Border Wars: Do taxes influence land-use decisions across state boundaries?

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Abstract: This paper considers the fiscalization of land use in one state brought about by state regulation in a neighboring state. The idea that land use is 'fiscalized,' i.e. motivated by potential tax benefits, is well established in the literature (Chapman, 1988, 2008; Lewis, 2001; Wassmer, 2002; Pagano, 2004). The source of these motives is often attributed to a state's control over the revenue structures of the cities within its jurisdiction. With increasing limits on the property taxing authority of municipalities, local governments have had to find creative ways to finance public services (Carroll & Sharbel, 2006). For example, Proposition 13 in California has left its municipalities highly dependent on sales tax revenues, making 'mall wars' between neighboring jurisdictions rather common. The extant literature, however, neglects an important issue. Many cities operate in metropolitan regions that cross state lines. In such a region, the state-level institutions faced by one city are different from those faced by another in the same metropolitan region. Thus, our objective is to extend the fiscalization logic beyond the "within-state" focus and consider "cross-state" impacts on fiscalization of land use. More precisely we ask: *how do the fiscal institutions of one state affect the land-use policies of cities in a different state within the same region?* To address this question we draw on a case-study of two cities Kansas City, Missouri (KCM) and Kansas City, Kansas (KCK).

1.0 Introduction

The papers in this seminar consider the relationship between American states and localities; in particular, the degree to which states serve as facilitators or obstructionists of local government. This tension is often defined by the localities' need to finance public goods and services without undue interference from higher orders of government.[1] To maintain their legitimacy, local governments must be able to independently generate sufficient revenue to provide the goods and services demanded by their citizens.[2] However, the fiscal tools available to localities, and the extent to which they can be used, are governed by each particular state; the types of taxes that can be levied, the rate at which they can be levied, and the amount of debt that can be incurred. Thus, cities must strategically employ other policy and regulatory instruments to capture fiscal resources. This paper considers such strategic behavior.

The issue of local fiscal strategies would not be particularly compelling, except that state governments have increasingly constrained the fiscal powers of municipal governments. Thus, municipalities must meet the increasing demands by citizens for "more, and better, public services" in the face of an increasing number of state mandated restrictions on their taxing powers.[3] For example, since California limited the property taxing capabilities of its municipalities in 1973 – through Proposition 13 – forty-five other states adopted new or additional legislation limiting the taxing and spending powers of their municipalities. However, local governments have found ways - through their powers over land development - to control their fiscal resources, despite state imposed constraints.

[1] Bird, Richard (1993) Threading the labyrinth: some issues in fiscal decentralization. National Tax Journal 46(2) 207-227.
[2] Brunori, David (2007) Local tax policy: a federalist perspective. Urban Institute Press: Washington, DC.
[3] Ibid.

The municipality's power to regulate land-use, like its power to tax, is established at the state level; it is derived through state enabling legislation that delegates the State's police powers - to regulate the health, safety, morals and welfare of its citizens – to municipalities. However, unlike taxation, states have largely ceded the regulation of land development to the locality. Communities have consistently won legal challenges that have left them with "almost complete power over land-use within their boundaries."[4] Thus, to the extent that fiscal gains can be derived through land development, municipal regulation offers localities a powerful tool to achieve fiscal autonomy in the face of constraints on traditional tools of public finance. This behavior, termed *the fiscalization of land-use,* is the focus of this study. Our aim is to better understand how local land-use tools are used to capture fiscal resources.

The fiscalization literature describes several land-use strategies that cities employ to capture fiscal benefits. First, municipalities can focus on the potential direct benefits of a development. For example, if a city has access to a sales tax, it is likely to prefer retail development relative to other development options; the city's interest is in the direct flow of revenue. Alternatively, the city can focus on indirect benefits, such as positive or negative externalities, and additional public benefits associated with the particular development. In these instances, the costs and benefits of the development ultimately shape the overall package of public goods offered by the city but does not directly increase the public fisc. A final strategy is 'fiscal squeeze.' Early conceptualizations of fiscal zoning suggested that land-use regulations would be used to capture tax revenues such that citizens only pay the marginal cost of the services they demand (Hamilton 1975). This view has since been expanded to account for fiscal squeeze strategies in which land-use regulations are used to redistribute resources from a newcomer to current residents by

[4] White, M. (1975). Fiscal zoning in fragmented metropolitan areas. I*n: Fiscal zoning and land use controls, eds E.S. Mills and W.E. Oates.* 31-101. Lexington, MA, Lexington Books.

overcharging the former for local services. In this strategy, land-use regulations not only set minimum house values to cover the marginal cost of public services, but also permit municipalities to exercise some degree of monopoly power as suppliers of development approvals.[5]

Underlying the fiscalization story is a story of inter-municipal competition. The need for fiscal autonomy, and the subsequent fiscalization behavior, is closely related to the competitive environment in which American cities operate. Competitive municipalities will set their policies based upon the policies in neighboring jurisdictions.[6] This competitive behavior is driven by two different mechanisms - exit and voice.[7] The exit mechanism refers to the desire of local governments to attract and retain mobile capital, firms and residents. The voice mechanism suggests that, rather than migrating from place-to-place, citizens may choose to express their preferences through traditional political means, e.g., voting.

In both cases – exit and voice - public officials are driven to provide the goods and services that are demanded by citizens. These goods and services must be offered at a 'competitive tax-price,' i.e. the same tax-price for a comparable set of goods and services in a neighboring jurisdiction. Public officials accomplish this through regulating the private development of land within their jurisdiction. The strategic use of development regulations allows cities to compete, more or less successfully, with neighboring jurisdictions over state constrained fiscal resources. Thus, the fiscalization scholarship attempts to offer insights with

[5] White, M. (1975). Fiscal zoning in fragmented metropolitan areas. I*n: Fiscal zoning and land use controls, eds E.S. Mills and W.E. Oates.* 31-101. Lexington, MA, Lexington Books.

[6] See for example, (Case, 1993; Case et al., 1993; Ladd, 1992, Revelli, 2002, Rork, 2003). Additionally, competition has been shown to exist in non-American settings (Haiyashi & Boadway, 2001; Heyndels & Vuchelen, 1998), for non-fiscal policies such as local growth controls (Brueckner, 1998), and between overlapping jurisdictions (Berry, 2002). For a comprehensive review of the empirical and theoretical literature see Brueckner (2003) and Wilson (1999), respectively.

[7] Hendrick, Rebecca; Wu, Yong Hong; & Jacob, Benoy. (2007) Tax competition among municipal governments: exit vs. voice. Urban Affairs Review 43 (November) 221-255.

respect to how local officials employ land-use regulations to navigate a competitive and increasingly complex fiscal institutional environment.

Despite the contributions this literature has made to our understanding of local governance, the theoretical and empirical work has focused on relatively simple fiscal environments; typically, focusing on a single tax in a single state. Cities, however, often have access to multiple tax instruments and may compete with jurisdictions that employ different instruments. Thus, the extant literature offers little clarity with respect to how land-use strategies are employed in more complex fiscal environments. With this in mind, we consider the central theme of the seminar – are states obstructing or facilitating local governments - by asking: *how do the fiscal institutions of one state affect the land-use policies of cities in a different state within the same region?*

To address this question we draw on a case-study of two cities: Kansas City, Missouri (KCM); and Kansas City, Kansas (KCK). These cities are adjacent to each other and are on either side of the Missouri-Kansas state border. While both cities are largely reliant on local sales tax revenues, KCM is also allowed to levy an earnings tax. Thus, unlike KCK, which supplements its sales tax revenue with a local property tax, KCM is largely reliant on the one-percent earnings tax. The key contribution of this paper is to offer insights into how cities, such as KCM and KCK that operate in relatively complex fiscal environments, employ land-use strategies to capture fiscal benefits. A second contribution of this paper is methodological.

