The Effects of Property Taxes and Development Cost Charges on Urban Development: Perspectives of Planners, Developers and Finance Officers in Toronto and Ottawa*

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City and regional planners in North America tend to agree that fostering growth is no longer their prime objective and that the peripheral expansion of cities creates a host of problems. The countryside is made beyond reach much of the time. Congestion increases, as does pollution. Services cost more. Repetitive, garage-faced streets push without end through old orchards, farmland, forests and meadows. Growth management plans have been developed in many of the coastal areas of the United States to keep uncontrolled development from "killing the golden goose" that brings the demand for more buildings. Many of the plans try to manage growth by directly affecting the development process by insisting on concurrent and inter-jurisdictionally consistent infrastructure expansion. More direct instruments include growth boundaries and development caps. Relatively little has been said in the growth management literature of the efficacy of using fiscal instruments to change the profitability of different types of development and, thereby, influence the way a region develops. This article discusses the prospects for using property taxes and development cost charges to affect urban development.

Property taxes and development cost charges can have environmental impacts by changing the extent to which developers substitute land for buildings and, thereby, the density of the built form, the spread of cities, and the mix of

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land uses. The schedules of rates and fees can promote city spread directly by favouring less dense projects. Fiscal instruments can have indirect effects by changing the optimal timing of development that affects the conditions under which it takes place and therefore the density with which land is developed. The reliance on property taxes and development cost charges to finance local services may induce municipal officials to encourage developers of the low density projects that are thought, perhaps erroneously, to yield the greatest fiscal dividends. The substitution, timing and fiscalisation consequences of property taxes and development cost charges are examined through interviews with Toronto and Ottawa area developers, municipal planners and finance officers. The article starts by describing the two financial instruments as they are used in Ontario. The expected consequences of the two instruments are presented next. The survey and interview methods are described, the context is set, and the findings and conclusions follow.

Fiscal Instrument and Urban Form

The Shift Toward Development Cost Charges

The history of development charges and property taxes are closely intertwined in Ontario, as revealed by the development of municipal infrastructure financing mechanisms over the 20th century. The Ontario Local Improvement Act of 1914 allowed municipalities to install growth-related services and recover the costs by levying local improvement taxes on the property owners who benefited from the service provision. Tax rates were negotiated on a site-specific basis, based on the principle that developers should pay in proportion to the benefits received. Although the taxes were structured to cover the full cost of local improvements, when developers failed financially, the costs were transferred to municipal taxpayers. In difficult times, this system threatened to bankrupt many of Ontario's financially strapped municipalities (Steele 1956).

In the 1950s, growth-pressured municipalities began to transfer the risk of on-site infrastructure financing to developers by requiring them to install roads, sewer and water facilities internal to their subdivisions as a condition of development approval. After being challenged by developers in the 1950s, the legality of this practice was established by revisions to the Planning Act in 1959. By the 1960s, most municipalities in Ontario were using subdivision agreements for this purpose. Off-site services (i.e., investments that could not be linked directly to individual developments) were originally paid for through municipal bonds supported by general municipal revenues such as property taxes. Through the 1950s, however, subdivision agreements were increasingly used to levy charges to pay for local off-site services, such as sewer and road improvements, for major off-site hard services, such as trunk sewers and treatment plants, and for off-site soft services, such as recreation centres and town halls. Despite the fact

that developers resisted these off-site levies, and that municipalities were on a flimsy legal footing in charging them, the use of lot levies to finance off-site services continued to spread during the 1960s and the 1970s, both in terms of the number of municipalities in Ontario employing them and the number of services they were used to fund. But the system of charges was still not adequate from a municipal perspective. A revenue stream based on site-specific negotiations was unpredictable in that the outcome depended on uncontrollable variables such as the sophistication of the developer involved. Larger, better connected, and more experienced developers were able to reduce contributions for major off-site and soft services, either by influencing municipal councils or by arguing before provincial administrative tribunals that their developments were not directly linked to the need for new services. Municipalities were forced to cover the residual costs associated with growth through the property tax system.

After many municipalities reached their debt load limits, ratepayers made it clear that they were not willing to tolerate ever-increasing property taxes. Furthermore, raising property taxes to pay for new and more expensive development was seen by many as being regressive. These factors put a damper on municipal enthusiasm for continued urban growth to the extent that developers eventually accepted the inevitability of a development charge system (Sancton and Montgomery 1994). As in other North American jurisdictions (Stewart 1988), Ontario developers switched from arguing that infrastructure should be paid for through the municipal property tax system to negotiating the terms under which development charges would be applied. They proposed amendments regarding exemptions, transition rules, and scope of application of the fees. With increasing concerns over the level of property taxes, municipal officials started to increase the size of the exactions specified in developer agreements. This informal method of gaining developer contributions proved problematic as it increased uncertainty for developers and, at times, appeared to be unfair (Tomalty and Skaburskis 1997). Development cost charge legislation was passed to formalise the developers' contributions and make the process more transparent. In the early 1970s a few municipalities introduced fees ranging from very little up to a few thousand per dwelling unit. The maximum fees were soon increased to $6,000 in some municipalities and today the highest fees are in the $25,000 per dwelling range.

Fees of this size can be expected to have an impact on urban form either by directly influencing development or indirectly by reducing the burdens created by rising property taxes. The following sections link the fiscal instruments to decisions on the intensity of land use and, thereby, the density of the built form.

