed effects on school fee adoptions. Furthermore, local growth, planning capacity, debt millage, and interaction terms influence local choice of school fees. Table 6-4 reports logit estimates using school impact fees as a dependent variable. Among the three

⁴³ I ran two models using the state act and the case law variables individually. The case law variable was also statistically insignificant.

models, the linear duration dependency model is chosen, because the likelihood ratio (LR) test presents statistical difference between no duration dependence model and the linear duration dependency.⁴⁴ In-depth analysis follows below.

Table 6-4

Logit Estimates of Duration Dependence in School Impact Fee Adoptions

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Reformed county	0.5485*	0.299	0.5567*	0.2898	0.5465*	0.301
Personal Income	0.0001**	5.7E-5	0.00013**	6.3E-5	0.00012**	5.87E-5
Democrat voters	-0.0094	0.02	-0.0111	0.019	-0.0099	0.020
Business strength	-0.4691*	0.248	-0.4694*	0.25	-0.4645*	0.252
GFOA awards	-0.2704	0.723	-0.2624	0.72	-3.1E-1	7.4E-1
Planning expenditures	9.3E-8*	5.1E-8	8.5E-8	5.1E-8	9.2E-8*	4.9E-8
Finance expenditures	-2.3E-9	1.5E-8	-3.2E-9	1.4E-8	-2.5E-9	1.4E-8
Debt financing	0.0007	0.002	1.0E-4	0.003	0.0006	0.002
Debt millage _{t-1}	1.8604***	0.644	1.782***	0.65	1.7973***	0.65
GMA of 1985	1.9341	2.062	2.902	1.95	3.3015	2.41
SOH of 1995	0.578	0.778	0.5789	0.784	0.582	0.788
Regional diffusion	0.3779	0.312	0.3656	0.313	0.384	0.315
State diffusion	-0.1499**	0.063	0.0223	0.147	-7.9E-2	0.07
Single housing permits _{t-1}	7.6E-6	0.0002	-3.3E-6	0.0002	7.1E-6	0.0002
Multi-housing permits _{t-1}	0.00033**	0.0002	0.00034**	0.0002	0.0003**	0.0002
Population growth _{t-1}	0.1266***	0.048	0.138***	0.054	0.131***	0.049
Coastal zones	-0.9583	0.943	-1.068	0.961	-1.0017	0.944
Commission*Income	0.0001***	5.2E-5	0.00014**	5.6E-5	0.0001***	5.2E-5
Commission*Democrat	-0.049***	0.014	-0.051***	0.02	-0.050***	0.015
Commission*Business	-0.7763	0.565	-0.8696	0.62	-0.8119	0.58
Time counter			-0.1913	0.18		
Natural log time counter					-3.0305*	1.562
Constant	-7.602	2.583	-6.667	2.66	-5.8705	2.194
<hr/>						
N	1282		1282		1282	
Log likelihood	-67.69		-67.29		-67.37	
Chi2	200.47		172.78		192.1	
Pseudo R2	0.343		0.347		0.346	

Note. *P= < .1; **P= < .05; ***P= < .01. Two-tailed significance tests.

⁴⁴ Likelihood ratios are 2.8 and 2.64 individually. The former is larger than the critical value (2.71) at the .10 significance level.

The indicator of supplier's motivations is statistically significant and the sign of the coefficient estimates are positive as predicted. In other words, as counties become more modernized (or reformed) in the context of both the form of government and home rule authority, the likelihood of school impact fee adoptions goes up by .0007, holding the remaining variables constant on the mean values.

The demander variables show mixed empirical results. First, the coefficient of development community variable is negative as predicted and statistically significant. Second, citizen variables present mixed findings. Citizens with higher per capita income may push local government to adopt school impact fees and the effect is greater in the commission form than the reformed form of government. On the other hand, the Democratic registered voters variable have a significant effect in interaction with the commission form, but the direction is opposite to theoretical prediction.

With regard to administrative capacity, none of indicators get statistical support. Financial conditions result in mixed findings. The debt millage rate variable has significant effect on the school fees. The coefficient of debt millage rate indicates that as one unit increases in debt millage rate on the mean value, the likelihood that counties will adopt the school impact fees increases by .044, given that the remaining explanatory variables are constant. However, debt expenditures fail to explain the school fees.

The GMA of 1985 and the SOH Amendment have no significant effect on school fee adoptions. Diffusion factors have positive signs as predicted but lack statistical significance.

Local growth measured by population change and multi-family housing permits have a significant positive impact on school fees. However, single-family housing permits are not statistically significant. Geographic factor also does not explain the adoption of school fees.