Land-use regulations are often conceptualized as a set of guidelines that are clearly stated, static, and strictly enforced.[8] They are exogenous constraints within which private actors must make their development decisions. However, even in highly regulated environments, public

[8] Anas, A., Arnott, R., & Small, K. A. (1998). Urban spatial structure. *Journal of Economic Literature* 36[3], 1426-1464.

agencies benefit from flexibility in their decision-making processes (Healey et al., 1988). For example, while land-use regulations may be clearly stated, they often allow for a range of land-uses, as opposed to serving as a narrow constraint.[9] Also, regulations, such as zoning maps, tend to be fluid, changed at the private developer's behest, or in response to evolving public interests.[10] Thus, while "the U.S. system tends to provide greater certainty to property capital, there has always been pressures toward modifying as-of-right schemes."[11] This flexibility suggests that land-use outcomes should be conceptualized – and subsequently modeled - as micro-level decisions as opposed to a singular set of macro-level regulations.[12] Accordingly, we develop and test a set of hypotheses based on a decision-making framework in which the public agency will be able to rank development options for a particular parcel of land. In this paper, we articulate such an ordering based on models of a fiscally ideal landscape; what one might expect a city to look like if it were only interested in maximizing its fiscal resources in a competitive environment.[13]

The aim of this paper is to better understand how public officials use land-use regulations to capture fiscal benefits, particularly in complex institutional settings. Our approach is to focus on micro-level public decisions, in this case, the approval or disapproval of particular private development applications. To motivate this approach, the next section: 1) offers an overview of

[9] Bockstael, N. E. (1996). Modeling economics and ecology: the importance of a spatial perspective. *American Journal of Agricultural Economics* 78[5], 1168-1180.
[10] McDonald, J. F. & McMillen, D. (2004). Determinants of suburban development controls: a Fischel expedition. *Urban Studies* 41[2], 341-361.
[11] Wakeford, R. (1990). *American Development Control: parallels and paradoxes from an English perspective*. London, HMSO Books.
[12] See for example, Chau, K. & Lawrence, W.-C. L. (2004). Planned conversion of rural land: a case study of planning applications for housing and open storage uses in agricultural zones. *Environment and Planning B: Planning and Design* 31, 863-878; Jacob, Benoy (2008) Do Local Taxes and 'Market' Pressures Shape the Strategic Decisions of Municipalities (dissertation); Tang, B., Choy, L. H. T., & Wat, J. K. F. (2000). Certainty and Discretion in Planning Control: A case study of office development in Hong Kong. *Urban Studies* 37[13], 2465-2483.
[13] Bowman, A. O. M. & Pagano, M. A. (2004). *Terra incognita: vacant land and urban strategies*. Washington, D.C., Georgetown University Press.

the development application process, typical of most American cities, and 2) describes the logic of a utility function that, we argue, defines the development calculus of fiscally motivated public officials. The paper, then, articulates specific hypotheses regarding the expected development decisions of Kansas City, Missouri and Kansas City, Kansas, and describes the data, explains the (preliminary) analysis, and discusses subsequent findings. The paper concludes with some thoughts about the implications for theory and practice.

2.0 Toward a utility model of land-use decision-making

2.1 Conceptualizing land-use regulations as a series of micro-level decisions

In the early part of the 20th century, land-use regulations were formally recognized as part of the police power of American municipalities. As shown in Figure 1, the process that has since evolved begins with a private developer proposing a development scheme for a particular parcel of land. The city, then, either accepts the proposal as is (A) or declines it outright (B). In either instance the approval process ends. By following branch A, both parties have determined that the development will increase their utility - however defined. In contrast, by following branch B, the *public agency* has determined that the development does not increase its potential utility and is too far removed from its preferences that it is not willing to incur the costs of negotiations. Another option (C) is that the public agency will acknowledge that the proposed development does not match its preferences, but that it is close enough to enter into negotiations and thus, will suggest an alternative scheme. The developer is then faced with a similar choice set: accept the alternative (A1), decline it outright (B1) or suggest a compromise (C1), in which case the process simply repeats itself until a terminal node (i.e. approve or disapprove) is reached.

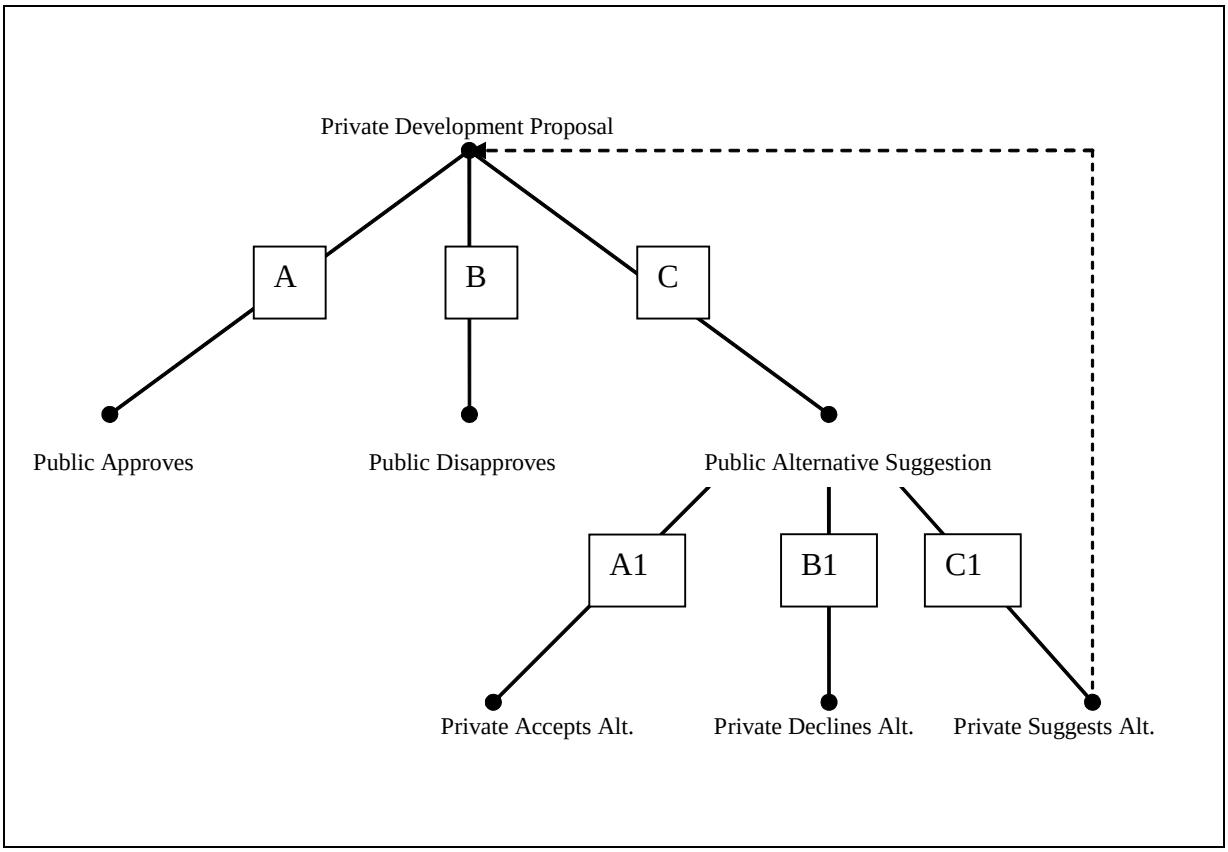

Figure 1. The Planning Approval Process in "Extensive Form"

Fundamental to this process is the determination of the pay-offs for each actor. For example, the initial development proposed by the private firm or developer is based on the belief that, compared with alternative development schemes, the proposed scheme is profit maximizing.[14] Similarly, the public sector will evaluate the proposed scheme with an eye toward utility maximization, which, due to inter-jurisdictional pressures, is largely defined by revenue generating processes. This suggests that land-use officials must be able to articulate a set of preferences for different land-uses at specific locations within their jurisdiction. The following sub-section describes how these preferences will be defined – in terms of a public land-use utility function.

