# Regulatory Costs: Who Pays in the End?

## Residential Developers' 'Rule of Thumb' and the Incidence of Regulatory Costs

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Since the turn of the century, governments have placed restrictions on the location and characteristics of new buildings, the primary reason being the recognition that new construction created negative side-effects for surrounding residents.[1] Consequently, it is difficult for most housing analysts to advocate eliminating all government regulations relating to housing production. However, there is disagreement among housing policy observers about what level of regulations is socially desirable. The key task of researchers is to establish the costs of regulation so that the benefits of these regulations, which accrue both to the home buyer and residents of the larger neighborhood, can be compared to the costs incurred by housing consumers. Therefore, proper measurement of regulation costs is an essential element of any policy debate surrounding regulatory reform of the housing development process.

Many studies have attempted to quantify the effect of government regulations on home prices. A large number of these studies identified a positive and significant relationship between home prices in a given geographic area and the presence of regulations, such as large-lot zoning requirements, growth controls and subdivision standards (for an excellent review of this large body of literature see Fischel 1990). Moreover, some housing market analysts argue that home ownership has moved beyond the reach of many American families because of the costs associated with complying with unnecessary government regulations.[2] While providing some evidence of the effect of government regulations, there has been little research about the *decision process* used by developers when faced with government regulations. Therefore, previous studies have concluded that regulatory costs have one of two effects. Some studies show costs are passed forward on a dollar-for-dollar basis to consumers in the form of higher prices. Alternatively, some studies show government regulations are passed back to landowners in the form of lower values for developable land.[3]

In this article, we argue that the ratio of the effects of regulations on home prices to the costs borne by developers is greater than one. Many developers work under a "rule-of-thumb" that home prices should be between two to four times the price paid for land. Consequently, government regulations that

result in relatively small increases in land costs can result in large increases in the asking price for new home. For example, a regulation that results in an additional $10,000 in costs to the developer would actually be passed on to the buyer as a $20,000 to $40,000 increase in final costs. Obviously, market conditions will affect the ultimate price paid by consumers; however, to a certain extent, new home prices will reflect some multiple of regulatory costs associated with the development process. If so, regulators must be aware that regulations with seemingly modest effects on land prices may result in relatively high increases to newly constructed home prices.

The remainder of this article is organized into four sections. The next section presents a schematic model of a developer's decision calculus along with a discussion of how government regulations affect the development process. In the third section, we develop a model to explain why government regulations would have a multiplied effect on prices. In the fourth section, "Methods and Analysis," we present our research methodology and results. The final section provides a discussion of the policy implications of our findings.

**A Conceptual Framework**

Figure 1 illustrates a developer's decision calculus. The model is predicated on the assumption that a developer has some predetermined notion of both the types of regulations they will face and the time needed to complete the project. Therefore, a developer's decisions will reflect the answers to several questions. Did they know beforehand what the restrictions were, and then factor them into project planning? How did he or she respond to the restrictions: By seeking to change them? By offering less for the land than he or she otherwise would? By changing project design? By changing the pricing of units? Or did he or she miscalculate the costs or delays so that the bottom line was reduced?