The Expected Effect of Property Tax Charges

The tax on the land component of real estate was thought to be capitalised back into land prices and would therefore not affect development patterns (Netzer

1966). The part of the tax that rests on the building portion, however, is a tax on capital that increases the developer's burden as the capital to land ratio is increased. To reduce their tax burdens the developers substitute more land for capital in their projects when such substitutions are possible. The substitution effect encourages developers to build less dense projects and this causes cities to spread out more than they would had a more neutral tax been used to finance local services. Pittsburgh offers an example of a policy that reduced the substitution effect by tilting the tax rate toward land and away from the building component (Bourassa 1987). The resulting development in Pittsburgh has been attributed to the tax change in part but mostly to the overall pro-development environment within which the tax change took place. The city was aggressively trying to attract development and the simultaneity of the tax and policy change makes it impossible to isolate the unique effect of the tilt in tax rates.

Property taxes can also affect the timing of development decisions and this can determine the density of development when density can change over time. The dynamic theory of land development may have started with Hotelling (1931) pointing out that developable land must appreciate in value at a rate equal to the interest rate for the market to be in equilibrium. Wicksell (1934) developed the timing conditions by considering how long an owner should wait before harvesting his or her trees for lumber. By waiting, more is gained because the trees grow bigger. However, waiting involves the loss of the use of the funds that could have been gained by harvesting the trees. As the owner of land near the built-up part of a city waits, the city grows outward and the profit maximising intensity with which the land can be developed increases over time as its value rises. As in the timber case, waiting to build later may allow more intense uses of the land and, thereby, yield a more profitable development. Waiting, however, is costly because it postpones the collection of rents and precludes the alternative use of the money.

Shoup (1970) showed that the most profitable time to develop land occurs when the rate of increase in the value of vacant land drops to equal the cost of waiting and not, as the old economic theory would have it, when the value of developed land exceeds its undeveloped value by an amount that covers the cost of development.[1] He dispelled the notion that "development or redevelopment would or should occur as soon as the development value of a site, net of clearance costs, exceeds the value of the existing improved property, as is sometimes stated" (p. 40). The benefit of waiting is weighed against the loss of the net rents that could have been collected from a completed project. The profit maximising development time occurs sometime after the land can feasibly be

1. Skouras (1978), Bentick (1979), Mills (1981) and Brueckner (1986) have developed the literature describing the consequences of property taxes in a dynamic setting. Brueckner (1986) develops the substitution effects.

developed.[2] Policies that delay development will increase its density and reduce city spread when developers and landowners act as profit maximisers, when density is not constrained by zoning, and when the most profitable development densities are seen to increase with time.

Arnott and Lewis (1979) consider density explicitly and introduce a property tax into their development timing models and vary the pre- and post-development rates. Only the pre-development tax is shown to affect project density and, therefore, city spread. If the increased reliance on development charges was to reduce future property taxes, then the expectation of the future reduction will not affect the density of the current project. However, lower property taxes in the future would help delay development and result in higher density projects were it not for the substitution effect of the property tax. Anderson (1986) confirms the effects on timing and shows how the expected future changes in land values determine the effect of taxes on timing decisions. Taxes increase the cost of holding property vacant and favours its early development. This means that the project's profit-maximising land/capital ratios are established in the context of lower housing prices. Early development means that less capital is used when developing sites and project densities are reduced.[3]

In the suburbs, the substitution and timing effects of property tax are expected to counteract each other. Property taxes, by penalising capital investment, reduce land values and hurdle rents and, on the whole, are expected to encourage lower density projects that increase the size of the urban area (Capozza and Li 1994). In the built-up parts of the city, property taxes increase the cost of holding vacant lots or keeping land underused and are expected to encourage earlier demolition and redevelopment. In the inner city the substitution and timing effects both lead to lower intensity land uses, when density constraints are not binding.

The Expected Consequences of Increasing Development Cost Charges

Development cost charges (DCCs) that are levied at the time of development increase construction costs and induce developers to delay until housing prices rise enough to cover the extra costs (Skaburskis and Qadeer 1992). The delay would raise densities should the conditions listed earlier hold. However, the schedule of fees may be designed to favour low-density projects and thereby

2. In a growing city, John Anderson (1986) suggests that property taxes delay the conversion of raw land to urban use when the tax rates are the same for underdeveloped and developed land. When negative externalities are generated by development, the delay increases social welfare because fewer costs are incurred at each point in time (Anderson 1993). If taxes did not also have a substitution effect that encourages developers to build at lower densities, the delay would lead to a less spread-out city.
3. A review of this literature is in Skaburskis (1995).

encourage city spread. When the charge is levied on a per dwelling unit basis without considering the building's characteristics, it penalises higher density projects. When DCCs are levied at the time greenfield sites are designated for urban use, then the burden falls on the current landowner and would be considered as "water under the bridge" by developers and not affect their future timing or density decisions (Evans 1982). When the charge is set as a pure tax on development profits, it is expected to have no effect on project density and timing (Evans 1982).[4]

In most North American cities, development cost charges have been increasing noticeably over time resulting in a public chorus of disapproval by developers who claim they reduce their ability to keep housing prices low. A policy that is continually increasing development cost charges will be seen to reduce future profits and thereby reduce the size of the current growth premiums that are embedded in suburban land prices. As a result, raw land prices drop. While an increase in current development cost charges will delay development until housing prices rise by an amount that at least covers the charges, the expectation of future increases in development cost charges will hasten development. The delay in development that is predicted by dynamic profit maximising models will also be countered when developers see the increase in charges as a part of a strategy to restrict growth and shift fiscal burdens to incoming residents. Until a new equilibrium is established in which all new infrastructure needs are financed through development cost charges and further increase in the fees are not expected, development may be rushed and decisions made under the conditions that favour lower density projects. The planning context determines the effect of development cost charges on development decisions.