Police/Corrections Impact Fees⁴⁵

This section tests the determinants of police/corrections impact fees employing a logit maximum likelihood approach. 14 counties adopted these fees between 1977 and 2001 in Florida. Overall, the explanatory variables explain 23 % of the variation in the

⁴⁵ Due to high collinearity, the estimation process dropped the case laws variable.

occurrence of police impact fees. Table 6-5 reports logit estimates using police/corrections facilities fees as a dependent variable. Three models with different duration dependence are formulated, but the likelihood ratio (LR) statistic shows that there is no statistical difference between the three models.⁴⁶ Accordingly, the following analysis is based on no duration dependence model.

Table 6-5
Logit Estimates of Duration Dependence in Police/Corrections Impact Fee Adoptions

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Reformed county	-0.2408	0.52	-0.2472	0.56	-0.2407	0.5164
Personal Income	8.0E-5	0.0001	0.00013	0.0001	7.7E-05	0.0001
Democrat voters	-1.3E-2	1.99E-2	-0.0075	0.022	-0.0134	0.021
Business strength	-2.4E-2	3.0E-1	-6.2E-2	3.0E-1	-2.3E-02	2.9E-1
GFOA awards	0.3495	0.951	3.6E-1	9.4E-1	3.5E-1	9.5E-1
Planning expenditures	-1.3E-7	2.4E-7	-1.8E-7	2.6E-7	-1.3E-7	2.4E-7
Finance expenditures	2.9E-8	2.6E-8	3.5E-8	2.8E-8	2.8E-8	2.6E-8
Debt financing	-0.0078	0.006	-8.5E-3	6.7E-3	-7.9E-3	6.2E-3
Debt millage _{t-1}	1.8606*	1.093	1.7811	1.172	1.8749*	1.06
GMA of 1985	3.3358**	1.682	3.9859**	2.011	3.2194	2.06
SOH of 1995	-0.8355	0.867	-0.8958	0.831	-0.832	0.863
Regional diffusion	0.5396	0.573	0.4889	0.595	0.5452	0.56
State diffusion	-0.252***	0.077	-0.0699	0.152	-0.262**	0.112
Single housing permits _{t-1}	0.00036*	0.0002	0.00044*	0.0002	0.00036*	0.0002
Multi-housing permits _{t-1}	-0.0005	0.0004	-0.0006	0.0004	-0.0005	0.0004
Population growth _{t-1}	-0.0003	0.089	-0.0085	0.098	-0.0003	0.089
Coastal zones	0.9068	1.123	0.6908	1.178	0.9239	1.087
Commission*Income	2.1E-5	4.6E-5	2.7E-5	4.9E-5	2.5E-5	4.6E-5
Commission*Democrat	-0.0153	0.015	-0.0176	0.015	-0.015	0.015
Commission*Business	0.02798	0.406	0.0525	0.429	0.0265	0.399
Time counter			-0.2315	0.144		
Natural log time counter					0.4237	2.35
Constant	-6.2583	2.72	-5.7648	2.775	-6.5001	2.14
<hr/>						
N	1244		1244		1244	
Log likelihood	-59.09		-58.14		-59.08	
Chi2	121.57		133.98		122.41	

⁴⁶ Likelihood ratios were 1.9 and .02, which were less than the critical value (2.71) at the .10 significance level, and thus the null hypothesis of no statistical difference between models was rejected.

Table 6-5 Continued

	No Duration Dependence	Linear Duration Dependence	Log Duration Dependence
Pseudo R2	0.23	0.242	0.23

Note. *P= < .1; **P= < .05; ***P= < .01. Two-tailed significance tests.

The results show that none of the indicators of the demanders and suppliers, nor interactive effects, gets statistical significance at the .05 significance level. Furthermore, local resources measured by administrative capacity and debt burden fail to achieve statistical significance.

On the other hand, the debt millage rate increases the likelihood of police/corrections impact fees. The coefficient estimate reflects significant and positive influence on the adoption at the .01 significance level and implies that a one-unit increase in debt millage will result in an increase in the probability of impact fee adoption by .016, given that the remaining covariates are held constant.

The state growth management legislation of 1985 has a significant effect on adoption. For example, compared to the pre-1985 legislation period of growth management, counties are more likely to adopt police/corrections facilities impact fees on average by .008, holding the remaining explanatory variables constant. However, the SOH Amendment fails to get statistical significance.

The regional diffusion variable fails to explain the adoption of police impact fees, even though the sign of the coefficient estimate is positive as predicted. However, the statewide impact fee adoptions in previous years have a negative effect on a county's probability to adopt impact fees. More discussion would be provided later.

With regard to local growth, this dissertation hypothesizes that localities experiencing increased demand for housing permits are more likely to initiate impact fee system. The empirical result presents mixed findings. Only single-family housing permits explain increase in the likelihood of the occurrence of police impact fees. The coefficient estimate of single-family housing permits indicates that one unit increase in single-family housing permits on the mean value will result in increase in the probability of impact fee adoption by .000001 on the mean value, given the other covariates held constant on the

mean values. The other two indicators of population growth and multi-family housing permits are not statistically significant.

