

Three Methods for Evaluating Measure 37 Claims

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Executive summary

Measure 37 imposes an enormous burden on government. It asks government to know the unknowable: what would the world look like if a particular land use regulation had not been enacted or enforced? And, how would land prices in that alternative world compare to land prices in the real world?

In this publication, we examine three methods for evaluating Measure 37 claims based on three criteria: (1) practicality or cost, (2) logic or reasonableness, and (3) the rate of correct answers for a variety of scenarios. We evaluate the following methods.

- **The “with and without” method** would require sophisticated computer models to simulate a world without a specific land use regulation. The model would compare market prices for properties in the hypothetical world *without* the regulation to those in the real world (*with* the regulation). Although this kind of analysis could be highly successful in correctly evaluating Measure 37 claims, it would be prohibitively expensive.
- **The “single exemption” method** considers the effect of waiving a land use regulation on an individual property. It meets the criterion of a practical approach, but it is based on flawed reasoning that leads to unreasonable results in

many situations. It produced the incorrect result in two-thirds of the scenarios evaluated.

By taking today’s market as a given, this method ignores the many direct and indirect ways that land use regulations can affect the market. Indeed, in many cases a single exemption has a high value precisely *because* land use regulation has raised the value of land.

This method’s frequent incorrect results are caused by the flawed reasoning that one can prove that a land use regulation has reduced a property’s value by estimating that the property’s value would rise if the regulation were removed. The effect of removing a regulation from one piece of land is not, however, the opposite of applying a regulation to many pieces of land.

Indeed, this method will always lead to approval of a Measure 37 claim—even if the land use regulation raised property values.

- **The “before-and-after” method** compares the market value of a property before the land use regulation went into effect with the market value of the property after the land use regulation went into effect. This method is both practical and based on sound reasoning. It was found to produce the correct result for three-quarters of the scenarios considered.

Introduction

Under Oregon’s Measure 37, landowners can seek compensation or a waiver if they believe a land use regulation has resulted in a reduction in their property’s value.¹ But determining the validity of such a claim imposes an enormous burden on government; it asks government to know the unknowable. What would the world look like if a particular land use regulation had not been enacted or enforced? And, how would land prices in that hypothetical world compare to land prices in the real world?

Three methods could, in principle, be used to determine whether a Measure 37 claim is valid. The first method, referred to here as the “with-and-without” method, tries to directly address the questions posed by Measure 37.² It attempts to take account of everything that would be different if the land use regulation had not been enacted or enforced, including shifts in supply, demand, and prices for land. It also asks several related questions. What investments by firms would have been made differently? How would public services and infrastructure be different? What changes in population movements might have occurred as a result?

The second method is a “single exemption” approach that estimates the value of the property if it and it *alone* were given a waiver to the land use regulation. This method does not estimate how prices would change if the regulation were removed from all properties (as the with-and-without method attempts to do). Rather, it estimates the value of an individual exemption to the regulation.

The third method is a “before-and-after” comparison of the property’s market value to determine whether it increased or decreased following enactment or enforcement of the land use regulation.

This publication describes each of these methods and evaluates the circumstances under which they produce a correct or incorrect result. Each method is described in detail with special attention to its advantages and disadvantages. We consider several scenarios involving different patterns of land price changes, as well as different effects of land use

regulations, and we compare the performance of the three methods in terms of how often they produce the correct answer to the Measure 37 question—was there a reduction in property value due to the land use regulation?

Methods for determining whether a “reduction in value” has occurred

The “with-and-without” method

The “with-and-without” method for evaluating Measure 37 claims tries to do exactly what Measure 37 asks: compare the “real world” of existing land markets with the hypothetical world that would exist if a specific land use regulation had not been enacted or enforced. In order to evaluate this hypothetical world, we would need to understand how markets for various land uses in multiple locations would have acted differently in the absence of the specific regulation. The supply of land for some uses would be higher; for others it would be lower. These changes would affect market prices for land in different locations and for different uses. Changes in land prices in one market or locality might affect demand in other markets or localities.

Such an analysis is complex and would require estimating the responsiveness of demand, supply, and price across the entire region where land markets are likely to influence each other. These changes might also affect individual decisions to move in or out of the area, and these responses are particularly difficult to evaluate.

All of these considerations could be integrated in a computer-based model. The model could then compare the “with” and “without” scenarios for the land use regulation, and the results would indicate whether the market price for a specific property would have been higher or lower in the hypothetical “without” scenario.

One problem with this approach is that it would be extremely costly. Models of this kind sometimes are developed by academic economists, but limitations in available data would make it very difficult to build and calibrate such a model for even one county. One could easily spend 2 years and several hundred thousand dollars on such an effort.

¹The text of Measure 37 is at http://www.sos.state.or.us/elections/nov22004/guide/meas/m37_text.html

²See “The ‘with-and-without’ method,” at right, for further explanation.

A second problem is that, even with a carefully constructed model, doubt would remain about the validity of the results. Many intangible factors affect land markets, and we cannot know how private and public decisions might have been different “without” the land use regulation. For example, would local government investments in roads, sewers, or other infrastructure have been different? Would government services and property tax revenues differ significantly? If so, would other decisions have been different?