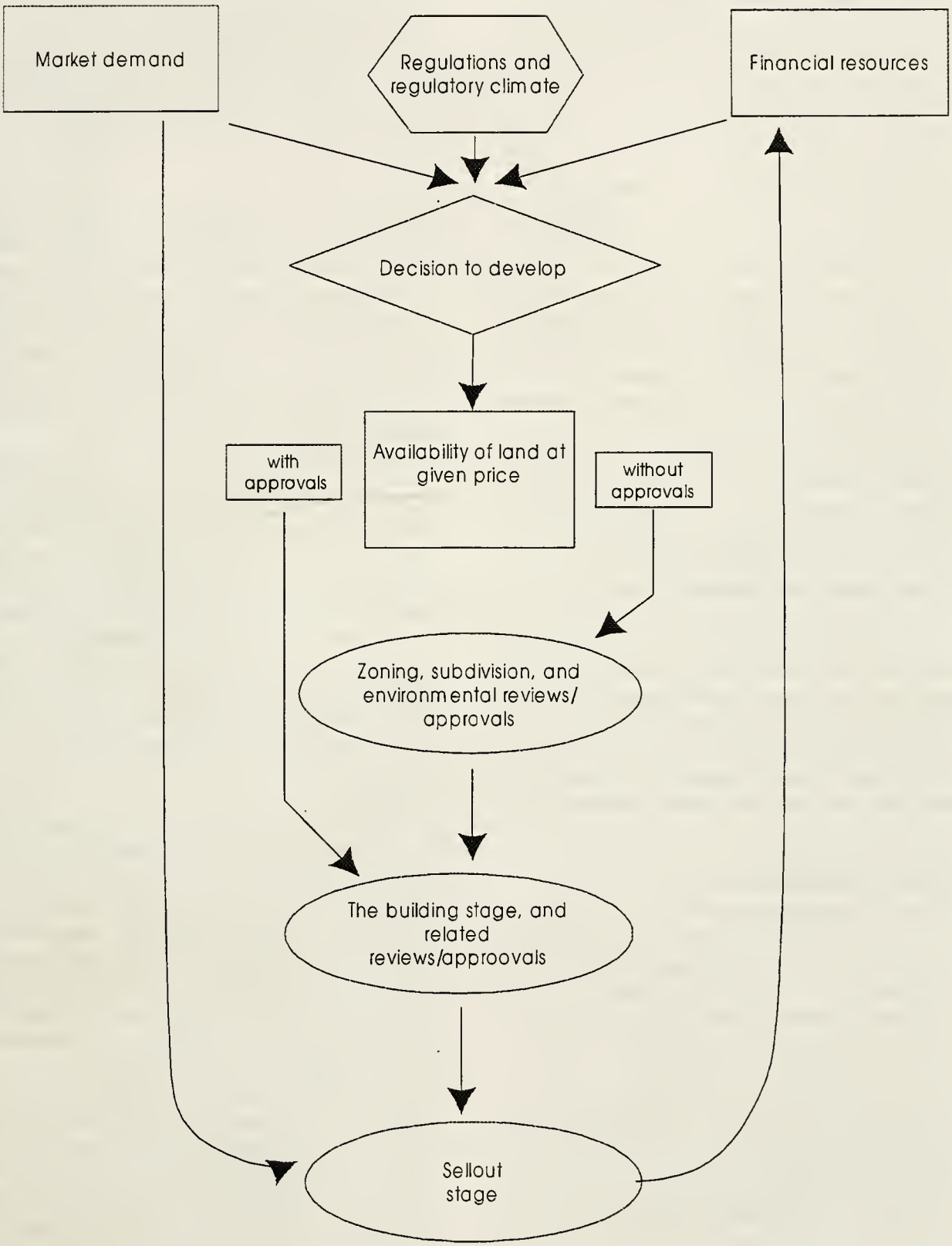
The development environment that exists when a developer contemplates a project includes several components. There is the aspect of market demand (the types of units the buying public wants built), an element affected by macroeconomic conditions, demographics, and tastes. The financial resources available to the developer is a factor affected by macroeconomic conditions and the developer's past success. The development environment also incorporates the regulatory milieu, which includes applicable ordinances and statutes, precedent, and practice in particular places.

Once a developer decides to embark on a project (taking into account the three factors just discussed), he or she attempts to find land that is "priced right." That may mean land that is part of a bankruptcy or under Real Estate Investment Trust (REIT) control -- resulting its being priced under market value. On the other hand, the parcel may be so large that it is affordable for only well-capitalized buyers. The developer's search for the right price may also mean a seller will accede to terms the developer considers favorable, including a discounted sale price, or a sale conditional on obtaining necessary approvals.

The price of land should reflect whether it has approvals in place. If it does, building can begin prior to final approvals for foundations, hookups, or other such items. There may be delays, but they normally will be shorter than in the absence of prior approvals. When land is bought without approvals, the developer must seek them. Whether or not a developer paid a "proper price" for land will depend on how long and costly the approval process was relative to what he or she expected. A developer obviously wants to get to the sellout stage as quickly as possible. If there are unexpected delays along the way, market demand may have changed, making the product hard to sell at the desired price. If land is bought outright, there are also carrying costs associated with delays.