Library Impact Fees⁴⁷

The determinants of library impact fees are examined employing logit maximum likelihood approach. As of 2001, 10 Florida counties adopted library fees. Overall, the model goodness of fit is .24, which implies that the explanatory variables explain 24 % of the variation in the adoption of library impact fees. Table 6-6 presents logit maximum likelihood estimates with robust standard errors. With model specification, the likelihood ratio (LR) test is conducted, but there is no statistical difference between models.⁴⁸ As a consequence, no duration dependence model is chosen and used for the analysis.

Table 6-6

Logit Estimates of Duration Dependence in Library Impact Fee Adoptions

Independent Variables	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
	Coefficient	Std.Err.	Coefficient	Std.Err.	Coefficient	Std.Err.
Reformed county	0.4038	0.633	0.3534	0.608	0.3073	0.5753
Personal Income	0.00006	0.0001	3.2E-5	0.0001	2.2E-5	9.8E-5
Democrat voters	-0.0732**	0.029	-0.077*8	0.030	-0.079***	0.03
Business strength	-0.2426	0.203	-0.239	0.206	-0.1664	0.214
GFOA awards	0.9825	0.985	1.0350	0.965	0.8471	0.967
Planning expenditures	-6.2E-7**	2.8E-7	-6.6E-7**	2.8E-7	-6.3E-7**	2.8E-7
Finance expenditures	2.3E-8	5.1E-8	1.8E-8	5.9E-8	6.6E-9	6.8E-8
Debt financing	-0.0015	0.006	-0.0008	0.005	-0.0005	0.005
Debt millage _{t-1}	-0.7934	2.434	-0.7406	2.384	-0.979	2.25
SOH of 1995	0.9962	1.053	0.9689	1.022	0.887	1.01
Regional diffusion	0.3313	0.549	0.2816	0.551	0.2625	0.51
State diffusion	-0.2882	1.5E-1	-0.7067	0.431	-0.9238**	0.389
Single housing permits _{t-1}	-0.0009	8.3E-4	-0.0008	0.0008	-0.0008	0.001
Multi-housing permits _{t-1}	0.0002	0.0006	0.0002	0.0006	0.0003	0.0005
Population growth _{t-1}	0.0424	0.076	0.0061	0.081	0.002	0.083
Coastal zones	0.5212	0.879	0.6426	0.862	0.6788	0.842
Commission*Income	-0.00002	3.7E-5	-1.5E-5	3.8E-5	-5.4E-6	3.96E-5

⁴⁷ With regard to the library impact fee adoption, the statistical result in STATA 8 notes that three variables regarding the state act, case law, and interaction effect between the commission and the political strength of development community predict the event perfectly and thus they are dropped in the estimation process automatically.

⁴⁸ Likelihood ratios are .84 and 2.4, which are less than critical value (2.71) at .10 significance level.

Table 6-6 Continued

	No Duration Dependence		Linear Duration Dependence		Log Duration Dependence	
Independent Variables	Coefficient	Std.Err.	Coefficient	Std.Err.	Coefficient	Std.Err.
Commission*Democrat	-0.0079	0.021	-0.0086	0.02	-0.0109	0.02
Time counter			0.3455	0.33		
Natural log time counter					20.99**	10.65
Constant	-0.814	2.438	-3.9051	4.39	-22.24	11.97
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N	851		851		851	
Log likelihood	-41.47		-41.05		-40.25	
Chi2	247.07		237.08		218.81	
Pseudo R2	0.237		0.245		0.259	

Note. *P= < .1; **P= < .05; ***P= < .01. Two-tailed significance tests.

The logit estimates show that none of indicators regarding suppliers, intergovernmental institutions, and financial conditions can get statistical support at the .05 significance level.

The demander variables have mixed consequences in terms of expected sign and statistical significance. Higher percentage of registered Democrat voters may have negative effects on library impact fee adoptions. On the other hand, another measure of citizens, per capita income, is not statistically significant. The development community, as predicted, opposes library impact fees, but the coefficient estimate fails to get statistical support. Interactive effects between commission and citizens' interests are not statistically significant.

Administrative capacity also results in mixed findings for library impact fees. The coefficient estimate of planning department expenditures is significant, but the sign is opposite to theoretical expectation. On the other hand, finance department expenditures and financial/budget presentation practices have positive effects, but fail to get statistical support.

Both diffusion indicators fail to explain the adoption of police impact fees. In other words, the sign of coefficient estimate regarding the regional diffusion is positive as predicted, but is not statistically significant. The statewide impact fee adoptions in previous years have a negative effect on a county's probability of adopting impact fees,

but also lacks significance. In addition, local demand on growth cannot explain the adoption of library impact fees. Intergovernmental institutions, local growth, coastal zones, and interaction effects fail to explain the adoption of library impact fees.