Even if these questions could be answered, doubts would remain about how accurately a model represents local land demand and supply relationships. Since a model depicts a hypothetical “without” scenario for a very specific (and nonexistent) localized land market, there is no way to satisfactorily validate the results. Challenges could easily be raised, and alternative models could lead to contradictory findings.

This approach is, in principle, the correct way to answer the Measure 37 question—if money and time were unlimited and if perfect information existed. From a practical standpoint, however, it is too costly and time-consuming, and any specific model likely would be vulnerable to challenges. It is important, nevertheless, because it provides a standard of comparison for the other two methods, and because it represents the only way to directly address the central Measure 37 question.

The “single exemption” method

This approach asks, “If the land use regulation were removed *from this one property*, would its value increase?” This may seem like a similar question to the with-and-without question, but it is not. This approach does not estimate what would happen if the land use regulation were removed from all affected properties; it estimates only the effect of an exemption for one property. Thus, the method doesn’t recognize what would be different if the land use regulation had never been implemented.

Many studies have demonstrated that land use regulations can have positive *or* negative effects on land prices.³ The single exemption approach, however, always leads to the conclusion that there has been a reduction in property value, even when the value of the property increased following introduction of the land use regulation.⁴ The reason is that removing a

restriction increases the landowner’s range of options, which in turn increases the land’s value.

In fact, in cases where land use regulations have *caused* property values to rise (for example, by keeping compatible land uses together), this approach is likely to indicate that a waiver would increase the value of a property even more. This result likely will be interpreted as evidence that the land use regulation reduced the property’s value, when in fact it did not.

The single exemption method is, nevertheless, quite practical. Standard appraisal methods can be used to estimate what a property would be worth if the land use regulation in question were removed. Relying on “comparable sales” or other techniques, property appraisers can readily estimate this amount in most cases.⁵

The “before-and-after” method

This approach asks, simply, whether there has been a reduction in value. That is, between the time prior to implementation of the land use regulation and some time after its implementation, did the market value of the subject property rise or fall? This approach compares the “after” price to the “before”

³Some of these studies are noted in W.K. Jaeger, “The effects of land use regulations on property values,” *Environmental Law*, Vol. 26, Spring 2006 (http://www.lclark.edu/org/envtl/objects/36-1_jaeger.pdf). See also C. Runge, et al., *Government Actions Affecting Land and Property Values: An Empirical Review of Takings and Givings*, Lincoln Institute of Land Policy Research Paper (1996) for a review of the effects of government action on property values. Runge et al. demonstrate that government actions, including land use regulations, government services, infrastructure, etc., can have positive *or* negative effects on land values. They make the point that consideration of compensation for regulatory takings (negative effects of government action on property values) should also recognize regulatory “givings” (positive effects of government actions on property values).

⁴This will be true so long as the land use regulation is binding (preventing landowners from doing something they would consider beneficial). If a land use regulation were not binding, or the disallowed land use were of no interest to the owner, he or she would have no reason to make a claim.

⁵A detailed discussion of the issues surrounding the single exemption method is found in W.K. Jaeger, “The effects of land use regulations on property values,” *Environmental Law*, Vol. 26, Spring 2006 (http://www.lclark.edu/org/envtl/objects/36-1_jaeger.pdf).

Table 1. Comparison of results using alternative methods to evaluate Measure 37 claims Scenarios 1–3. The property’s value was not affected by unrelated factors.

Scenario	Effect of land use regulation	Approval or denial of a Measure 37 claim ¹		
		With-and-without ²	Single exemption	Before-and-after
1	Reduced property values	Correct result (approve)	Correct result (approve)	Correct result (approve)
2	Increased property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
3	Had no effect on regulated property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)

¹Does not address accuracy of the magnitude of the change in value.

²Correct results will depend on the quality of the economic model.

price to see whether there was a reduction in value. (The “before” price must be adjusted for inflation so that a reduction in market value is not masked by the effects of inflation.)

This approach reflects many of the indirect ways that land use regulations might raise property values (for example, by preserving amenities such as good views). Indeed, in important ways, this approach is much like the with-and-without method. It compares the price at a time *with* the land use regulation to the price at a time *without* the regulation.

What this method does not do, however, is hold all other factors in the economy constant across the two time periods. As a result, this method may err if factors unrelated to the land use regulation reduce the property’s value (in cases where the regulation itself did not have a negative effect). If the regulation does reduce the property’s value, this method will err if unrelated factors have raised the property’s value sufficiently to overshadow the negative effect.

This method has the advantage of being simple and straightforward. Only three numbers are needed: the current price of the land, the price of the land before the land use regulation took effect, and the consumer price index to adjust for inflation. If the “before” price of the land is not known, appraisers or title companies can provide an estimate.⁶

Methods’ performance for alternative scenarios

A central question is how often each method produces the correct result. Will it approve all valid Measure 37 claims and deny all invalid claims? To answer this question, we developed a set of scenarios and evaluated each method on the basis of whether it produced the correct result.

Twelve scenarios were considered. Each is explained and illustrated in the Appendix (pages 9–14). The scenarios reflect a range of circumstances in which land use regulations have negative, positive, or neutral effects on land prices.

Results for the first three scenarios are summarized in Table 1, indicating that the with-and-without method, if applied correctly, will produce correct results in each case. The single exemption method produced a correct result in only one of these three cases, and the before-and-after method produced correct results in all three cases.