[14] This is often conceptualized as a bid-rent function, which describes the maximum amount of land rent that a firm can pay and still have a profit for any given type of land-use. Simply put, the bid-rent function provides a mechanism for understanding which land-use type maximizes the profit for firms and households for different parcels of land.

2.2 A fiscal land-use utility function

The fiscal utility of a city is defined in terms of: tax revenue, additional public 'goods,' and positive & negative externalities. Given a maximizing calculus, a city that is dependent on a particular local tax will, first and foremost, view developments that match its fiscal architecture in a more favorable light. For example, a city with a sales tax will prefer retail land-uses to alternative developments. However, when evaluating a proposed development scheme, the city is not only considering the proposed land-use, but the use at a particular location. This qualification would be inconsequential if the impacts of development were felt only on the parcel being developed. However, the externalities associated with development are, by definition, not geographically constrained to the footprint of the development. Thus, a critical component of fiscal maximization is the management of these externalities through the approval of development in a spatially strategic manner.

The tax revenue and public good benefits of development – the two non-externality dimensions of the fiscal utility function - are felt the same, regardless of the development's location in a city. A dollar of tax revenue or value of public good generated from a development in a city's downtown provides the same value as a dollar collected from a development at the city's border. Thus, given a development that has no externality – positive or negative - the competitive motivation of the municipality is simply to ensure that the development is located within its jurisdiction. In the absence of any positive or negative externality, the city is ambivalent with respect to the location of a development within its borders. No matter where the development locates within the jurisdiction, the city will gain the direct revenue or public good.

The same cannot be said for the externality effects of a proposed development. The fiscal impact will be felt differently, depending on the development's location relative to neighboring

jurisdictions. Assume, for example, that the development generates some positive fiscal spillover effects. The proposed development will not only provide a direct revenue stream to the city, but will also enhance the value of surrounding parcels. Given the competitive motivation of a municipality, its preference will be to keep as much of the positive fiscal spillover as possible within its own jurisdiction. As depicted in Figure 2, competitive municipalities will prefer the proposed development (A) over (B) because it captures both the direct revenue and the positive externalities. In contrast, proposed development (B) is less preferable because a portion of the positive fiscal externality is shared with the neighboring jurisdiction.

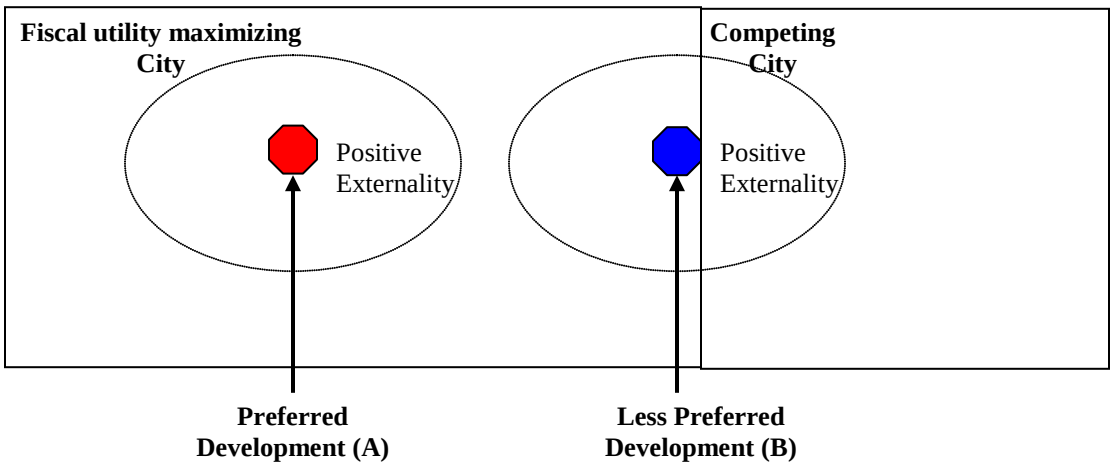

Figure 2. Preferred location for development with a positive externality

Of course, economic development projects may generate negative spillovers. For example, a development may also be associated with externalities that diminish the value of adjacent parcels or place some additional burden on the city, such as pollution or traffic congestion. These costs are unlikely to be capitalized in any meaningful way into the taxable value of the proposed development or neighboring parcels. Thus, the city cannot re-coup the costs from taxes or other means. Figure 3 shows that a fairly simple strategy for minimizing such costs is to shift the development closer to the political boundary of the neighboring jurisdiction. In this way, the

municipality can capture the direct revenue stream while shifting some of the costs associated with the development onto a neighboring jurisdiction.

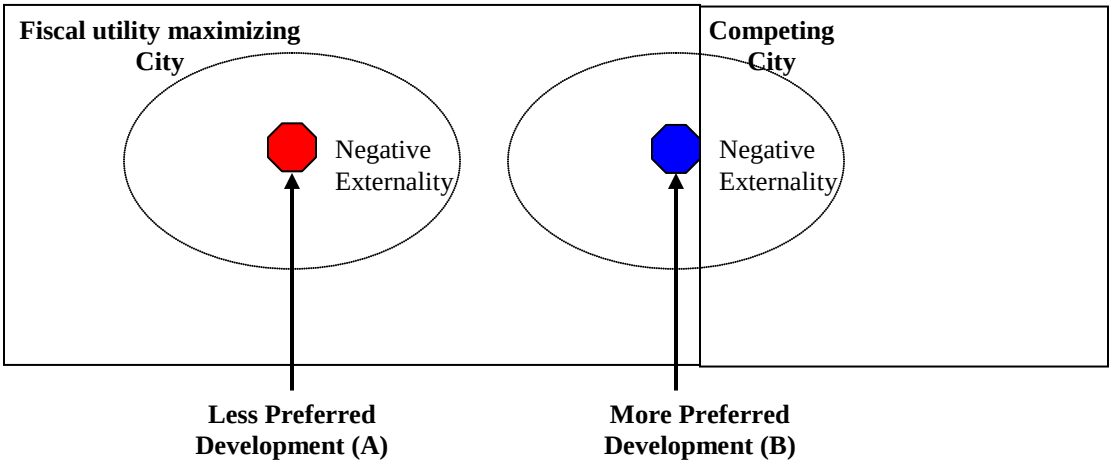

Figure 3. Preferred Location for Development with a Negative Externality

To model the calculus described above, we employ a simple utility framework. This requires accepting a few assumptions. First, given the flexibility in the development approval process, the decision to approve or disapprove development is not deterministic. Rather, it can be understood as an outcome of a probabilistic function of the anticipated utility gain that the attributes of the proposed land-use offers to the public agency when compared to potential future developments.[15]

Because the utilities are unobserved, they can be assumed to be random and the utility for a particular parcel of land can be expressed as a function of observed characteristics and a stochastic error term.[16] As shown in equation 1, the utility that the public agency receives at