Both the timing of the development process and the accuracy of all actors' expectations determine the incidence of the regulatory burden. In a world of perfect information -- no surprises -- and complete mobility of capital, stricter requirements for developers and longer delays would not negatively affect developers in the long run. If they acted rationally, they would not stay in the development business if they could not earn a risk-adjusted, economy-wide, average rate of return. Rather than tie their resources up in building, and earning, say, a 6 percent rate of return, they would seek higher returns by, say, investing in equities or manufacturing widgets. That would reduce the supply of housing being built and raise the price because of excess demand. That should induce more builders into the regulated market. Consequently, the likely long-run incidence is either on homebuyers, who pay higher prices, or on landowners, who receive lower offers, or both.

*Figure 1: Model of a developer's decision-making process*



However, the incidence of regulation costs is also affected by the fact that there is a limit on what homebuyers can spend annually for a house, normally about 30 percent of gross income. As the cost of regulation drives up housing prices, demand falls and the bottom end of the housing market drops out, leaving mostly high-end houses in the building pipeline. Thus, lower and middle-income households bear the burden, not simply through higher home ownership costs, but through the unavailability of homes in their price range. Presumably, rents rise as well, in which case there is a loss of consumer surplus. Or there could be a welfare loss due to doubling up, living with parents, living farther away from work where housing is less expensive, and so on.

The outcomes of the regulatory processes we describe may deviate from what legislators and regulators intended when drafting statutes, ordinances, and rules. For example, staff shortages tend to create delays in application reviews. In addition, multiple reviews at different levels of government extend the permitting timeline and may lead to inconsistent discretionary requirements. Also, regulators who have some flexibility (to accommodate a wide range of sound proposals) sometimes use it to deny or delay projects that may be in technical compliance but fail to meet the spirit of the rules. Similarly, public hearings and court appeals, intended in part to ensure that government officials follow the rules, are also powerful tools for opponents of developments. Foes can use hearings to politicize an approval process and convince elected officials not to follow the rules, or to delay and/or kill projects.

## A Model of the Effects of Regulation on Home Prices

Our working hypothesis is that some costs of regulation resulting from factors discussed above will result in price increases that are greater than the actual costs borne by the developer. This hypothesis is based on the simplified housing production model in Equation 1:

$$H = \Lambda S^{\alpha} L^{\beta} \qquad (1)$$

H is the output of housing, measured as a bundle that includes land and buildings; S and L represent structures and land, respectively; and $\Lambda$, $\alpha$, and $\beta$ are parameters that represent neutral technical progress and the shares of structures and land in production, respectively. Assuming constant or slightly increasing economies of scale, $\alpha$ and $\beta$ will each be less than 1.

Differentiating (1) with respect to land ($\partial H/\partial L$), and setting that equal to the real "rental rate" on land (r), as would be appropriate in long-run equilibrium, yields the expression shown in Equation 2:

$$pH = \frac{rL}{\beta} \qquad (2)$$

Here, $p$H is the cost of housing and $r$L is the cost of the land required for its production. A dollar change in the numerator on the right hand side, due, for example, to regulation, changes the left hand side by more than a dollar, as long as $\beta$ is less than one. For example, for a parameter value of 0.5, a dollar increase in the cost of land ($r$L) would have to be accompanied by a two-dollar increase in the cost of housing ($p$H) for the equality to hold.

The smaller $\beta$ is (less than one), the larger $\Delta p$H for any dollar change in $r$L. Since $\beta$ is directly proportional to the elasticity of demand for housing with respect to the price of land, we can see that less elastic demand allows regulatory costs to be passed forward more readily. Because land is immobile, there should be a lower own-price elasticity of demand for it than for structures (this was theorized by Sommerville in 1996). This hypothesis was tested using data collected from builder/developers in New Jersey. A discussion of the data and the results follow in the next section.