These three scenarios assume that, aside from the effects of the land use regulation, land prices are stable. We also considered scenarios such as rising prices for regulated lands, declining prices for regulated lands, and an unanticipated rise in the potential value of unregulated lands.⁷ For example, in Table 2

⁶A thorough examination of the economics behind the “before-and-after” method is found in A. Plantinga, *Measuring Compensation Under Measure 37: An Economist’s Perspective*. December 2004 (<http://arec.oregonstate.edu/faculty2/measure37.pdf>).

Table 2. Comparison of results using alternative methods to evaluate Measure 37 claims. Scenarios 4–6. The property’s value rose for reasons unrelated to the land use regulation.

Scenario	Effect of land use regulation	Approval or denial of a Measure 37 claim ¹		
		With-and-without ²	Single exemption	Before-and-after
4	Reduced property values	Correct result (approve)	Correct result (approve)	Wrong result (deny)
5	Increased property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
6	Had no effect on regulated property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)

¹Does not address accuracy of the magnitude of the change in value.

²Correct results will depend on the quality of the economic model.

we consider the same three possibilities, but in a setting where land prices generally have been rising. In this setting we find that, once again, the single exemption method produced the correct result in only one of the three cases. The before-and-after method produced the correct result in two of the three cases, and the with-and-without method produced the correct result in all three cases.

The performance of each method is shown for all 12 scenarios in Table 3 (page 6). These results suggest that the with-and-without method could, in principle, always provide the correct result. In practice, however, the success rate likely would be lower, and the extremely high cost of this approach makes it impractical. The single exemption method produced the correct result only one-third of the time (4 of 12 scenarios). The before-and-after method produced the correct result for three-quarters (9 of 12) of the scenarios.

⁷This last case reflects situations where unanticipated events or new information (e.g., discovery of valuable minerals underground) raise the value of a piece of land, but only if it can be put to a use that is disallowed due to the regulation being evaluated. This situation differs from cases where many possible but uncertain events might occur (e.g., changes in commodity prices, population growth). In those cases, the expected financial gain from each possible outcome is likely to be reflected in the market land price (depending on its likelihood of occurring). For scenarios where unanticipated events or new information arise, we want to consider cases where the events or information do not affect the value of regulated properties, but would raise the value of an exempted, or waived, property.

Some of the 12 scenarios are more likely than others to reflect current or future situations relevant to Measure 37 claims. In general, prices for all kinds of lands have been increasing for at least 20 years in Oregon, although there are exceptions in some regions and over some periods of time. Thus, scenarios 4–6 and 10–12, which assume rising land prices, are most relevant. For these six scenarios, the before-and-after method produced the correct result five times, while the single exemption method produced the correct result only two times.

In addition to the frequency of correct results, it is interesting to note the types of errors produced by each method. With the before-and-after method, two of the three incorrect results were cases in which a Measure 37 claim was incorrectly approved; in only one case did this method incorrectly deny a Measure 37 claim. For the single exemption method, however, all cases of incorrect results were incorrect approvals. In fact, even if all land use regulations increased property values, the single exemption method would always conclude that a reduction in value had occurred.

In scenarios 4–6 (Table 2), we see that the before-and-after method produced the wrong result only when the property’s value rose for reasons unrelated to the land use regulation *and* the regulation reduced the property’s value. This result implies that the effect of the land use regulation was small relative to the rise in land values, creating a net positive effect on market price that masked the negative effect of the regulation. This situation is likely when land values have been rising over extended periods of time.

Table 3. Comparison of results using alternative methods to evaluate Measure 37 claims.

		Approval or denial of a Measure 37 claim ¹		
		With-and-without ²	Single exemption	Before-and-after
<i>Scenarios 1–3. The property’s value was not affected by unrelated factors</i>				
1	Land use regulation reduced property values	Correct result (approve)	Correct result (approve)	Correct result (approve)
2	Land use regulation increased property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
3	Land use regulation had no effect on regulated property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
<i>Scenarios 4–6. The property’s value rose for reasons unrelated to the land use regulation</i>				
4	Land use regulation reduced property values	Correct result (approve)	Correct result (approve)	Wrong result (deny)
5	Land use regulation increased property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
6	Land use regulation had no effect on regulated property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
<i>Scenarios 7–9. The property’s value declined for reasons unrelated to the land use regulation</i>				
7	Land use regulation reduced property values	Correct result (approve)	Correct result (approve)	Correct result (approve)
8	Land use regulation increased property values	Correct result (deny)	Wrong result (approve)	Wrong result (approve)
9	Land use regulation had no effect on regulated property values	Correct result (deny)	Wrong result (approve)	Wrong result (approve)
<i>Scenarios 10–12. Unanticipated events/information raised the “if-developed” value of the property</i>				
10	Land use regulation reduced property values	Correct result (approve)	Correct result (approve)	Correct result (approve)
11	Land use regulation increased property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
12	Land use regulation had no effect on regulated property values	Correct result (deny)	Wrong result (approve)	Correct result (deny)
Percentage of correct results		Varies ²	33%	75%
Attributes		Complex, costly; requires detailed economic model; difficult to validate	Easy, low cost	Easy, low cost

¹Does not address accuracy of the magnitude of the change in value.²Correct results will depend on the quality of the economic model.