[15] For a more general exposition of this see: Luce, D. (1959). *Individual choice behavior*. New York, Wiley. Marschak, J. (1960). Binary Choice Constraints on Random Utility Indicators, in Kenneth Arrow ed, S*tanford Symposium on mathematical models in the social sciences*. 312-329. California, Stanford University Press.
[16] For a more general exposition of this see McFadden, D. (2001). Economic choices. *The American Economic Review* 3, 351-378

parcel *i* for a particular land-use *a* is a function of the set of observed characteristics of a proposed development *(D)* and an associated random error ε.

$$U_a^i = D_a^i + \varepsilon_a^i \quad (1)$$

A second assumption of the utility model is that the public agency will have a set of stable, and known, preferences for different land-use types. Further, these preferences can be articulated for each parcel of land within the jurisdiction. Thus, given a single parcel of land, the public agency will be able to rank the different possible types of land-uses that could be developed by a private actor. The geographic (or spatial) preferences are related to the way in which a city perceives the externalities associated with a development. As noted at the outset of this section, the type of development that the municipality will prefer is related to its tax structure, that is to say, it is related to the tax dimension of the fiscal utility function. Thus, if we know the city's fiscal architecture, we will know the type of development a municipality prefers, and the likely externalities with which it is associated. This suggests that, when evaluating a development, the city will consider whether it: 1) provides local tax revenues, 2) provides some positive externality, or 3) has some negative externalities associated with it.

Thus, the vector *D* can be expressed as:

$$D_a^i = (T, P, N) \quad (2)$$

Where:

(T): the direct revenue stream of the proposed use – through local taxation,

(P): any positive externalities associated with the development and,

(N): any costs/negative externalities associated with the development that the public sector would have to bear.

First, the direct revenue stream (*T)* suggests that the utility of the municipality is increased if the proposed development provides a direct revenue stream – through taxation (Figure x). Second, any positive externality (*P*) associated with a development can be captured, and subsequently increases municipal utility, by locating the development as close to the city center as possible (Figure 2). Finally, any negative externality (*N*) associated with a development can be mitigated by locating the development as close to the city's political borders as possible.

Thus by observing the municipality's tax structure we can predict the type of development it will prefer. And by knowing something about the externalities associated with particular types of development we can predict a city's preferences for the location of different developments. This logic is extended in the next section, which describes three idealized fiscal landscapes. Based on this discussion, the next section also develops a set of hypotheses for fiscal land-use strategies by Kansas City, Missouri and Kansas City, Kansas.

3.0 Fiscally ideal landscapes and the Kansas City metropolitan case

In the previous sections, we have made the case that when studying land-use regulations, the ideal unit of analysis is the individual decision, i.e. the decision of the public agency to approve or disapprove a private development application. We have also argued that the underlying calculus of this decision is fiscal and that the observable manifestations of these decisions will differ depending upon the fiscal architecture of the city. That is, cities that rely mostly on a property tax will have a different preference ordering for development than will a city that relies on an income or sales tax. The logic of this last claim is more fully developed in the first sub-section below (3.1). In particular, it presents three models of fiscally idealized

landscapes, developed by Bowman and Pagano (2004).[17] These models provide important insights into how we would expect the utility function to be maximized in different contexts; i.e. the preference ordering we would expect for cities, with respect to the spatial organization of development.

Of course the primary objective of this study is to develop and test hypotheses relating to fiscalization as it occurs in environment when a city relies on more than one particular tax source. Thus, the second sub-section outlines the fiscal architecture of the two cities that are the focus of this paper – Kansas City, Missouri (KCM) and Kansas City, Kansas (KCK), and specifies 5 hypotheses, which provide the basis for subsequent analysis.

3.1 Fiscally ideal landscapes

Although no American city is entirely dependent on a single source of revenue, some are more reliant on a particular type of tax then others. Bowman & Pagano (2004) demonstrates that the spatial preferences of land-uses is related to the tax that the city is most reliant upon (i.e. property, income or sales taxes).[18] They present three conceptual models for an idealized fiscal landscape; what one might expect a city to look like if it were only interested in maximizing its fiscal resources in a competitive environment. We employ these models to help define the preference ordering of land-uses with respect to the type and location of development. This suggests that the general utility function described in the previous section will have different observable outcomes in different taxing contexts – property, income or sales taxes.

[17] Bowman, A. O. M. & Pagano, M. A. (2004). *Terra incognita: vacant land and urban strategies*. Washington, D.C., Georgetown University Press.

[18] Although the Bowman/Pagano argument was initially placed in the context of policies directed at vacant land conversion, the spatialization of revenue structures can be extended to other city-investment decisions or at least to those decisions that require land investment (e.g., infrastructure improvement, transportation access to private commercial development, residential density bonuses).

First, the overriding imperative of property-tax dependent cities is to enhance real estate values. For property-tax dependent cities, city economic development investments and zoning should probably concentrate high property value activities in the city's center. This strategy spurs higher real-estate values while ensuring that any of the fiscal spillover benefits of such activity to the city—measured in terms of higher real estate values and improvements to structures—will accrue to the city's fiscal well being.

Additionally, a 'property tax city' will seek to place high infrastructure-cost activities with comparatively lower property values at the city's perimeter, thereby pushing some costs of development to neighboring communities. Improving transportation access to shopping centers and industrial parks, for example, not only burdens the municipality's budget, but it also requires other governments to provide financial support. The fiscal imperative to keep costs down or to export costs of service provision to other jurisdictions is well known. We suggest it springs from one of two perspectives. One perspective is that policy officials design revenue structures that ensure a fair revenue burden—because one's place of residence is often not an important determinant of one's consumption of city services-- rather than one that places the full cost of services on residents. While designing a revenue system that is fair may motivate the placement of some development activities at the city's fringe-- thereby assuring that shoppers pay for some of the services and infrastructure they consume-- it may also be the case that policy officials can generate more net revenue when other jurisdictions pick up some of the spillover costs

Second, sales-tax cities induce policy officials' development behavior in a direction quite unlike that of property-tax cities. Over a decade ago, the finance director of Tempe, Arizona in an interview said that the city should no longer try to grow its property tax base. For every single-family detached home that was built, the property tax derived from the owner covered less

than 50% of the value of city services provided to that residence because the property tax rate was so low. In his mind, encouraging out-migration of residents and in-migration of retail establishments would have been good development policy. And indeed, the city has invested in developing large pockets or centers of commercial activity over the last 20 years, especially at the city's southwest corner, bordering the city of Phoenix, that had been previously undeveloped. Why in the corner of the city and not in the center? Because the corners serve a shopping-shed area that exceeds the corporate limits of the city and the retail-sales tax can be bountiful. Phoenicians help underwrite the service costs of Tempe by purchasing automobiles and other taxable items in Tempe and by living and working anywhere but Tempe. The city manager of Oklahoma City—a city that generates nearly two-thirds of its revenue for the General Fund from the sales tax—labels this type of development at a city's edge the "Wal-Mart Wars."[19]

The urban design of sales-tax cities, assuming city officials are motivated to maximize revenues and minimize costs, is to build up the city's edges with commercial establishments and encourage non-residents to shop in the city (but live elsewhere). What becomes less relevant or important to the revenue-maximizing behavior of city officials is the location of residential properties or office buildings, because neither directly connects to the city's fiscal well-being. The indirect effect, however, might be important depending on the quality of life the city officials are attempting to provide. Good neighborhoods, low public safety costs, and vibrant communities are typically sought-after characteristics. Yet, there are some incorporated municipalities in which the public officials focus nearly all of their energies on enhancing the retail sales tax base. Schaumburg, a suburb northwest of Chicago, hosts one of the region's

[19] Pagano, Michael A. (2003) City Fiscal Structures and Land Development. A Discussion Paper Prepared for the Brookings Institution Center on Urban and Metropolitan Policy and CEOs for Cities, April.http://www.brook.edu/dybdocroot/es/urban/publications/paganovacant.pdf

largest shopping malls and, as a consequence of its success, has eliminated the property tax for the city's residents. The city has no interest in luring more residents, so it invests little in residential activity.