Implications

Whether there are differences in the service delivery, revenue options, and expenditure levels between reformed and non-reformed counties is subject to ongoing debate (Benton, 2002). The results in this dissertation provide some evidence that even though it is not the case across all impact fee types, counties with both a professional administrator (or manager) and home rule authority are more likely to adopt controversial new financing sources, especially for the use of school facilities. The centralized leadership and management in the reformed county may better coordinate diverse and controversial interest resulting from local land use control (Frederickson & Johnson, 2001). Local decision-makers can reduce transaction costs when they have the centralized authority to deal with daily county administration, because the centralized authority can reduce coordination costs not only among agencies (or departments) but also diverse interests of private sectors.

The empirical results confirm partly that the motivations of the demanders play substantial role in impact fee adoptions. First, with regard to dissimilar effects of development community, this dissertation posits that the development community may oppose more strongly impact fees for school, library, police/corrections, and fire facilities than transportation and parks fees, due to difficulties of direct linkages required in the rational nexus standard. The empirical results cannot differentiate dissimilar effects. Instead, the results present that the political power of the development community reduces the likelihood of adopting transportation, parks, and school impact fees. It implies that in general, development communities oppose impact fees, but it is not clear that they do so on the basis of the linkages between new development and impact fees identified in the rational nexus standards. While there are variations in citizen's influence on local politics, the results indicate that citizens with higher incomes prefer impact fees, especially for the use of transportation and school facilities. The other measure of citizens' characteristics is operationalized using the proportion of registered Democrat voters. Across impact fees, citizens' ideology does not get statistical support except for

library fees. The empirical results are somewhat contrary to what theory predicted in the previous chapters. This dissertation hypothesizes that Democratic ideology may drive a community to adopt impact fees. On the contrary, the result provides a negative effect on the fees. Presumably, the service characteristics of library may not directly relate to environmental issues addressed in the citizens' ideology hypothesis. Furthermore, Democrat party ideology may emphasize local taxes for public services rather than fees, because fees may adversely affect mid- and lower-income family. In the context of interactive effects, the commission form of government is more responsive to the interest of the demanders (or interest groups), especially for the use of transportation, parks, and school facilities.

Administrative capacity plays critical role in terms of resources addressed in the study of diffusion (Berry & Berry, 1999). Initially, this dissertation notes the difficulty of defining and measuring administrative capacity. Even with given limitations, the proxy variables representing planning and financial management capacity explain the impact fee adoptions well. Except for police/corrections impact fees, the results confirm that administrative capacity makes a significant difference in creating controversial financial institutions. The higher administrative capacity enhances county position in dealing with complex fee formulas and capital improvement plans (ACIR, 1991). However, it is not conclusive whether the higher administrative capacity more strongly promotes impact fees for engineering facilities such as transportation rather than non-engineering facilities.

Intergovernmental institutions influence local choice of impact fees. The Growth Management Act of 1985 and the case laws are linked to fee adoptions. Local governments are creatures of the state according to Dillon's Rule and function within the boundaries of the state statutes. In Florida, the Growth Management Act of 1985 is implicit about the adoption of impact fees at the local level, but the concurrency requirements regarding infrastructures urge the local comprehensive planning process to take into consideration new financing mechanisms. These requirements are especially applicable to transportation and parks facilities. For example, counties should provide level of services for transportation in comprehensive planning process and consequently, the state legislation promoted local consideration of new funding sources for transportation. The case laws also provide some evidence that the rational nexus standard

developed through legal battles and consequent case laws enhance the legal basis for impact fees, whereby they clarify local regulatory power of impact fees. The findings suggest that the case laws play a significant role for transportation and parks impact fees. However, the Save Our Homes Amendment of 1995 fails to explain the adoption of aggregate impact fees as well as diverse fee types. Since major adoptions occur during the mid- and late 1980s as demonstrated in descriptive analysis, that amendment is not associated with the adoption of impact fees.

Perhaps most interesting is the role of diffusion factors in the explanation of local decision and approval of the innovative financial institutions. Local policy makers may see that the new idea or innovative financial system is gaining more significance and prominence than before. In other words, the chances of impact fee consideration and approval may increase with time. The regional diffusion measure has the expected effect on the innovation of the financial institutions and is quite strong. For transportation, fire/EMS, and police/corrections impact fees, regional diffusion occurs across neighboring counties. As the regional diffusion study demonstrated, the innovations of neighboring counties seem to provide positive rationales and reduce the resistance to new systems (Berry & Berry, 1990). However, the empirical results report an unexpected finding regarding statewide diffusion factor. Contrary to theoretical expectations, the statewide adoption of police/corrections impact fees may send a negative signal to counties in consideration of innovation. I suspect that it may be related to statistical issues rather than substantive theory, because duration dependence seems to mediate the statistical significance of the state diffusion.