It may be possible, however, to isolate the negative effect of the land use regulation by reducing the time between the “before” price and the “after” price. By comparing the market price of the land shortly before the regulation was enacted or enforced to the market price shortly after enactment or enforcement, the likelihood of isolating the regulation’s effect increases.

The imperfect performance of the single exemption and before-and-after methods is tied to their underlying assumptions. The single exemption method often errs because it ignores the market-wide shifts caused by a land use regulation, which are likely to be very different than the value of an exemption to one property. This method is invalid because it is based on the faulty reasoning that removing a land use regulation from one property has the opposite effect of applying the regulation to many properties. When this method produces the correct result, it does so by accident.

By contrast, the before-and-after method sometimes errs because it assumes that the change in value between “before” and “after” was caused by the land use regulation. It ignores the possibility that other factors might have raised or lowered the value of regulated lands.

The intent of Measure 37 and the choice of evaluation method

Measure 37 does not explicitly state how a “reduction in fair market value” should be measured. Nonetheless, the intent is clearly to determine whether a “reduction in fair market value” has been caused by the enactment or enforcement of a specified land use regulation. If there has been a reduction, a method is needed for estimating the dollar value of that reduction. As discussed above, the most accurate way to make this assessment is to compare a world “with” the land use regulation to a world “without” it.

Recently, however, Measure 37’s sponsors have said that Measure 37 specifies that claims should be evaluated by comparing the value of a single property *in today’s market* (with the regulation) to the value of that property without the regulation. By interpreting “with and without” to apply only to the claimant’s property, this approach amounts to the single exemption method. It takes no account of the effects of the land use regulation on today’s market. Is this approach reasonable and fair?

Consider what happens when a local government condemns a residential property. Unlike a land use regulation that restricts some uses of land and might lead to a Measure 37 claim, a condemnation prohibits any use of the land by the owner, reducing the fair market value of the land to \$0. The process for compensation is also different than under a Measure 37 claim. Nonetheless, many of the principles are similar.

Let’s assume a local government condemns a property whose fair market value is \$300,000. A single exemption approach to compensation would correctly evaluate the loss by considering the existing market for comparable properties. A method based on assessing the value of a single property is clearly appropriate when the only effect of the government action is on that property.

Now, let’s assume the government condemns several similar properties in the same neighborhood and uses the condemned properties in a way that is disagreeable to nearby residents—perhaps a prison or a noisy, smelly waste treatment plant. As these undesirable land uses are recognized by the market, let’s assume land prices in the neighborhood decline by one-half, to \$150,000, for properties comparable to the first property condemned.

After condemnation, the fair market value of all of the condemned properties is \$0. The first landowner would have received \$300,000 in compensation. How much should be paid to the last landowner whose property is condemned? By the time his property is condemned, it would be worth only \$150,000. A single exemption approach to evaluating the loss would find that compensation should be \$150,000 because that is the market price at the time of the condemnation.

Now, let’s consider a different scenario. Let’s suppose that, over a period of weeks, the government condemns 1,000 residential properties, but does not put the land to an objectionable use. Again, the properties are valued at \$300,000 before the government action. As the supply of housing declines due to the condemnations, however, prices for remaining residential properties gradually rise to \$600,000.

The owner of the first condemned property would have received \$300,000 in compensation. But by the time the last property is condemned, the market price for comparable properties has risen to \$600,000. Using today’s market as the basis for compensation,

the last owner could receive \$600,000 in compensation for a property comparable to the first property, which received \$300,000.

A reasonable observer likely would find both scenarios unreasonable. In neither case should the compensation be based on the new price because that price was created by the government actions. Most observers would also recognize that the large difference in payments to the first and last owner are unfair. Similar compensation should be paid for similar properties. Had the government's action not occurred, the properties would have been worth the same amount.

These illustrations make clear that the single exemption method is both unfair and unreasonable. This method evaluates the effects of government actions on the value of a property using today's market value for a single property with and without the government action. It ignores the effects of the government action (whether mass condemnations or a land use regulation affecting many properties) on market prices for both regulated and unregulated lands.⁸ Since the single exemption method takes today's market as given, it cannot avoid the unfairness of the hypothetical scenarios described above.

By contrast, the before-and-after method would produce the correct result in these scenarios. All property owners would receive the difference between their property's value before the government action (\$300,000) and its value after (\$0).

This illustration differs only by degree from the land use regulations that are the focus of Measure 37. Rather than restricting some uses of land, a condemnation prohibits any use of the land by the owner. And, rather than simultaneously imposing a land use regulation on many properties, the above scenarios consider a gradual implementation of condemnations in order to highlight the kinds of effects that land use regulations can have on market prices. The results are relevant to the Measure 37 discussion, however. By using today's market to evaluate a single property with and without a land use regulation, the single exemption method produces results that are incompatible with the intent of Measure 37.

⁸The effects of government actions on land prices are of two main types. The first are amenity effects (for example, the result of undesirable public land uses in a neighborhood). The second are scarcity effects (for example, a reduced supply of housing).