Finally, the third idealized urban design is based on a city's high income-tax reliance. Those income-tax structures encourage policy officials to search for the employed worker, one with a paycheck and, even more important, a highly-compensated employee. Of course, unlike the property and sales tax, the income tax can be implemented in different ways. Cities whose income tax is of the commuter tax variety motivate public officials to invest in development projects and encourage private investment in job-creating activities in the city. Those without a commuter tax need employed, high-income *residents*. Development of office buildings and high-end residential areas, especially in the center of the city should be a high priority so that the high-salaried employee lives in the city and the city can generate revenue from this employee.

In sum, we can develop propositions about the preferred type and location of land development for different cities based upon their fiscal resources. More precisely, we can think about how these preferences lead public officials to maximize their fiscal utility (equation 2), by approving or disapproving <u>similar</u> land-use applications in <u>different</u> locations. Given the spatial logic associated with the fiscally ideal landscapes, we can develop hypotheses regarding our expectations for the public agency to approve private development proposals. In general, these hypotheses articulate a causal link between the decision to approve a particular type of development (based on the preference for a particular tax) at a particular location, relative to neighboring jurisdictions (based on the externalities associated with the development). This does not suggest that development will only be approved if it is perfectly congruent with the spatial preferences of the public agency, but rather that the probability of the public agency approving

such a development will decay as the distance from the municipal boundary increases. The next section develops such hypotheses for Kansas City, Missouri and Kansas City, Kansas.[20]

3.2 Hypotheses

The question posed in this study is: *how do the fiscal institutions of one state affect the land-use policies of cities in a different state within the same region?* To address this question we explore the land-use decisions made over a 6-year period (2001 – 2006) [21] for two cities in the Kansas City Metropolitan Region - Kansas City, Missouri (KCM) and Kansas City, Kansas (KCK). These cities provide an ideal case study to address our research question in that: 1) they share a common border; making inter-jurisdictional competition more likely, and 2) while the two cities rely heavily on a local sales tax, KCM is also allowed – by state legislation – to draw upon an earnings tax. Our objective is to understand how KCM's access to this tax, and KCK's lack thereof, shapes the land-use strategies of these cities as they compete with each other for mobile resources. To understand the fiscal incentives faced by each city, and subsequently hypothesize about their land-use decisions, this sub-section takes a closer look at the relative composition of the tax structure in each city, over the particular period studied.

From 2001 – 2006, both KCM and KCK collected a substantial portion of their tax revenues from the local sales tax. As shown in figure 4, KCM collected between 43 and 49-percent of its total tax revenue from the sales tax, while KCK collected between 28 and 40-percent. While KCM is 'more reliant' on the tax than KCK, both cities seem to pursue it vigorously. Accordingly, our expectation is that: both cities will prefer land-uses that enhance

[20] Because the interactions of the fiscal architecture of the city and the externalities of the development are based on a framework developed by Bowman and Pagano, these five hypotheses act serve an ancillary benefit by testing of the robustness of their framework. That is, Bowman and Pagano (2004) developed their framework to explain how cities pursue the development of vacant land. This study does not limit the application of their logic in this way. Thus, to the extent that they hypotheses are upheld would suggest that their framework has applications beyond the development of vacant-land.

[21] Section 4.1 provides a rationale for this time period.

their respective sales tax revenues. More precisely, based on the models of fiscally ideal landscapes, we expect both cities to push retail development as close as possible to its borders with neighboring jurisdictions. Thus, when faced with retail development applications, we hypothesize that:

> *H1: Both KCK and KCM will be more likely to approve retail development as the development's distance from the city's border decreases.*

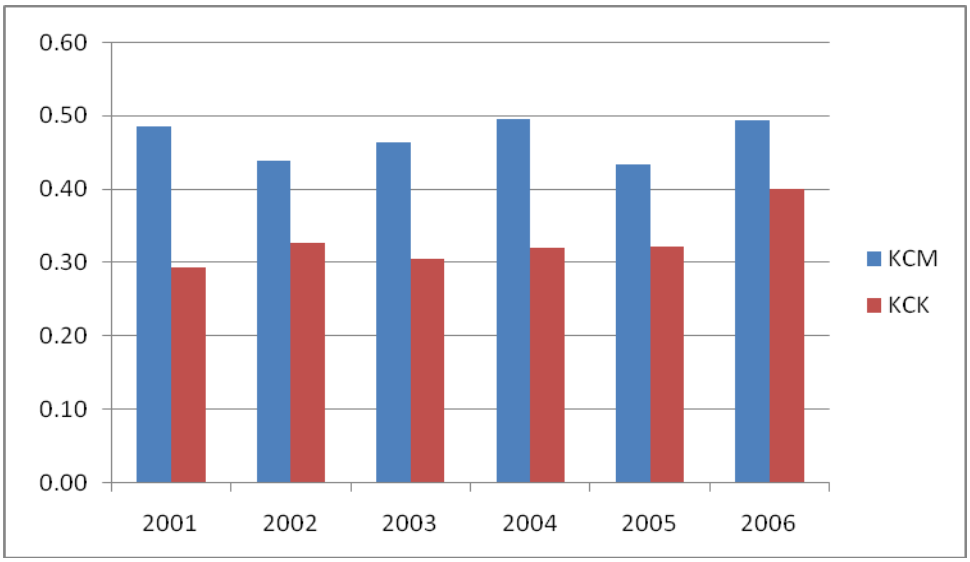

Figure 4. Sales tax collections for KCM and KCK

The second dimension of the fiscal architecture of these cities is the income tax. KCM is one of the few cities in the US that relies heavily on this tax. The city levies a 1-percent earnings tax on business income and any income earned by residents and non-residents. As shown in figure 5, this accounts for between 33 and 38 percent of the city's annual tax revenue. In contrast, KCK drew no benefits from this type of tax. The situation is reversed when looking at the revenues generated through the local property tax. More precisely, over the six years studied, KCM drew less than 20-percent of its revenue from the property tax while KCK drew as much as 70-percent (see figure 6). This suggests that the income tax and the property tax serve as complements to the sales tax for KCM and KCK, respectively. To hypothesize about the

subsequent fiscal land-use strategy we need to examine the implications of these particular taxes – property and income - with respect to the private actor who is "shopping around" for a jurisdiction. .