The revenue prospects created by DCCs may also have indirect consequences on built form by encouraging municipalities to streamline their approvals processes. As a result of the extra revenue, projects may not be delayed due to the municipality's lack of funds to expand infrastructure. The fees may reduce the residents' resistance to growth by ensuring them that their property taxes will not increase as a result of growth. These changes may reduce both the level of uncertainty developers face and the amount of time it takes to obtain development approval and can have two opposing effects on density. By reducing the uncertainty created by growth resistance or by the municipality's timing of its infrastructure expansion, DCCs reduce the hurdle rents that have to be covered and would tend to encourage earlier and therefore lower density projects.[5] But the length of the lag time between requests for project approval

4. Developer exactions are discussed in Alterman (1988), Nelson (1988), Connerly (1988), Altshuler and Gomez-Ibanez (1993) and Skabursk is and Tomalty (1997, 2001).

5. Dennis Capozza and Robert Helsley (1990) recognise the cost of the irreversibility of development decisions and the tendency of profit maximizing landowners to wait until the possible gains from development exceed the value of maintaining the option to build some

and start of construction changes the timing effects that are produced by the presence of uncertainty. When the time it takes to approve a project is long and the level of uncertainty regarding market conditions is high, the value of projects that should be developed early increases relative to the value of saving the vacant land for the projects that are best left for later development. High uncertainty means that developers can make either very large profits or sustain large losses. Uncertainty without lags favours late development (hence higher density) projects as uncertainty increases the value of keeping options open so that the owner of land can take advantage of unexpected upswings in the market (Clarke and Reed 1988). Avner Bar-Ilan and William Strange (1996a, 1996b) show that uncertainty, coupled with delays in project approvals, favours the early development projects as a result of the delay skewing upward the expected returns of the early development options. The increase in the expected value is due to the developer's ability to back out of the project during the approvals process should market conditions deteriorate. The asymmetrical truncation of the benefits and costs created by uncertainty in the presence of lags encourages early, hence less dense, development. This effect would tend to counter the delays due to DCCs raising the cost of developing land.

The effects of development cost charges described above are expected only in relatively stable and unconstrained markets. The effects within demand driven markets with quickly rising housing prices are expected to be different. Here, development cost charges are simply transfers that distribute some of the windfall created by the supply constraints to the municipality (Skaburskis 1990, 1991). Development charges would not affect the margins when land and construction prices are inflated by the market's inability to respond quickly to the increasing demand. Of importance here is the relative size of the fees placed on different types of development. They can affect city structure through their substitution effects. If the schedule does not distinguish between small and large houses, the fees will favour large house development. The survey results presented in this article were, however, developed during a stable market.

Institutional Considerations

In Ontario, land development occurs within a relatively strong planning framework. In greenfield areas, development is often initiated by the developer who purchases the land and -- at an opportune time -- makes application to the municipality to have the land rezoned for urban purposes. The official plan for the municipality will indicate whether the land is designated as being within the

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other type of project. When future conditions are uncertain, an "intensity premium" is added to the irreversibility premium and raises the "hurdle rents" that delay development (Capozza and Li 1994).

urban area, meaning the area within which the municipality foresees development over the life of the plan, often 15 or 20 years. If the land is within the urban area and the timing in terms of infrastructure phasing is appropriate, the municipality may choose to undertake a rezoning procedure, accompanied by the creation of a secondary or local official plan. The plan and the zoning provisions are often worked out in close collaboration with major property owners in the area and with formal public consultations. The success of the public consultation will depend, in part, on the expected fiscal consequences of the development. If the municipality refuses the developer's application because the land is not within the area designated for urbanisation or for any other reason, the developer may appeal to the Ontario Municipal Board, a quasi-legal administrative tribunal that rules on planning matters. Developers of large areas usually seek planning approval on a phased basis depending on the uptake rate by home buyers in the local market in order to minimise property taxes (undeveloped land pays a low agricultural rate) and to postpone the payment of fees and levies such as development charges which are paid on subdivision approval or issuance of building permit. The design of the fee schedule and conditions will affect project scale and timing.

Development cost charges in Canada were most likely the result of fiscally constrained municipal officers looking to U.S. cases where residents objected to property taxes that were very high by Canadian standards and started to develop opposition to the growth. The development cost charge policy is hailed as a "pay-as-you-grow" or "growth pays its own way" policy and appears eminently fair to most residents who feel they were already paying too high property taxes and who see their amenities diminish as a result of continued growth. As a result, the implementation of development cost charges can be seen as a measure that reduces growth resistance and makes development approvals politically acceptable. If development were not to be allowed in the absence of DCCs, then the theoretical expectations described earlier do not hold as it will be the institutional conditions and planning agreements that determine what is built and, possibly, when it is built. Similarly, the reliance on property taxes as the main source of local revenues may make local officials favour the land uses that are thought to yield the highest fiscal dividends. To the extent that residents think that low density housing, commercial and industrial uses are fiscally advantageous, we would expect that the reliance on property taxes would encourage these uses and thereby encourage city spread. The fact that some U.S. studies have shown low-density development to be unattractive from a fiscal point of view has not had much effect in Canada.[6]

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6. Lower density housing is seen as attracting more affluent families with less "troubling" children. It is impossible to say without further study whether the bias against higher density housing is based on beliefs regarding fiscal, aesthetic, or social consequences. A U.S. study pointing to the fiscal disadvantages of low density development was prepared by the Main State Planning Office (1997) and in Toronto by Blais (1996).