Concluding comments

Measure 37 imposes an enormous burden on government. It asks government to know the unknowable: what would the world look like if a particular land use regulation had not been enacted or enforced? How would land prices in that alternative world compare to land prices in the real world? Even with sophisticated and costly computer models that could simulate a with-and-without comparison of the economy, our ability to confidently answer these questions is limited, and the results would be subject to challenges and doubts.

Given the impracticality of such a costly with-and-without analysis, two other options are possible. Each has been examined here in terms of its cost, underlying reasoning, and success in producing the correct result for a range of circumstances.

The single exemption method meets the criterion of a practical approach, but it is based on flawed reasoning that leads to unreasonable results in many situations. It produced the incorrect result in two-thirds of the scenarios evaluated. The effect of removing a regulation from one piece of land is not the opposite of applying a regulation to many pieces of land. And, by taking today's market as a given, this method ignores the many direct and indirect ways that land use regulations can affect market prices. Indeed, in many cases a single exemption has a high value precisely *because of* the effects of the land use regulation.

The flawed reasoning that one can "prove" that a land use regulation has reduced a property's value by estimating that the property's value would rise if the regulation were removed is the main reason for this method's frequent incorrect results. This method will always lead to approval of a Measure 37 claim—even if the land use regulation raised property values. The fallacy of the single exemption reasoning, however, seems to have contributed to the perception that land use regulations in general have had large, widespread, and adverse effects on land values across Oregon.

By contrast, the "before-and-after" method is both practical and based on sound reasoning. It produced the correct result for three-quarters of the scenarios considered. This method is being used by Portland's Metro Council. Indeed, the "before-and-after" method is what Oregonians in Action used in their opening brief before the Oregon Supreme Court to illustrate and defend why Measure 37's compensation scheme was "reasonably related to its purpose" (filed 12/5/05).

Appendix. Illustration of the scenarios

Twelve scenarios are illustrated below. The graphs show how each situation would be evaluated by each method. For example, if other changes were neutral (no overall change in inflation-adjusted land prices), and a land use regulation lowered property values, all three methods would correctly approve the Measure 37 claim (Scenario 1).

If, however, the land use regulation increased property values (Scenario 2), the with-and-without and before-and-after methods would correctly deny the claim, but the single exemption method would incorrectly approve the claim. This outcome would occur because an exemption to a land use regulation is likely to have a positive value even if the regulation increased the property's value. For further

explanation, see Jaeger (2006) and Jaeger and Plantinga (2007).

In the graphs below, divergent lines describe the price trend for regulated and unregulated lands. In most of these scenarios, the "price of unregulated land" line rises after the regulation takes effect. This price increase is consistent with an increase in the supply of land for uses allowed under the regulation and a decrease in supply for disallowed uses. In most cases, this reduction in supply can be expected to cause prices to rise.

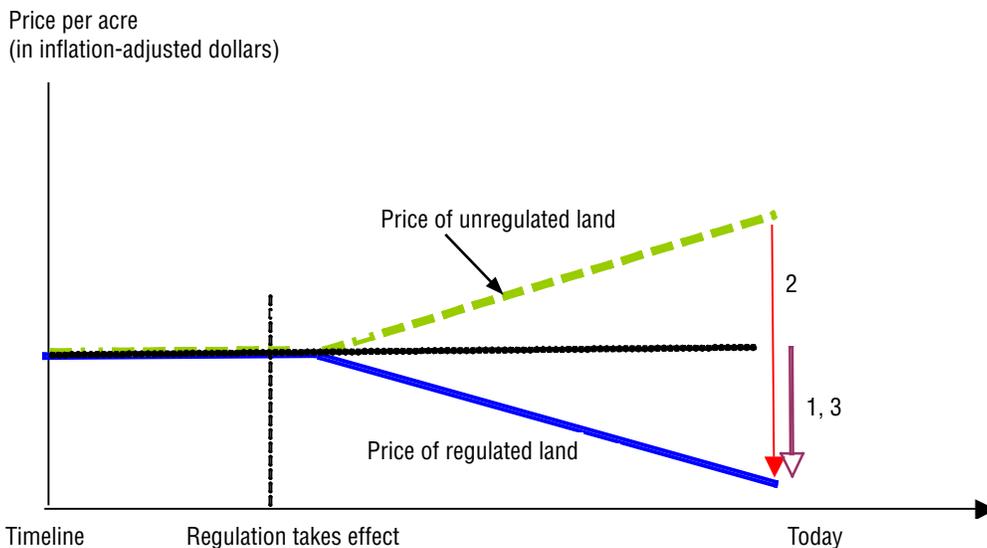
In each figure, the arrows indicate the direction of each method's estimated effect of the land use regulation. A downward-pointing arrow implies a reduction in value.