## Methods and Analysis

The results presented in this paper are derived from a larger study of developers and regulators in New Jersey and North Carolina.[4] As part of the study we conducted two types of primary data collection efforts. The first type of data collected was from questionnaires mailed to a stratified sample of 850 builders/developers in New Jersey. (The sample was stratified in order to ensure geographic coverage of the entire state.) Two hundred builders/developers throughout the state were randomly selected to receive a "short" questionnaire; longer questionnaires were sent to the remaining 650 builder/developers in each of four regions: the New York commuting shed; the Route 1 corridor; the Philadelphia commuting shed; and elsewhere in the state[5]. (Luger, et al., 1998, presents details of the survey methodology, sampling strategy, and validity issues.) Because our initial response rate was low (approximately 12 percent), we expanded our sample size for

the short form by 300; we also sent several hundred replacement questionnaires to the original sample.

The second type of data collected came from telephone interviews with 66 builder/developers drawn from the same sample as our mail survey. We divided the interviewed parties into four panels. The first panel of respondents was asked the following questions:

*Assuming that there is a demand in your market for completed homes selling for $500,000 on half-acre lots:*

- *In a typical case, what is the most you would put into the hard costs to build the house and appurtenances (brick, lumber and direct labor?)*
- *In a typical situation what is the most you would pay for that improved lot, with all approvals in place (construction, subdivision, and environmental)? (Disregard the possibility of additional costs for impact fees, dedications, etc.)*
- *Again in a typical case, what is the most you would have paid for that same lot in a subdivision if approvals were in place, but without any improvements?*
- *What is the most you would have paid for that same lot in a subdivision, but without either approvals or improvements?*

We also asked these questions to the same panel of builder/developers for a $500,000 home on a two-acre lot. Panel Two was asked the same questions for half- and two-acre lots, but for a $250,000 selling price. Panel Three was asked the questions for a $125,000 home on a half- acre lot, and Panel Four for a $750,000 home on two acres.

The "willingness to pay" questions are consistent with the contingent valuation approach commonly used in environmental research.[6] In this case, our purpose was to ascertain how builders value approvals and improvements. We used differently valued properties to account for possible non-linearities in the demand curve. Table 1 reports the mean values.

Note that the price paid for improved, approved land plus the cost of non-land improvements do not sum to the selling price. In part, this is a consequence of the data distribution (summing mean values); however there is also a profit margin to consider.

The table indicates the following rates of return to builder/developers:

- For a $750,000 home on 2 acres: 23.7 percent
- For a $500,000 home on ½ acre: 22.6 percent
- For a $500,000 home on 2 acres: 25.3 percent
- For a $250,000 home on ½ acre: 13.4 percent
- For a $250,000 home on 2 acres: 8.9 percent
- For a $125,000 home on ½ acre: 13.0 percent

Those estimates are consistent with what developer/builders claim in follow-up interviews among a subsample of questionnaire respondents: that higher rates of return accrue to higher-valued property, perhaps because the price elasticity of demand for housing is relatively small for the highest income households, allowing more regulatory costs to be passed forward. (Note that the figures are rough proxies of actual rates of return, because they do not include financing costs, and are not annualized.) The longer a development project takes, the lower the annualized rate of return, which is the relevant indicator of financial viability. The data in Table 1 roughly agree with our mail survey responses from New Jersey builder/ developers. The median price of new homes built by our respondents was $236,000, and the median size of a developed lot was 0.8 acres. The raw land component of that parcel was $24,000, and the median per parcel cost for improvements was $27,900.

The responses in Table 1 can be translated into the costs for approved, unimproved and improved, approved lots, as shown in Table 2.

The offering prices in the table are hypothetical. For example, a developer would be willing to pay $27,187 more for unimproved land with approvals than for unimproved land without approvals for a planned $500,000 home on half an acre. As expected, the more expensive a home, the larger this difference. (Note that the relatively small differences between the mean values for one-half acre and two-acre lots were not significant as measured by a t-test.) The first row in each panel of the table also provides a basis for estimating improvement costs, which range from 10.7 percent to 15.1 percent of the sales price. It is worthwhile to note that the written developer surveys revealed that hypothetical cost of improvements, if weighted by the mix of different-valued homes in New Jersey, would be in the $22,000 range. The survey responses indicated that per-lot improvements were 11.8 percent of the sales price.