With regard to the expected effect of DCCs on a municipality's inclination toward fiscal zoning, we are ambivalent. On the one hand, when DCCs reflect the true social costs of development, their use should reduce the municipality's incentive to ban what they think as the fiscally burdensome higher density projects. On the other hand, municipalities may perceive that high density projects have negative social consequences and may, therefore, raise the charges on these projects to make high density development less profitable and less likely.

In Table 1, the expected spatial impacts of the two instruments are summarised. The incentives induced by property taxes and development cost charges are expected to affect the form of cities by changing the rate at which developers substitute between the building and the land component of real estate and by affecting the timing of development and thereby the economic conditions that determine what is built. DCCs may affect the mix of land uses and the location of projects by changing the relative cost of development alternatives and the ease with which projects obtain approval. The substitution effects of property taxes and development cost charge schedules that ignore the external costs of low density encourage city spread. The timing effects may offset the substitution effects to some extent when delays lead to higher density development.

TABLE 1 The Expected Spatial Consequences of Property Taxes and Development Charges

Property Taxes
1. Reduce project density as a result of the substitution effect increasing the cost of capital improvements relative to land.
2. Encourage early redevelopment in the inner city by increasing the carrying cost of underused land. Delay suburban development.
3. Delayed development is at higher densities.
4. Encourage fiscal zoning that favours lower density residential projects and leads to the over-supply of non-residential land.
Development Cost Charges
1. Reduce project density when schedules do not reflect lot sizes.
2. Delay development and lead to higher densities.
3. Streamline the development process, reduce uncertainty. Ensure that infrastructure is provided on time.
4. Reduce public resistance to higher density projects.

Method

Key informant interviews with developers, planners and municipal finance officers were used to record their beliefs regarding the effects of the two instruments. Two case study regions were chosen: the Greater Toronto Area and the Regional Municipality of Ottawa-Carleton. These regions were selected because they presented two metropolitan regions within the same provincial legislative framework (e.g., the Development Charges Act and the Assessment Act) but with contrasting taxation regimes and levels of development charges.

The boundaries of the regional municipalities that most closely corresponded with the Census Metropolitan Area was chosen to bound the study areas. In the case of the Toronto region, this corresponded to what the provincial government had designated as the Greater Toronto Area and included the regional municipalities of Peel, Halton, York, and Durham as well as Metropolitan Toronto. In the case of the Ottawa region, the CMA is divided by a provincial border and only the Ontario part (with about three-quarters the CMA population) was included

TABLE 2 Distribution of Interviewees

	Finance Officials	Planning Officials	Developers
Ottawa	7	5	10
Toronto	16	10	11
Total	23	15	21

in the study area. This part of the Ottawa CMA was largely captured within the boundaries of the Regional Municipality of Ottawa-Carelton, and this was the unit chosen for study.

Municipalities within each study region were chosen for detailed analysis. The choice was based on several criteria including the desire to get a mix of central, mature suburban, newly suburbanising and rural municipalities. The widest geographical range of municipal locations was also striven for, including central cities and rural municipalities on the regional fringe.

Within each municipality, interviewees were identified in the planning and finance departments using the municipal directory, prior contacts, and the "snowball" method of asking one contact to suggest others. Occasionally interviewees were selected from other departments such as the economic development department. In general, an attempt was made to interview the most senior planner or other finance official available and informed on the topic at hand. Contacting regional professional associations identified interviewees among the property development community in each region: the Urban Development Institutes in Toronto and Ottawa, the Greater Toronto Home Builders Association and the Ottawa-Carleton Home Builders Association. Developers were chosen to represent a range of firm sizes, development portfolios, and geographical scopes of activity within the region.

The respondents' backgrounds are presented in Table 2. Twenty-two of the

respondents were from the Ottawa area, and 37 were from the Toronto region. The larger number of interviewees from the Toronto region reflects the greater size and administrative complexity of that region. In terms of function, the largest group (23) of interviewees was made up of people working in the finance departments of municipal and regional governments. The second largest group (21) of interviewees was made up of developers, and the third group was the municipal and regional planning officials (15). Developers all were involved in residential development; over two-thirds (16) were involved in greenfield residential development, and a third had some experience with residential development within the existing built-up areas. In addition to their residential activities, five developers were involved in commercial development and five with industrial development.

A semi-structured interview instrument was developed based on the research issues identified above. The questions were designed to yield observations on a broad range of conditions that might affect the relationship between financial instruments and land use. Interviewees were asked about the factors that influenced their development, zoning and approval decisions over the last five years to identify the role property taxes and development cost charges played in their timing and density decisions. The questions also asked about the approval processes and about changes that might encourage more compact urban growth patterns. The relatively informed nature of the questioning was required due to the seniority of the people we interviewed. Heads of firms or departments do not themselves answer close ended questions and in many cases want to direct the conversation.

All classes of interviewees were asked the same set of questions in order to provide a basis for the comparison and triangulation of responses. But the open-ended nature of the questions provided the researchers with the opportunity to probe more deeply into certain issues, depending on which group the interview fell into. For instance, planners were more closely questioned on issues related to the approvals process and urban growth patterns while municipal officials were probed for more detailed information on the design and purpose of the fiscal instruments. With developers, the interviews emphasized actual impacts on their decisions relating to timing, density and location of development. These questions were designed to overlap with each other.