When moving to a particular jurisdiction, the private actor will consider the overall tax burden (s)he will have to bear. Moving to the KCM-KCK metro area means that the burden

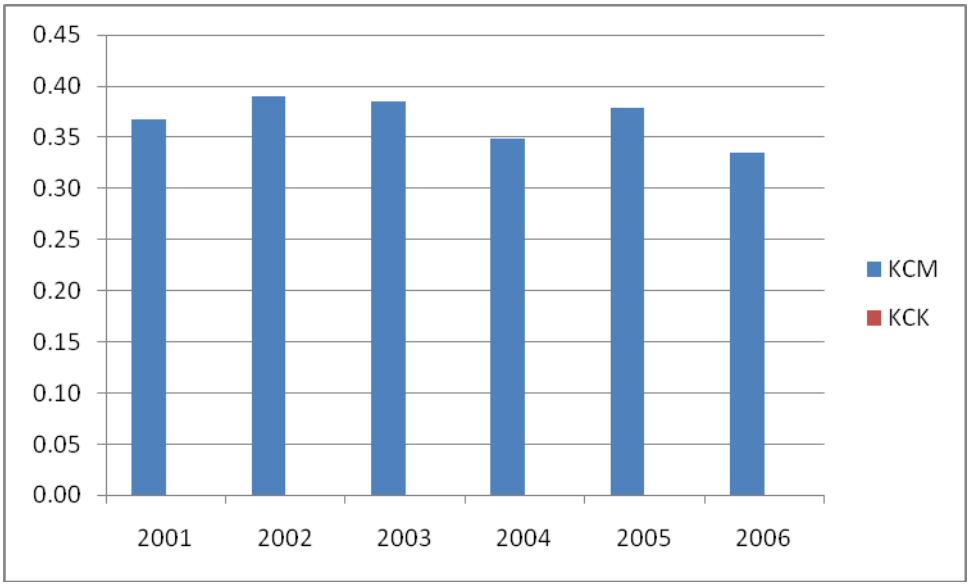

Figure 5. Income tax collections for KCM and KCK

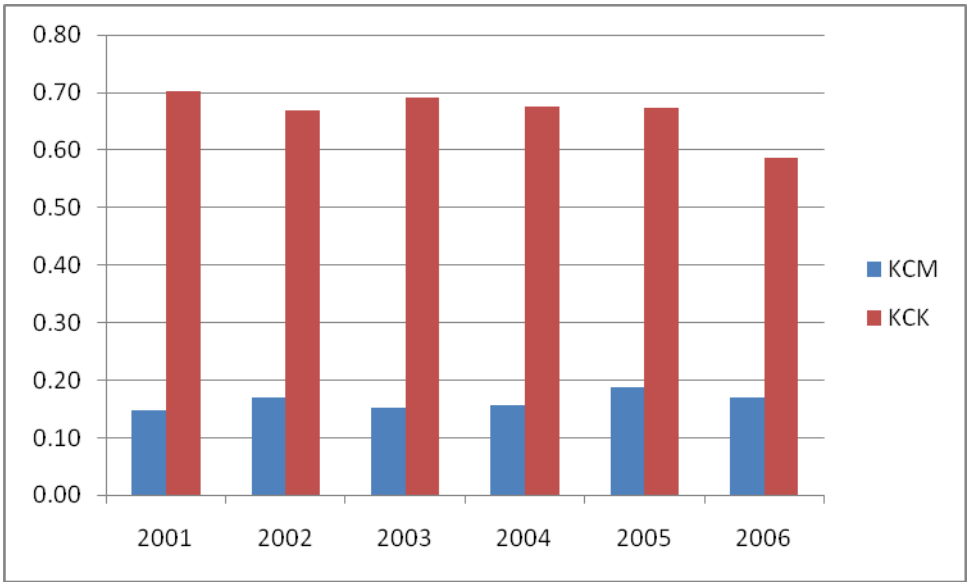

Figure 6. Property tax collections for KCM and KCK

will be shaped by the sales, income and property taxes; if one chooses to live and work in KCK their burden is defined by the property tax and sales tax, while if one chooses to live and work in KCM their burden is primarily defined by the income tax (including the exported income tax to non-resident employees) and sales tax. This suggests that the primary source of competition between the two cities is going to be over the location of jobs.

Because KCM's earnings tax is both on residents and commuters, it is likely that people who work in KCM will choose to live in KCM. That is, *ceteris paribus*, why incur the additional property tax burden, of KCK, if you don't have to? If KCM can attract employees to the jurisdiction, this would place them at a significant competitive advantage over KCK. KCK has a similar incentive to capture jobs. That is, if an individual works in KCK (s)he will likely prefer to also live in KCK. Just as the citizen/worker in KCM wouldn't want to incur the KCK property tax, the worker in KCK would prefer to not pay the KCM income tax. That said, while both cities will want to employ their land-use regulations to capture jobs, the spatial models tell us that the spatial preferences of KCK and KCM with respect to 'job creating' developments will differ. Thus, if our models are correct, we would expect observable differences in the land-use

approval patterns of the two cities for similar types of developments. These differences are the basis for the four remaining hypotheses.

Hypotheses 2 and 3 focus on the land-use strategies relating to commercial and industrial development. First, as described above, KCK can rely on the fact that not many people will choose to work in their jurisdiction *and* incur an income tax in KCM. So, as long as firms locate in KCK, the city is more likely to also attract property tax paying residents. Thus, its goal is to have job enhancing developments[22] within its jurisdiction. However, following the fiscal ideal landscape models, it will try and push negative externality effects onto neighboring jurisdictions. Thus, we hypothesize that:

> *H2: KCK will be more likely to approve commercial and industrial development as distance from adjacent neighbors decreases.*

The third hypothesis considers KCM's strategy with respect to commercial and industrial development. Following a similar fiscal logic as KCK, KCM has an incentive to acquire job-enhancing developments within its borders. KCK (as described above) is interested in locating jobs within its jurisdiction primarily to capture the property tax and associated tax benefits from projects near development projects. While KCM is similarly motivated (for both property and income tax) it is also particularly concerned about losing income tax revenues to its competitors who do not impose an income tax. Thus, KCM will prefer to locate commercial and industrial developments with high-paying jobs as far from the border with neighboring jurisdictions as possible. The logic is that the closer such developments are to the KCK border, the more likely employee's "will encourage the office's relocation to the neighboring jurisdiction."[23] Thus, we hypothesize that:

[22] Which we operationalize as commercial and industrial developments.
[23] Bowman, A. O. M. & Pagano, M. A. (2004). *Terra incognita: vacant land and urban strategies*. Washington, D.C., Georgetown University Press. (pg. 70).

H3: KCM will be more likely to approve commercial and industrial development as distance from adjacent neighbors increases.

The fourth and fifth hypotheses are based on the strategic motivations for both cities with respect to residential development. The last two hypotheses focused on the mobility of residents in choosing where to work. However, few people choose the location of their place of employment. So what about the individuals who, for whatever reason, have to work in KCM? Does KCK simply concede that these individuals will live in KCM? It seems likely that KCK will still try to capture these tax revenues; particularly for 'high-valued' residential developments. In particular, they will try and make residential developments as attractive as possible by locating them closer to the KCM border, thereby, allowing those individuals who must work in KCM but prefer KCK for other reasons, an opportunity to save on commuting costs.

H4: the value of approved residential developments in KCK will increase as the distance from KCM decreases.

In contrast, KCK is not simply in competition with KCM. Given the models of fiscally ideal landscapes, we would also expect KCK to try and capture as much of the positive externality associated with high-value residential development. This will be the motivation KCK faces when considering neighbors, other than KCM. Thus, we hypothesize that:

H5: the value of approved residential developments in KCK will increase as the distance from neighboring cities in Kansas increases.

This section has outlined five hypotheses that test the fiscal logic of land-use strategies proposed in this study. The primary causal factor in each hypothesis is the distance of the development to neighboring jurisdictions. More precisely, in the first three hypotheses the

distance variable combined with the type of the development – retail, commercial and industrial – to predict outcomes, while in the last two hypotheses, the distance variable combined with the value of the development to predict outcomes.

4.0 Data

4.1 Dependent Variables

Given the argument presented in this study, the unit of analysis is an individual public decision to approve or disapprove a private development application. While analyses of micro-level public decisions on land-use applications is unique in the American context, scholars of the development process in the United Kingdom and Hong Kong have employed this type of data to understand a range of development decision issues, such as the use of discretion in the planning process,[24] the predictability of public decisions on development applications,[25] and the factors influencing the conversion of rural land.[26] Ideally the empirical analysis would be based on a data set of public decisions on private development proposals; it would include the full range of private development applications received by the city as well as the final approval/disapproval decision. However, such micro- level data is daunting to collect and its availability is idiosyncratic at best.[27] Indeed, this particular data was not available, in any accessible form, from either KCK or KCM. Thus, we employ building permit issuances as a proxy for approvals and disapprovals.

