

# **Measuring Compensation Under Measure 37: An Economist's Perspective**

Andrew J. Plantinga  
Department of Agricultural and Resource Economics  
Oregon State University  
Corvallis, OR 97331  
[plantinga@oregonstate.edu](mailto:plantinga@oregonstate.edu)  
Ph: 541-737-1423

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## **Measuring Compensation Under Measure 37: An Economist's Perspective**

Governor Kulongoski recently stated his preference for paying claimants under Measure 37 rather than foregoing enforcement of the state's land-use laws. Many have expressed fears that such claims could run into the billions of dollars, further straining budgets for education and other publicly-funded programs. If compensation is paid, the costs of Measure 37 will depend ultimately on how compensation is determined. Measure 37 does not precisely define how to compute compensation, leaving the door open to different interpretations. There are several ways in which compensation might be calculated, all of which involve thinking about how land markets operate. This white paper provides an economist's perspective on measuring compensation. What are the different ways in which compensation might be determined? What do these approaches assume about the operation of land markets?

The text of Measure 37 raises many questions. I only address the issue of how to determine compensation, using the text of the measure as a reference point. I am interpreting the text as an economist, not as a legal expert. My expertise is the field of economics, not law. In addition, the consensus of legal experts I have spoken to is that no body of case law provides guidance on how to determine compensation. One naturally thinks about parallels with government takings cases—but this parallel is weak, as discussed below. I will then provide a simple example to focus my discussion on compensation. Following that, I will propose and evaluate two approaches to computing compensation and, then, end with some concluding remarks.

## What does the text of the measure say about compensation?

There are two important passages in the text of Measure 37 that speak to the issue of how compensation should be measured:

“Just compensation shall be equal to the reduction in the fair market value of the affected property interest resulting from enactment or enforcement of the land use regulation as of the date the owner makes written demand for compensation under the act.”

“Subsection (1) of this act shall not apply to land use regulations enacted prior to the date of acquisition of the property by the owner ...”

The two key points in the first passage are that compensation is for the *reduction in fair market value* and that compensation is paid for reductions in value that occurred *as of the date* the owner submits a claim. The second passage indicates that the property must have been acquired by the current owner (or family members) prior to enactment of the regulation.

## What does fair market value mean?

To understand compensation under Measure 37, we need a definition of *fair market value*. Fair market value refers to the price that willing and well-informed buyers and sellers would agree upon for a piece of property. Some definitions emphasize the notion of competitive markets; namely, it is the price that would result in a market with a large number of potential buyers and sellers. A market dominated by a single seller (a monopolist) or a few sellers (oligopolists) would not be competitive, a point I will return to below.

What does the price of property represent assuming it derives from a competitive market?

Let's consider the price for a parcel of land. Suppose that the parcel can generate an annual income<sup>1</sup> for its owner of \$100 in perpetuity. How much should this parcel sell for? A buyer

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<sup>1</sup> Throughout this paper, I will define income as the money taken in by the landowner minus money paid out in costs. This is sometimes referred to as net income or the net return.

would be indifferent between buying the land, and gaining the \$100 annual income stream, and giving up a sum of money that would generate an identical income stream. Suppose that banks are offering a 5% annual rate of return on deposits. A \$2,000 deposit in a bank would generate \$100 per year in interest. Thus, the income streams from owning the land and investing \$2,000 at the bank are the same.

In a competitive market, the land would sell for exactly \$2,000. If the seller offered the parcel at a price higher than \$2,000, say \$2,500, there would be no buyers because the bank investment is a better deal. Instead of buying the parcel for \$2,500, an investor could invest this amount at the 5% rate offered by the bank and generate an income stream of \$125 per year. This beats the \$100 income stream that the land parcel would provide. By the same argument, nobody would want to buy the parcel for any amount above \$2,000, and the seller would be forced to lower the asking price. If the price is set below \$2,000, say \$1,500, then a lot of buyers would want the parcel. \$1,500 invested at 5% yields only \$75 annually, and so the land parcel which generates \$100 annually is a better investment. Competition among buyers will bid up the price of the parcel. As long as the price is below \$2,000, another buyer will always want to offer a little bit more.

As shown, competitive market forces push the price of the land parcel toward \$2,000. This price depends on the stream of income (\$100 annually) that can be generated by the land and the interest rate (5%). The exact relationship<sup>2</sup> is:

$$\text{Current price} = \frac{\text{Annual income}}{\text{Interest rate}}$$

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<sup>2</sup> The formula is more complicated when the income stream is expected to change in the future and when there is uncertainty about the income stream.