Scenario 1. Land use regulation reduced the regulated property's value

Method 1 (with-and-without): reduction in value (approve)

Method 2 (single exemption): reduction in value (approve)

Method 3 (before-and-after): reduction in value (approve)



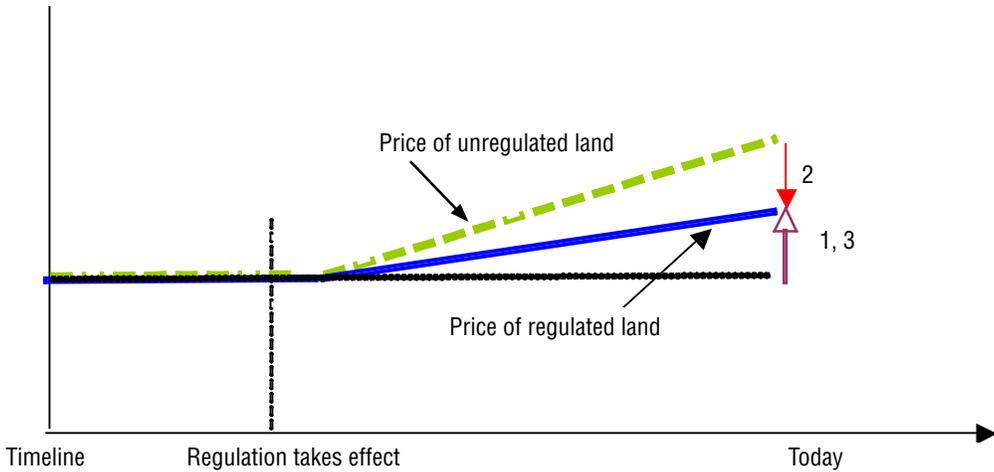
Scenario 2. Land use regulation increased the regulated property's value

Method 1 (with-and-without): no reduction in value (deny)

Method 2 (single exemption): reduction in value (approve)

Method 3 (before-and-after): no reduction in value (deny)

Price per acre
(in inflation-adjusted dollars)



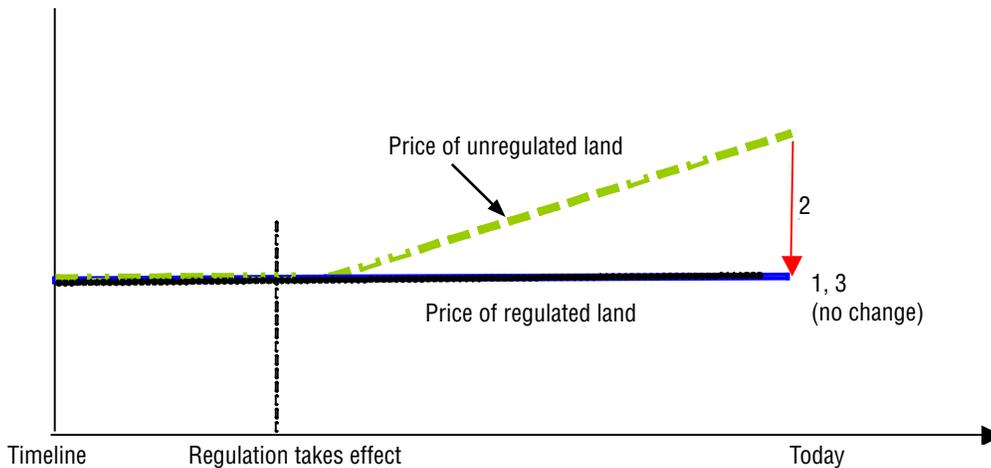
Scenario 3. Land use regulation had no effect on the regulated property's value

Method 1 (with-and-without): no reduction in value (deny)

Method 2 (single exemption): reduction in value (approve)

Method 3 (before-and-after): no reduction in value (deny)

Price per acre
(in inflation-adjusted dollars)



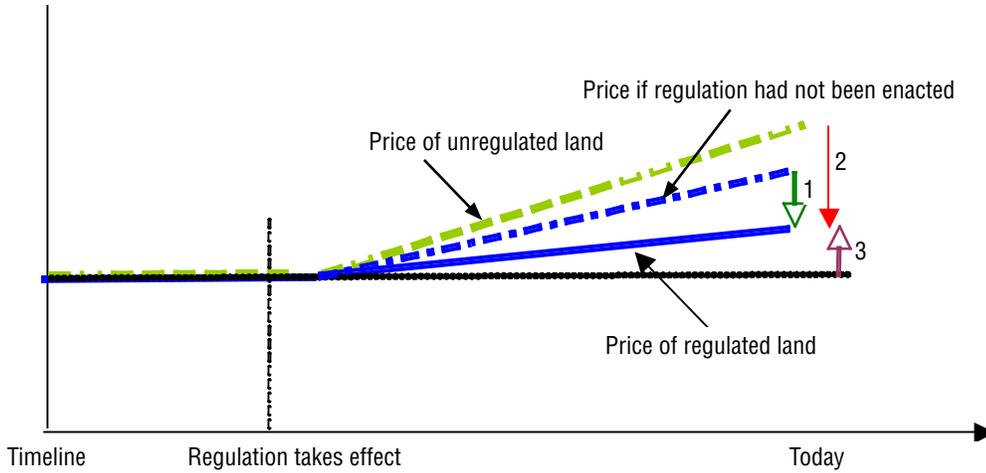
Scenario 4. The regulated property’s value rose for reasons unrelated to the land use regulation, and the land use regulation reduced the property’s value

Method 1 (with-and-without): reduction in value (approve)

Method 2 (single exemption): reduction in value (approve)

Method 3 (before-and-after): no reduction in value (deny)

Price per acre
(in inflation-adjusted dollars)