With regard to financial conditions, the empirical results get modest support for impact fees for transportation, school, and police/corrections facilities. I conjecture that local politics and administrative capacity may provide substantial incentives or barriers to adopt and implement the new financial institutions such as impact fees. For example, the strong support of the regional diffusion process implies that local decision makers pay special attention to neighboring counties' experiences and utilize successful stories to reduce transaction costs as demonstrated in the diffusion model (Berry & Berry, 1990) and mimetic isomorphism (DiMaggio & Powell, 1983). Furthermore, as mentioned above, even though counties face significant financial problems, the lack of political

support and administrative capacity to implement an impact fee system will function as barriers to initiating innovative institutions or impact fees.

Local growth is widely understood as a driving force for impact fee adoptions (Frank & Downing, 1987). In the previous chapter, this dissertation demonstrates that local growth, such as population growth and single-family housing permits, has a strong positive influence on the adoption of aggregate impact fees. The findings of diverse fee types, except for parks and police/corrections, are also consistent with the results of aggregate impact fees and previous studies (Frank & Downing, 1987). In other words, rapid growth of population and housing permits increase the probability of local adoptions of impact fees.

Overall, the bottom line of the empirical results is that determinant factors identified in the framework can explain local choice of impact fees across diverse fee types. In other words, whether determinant factors may have dissimilar effects on each fee type is inconclusive, except for the reformed county factor. The empirical results of school impact fees provide modest evidence that the reformed county is more likely to adopt controversial impact fees such as school impact fees. It confirms that the centralized leadership and administration can coordinate diverse interests (Frederickson & Johnson, 2001) and distributional consequences resulting from controversial institutional change in local land use (Clingermayer & Feiock, 2001).

CHAPTER 7

CONCLUSIONS

Private sector sharing of the public costs of infrastructure is no longer a new idea. The dilemma that local communities face is how to sustain prosperity through the creation of new jobs and economic development with increased demands for quality of life. Explosive population growth changing the geography of urban and suburban areas has increased the significance of not only short- and long-term planning but also innovative financial policy and management. In this vein, impact fees provide the most distinctive case of how local governments can incorporate the fiscal problems of the local infrastructure into both planning and financial processes. However, while there has been considerable research regarding the role of impact fees in the context of planning, few systematic studies have been conducted in relation to financial sources. In particular, while research has examined the effects impact fees have on local revenues, a comprehensive study of impact fee adoptions has been absent.

With those problems in mind, this dissertation raised two basic questions regarding impact fees as a local financial institution: First, what, if any, patterns exist in impact fee adoptions since the inception in 1977? Second, what explains the adoption of impact fees? The primary inquiry centers on determinants of impact fee adoptions at the county level in Florida.

Previous studies of impact fees viewed impact fees as policy instruments for local planning, growth management, and land use regulation and housing price (Frank & Downing, 1988; Nelson, 1988; Yinger, 1998; Ihlanfeldt & Shaughnessy, 2002). However, this dissertation identifies impact fees as fiscal institutions, because impact fees are prescribed in local ordinances and are gaining more significance as a means to resolve local fiscal stress and infrastructure deficiencies.

The institutional approach in sociology views institutional changes as isomorphic and taken-for-granted processes (DiMaggio & Powell, 1983), but cannot explain “intentional and planned” changes well. On the other hand, the accumulation of knowledge in political science and economics views institutions as rules of the game (North, 1990) and rules about behavior, especially about decision-making (Riker, 1982; see also Ostrom, 1986). These rules define “who gets what” and influence the property rights of individuals and organizations. Impact fees as innovative fiscal institutions may impose regulatory burdens on the development community and affect individual property rights. Without doubt, those whose property rights are adversely affected by changes in fiscal institutions may act against initiation of impact fees. This dissertation develops a theoretical framework combining political market theory and innovation study. The framework identifies the local demanders and suppliers, intergovernmental institutions, administrative capacity, diffusion, financial conditions, and geographical factors. For the empirical analysis, this dissertation examines cross-sectional and time-series data of 66 counties in Florida using event history analysis.

The following section discusses lessons gleaned from this analysis and additions to knowledge of local institutional changes such as impact fees. Limitations of this dissertation follow in the next section. The great challenge in the study of local government and local communities relates to measurement issues, which are especially applicable in longitudinal research. This dissertation then discusses theoretical and policy implications of impact fee studies. Finally, future research agendas are addressed.

Lessons and Discussions

In advance of examining the determinants of impact fee adoptions, this dissertation conducted a descriptive and historical analysis regarding temporal and spatial patterns, types of impact fees, and frequency of changes in impact fee amounts (or schedules).