Interviews were conducted by telephone over February and March of 1995 and were preceded by a faxed cover letter outlining the research project and the types of questions to be asked. While the duration of the interviews ranged from 30 to 150 minutes, the average length was approximately one hour. The interviews were recorded and transcribed for qualitative analysis. A simple analytic framework was developed in order to structure the research data in a coherent way. First, findings were organised by geographical region: Toronto and Ottawa. Within each region, the findings were subdivided into those that pertain to the impact of financial instruments on private actors (i.e., developers) and those that pertain to impacts on public actors (i.e., municipal officials).

Within each of these categories, the findings were further divided according to the information source (developers and municipal officials, including both planning or financial officials) and, finally, findings were grouped according to whether they were relevant to property taxes or development charges.

The interviews assess the extent to which developers consider tax and development cost charges when making their decisions on what they build and when they build. In most cases, self-serving answers are not a serious problem. Timing issues are generally too complicated to be addressed in a self-serving manner. Answers to questions about the substitution effects of property taxes and DCCs do not particularly benefit developers. Biases regarding the effect of property taxes on landholdings would be revealed by the difference in the responses of developers who engage in land banking and the ones who do not. Furthermore, municipal planners were interviewed to draw on their knowledge of developer behaviour and differences would be noted. Similarly, the possible effect of DCCs on municipal development approvals was also explored with developers. To gain more candid views on municipal behaviour we also interviewed retired planners and finance officials. We assessed the validity of responses by gaining the views of different actors and noting their congruence.

Context

With a 1991 population of about 4.2 million, the Greater Toronto Area (GTA) area is the most populated in Canada and the tenth largest urban region in North America. There are 30 lower-tier area municipalities and five upper-tier regional municipalities in the GTA. With 678,147 residents, the Regional Municipality of Ottawa-Carleton forms 74 % of the metropolitan area and is the focus of the present study. At the centre of the regional municipality, and with about 45 % of its population, is the City of Ottawa. The region has 11 municipalities within its borders. Lower-tier municipalities are responsible for local parks and recreation, local roads, storm sewers, libraries, fire, planning, and economic development.

Development control is shared between upper- and lower-tier municipalities, with the senior level responsible for subdivision control in greenfield areas and condominium approvals, and the junior level responsible for zoning by-laws specifying housing types, lot sizes, and set-backs. Approvals follow a "one stop" approach with the planning department serving as both the reviewing and approval authority and as the co-ordinator of comments from a myriad of other government agencies and private intervenors. Depending on the municipality, the approvals process can take from six months to three years and involve an official plan amendment, zoning bylaw changes, subdivision agreement, registration of the subdivision plan, and the issuance of a building permit.

In Ontario, property taxes are assessed on land and buildings at rates that vary with property type. According to the Assessment Act, property taxation is a provincial responsibility and properties are to be assessed at market values.

However, the relationship between assessed values and market values varies widely from municipality to municipality. Non-residential property taxes in Metro tend to be much higher than in the adjacent suburban areas, while residential taxes tend to be lower. In Ottawa-Carleton there is only one upper-tier government and assessments are equalised across the municipalities in the region. Tax rate differentials between land uses are not as great in the Ottawa region as they are in Metro. For instance, in the City of Ottawa the effective tax rate for residential properties of six units or less is 72 % of the commercial rate, while in the City of Toronto it is only 27 %. The Toronto rate on assessed value for low density residential is .012127 compared to .046008 for properties with 6 units or more. The Ottawa rates are .018995 and .038550. The high tax rates on the higher density residential development is justified by the possibly erroneous belief that higher density development creates greater fiscal burdens for each dollar of assessed value.[7]

Municipalities in both regions created formal development charge bylaws following the 1989 provincial Development Charges Act, setting out the parameters such bylaws should take. Most bylaws were based on consultant studies estimating the capital costs associated with new growth, including hard and soft infrastructure such as schools, fire stations, public administrative offices and recreation centres. Many municipalities have adopted bylaws charging less than the theoretical rates, especially for non-residential uses. Generally these bylaws differentiate between dwelling types, charging higher rates on single-family dwellings, lower charges on townhouses, and the lowest rates being applied to apartments. In some cases, development charges vary according to the location of the project within a municipality, with lower charges for unserviced rural areas. Across each region, municipalities within core areas have lower development charges than suburban and rural municipalities.

Despite similarities in the general structure of development charges, the two regions differ significantly in the rates applied at the time of the interviews. In the Toronto region, municipal rates on detached dwellings vary from zero in the City of Toronto to a high of about $13,500 in the suburban municipality of Brampton, and average about $9,300. School board charges in some parts may add another $7,000. In the Ottawa region, rates are significantly higher, from a low of about $11,000 per unit in the City of Ottawa to over $18,000 in the suburban community of Nepean, with an average rate of $12,820.

Findings Regarding the Effect of Property Taxes

7. One official pointed to the extra costs created by the unruly children of apartment dwellers in comparison to those of single-family detached owners. There appears a perpetuation of the myths surrounding homeownership that have led to the favourable tax treatment and created the indirect subsidies to homeowners.