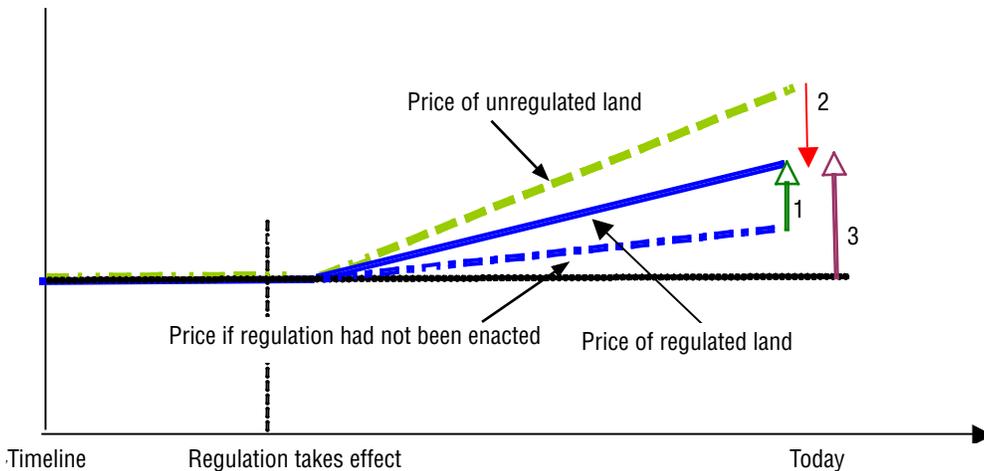
Scenario 5. The regulated property’s value rose for reasons unrelated to the land use regulation, and the land use regulation increased the property’s value

Method 1 (with-and-without): no reduction in value (deny)

Method 2 (single exemption): reduction in value (approve)

Method 3 (before-and-after): no reduction in value (deny)

Price per acre
(in inflation-adjusted dollars)

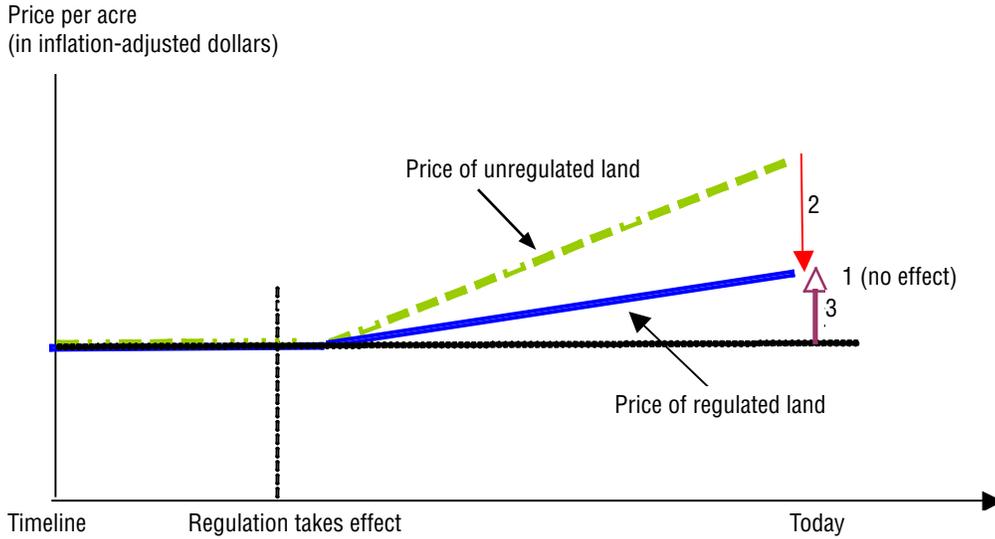


Scenario 6. The regulated property’s value rose for reasons unrelated to the land use regulation, and the land use regulation had no effect on the property’s value

Method 1 (with-and-without): no reduction in value (deny)

Method 2 (single exemption): reduction in value (approve)

Method 3 (before-and-after): no reduction in value (deny)

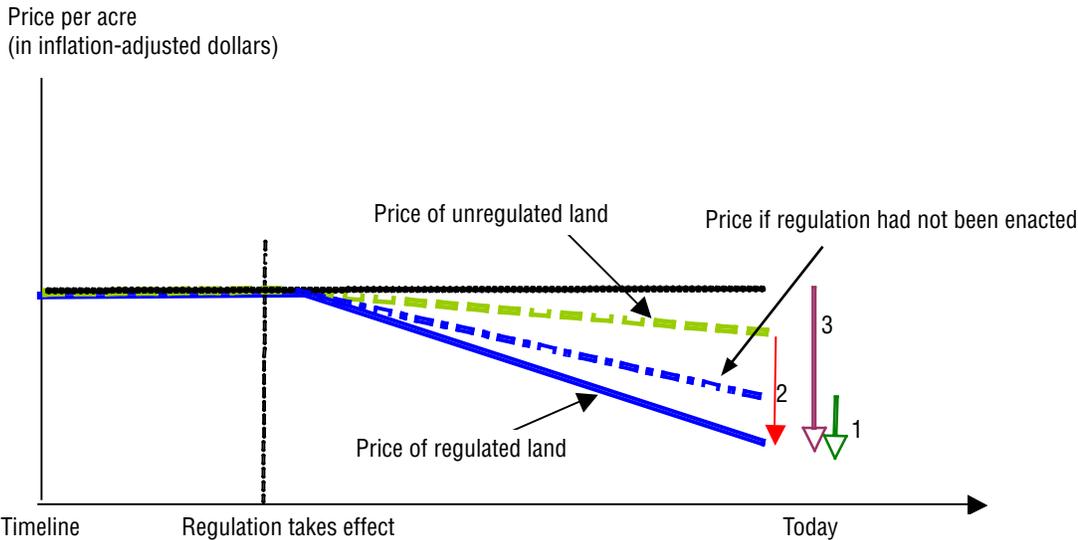


Scenario 7. The regulated property’s value declined for reasons unrelated to the land use regulation, and the land use regulation reduced the property’s value