Florida has experienced substantial population growth during the last several decades. This has created the demand for infrastructure and raised environmental concerns such as protection of wetlands, coastal environments and forests. New developments have pushed local governments to coordinate growth management with state government and solve infrastructure needs with new financing mechanisms such as

impact fees. Parks impact fees were adopted by Broward County in 1977. Furthermore, eight of the next nine adoptions occurred in counties located in the southern and central regions of Florida except for Holmes County, and the adoptions spread to the northern counties. The empirical results in Table 5-1 demonstrated that one half of the impact fee counties located in the north (five counties) adopted the impact fees in the 1990s, while most of the counties located in the southern and central regions adopted impact fees in the 1980s.

In the context of temporal patterns, most impact fee adoptions occurred during the mid- and late 1980s, while counties were less active in institutionalizing impact fees in the 1990s. It is especially true for impact fees for fire/EMS, parks, police/corrections, and library facilities. One issue that deserves mention with regard to timing is the adoption of school impact fees. The empirical findings indicate that while most types of impact fees were already in place in the 1980s, the adoption of school impact fees was dominant in the 1990s, that is, over 70% of school fees were adopted in the 1990s. As mentioned before, school impact fees have been highly controversial among development communities. It seems that even counties that put impact fee systems in place may be very cautious to initiate controversial fee types. Among fee types are transportation, fire/EMS, and parks impact fees, which are most popular in Florida counties.⁴⁹ This finding is similar to the national survey of impact fee adoptions (Leithe & Montavon, 1990).

Once the fees are adopted, the impact fee amounts to be imposed on development community are not fixed. In other words, counties frequently change impact fee schedules. Among fee types are parks impact fees, which have been changed more often than any other type of fees. For the 25-year research periods, counties with parks impact fees changed the fee schedules by 3.6 times on average. In particular, Broward County changed parks impact fees every year since its inception in 1977 by adjusting impact fee schedules based on the consumer price index (CPI).

These changes capture only one aspect of the changes occurring at the county level. More importantly, county after county adopted impact fees. This dissertation runs seven event history analysis models examining the determinants of such adoptions. Not

⁴⁹ 36, 21, and 18 counties adopted transportation, fire/EMS, and parks impact fees individually.

surprisingly, there are several variations in sign and statistical significance depending on types of fees. However, the results provide several general lessons for the study of change in local financial institutions such as impact fees.

First, the analysis in this dissertation supports the idea that interest groups have significant influence on local politics and policy decision-making (Molotch, 1976; Schneider, 1989; see also Burns, 1994). This dissertation uses the term “demanders” to represent citizens and the development community, implying internal determinants in the innovation study. With regard to citizens, the results suggest that high-income citizens are more favorable to impact fees. As discussed before, those citizens seem to be actively involved in local politics in order to raise their concerns for property values and tax burdens resulting from infrastructures. Hence, high-income citizens may push counties to adopt impact fees. Notably however, citizens’ ideology does not make a difference for impact fee adoptions except for library facilities.

On the other hand, consistent evidence found in the analysis supports the conclusion that the political strength of developers discourages the innovation of financial institutions that will place new regulatory burdens on them. The results confirm that the development community will resist impact fee adoptions, which redefine or change the property rights (Eggertson, 1990; Clingermayer & Feiock, 2001; Feiock & Lubell, 2003). This is because impact fees, as one type of fiscal institutions, can have distributional consequences on the development community (Clingermayer & Feiock, 2001). The findings suggest that for impact fees in the aggregate, a one percent increase in the proportion of development establishments with over 50 employees on the mean value will decrease the probability of impact fee adoption by .003, holding the other explanatory variables constant on the mean values.

Second, the empirical findings of this dissertation provide some evidence that motivations of local government decision makers promote impact fee adoptions. That is, counties having both a centralized executive and a local charter are more likely to adopt school impact fees. The adoption of school impact fees came later and has been more highly controversial among development communities than any other type of impact fees. The empirical results suggest that through centralized professional management, local decision makers can reduce the transaction costs of dealing with the development

community, because the centralized authority can reduce coordination costs among agencies (or departments) as well as diverse interests of private sectors.

Third, the findings confirm that intergovernmental institutions can provide incentives by reducing the uncertainty of local institutional change (Ostrom, 1999; Feiock & Carr, 2002). Until the 1970s, growth management and land use policy in general was primarily regarded as a realm of local governments. However, as an effort toward statewide coordination of growth management, a dozen states have adopted state growth management statutes since 1970s (Steel & Lovrich, 2000). The empirical results demonstrate that Florida counties experienced significant increase in the impact fee adoptions after state growth management legislation in 1985: state institutions matter for local institutional choice—impact fees—especially for transportation, fire/EMS, parks, and police/corrections facilities. Furthermore, several case laws in 1983 provided legal grounds for impact fees through the rational nexus standards. However, states constraints on an annual assessment increase of local homestead property specified in the Save Our Homes Amendment of 1995 did not affect the adoption of impact fees.