[24] Tang, B., Choy, L. H. T., & Wat, J. K. F. (2000). Certainty and Discretion in Planning Control: A case study of office development in Hong Kong. *Urban Studies* 37[13], 2465-2483

[25] Willis, K. G. (1995). Judging development control decisions. *Urban Studies* 32[7], 1065-1079.

[26] Chau, K. & Lawrence, W.-C. L. (2004). Planned conversion of rural land: a case study of planning applications for housing and open storage uses in agricultural zones. *Environment and Planning B: Planning and Design* 31, 863-878.

[27] In his study of the influence of sales tax revenue on development decisions, Lewis argued that the ideal approach to such a study fiscal motives in land-use decisions would be to collect such micro-level land-use decisions, such as changes to the local zoning regulations. The challenges collecting such data posed, however, dissuaded him from using such an approach.

Building permits represent the final stage in the land-use approval process. That is, once a development application has been approved, a building permit is issued. Building permits then, only reflect approvals. However, building permits are also issued for demolitions. That is, the approval to demolish a particular development which is, in essence, a disapproval of a particular land-use type in a particular location. Thus, we operationalize approvals and disapprovals as building permits for construction (approved land-use) and demolition (disapproved land-use).

We collected this data for the time period 2001 – 2006. The time frame selected for this study does not reflect any theoretically or historically significant time-period. Rather, it reflects the availability of land-use data. While the permit data itself is readily available for a relatively lengthy time period, connecting this data to other data prior to 2001– particularly GIS data – was not possible.

The permit data was provided by both municipalities as a set of digital spreadsheets. Preparing this data for analysis involved multiple steps. First, because demolitions are used as a proxy for disapprovals, all demolition permits had to be cross referenced with construction permits to make sure that the demolition wasn't simply replaced with the same land-use. Such a 'replacement' of a land-use occurred in less than 2% of the demolitions. In those cases where the demolitions were replaced, we dropped the observation from the analysis. Second, we focused exclusively on new construction. Thus, building permits that reflected an addition to an existing building were also excluded from the analysis (almost 85% in KCM and 77% in KCK). The rationale for this exclusion was that there was no clear way to demarcate 'at what point' the fiscal logic would take hold. Finally, each observation represents a <u>decision</u> to construct or demolish a <u>particular type</u> of development. Thus, the data had to be coded to account for both

these dimensions – the decision and the type of development - commercial, industrial, retail or residential development.[28] The data is summarized in Table 1 (below).

	KCM Construction vs. Demolition (2001 – 2006) (Percent of City Total)		KCK Construction vs. Demolition (2001 – 2006) (Percent of City Total)		Total
	Const.	Dem.	Const.	Dem.	
Commercial	106 (12%)	33 (21%)	88 (13%)	12 (13%)	239 (13%)
Industrial	34 (4%)	18 (12%)	22 (3%)	11 (12%)	85 (5%)
Retail	110 (12%)	27 (18%)	83 (12%)	15 (16%)	235 (13%)
Residential	671 (73%)	76 (49%)	503 (73%)	55 (59%)	1305 (70%)
Total	921 (49%)	154 (8%)	696 (37%)	93 (5%)	1864 (100%)

Table 1. Summary of building permit data employed for analysis

4.2 Independent Variables

Land-use decisions are modeled as an outcome of four sets of explanatory variables - distance, market failures, development characteristics, and additional exogenous controls. The first set of independent variables is comprised of two distance measures. The variable of primary interest is the distance of the proposed application to the neighboring or competing jurisdiction. In the framework put forward in this study, 'pushing' a development closer to a neighboring jurisdiction forces the neighbor to bear the costs of some of the negative externality associated with a development. Thus, this variable is measured as the 'straight-line' distance from the edge of the development parcel to the edge of the nearest municipality. This measure has important limitations. For example, it does not account for topographical features, like a steep cliff, or

[28] It was expected that a key difficulty might be in determining the appropriate land-use code was for proposed mixed-use developments. In both cities, however, these developments were designated as 'commercial mixed-use' or 'residential mixed-use' depending on the primary use of the proposal (based on floor area ratio).

cityscape features, such as the road network. Thus, if the negative externality is explicitly transportation oriented, the straight-line measure may not fully capture the hypothesized cost minimization logic. This limitation is addressed through the inclusion of one other distance variables - the straight-line distance from the parcel to 'highway on-off ramps (D_HIGH). Transportation corridors have been shown to be key variables in the location of development as well as determining the presence and substance of land-use regulations.[29] Both distance variables are measured in miles.

The second set of independent variables control for the market failure rationale in the decision calculus of public officials. The market failure perspective argues that public policy should be formulated and implemented to ensure that incompatible land-uses are kept separate.[30] The incompatibility of land-uses is argued to be a result of the negative spillovers from non-residential land-uses to residential land-uses.[31] Thus, the decision to approve a development project at a particular location may not be based on the fiscal logic developed in this study, but rather on the proximity of compatible land-uses. Compatibility is often described in terms of residential versus non-residential uses. Thus, the market failure logic suggests that non-residential uses and residential uses are inherently incompatible with each other and should not be spatially proximate. However, the literature is not clear on how 'proximate' these uses should be. However, the empirical approach to this issue is often to employ a simple dummy variable for adjacency. That is, if a development is adjacent to a different type of land-use then the proposal is incompatible. We adopt the same approach.

[29] McDonald, J. F. & McMillen, D. (2004). Determinants of suburban development controls: a Fischel expedition. *Urban Studies* 41[2], 341-361.
[30] Pigou, A.C (1932) *The economics of welfare 4th edition*. London, MacMillan
[31] Mills, D.E. (1979) Segregation, rationing and zoning. Southern Economics Journal 45 (April) 1195-1207

The third set of independent variables controls for the intensity of the proposed development. The logic underlying the inclusion of this variable is that the format of the data does not account for the variation within each category of development. A large commercial development is weighted the same as a small commercial development. This variable is operationalized as the Floor Area Ratio (FAR) of the development.

The fourth set of variables accounts for specific neighborhood and exogenous effects. These variables control for characteristics of the neighborhood in which the development application is proposed. In particular, variables were created that accounted for: 1) the percent of the 'neighborhood' that was white (WHITE), 2) the percent below poverty (PER_POV), 3) the median household income (MED_INC) and, 4) the percent of homeowners (H_OWN). The latter two neighborhood effects reflect Fischel's argument that homeowners exert significant influence on the outcomes of local government decision-making, particularly relating to land-uses. The importance of home-voters in land-use regulations has been borne out in several studies.[32] The former two variables, control for differences in the public decision calculus based on the socio-economic profile of a neighborhood. These variables were constructed using data from the 2000 American Census TIGER files. The neighborhood of a proposed development application was operationalized as a census block-group. Thus, the development applications were spatially located in terms of their census block group and the values in those groups reflect the neighborhood measure for the observation. These groups are unlikely to coincide with actual neighborhoods, but they represent the lowest level of analysis for which the variables can be

[32] See for example: Brueckner, J. K. (1998). Testing for strategic interaction among local governments: the case of growth controls. *Journal of Urban Economics* 44, 438-467; Fischel, W. A. (2001). Municipal corporations, homeowners and the benefit view of the property tax. In: *Property taxation and local government finance: essays in honor C. Lowell Harriss*, ed. W.E. Oates. 33-78. Cambridge, MA, Lincoln Institute of Land Policy; Lenon, M., Chattopadhyay, S., & Heffley, D. (1996). Zoning and fiscal interdependencies. *Journal of Real Estate Finance and Economics* 12, 221-234

geographically identified. An additional variable is included to account for potentially unobserved influences in the decision calculus that controls for potentially unobserved influences in the decision calculus. First, it employs a variable for the total number of days since the beginning of 2001 (DUR_2001). This provides a control for exogenous factors that may have changed the decision-calculus for all the development applications during the time period.