Substitution Effects

Developers were interviewed about the possible impact of property taxes on their decisions concerning the housing mix or commercial floor space of a given project. Sixteen out of the 18 developers who expressed an opinion during the interviews stated that property taxes had very little impact on project densities and they did not see the taxes as increasing the cost of the capital improvements relative to land. They therefore did not consciously react to property taxes, to tax changes or to tax differences by changing project design. The intensity with which land is developed is based on the market demand for different types of dwellings and on the signals developers received from planning departments. Within the context established by these larger factors, however, property taxes do exert some influence over development decisions in particular circumstances. For instance, commercial developers were concerned that the current assessment procedures that made no provision for reducing taxes on the office buildings with high vacancy rates resulted in the unnecessary demolition of the buildings to reduce tax burdens (vacant commercial lands are taxed at lower than residential rates). Of course, any quest to reduce taxes is self-serving. Residential developers noted that property taxes were much higher on dwelling units in buildings with six or more rental units than on lower-density housing, which helps make the construction of apartment buildings economically unfeasible. Differences in tax rates make a difference to development patterns. Municipal officials pointed to the same impacts that concerned developers: the higher property tax rates discouraged the construction of apartment buildings and encouraged the demolition of underused commercial properties.

Timing Effects

Developers and municipal officials suggested that property taxes were overshadowed by market considerations as determinants of project timing. However, property taxes can have subtle effects on the pace and timing of development, depending on the location of the project and the nature of the real estate market. In the region's core, taxes form a significant portion of the carrying cost of land and were thought to provide an added incentive for the early redevelopment of vacant or under-used sites when market forces were favourable. In suburban areas, the timing effects of property taxes were muted by the very low tax rates on vacant land that is held in agricultural use. In fact, many developers paid farmers to work their land in order to qualify for tax reductions of up to 75 %.

Municipal officials and developers in the two regions agreed that property owners do not intentionally hold greenfield land vacant while waiting for allowable densities to increase beyond the currently designated levels. City

officials recognised that most developers were experiencing cash flow problems during the recession of the early 1990s and would have preferred to bring their land to market as soon as possible. There was no indication that any of the developers we interviewed waited for changing development options once the planning, financial, and infrastructure conditions for development had been met. They do not calculate the expected gains and costs of waiting in an effort to maximise profits as described by the models of Shoup (1970) and Arnott and Lewis (1979), but appear to adopt a satisficing strategy -- to build when an adequate (not necessarily the maximum) profit is realisable. When developers were asked if they knew of anyone who held off developing land when development was feasible, several told us the few people who had waited with vacant land past the boom of the late 1980s "had lost their shirts" in the 1990 recession. Uncertainty appears to encourage early development when the development is thought to be feasible. Market cycles are not expected to last and developers move quickly in hot markets to capture the scarcity rents created by the disequilibrium. In recessions, the developers will build what they can to maintain business activity. In hot markets, planners, by affecting the development approvals process, were seen to be the key determinants of the pace of suburban development. In recessions, the case of market absorption determines project timing.

Fiscalisation Effects

When interviewed about the impact of property taxes on planning decisions, all of the 12 municipal officials who expressed an opinion on this subject thought that municipal land-use decisions were made principally on the basis of what was considered to be desirable urban form and on servicing factors, and not on the basis of an explicit fiscal calculation. Finance officials reported that revenue predictions were traditionally made for larger project proposals, but that cost assessments were rarely made. Thus, no conclusions could be drawn by finance officials as to the net fiscal impact of projects. Nevertheless, half the officials interviewed recognised that the tax implications were being considered increasingly in response to political concerns about rising tax rates and troubled economic conditions. Finance officials acknowledged that they were becoming involved in planning issues as municipalities faced greater budget constraints. Planning officials reported that the fiscal implications of their decisions were coming under closer scrutiny by city councils, especially with respect to major development projects. In particular, municipal officials reported that tax concerns contributed to increased municipal resistance to developer applications to convert high-tax industrial land to low-tax residential use. Furthermore, commercial and industrial projects were being favoured in planning decisions for both tax and job-creation purposes. Finally, officials considered it part of their

role to negotiate conditions of approval with developers to offset the short-term costs of development to the municipality. According to municipal officials, assessment impacts could not serve as the primary basis for planning and approval decisions, but increasingly a project's contribution to the tax base was being considered within the broader land use planning framework of the municipality. Twelve of the 17 developers who expressed an opinion thought that planning decisions were sometimes based on the desire of council to enhancetheir tax base.

Developers reported in the interviews that municipal councils favoured low-density single-family houses because of their higher tax revenues and the lower demand for human services by well-to-do residents. Developer interest in higher density housing, stimulated by the economic conditions attending the recession of the early 1990s, was being frustrated in some municipalities by restrictive planning regulations. Most of the municipal officials we interviewed reported that large-lot executive housing, condominiums, commercial and industrial uses (i.e., anything but medium or high-density rental housing) were the best options from a fiscal point of view. However, we probed this issue during the interviews and could find no evidence that this preference was based on fiscal considerations. Indeed, of the 21 officials interviewed, half (10) reported that there was no clear evidence either way on the fiscal burden of various housing types, and most of the others (7) saw detached housing as a drain on municipal finances. Most acknowledged that their suburban municipalities had a preference for low-density housing projects but this was based on "quality of life" issues rather than on fiscal considerations.[8]

The Effect of Development Cost Charges

Substitution Effects

Fourteen of the 19 developers who expressed an opinion agreed that development charges affect their decisions on building type and lot size. However, it was interesting to note that the response profile differed significantly between the two regions. In the Toronto region, 10 out of the 11 developers with an opinion on this subject reported that the current schedule of development charges reduced residential densities and only one said that the charges had no effect on density.