*Table 1: Summary of developer survey results*

**Panel One: $500,000 house**

| | 1/2 acre lot | | 2 acre lot | |
|---|---|---|---|---|
| | Mean value | No. responses | Mean value | No. responses |
| Non-land costs | $273,077 | 13 | $258,750 | 12 |
| Improved lot | 134,615 | 13 | 140,357 | 14 |
| Raw approved land | 84,545 | 11 | 78,654 | 13 |
| Raw unapproved land | 51,696 | 14 | 56,125 | 14 |

**Panel Two: $250,000 house**

| | 1/2 acre lot | | 2 acre lot | |
|---|---|---|---|---|
| | Mean value | No. responses | Mean value | No. responses |
| Non-land costs | $135,845 | 25 | $139,026 | 19 |
| Improved lot | 84,700 | 25 | 91,024 | 21 |
| Raw approved land | 46,888 | 20 | 55,515 | 17 |
| Raw unapproved land | 30,475 | 20 | 31,053 | 19 |

**Panel Three: $125,000 house**

| | 1/2 acre lot | |
|---|---|---|
| | Mean value | No. responses |
| Non-land costs | $76,024 | 21 |
| Improved lot | 34,643 | 21 |
| Raw approved land | 21,235 | 17 |
| Raw unapproved land | 17,343 | 19 |

**Panel Four: $750,000 house**

| | 2 acre lot | |
|---|---|---|
| | Mean value | No. responses |
| Non-land costs | $404,417 | 6 |
| Improved lot | 201,758 | 6 |
| Raw approved land | 94,583 | 6 |
| Raw unapproved land | 55,417 | 6 |

*Table 2: Costs of approvals and improvements*

**Panel One: $500,000 house**

| | Mean value | |
|---|---|---|
| | 1/2 acre lot | 2 acre lot |
| Improvements (for approved land) | $55,000 | $60,193 |
| Approvals (for unimproved land) | 27,187 | 25,903 |
| Improvements and approvals | 80,480 | 84,233 |

**Panel Two: $250,000 house**

| | Mean value | |
|---|---|---|
| | 1/2 acre lot | 2 acre lot |
| Improvements (for approved land) | $42,511 | $44,630 |
| Approvals (for unimproved land) | 16,381 | 18,035 |
| Improvements and approvals | 53,833 | 60,068 |

**Panel Three: $125,000 house**

| | Mean value | |
|---|---|---|
| | 1/2 acre lot | 2 acre lot |
| Improvements (for approved land) | $21,559 | n/a |
| Approvals (for unimproved land) | 1,983 | n/a |
| Improvements and approvals | 22,014 | n/a |

**Panel Four: $750,000 house**

| | Mean value | |
|---|---|---|
| | 1/2 acre lot | 2 acre lot |
| Improvements (for approved land) | n/a | $128,610 |
| Approvals (for unimproved land) | n/a | 39,167 |
| Improvements and approvals | n/a | 175,610 |

Table 2 is based on the assumption that developers have a target market in mind when undertaking projects, and changes in the cost of approvals affect the pricing of land. However, this is an extreme assumption. Consider, for example, a $125,000 house on a half-acre lot. A landowner may agree to sell that lot without approvals or improvements, not for $17,434, but for $20,000. A developer would then assess whether the extra $2,600 could be passed onto a buyer, or if he or she could live with a lower rate of return.

The answer depends on market conditions in a particular place at a particular moment in time (as reflected in the price elasticity of demand).

The issue of the incidence of cost changes for structures and land was addressed empirically by Somerville (1996). He demonstrated that unexpected changes in the cost of land, such as those due to unanticipated regulatory delays, are borne in the short run by builders or developers in lower profits, but unexpected increases in the cost of a structure can be passed on to consumers in higher final prices. Therefore, "builder behavior would be expected to be much more sensitive to land costs because they directly affect the builder's bottom line[7]". Over time, diminished supply would affect prices through normal supply and demand adjustments.

In addition to being supported by the contingent valuation data, the rule-of-thumb multiplier is also evident in our analysis of mail surveys from New Jersey builder/developers. Eight respondents estimated the median increase in the price of a house due to zoning restrictions (which required them to change the design and/or layout of their projects) to be $50,000. Using the multiplier of 4.0 for the ratio between sales price changes and raw land price value, that estimate should translate backward into a raw land price difference of $12,500. Indeed, the respondents who provided an estimate of the change in raw land value due to zoning restrictions gave a median figure of approximately $7,000. The higher implied multiplier (close to 7.0) is most likely an artifact of the small unrepresentative sample of builder/developers responding to that question, but it is of the right order of magnitude.