5.0 Analysis and Findings

5.1 Hypotheses 1 – 3: Logit Analysis

Hypothesis 1 – 3 considered the 'approval' decisions of retail, commercial and industrial developments. These reflect a discrete choice on the part of the public agency. Typical of discrete choice models, the empirical estimation is derived from a *logit*-model in which the dependent variable P_i is the probability of the private proposal obtaining public approval. This model takes the following general form:

$$\Pr(Y=1) = \frac{\exp(\alpha + b_1 x_1 + b_2 x_2 + ... + b_n x_n + \varepsilon}{1 + \exp(\alpha + b_1 x_1 + b_2 x_2 + ... + b_n x_n + \varepsilon} \quad (3)$$

The *logit* is a transformation of the P_i dependent variable that, in this case, takes the value of 1 if the development proposal is approved and 0 otherwise. P_i is defined as a function of independent explanatory variables X*i = 1, 2,…n* for which the relative strength of the factors is given by the respective *b*-coefficients and are generated from a maximum-likelihood estimation. That said, because our analysis is still preliminary in nature, we only report the signs and statistical significance. In subsequent analyses we will determine the magnitude of the effects.

> *Hypothesis 1: Both KCK and KCM will be more likely to approve retail developments as their distance from the city's border decreases.*

The findings for this first hypothesis are summarized in Table 2 (below). The table demonstrates that the distance to neighbor variable D_NEIGH (miles) is statistically significant and the sign is as expected. This finding mostly confirms the competitive motivation we assumed to exist. The findings coincide with what the traditional fiscalization literature would tell us. Hypothesis two and three more directly test the nuances of fiscal strategies.

DEPENDENT VARIABLE: Approved/Constructed retail developments	KCK Obs. = 83 Model Evaluation Likelihood Ratio = 11.04 *** Wald Test = 9.22** Goodness of Fit H&L = 6.96		KCM Obs. = 110 Model Evaluation Likelihood Ratio = 10.01*** Wald Test = 8.01** Goodness of Fit H&L = 4.04	
Independent Variables	Sign	Sig	Sign	Sig
D_NEIGH (miles)	-	**	-	**
D_HIGH (miles)	-	***	-	***
FAR (ratio)	+		+	
WHITE (percent)	-		+	
H_OWN (percent)	-	**	-	**
MED_INC	+		+	
PER_POV	+		-	
DUR_2001(months)	-		-	

Table 2. Findings for Hypothesis 1

Hypothesis 2 states that KCK will be more likely to approve commercial and industrial development as distance from adjacent neighbors decreases, while hypothesis 3 states that KCM will be more likely to approve commercial and industrial development as distance from adjacent neighbors increases. To the extent that these hypotheses can be empirically verified, we have strong evidence that: 1) these two cities are in fact competing with each other, 2) they are using the land-use approval process to do so, and 3) the fiscal structures change the way each cities values a particular type of development. The findings for these two hypotheses are summarized in Table 3 (below). Although we are not yet reporting the coefficients and subsequent

magnitudes of the effects, the table demonstrates that the distance to neighbor variable D_NEIGH (miles) is statistically significant and the sign is as expected for *both* cities.

DEPENDENT VARIABLE: Approved/constructed commercial and industrial developments	KCK Obs. = 110 Model Evaluation Likelihood Ratio = 9.04 *** Wald Test = 7.12** Goodness of Fit H&L = 3.55		KCM Obs. = 140 Model Evaluation Likelihood Ratio = 11.01*** Wald Test = 9.22** Goodness of Fit H&L = 3.04	
Independent Variables	Sign	Sig	Sign	Sig
D_NEIGH (miles)	-	*	+	**
D_HIGH (miles)	-	***	-	***
FAR (ratio)	+		+	
WHITE (percent)	-	*	-	*
H_OWN (percent)	-	*	-	*
MED_INC	+	*	+	
PER_POV	-		-	
DUR_2001(months)	+	*	+	**

Table 3. Findings for Hypothesis 2 & 3

5.2 Hypotheses 4 & 5: OLS Analysis

This section summarizes the findings for hypotheses 4 & 5, in which the dependent variable is not a 'discrete choice' but rather the value of the property approved. These hypotheses were tested using an OLS regression models. The convention in the empirical literature when employing a 'value' based dependent variable is to transform the variable using a natural log. In each model, the adjusted R-square demonstrated the model explained a reasonable proportion of the variation. Because the dependent variable is logarithmic, the coefficients will be interpreted as percent changes. As with the logit models (above), the analysis is still preliminary and so we limit our discussion to the signs and statistical significance.

Hypothesis 4 and 5 focus on the decision calculus of land use officials in KCK with respect to capturing tax benefits through residential developments. More precisely, Hypothesis 4 states that the value of approved residential developments in KCK will increase as the distance from KCM decreases, while Hypothesis 5 states that the value of approved residential developments in KCK will increase as the distance from neighboring cities in Kansas increases. The findings for these two hypotheses are mixed. For H5, the distance variable is statistically significant and the sign is as expected. However, for H4, the distance variable is not statistically significant. A possible interpretation of this unexpected finding is that the commuting costs are simply not minimized enough such to make the strategy suggested in Hypothesis 4 viable.

DEPENDENT VARIABLE: Ln(value of approved/constructed residential development)	KCK Obs. = 503 Adjusted R-square = 0.37 Hypothesis 4 – distance to KCM		KCK Obs. = 503 Adjusted R-square = 0.44 Hypothesis 5 – distance to other neighbors	
Independent Variables	Sign	Sig	Sign	Sig
D_NEIGH (miles)	-		+	***
D_HIGH (miles)	+	*	+	**
FAR (ratio)	+	**	+	**
WHITE (percent)	+		+	
H_OWN (percent)	+	**	+	**
MED_INC	+		-	
PER_POV	-		+	
DUR_2001(months)	+	*	+	*

Table 4. Findings for Hypotheses 4 & 5

6.0 Conclusions

The goal of this study was to consider the degree to which states serve as facilitators or obstructionists of local government. To that end, we drew on a case-study of two cities Kansas City, Missouri (KCM) and Kansas City, Kansas (KCK) to explore the question of: *how do the fiscal institutions of one state affect the land-use policies of cities in a different state within the*

same region? Because the analysis is still preliminary, we are hesitant to draw any definitive conclusions. Nevertheless, we would address the seminar's question regarding the degree to which states serve as facilitators or obstructionists of local government by saying: "it depends." The more satisfying answer is that it may well depend upon the degree to which cities can effectively employ land-use regulations to capture fiscal resources. This study offers insights into how cities – even those operating in complex fiscal environments – think strategically about how they can employ land-use tools to capture fiscal benefits. Additionally, the findings provide evidence that public sector preferences for land uses can be spatially articulated. From an theoretical point of view, this suggests that this approach may provide an appropriate basis for articulating a public land use utility function that parallels the private firm's bid rent function. Finally, from the perspective of practice, this work adds to the growing body of work that calls for greater communication and integration of local public finance processes and land use decision processes.