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8. A survey of 181 city planning department directors (Skaburskis and Brunner 1999) across Canada showed that most were in favour of growth and 66 percent saw infrastructure service gaps as the main problem created by growth. Only 18 percent recognised "sprawl" as a problem and only 6 percent saw low density suburban development as a major problem. In our larger cities, planners mostly recognise that higher density development has advantages but they face the NIMBY problem and yield to councils that are most reluctant to go against existing neighbourhood wishes.

In the Ottawa region, four developers reported that their charges tended to increase densities while four thought that they had little or no impact on density decisions.

In Toronto, developers saw the DCC burden increase with the number of units in a subdivision because the fees are levied on a dwelling unit basis. Since the revenue potential of land is mostly determined by the length of the frontage of lots, developers faced with high DCCs can reduce the number of lots by increasing the frontage on the remaining lots. Increasing the number of lots in a tract can increase development charges faster than net revenue. Although charges are lower on higher-density units, the difference is not enough to offset the gains from increasing frontage. In contrast to the Toronto area, none of the developers interviewed in Ottawa thought that DCCs reduced residential densities. In fact, Ottawa respondents reported that their development charge encourages higher density housing. The high development charges made single-family housing unaffordable to many people who were now buying townhouses or row houses. In addition, the differences in the charges applied to different housing forms were large enough to influence development decisions in favour of higher density buildings. A regional policy of reducing development charges for units smaller than 1100 square feet was adopted to encourage the production of more affordable housing; however, not enough time had elapsed to determine empirically whether this policy is increasing urban densities overall. Nevertheless, the use of a differentiated fee schedule to encourage higher density development had made developers aware of the link between the charges and built form, and we expect that the design of the development cost charges schedule will directly affect the spatial structure of Ottawa in the long run.

On the whole, municipal officials appeared to be less convinced than developers that development charges have an appreciable effect on the density decisions of private developers, either residential or non-residential. Of the 10 municipal officials who expressed an opinion on this subject, only one thought that DCCs could affect residential and non-residential densities by increasing development costs. Most reported that density decisions were based on zoning and neighbourhood response to higher density proposals.

Timing Effects

Half of the 18 developers who expressed an opinion reported that DCCs affect their project timing decisions. First, the charges created cash flow problems that could be reduced by bringing projects through the approvals process in a piecemeal fashion, essentially delaying some phases of the project. Second, some respondents observed the indirect effect of higher costs on the number of units that could be absorbed and noted that DCCs often delayed projects that might otherwise have gone ahead. The remaining respondents reported that DCCs did not have an impact on project timing. Typically, they claimed that market

demand was the most important factor in their timing decisions. These observations are consistent with the theoretical models showing that development would be delayed until housing prices rise to cover all costs including the cost of the fees.

In Canada, DCCs are not levied at the time land is designated for urban use but municipalities differ in regard to when the fees are collected. Developers active in municipalities where development charges are collected at the subdivision agreement or registration stage saw the levies as affecting their timing decisions. Paying the levies "up front" at the time the development application is made created a potential cash flow problem and increased the risk inherent in land development. Therefore, some developers were more cautious as a result of having to pay at the time they applied for development permission and delayed their projects until they were absolutely sure that buyers or renters were ready for the product. Developers operating in jurisdictions collecting the charges late in the development process (i.e., at the building permit stage) placed less importance on development charges in general. In most of these cases, the charges were paid by the builders who bought land from the developers and were thought to have little impact on the timing decisions of land developers. The builders, of course, will wait for housing prices to rise to a level that covers construction costs including fees. Municipal officials were less aware of the link between development charges and project timing decisions.

Fiscalisation Effects

Developers were aware of the potential for development charges to hasten or ease the approvals process but, of the 13 developers who expressed an opinion, 12 claimed that in practice DCCs do not help and many reported that the charges made the approvals process more onerous, expensive, and time-consuming. The Development Charges Act permits area-specific bylaws to facilitate the front--ending of the changes to allow for infrastructure to be built before the land is developed or redeveloped. However, these bylaws can be appealed by any affected landowner, resulting in delays for everyone within the designated area. While the development charge system was supposed to standardise the range of services that could be subject to charges, each municipality has a different definition of what is justifiably included in development charge bylaws, which leads to confusion, and at times, acrimony.

Municipal officials, more often than developers, reported that the introduction of DCCs eased development, particularly in greenfield situations where municipalities would otherwise be unable to fund the needed infrastructure. Nonetheless, officials were also aware of problems in the

administration of the development charges process that obviated some of the expected streamlining effects. DCCs slowed the process by increasing the number of factors involved in development approval and by requiring formal legal agreements for payment deferrals. Furthermore, the recession of the early 1990s, which corresponded with the introduction of a new round of bylaws under the new Development Charges Act, freed up time for developers to challenge these bylaws and this has increased appeals and delays. Finally, the need to be able to justify DCCs has necessitated expensive and time-consuming studies on growth projections and capital requirements.

Many municipal officials interviewed questioned the accepted wisdom that higher density projects were less expensive from an infrastructure point of view and pointed out that operating costs are not included in development charges. They suggested that such costs could be higher for apartment units, with increased policing, fire, recreational and social service requirements. Furthermore, public resistance to higher density projects is not based on fiscal considerations. Rather, residents in existing lower density areas anticipate a decline in the quality of life due to greater pressure on local services and changes in "neighbourhood character". Thus, DCCs do not make higher density development more acceptable to either municipal officials or the general public.