These findings indicate that there is more than a housing prices, the extent of which will vary from project to project depending on local conditions, house size, land-to-structures ratio, and other factors. This translation occurs whether the cost of regulation is accounted for in the non-land (structures) or land component of the housing bundle, since both share parameters, $\beta$ and $\alpha$, are less than 1. However, it is greater for those elements of land costs since $\beta < \alpha$.

That relationship helps us understand the relationship between home prices and regulation costs in some of the survey responses. Builder/developers indicated, for example, that open space set-asides caused them to raise the price of a median finished unit by $3,500. Using a multiplier of 4.0, that means that the actual outlay for additional land was about $900 per unit. Similarly, delay costs tend to translate into higher sales prices with this multiplier effect. For example, we noted earlier that each 12-month delay adds approximately $1,500 per unit in additional carrying costs, which would translate into at most $6,000 more for a buyer.[8] These price translations reflect long-run responses to regulatory costs; in the short-term, builders react in a variety of ways to regulatory costs.

While our findings are based on a relatively small sample, the consistency of the results derived from both the contingent valuation and survey data suggest that a rule-of-thumb is used in practice by developers when determining the optimal capital/land ratio of production costs. Increases in the cost of raw land or the cost of improved land are passed along to consumers in amounts greater than the costs paid by developers. Local circumstances dictate the ultimate incidence of government regulations, but builder/developers attempt to maintain a fixed capital/land cost ratio when developing an initial asking price. The policy implications of this result are discussed in the concluding section.

**Conclusions and Policy Implications**

The fact that the elasticity of demand for housing with respect to price is less than zero has another important consequence: a dollar added to the price of land due to the capitalization of the required regulatory approval adds more than a dollar to the final selling price. That multiplier ranges from two to six, depending on the value of the property being sold as well as on the way land-price is measured (with or without improvements in place). In general, a multiplier of four is not unreasonable; this means that when a developer expects regulation to cost a dollar (substantively or in procedural delay), on average he or she will attempt to increase by $4 the price of the houses being built.

The phrase "on average" is important, because survey data showed a wide range of actual experiences among builder/developers. Of 57 respondents to a question about the incidence of subdivision requirements, for example, 19 indicated they changed the offer price for land, and 19 said they changed the pricing of units. Similarly, of 64 respondents, 22 said stringent zoning affects their offer-prices for land, while 10 said it affected their selling prices. In addition, 74 of 230 respondents indicated lower land-price offers in response to environmental regulations, while 39 said they charged more for a house. Moreover, the median response by all respondents was that environmental.

regulations reduced a developer's bottom line by 1 percentage point.

To conclude, our article suggests that regulatory costs to consumers, in certain circumstances, may exceed costs borne by builder/developers. Many developers describe a rule-of-thumb where land costs make-up a fixed percentage (usually around 25 percent) of the asking price for new homes. As a result, relatively modest additional costs for land resulting from government regulation may translate into sizeable price increases faced by consumers of new housing. If true, regulators must be keenly aware of the full cost impacts of additional regulations in order to generate an accurate cost-benefit assessment of regulations initiated to foster socially desirable objectives. CP

## Endnotes

[1] Lubove, 1981.

[2] Advisory Commission on Regulatory Barriers to Affordable Housing, 1991, Lowry and Ferguson, 1992, National Association of Homebuilders, 1995.

[3] Deakin 1989, Knapp and Nelson 1988, Wachter and Cho 1991.

[4] Luger et al, 1988.

[5] Luger et al., 1998, presents details of the survey methodology, sampling strategy, and validity issues.

[6] The contingent valuation approach is a technique used to value benefits or resources through the construction of a hypothetical situation. Individuals are surveyed and asked to value the good in question based on information presented in the background scenario. For more information, refer to Paterson, Luger and Lindsay 1995.

[7] Somerville, p. 410.

[8] This translates into 2.54 percent of the median housing price per year, or 0.2 percent per month. This is less than the 1.2 percent per month estimated by Seidel (1978), which presumably reflects changes in interest rates and housing values since that time.

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