The current price for land (or any other asset) reflects the annual income stream generated in perpetuity starting from today. Or, in terms used by economists, the price equals the present value of the future stream of discounted annual net returns (the difference between revenues and costs).

### **Is compensation under Measure 37 prospective or retrospective?**

Measure 37 requires compensation for the reduction in fair market value due to land use regulations as of the date a claim is filed. “As of” can have different meanings depending on context. For example, if I say that my insurance policy takes effect *as of* next Thursday, I mean that I will be insured beginning next Thursday and on into the future. In this context, “as of” refers to a prospective change. If I say that the reduction in my weight due to my diet is 5 pounds *as of* today, I mean that I lost 5 pounds between the time my diet began (some time in the past) and today. In this context, “as of” refers to a retrospective change.

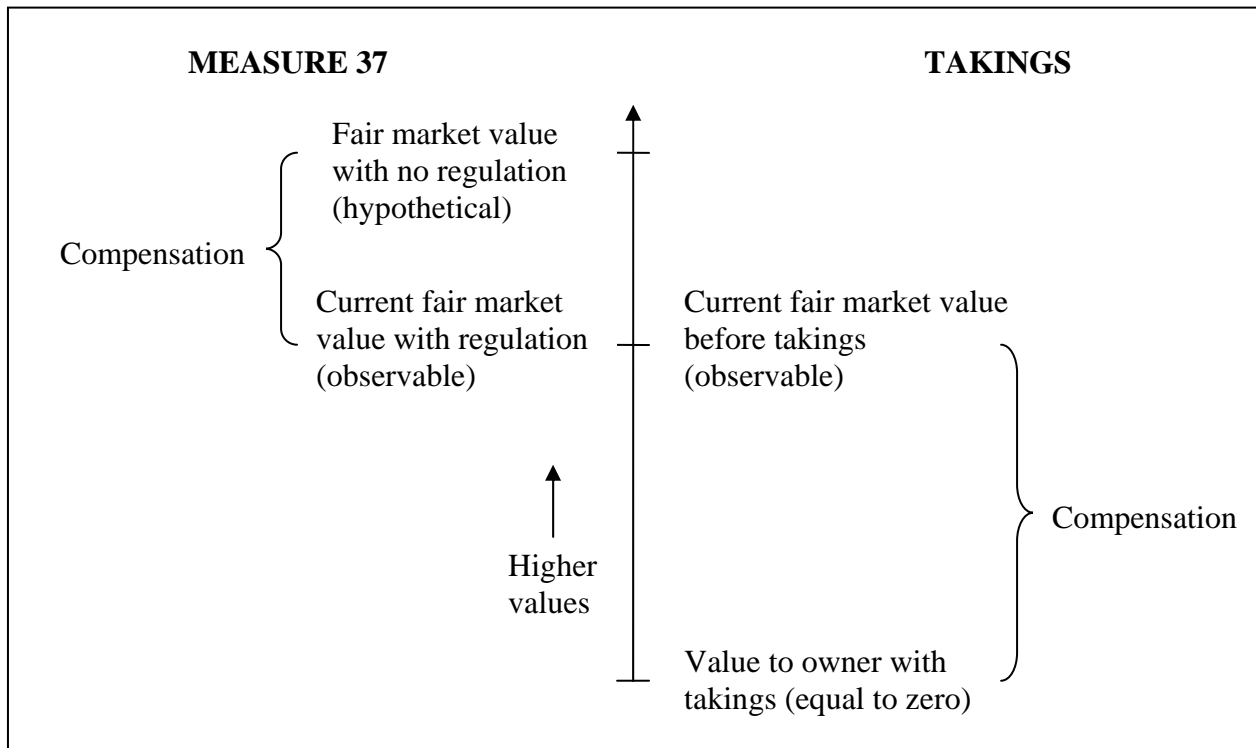
Either of these interpretations could apply to compensation under Measure 37. In the prospective case, compensation would be paid for the reduction in fair market value on the date the claim is filed. For example, a regulation might be found to reduce the market value of a land parcel from \$2,000 to \$1,000 on a specific date, implying compensation of \$1,000. The \$1,000 would compensate landowners for the future stream of income losses the landowner would experience beginning on the date the claim is filed and on into the future. In this case, compensation is provided today for losses that will be experienced in the future.