Fourth, the regional diffusion factor derived from the study of state policy innovation can be applied to counties. Consistent with the regional diffusion model (Berry & Berry, 1999), counties are more likely to adopt impact fees if more neighboring counties have adopted impact fees in previous years. In particular, the empirical results support the regional diffusion process for aggregate impact fees, transportation fees, and fire/EMS fees. The unexpected finding of the diffusion model comes with respect to the state diffusion process. This dissertation hypothesized that if the number of impact fee counties grows statewide, then the probability of adoption by counties may increase. However, in empirical tests, the effect of the state diffusion process was in the opposite direction for police/corrections impact fees. I conjectured that it might be related to statistical issues instead of substantive theoretical issues. That is, the group of counties at risk might become more diluted over time as the most likely counties were dropping out from the risk sets.

Fifth, administrative capacity as a critical resource influences impact fee adoptions. Counties having employees with professional and skilled expertise are more likely to be involved in the adoptions of impact fees than other counties. Technical

sophistication and implementation issues might function as barriers to initiation of impact fees. This finding is consistent with previous surveys by ACIR (1989, 1991) in Florida. Furthermore, this has implications on administrative arrangements, which can improve policy outcome (Feiock & Stream, 2001).

Sixth, local growth patterns drive impact fee adoptions. The previous studies on determinants of impact fee adoptions attributed the adoption of impact fees to local growth, especially population growth (Frank & Downing, 1988; Kaiser, Burby, & Moreau, 1988). For the measure of local growth, this dissertation utilizes population growth as well as housing permits. The empirical findings in this dissertation provide consistent and strong effects of local growth not only on aggregate impact fee adoptions but also on diverse fee types, except for parks and library impact fees. Explosive population growth and subsequent housing development increase demand for new infrastructure. Local governments impose part of the cost of those infrastructures on the private sector through impact fees.

Finally, determinants of impact fee adoptions were assumed to vary depending on the characteristics of public facilities such as linkage between new development and infrastructure demand, engineering facilities, and local service characteristics. Overall, determinant factors identified in the framework cannot differentiate a local choice of impact fees between diverse fee types. More specifically, whether the explanatory factors have distinct effects on each fee type is inconclusive, because as counties broaden fee types over time, it becomes more difficult to distinguish different effects of determinant factors between fee types. However, one exception is with the reformed county factor. The result does provide modest evidence that the reformed county is more likely to adopt controversial impact fees such as school impact fees. This is consistent with the role of centralized executives in coordination of not only diverse interests (Frederickson & Johnson, 2001) but also distributional consequences resulting from controversial institutional change in local land use (Clingermayer & Feiock, 2001).

Limitations of Design and Measurements

Despite the lessons from the analysis, some caveats are in order. First, Florida may not be typical, because Florida applied strict state rules to change in local land use and growth management policy. Compared to that strictness, the state laws do not

provide specific guidance for local adoption and implementation of impact fees. Instead, several court cases provided legal bases for the local decision to adopt impact fees. Second, the measure of motivations of the suppliers was limited to aggregate incentives or constraints derived from institutional arrangements or structures. To obtain reliable data on elected public officials and career officials is extremely difficult at the local level. The problem goes further in the case of longitudinal analysis. In addition, it is not easy to identify internal dynamics among political actors in institutional change or impact fee adoption. Third, the model design does not include local school boards and overall tax burdens and cannot distinguish service-specific demand and capacity. Even though the Board of Commissioners makes final decisions regarding impact fee adoptions, local school boards may play a key role in the initial step of school impact fee adoptions. This dissertation discusses local financial conditions in the context of infrastructure financing. The analysis of overall tax burdens may expand the knowledge of how countywide fiscal characteristics drive counties to adopt new revenue options such as impact fees. Fourth, this dissertation excludes fees for water and sewer facilities. Noting that water and sewer fees are known as tap fees, connection fees, system development charges, and impact fees, this dissertation addresses that it is difficult to draw a line between them for the study of impact fee adoptions. It deserves further examination as to why some local governments use these fees for the same purposes but do not call them impact fees.

Contributions

American counties were long depicted as “forgotten governments” or “dark continent of American politics” (Gilbertson, 1917). However, as many counties have been urbanized and their role in service delivery expanded, they have become the focus of tremendous debate and research efforts. The key issues addressed in this dissertation focus on local financial institutions at the county level, which have increased significance in times of fiscal stress. This dissertation buttresses our understanding of local institutions and new information about what factors local governments should consider when local decision makers attempt to initiate new revenue options to improve public facilities. User charges or fees may be desirable revenue options for the general public as opposed to property taxes, but adverse distributional consequences resulting from impact fees raise substantial concerns for development communities.