Method 1 (with-and-without): reduction in value (approve)

Method 2 (single exemption): reduction in value (approve)

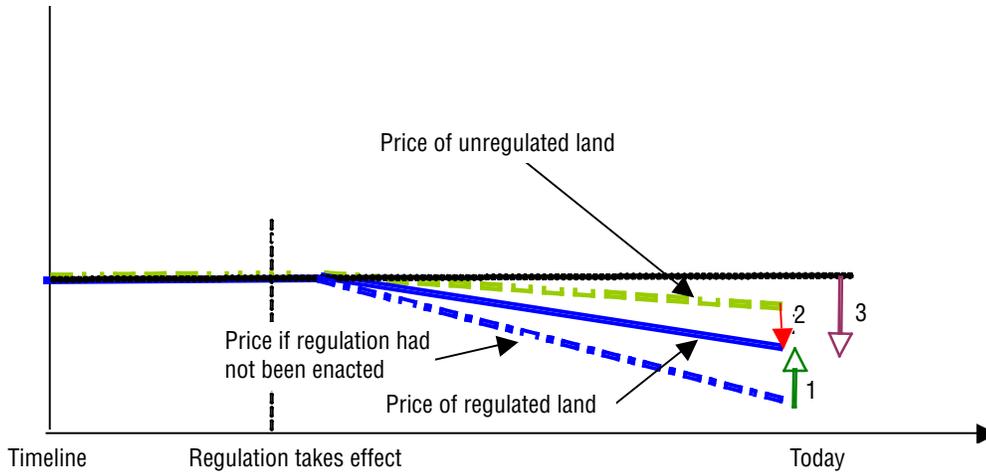
Method 3 (before-and-after): reduction in value (approve)



Scenario 8. The regulated property’s value declined for reasons unrelated to the land use regulation, and the land use regulation increased the property’s value

- Method 1 (with-and-without):** no reduction in value (deny)
- Method 2 (single exemption):** reduction in value (approve)
- Method 3 (before-and-after):** reduction in value (approve)

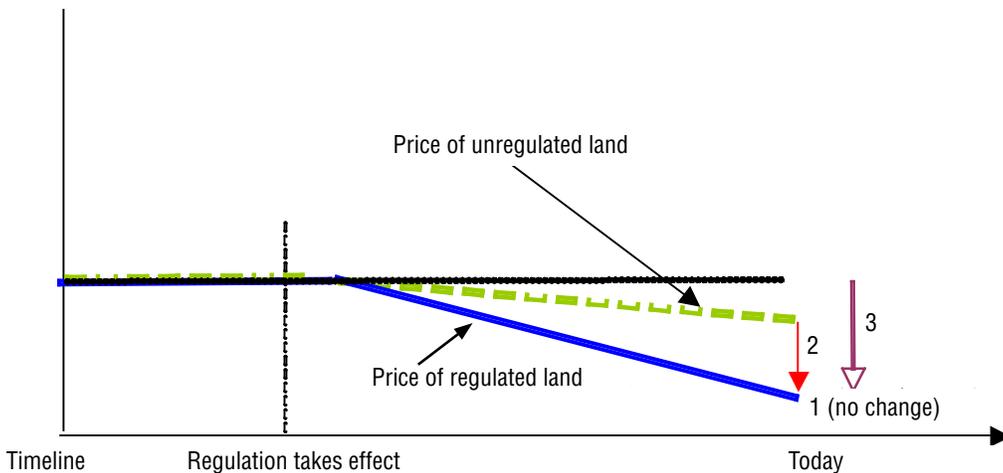
Price per acre
(in inflation-adjusted dollars)



Scenario 9. The regulated property’s value declined for reasons unrelated to the land use regulation, and the land use regulation had no effect on the property’s value

- Method 1 (with-and-without):** no reduction in value (deny)
- Method 2 (single exemption):** reduction in value (approve)
- Method 3 (before-and-after):** reduction in value (approve)

Price per acre
(in inflation-adjusted dollars)



Scenario 10. Unanticipated events/information raised the “if-developed” value of the regulated property’s value, and the land use regulation reduced the property’s value

Same as Scenario 1 (greater “reduction in value” for method 2)

Scenario 11. Unanticipated events/information raised the “if-developed” value of the regulated property’s value, and the land use regulation increased the property’s value

Same as Scenario 2 (greater “reduction in value” for method 2)

Scenario 12. Unanticipated events/information raised the “if-developed” value of the regulated property’s value, and the land use regulation had no effect on the property’s value

Same as Scenario 3 (greater “reduction in value” for method 2)

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For more information

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