Conclusions

The findings with regard to the expectations developed in the first part of this article are presented in Table 3. The interview and survey findings suggested that the land/improvements substitution effect of property taxes was not recognised

TABLE 3 The Recognised Consequences of Land Fiscal Instruments

Property Taxes

1. Substitution effect of property taxes was not recognised by developers and planners.
2. High property taxes were said to encourage the early demolition of low-yield buildings but do not affect replacement rates. Very low taxes due to agricultural use exemptions mitigate possible timing effects.
3. Delays in development do not change the density of projects.
4. Municipal officials do not engage in overt fiscal zoning.

Development Cost Charges

1. DCCs decrease density by increasing the frontage of lots.
2. DCCs delay development but have no effect on density as this is primarily set by zoning.
3. DCCs have not eased the approvals process. DCCs do not ensure timely infrastructure expansion.
4. DCCs have not made higher density projects more acceptable to suburban communities.

by developers, leading us to believe that changing the ratios will not have a perceivable effect on urban structure. Property taxes, however, were affecting cities as a result of the differences in tax rates on different land uses. The lower rates on commercial and residential uses favour less dense urban forms. However, changes in property taxes were unlikely to make developers change building sizes within a land use category. Changes to the tax burden as a result of density changes within a class are too subtle to be perceived in the face of other much more important factors: market demand, infrastructure capacity and planning regulations.

With respect to the impact of property taxes on the timing of development, the results show that developers are aware of a property tax effect on the timing of infill development, particularly in demand-driven markets. However, developers do not recognise the potential impact of property taxes on the timing of suburban development. None of the developers we interviewed would wait for density options to change and most do not hold off from developing land when development is financially feasible. The high scarcity rents during overheated markets and the uncertainty of the price cycles encourage developers to build when they can obtain a normal profit. Furthermore, lower taxes on agricultural land allow developers to hold land until the first available chance for development as determined by financial and planning considerations.

These findings suggest that the substitution effects due to differences in property tax rates outweigh the timing effects and they tend to reduce development densities. The fiscalisation effects of property taxes also encourage

the spread of cities as many municipalities oversupply industrial land in suburban and mature areas, much of which remains vacant. Although it is often assumed by developers that municipalities favour lower density residential development for tax reasons, we could not confirm this expectation in our interviews with municipal officials. Although most interviewees originally expressed the view that property taxes had little or no impact on urban form, probing interview questions suggest that the net result of property taxes is to encourage development decisions that result in lower density development and a more spread-out urban area.

This analysis also has implications for regulatory change. Regulators at the provincial and municipal levels who want to encourage more compact development should develop differences in property tax rates among different land uses and building types rather than attempt to change the tax burden on the capital and land components of real estate. Reduced tax rates on higher density housing, tax breaks for underused commercial properties, and a reduced tax burden on industrial lands are the most effective means of encouraging change in development patterns.

Overall, respondents appeared more aware of the effects of development charges than of property taxes. As with property taxes, recognition of the substitution effects of development charges arose from the differential rates applied to various building types. Where the ratio of rates on lower to higher density housing was large enough, development charges encouraged higher density development. Otherwise, they were perceived to encourage lower density housing. Although development charges were found to delay development, the timing effects do not affect density.

The fiscalisation effects of development charges are ambiguous. "Pay as you go" charges instead of debt financing have reduced municipal concerns over infrastructure funding, but there is no evidence that the approvals process in the Toronto and Ottawa area municipalities has been shortened as a result. In fact, the design and implementation of DCCs have been a source of intense conflict between the development industry and the municipal sector in Ontario. Many municipal bylaws have been challenged in court and the system has been under almost constant political review by the province since it was established in the late 1980s. DCCs have not added to the certainty of the approval process.

Economic theory describes the outcomes of market interactions "as if " the actors were maximising profits or utility and the theory is tested by looking at changes in market outcomes in response to changing conditions. Consumers need not know they are maximising utility in order to act as if they are maximising utility. While the test for the model is the observation of behaviour and outcomes, there remains a conceptual mechanism linking the consumer's psychological state and behaviour to the outcomes depicted by the models. To accept the economic model of utility maximizing, we would ideally want a connection to a real-world mechanism that makes the model plausible. With consumer utility maximisation, we can refer to our own experience of weighing

the value of one bundle of produce against another and then having our choice be influenced by their price ratios. Similarly, dynamic models would be intuitively appealing if we could recognise a behavioural response to the possibility of future changes in conditions.

The dynamic models that are the hallmark of the new land economics appear to hold, as a premise that their decision-makers are "planning", that they are contemplating the future and calculating changing returns (e.g. Shoup 1970; Arnott and Lewis 1979). It is therefore reasonable to ask the people who actually make the land use and development decisions how they see and consider the possibility of changes in future prospects. Certainly, if the developers we interviewed had described strategies that considered possible changes in future building programs, then their words would be considered as evidence supporting the premises and assumptions underlying the current dynamic profit maximising models. But we found little evidence of developers making long range plans and virtually none of their making long-range calculation of possible benefits, costs and chances. We found that developers describe themselves as treating the future building options as fixed. At the least, this leaves us with the sense of disconnect between the behaviour of developers and the dynamic models of the profit maximising strategies of individual behaviour. This is not to say that the models are wrong, only that they are still far from complete. It also suggests that the older and much simpler models are still of use in describing developer behaviour. The main practical value of the current dynamic models may be in the lessons they teach planners. Social welfare may be increased by considering future land use options as being malleable and, therefore, developing plans that allow for future changes in land-use designations.

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