This dissertation has attempted to advance the understanding of institutional change. The political market approach underscores the role and interaction between the demanders and suppliers. I argued that the political market approach explains the institutional change in only a limited way, especially for controversial innovative financial institutions such as impact fees. This is because this approach does not take into consideration intergovernmental incentives/constraints, administrative capacity, or emulation strategy that local decision makers use to reduce political risks and uncertainty. Ostrom (1999) argues that local rules are “nested” within state rules and the change of the former are constrained and affected by the latter. Furthermore, administrative capacity to cope with the challenges from the opponents is not well addressed in the political market approach. The policy implementation study demonstrates that in the policy decision-making process, implementation issues should be addressed for the success of policy (Pressman & Wildavsky, 1973). This dissertation emphasizes administrative capacity can help overcome the challenges and barriers to institutional change. Local governments can also reduce the uncertainty by emulating the successful experiences of other communities (Berry & Berry, 1999). Overall, the combined framework provides a better design for explaining institutional change than the political market or diffusion of innovation approach alone.

With regard to methodology, event history analysis using binary cross sectional time series data renders better model specification than one time cross sectional comparison using survey methods. While event history analysis is normally used to study state policy innovations, it is also applicable for institutional change at the local level. This is because event history analysis focuses on the event in consideration of longitudinal variations across states or counties (Berry & Berry, 1999).

For The Future Study of Impact Fees

Much of the analysis in this dissertation focused on local institutional choice centered around impact fee adoptions. This dissertation argues for the significance of the political actors, administrative capacity, intergovernmental institutions, and emulation of innovation in local institutional change. However, there is still much to be done to advance the understanding of impact fees. Based on the foundation provided by this

research, future studies of impact fees can be extended to their implementation and intergovernmental relationships needed to improve infrastructures.

First, this dissertation focused on patterns and determinants of impact fee adoptions. As demonstrated in descriptive analysis, counties have frequently changed the amount of fees. Future study may ask why there are variations in the frequency of change and the amount of fees imposed on new development.

Second, local governments are required to use impact fees collected from new developments only for infrastructure improvements. In other words, as identified in the rational nexus standard, impact fees are earmarked for financing infrastructure needs resulting from new developments. One question subject to much debate is how to ensure that the impact fees collected are used for target infrastructure rather than general purposes. Future study needs to examine how local governments allocate earmarked impact fees to new infrastructure demands and how such use is influenced by the determinants of their adoption. Furthermore, considering that the time-line of new developments is important, what is the allocation schedule like? With regard to a spending schedule, the Advisory Council on Intergovernmental Relations (ACIR, 1991) reported that local ordinances did not prescribe the explicit schedule in spending impact fees. The report indicated that while some counties clarified the time limit in allocating impact fees, the schedule varied widely across counties. Future study needs to extend current practices to different fee types. Questions for potential research may be, “Are there any differences in implementing the impact fees among different types of impact fees? If so, what accounts for them? Do those differences result from characteristics of diverse fees? Or, do they result from other factors such as political, bureaucratic, and economic factors?”

A second line of inquiry that deserves mention is to what extent impact fees may induce new money for infrastructure improvement from other levels of governments. For example, new infrastructure can provide economic benefits not only for counties but also for cities and the state. As such, if county governments want to maximize utilization of impact fees, they may attempt to induce intergovernmental cooperation. As the county’s role in service provisions expands beyond its boundary, this inquiry may gain more significance.

Third, while we have accumulated knowledge of the consequences of growth regulation such as urban containment and zoning and economic development policies for local economic performance, we know little about the consequences development impact fees have on infrastructure and economic growth except for in Nelson and Moody's study (2003). Using countywide data from 1993-1999 in Florida, Nelson and Moody reported that development impact fees had a positive influence on local economic development measured by job growth. They attributed this positive effect to infrastructure improvements and/or new infrastructure construction paid by development impact fees. Earmarked impact fees are used to improve roads, sewers, parks, schools and the like. Improved infrastructures produce a business-friendly climate and promote private investments for economic development. Even though Nelson and Moody's study (2003) is useful in that it provides new aspects regarding the relationship between impact fees and economic development, some caveats are in order. A critical omission from Nelson and Moody's analysis is an empirical examination of how county infrastructures are linked to impact fees. Although they conclude that job growth is promoted through infrastructure improvements, this relationship is not empirically tested. Furthermore, additional factors need to be taken into account in the model design, such as institutional/administrative arrangements, which play a mediating role in determining policy outcomes and reduce transaction costs (Williamson, 1985). The national economy in the 1990s experienced an unprecedented boom, which may explain job growth patterns at the local level. Nelson and Moody's design does not take into consideration the performance of the national economy. Using a comprehensive model, future research can better address and examine the economic consequences of impact fees.

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