In the retrospective case, compensation is paid for the reduction in fair market value between the time the regulation was enacted and today. For example, a regulation might be found to have reduced the annual income from a parcel from \$100 to \$50, implying

compensation of \$50 for each year the regulation has been in effect. Here, compensation is provided for losses already sustained by the landowner. This is an appropriate interpretation of the *reduction in fair market value* because of the equivalence between the sales price of an asset and the discounted income stream generated by it.

**How is Measure 37 compensation different from compensation in a takings case?**

Under the U.S. Constitution, the government is required to compensate a property owner when it takes his or her property for some public purpose. A typical case is when the government exercises eminent domain to obtain land for the construction of a public road. In this case, determining the fair market value of the land is relatively straightforward. It is the amount for which the owner could sell the land in the absence of any government intervention (i.e., before the taking occurs). We observe this value (or can estimate it with relative precision)



because it is generated in the land market that exists prior to the government action. After the takings, the value of the land to the owner is zero and so the takings has reduced the value to the landowner by exactly the fair market value prior to the takings. This amount is shown on the right-hand side of the above illustration.

Under Measure 37, we are asked to compute the *reduction* in value: specifically, how much the property would have been sold for without the regulation minus its value with the regulation. This amount is shown on the left-hand side of the above illustration. The difficulty with measuring the reduction in value—and why this is fundamentally different from a typical takings case—is that it involves an unobservable hypothetical. Namely, we do not observe a price without the regulation because the regulation is and has been in effect. We do observe (or can estimate with relative precision) the value with the regulation because it is generated in a land market that currently exists, but we need the hypothetical value to calculate the change in value.

Compensation under a takings is prospective. Property owners are compensated for the lost income stream that starts today and continues into the future. To compensate owners today for future losses makes sense in a takings case because the property owner has been deprived of any entitlement to future income streams. As discussed above, Measure 37 also can be interpreted as requiring prospective compensation. However, under Measure 37 the property owner still retains the title to the property and, thus, is entitled to whatever income stream the property produces in the future. One could argue that, therefore, owners should be compensated for losses as they occur rather than upfront before they occur. For example, suppose that compensation is provided prospectively for the effects of a regulation that, five years from now,

is abolished. The owner will have been compensated for the entire stream of future losses.

However, after five years, the owner does not experience any actual losses because the regulation has been removed. Because the owner retains title to the property, he or she receives the higher income stream and, in effect, is compensated twice for the effects of the regulation.

### **An example**

To make the following discussion concrete, I will focus on an example. Suppose there is a parcel of agricultural land that was purchased prior to a zoning decision that prohibited development of the parcel for residential housing. Suppose, further, that at some point after the zoning regulation was put in effect, development became the most profitable use—that is, the use that would generate the highest income stream. I will assume that the parcel remained in agricultural use (because of the zoning restriction) and that, next to development, agriculture was the most profitable use of the land.

### **What is the simplest approach to determining compensation?**

Consider the following method of determining compensation for the example provided above. We observe, or can estimate, the amount the land would rent for annually when it is used for agriculture. This is the annual value of the land with the regulation. We can convert this amount to a sales price for the parcel by dividing through by the interest rate (see the formula above). To find the sales price without the regulation, we could hire a land appraiser who could estimate how much the parcel would sell for if development were allowed on the parcel. We now have two prices for the parcel—the price assuming the land remains in agricultural use (the price with the regulation) and the price assuming development is an option (the price without the

regulation). If compensation is to be prospective, then it should simply equal the difference between the two prices:

$$\text{Prospective compensation} = \text{Price without the regulation} - \text{Price with the regulation}$$

If, instead, compensation is retrospective, then we need the annual incomes generated by the parcel. We get these amounts by multiplying the above prices by the interest rate. Thus,

$$\begin{aligned} \text{Retrospective compensation} = \\ (\text{Annual income without the regulation} - \text{Annual income with the regulation}) \\ \times \text{Number of years regulation has been in effect} \end{aligned}$$

Here, the annual loss due to the regulation is multiplied by the number of years the regulation has been in effect.<sup>3</sup> Finally, if the landowner is to be compensated for losses as they occur, rather than before they occur, compensation would be paid annually and would equal:

$$\text{Annual compensation} = \text{Annual income without the regulation} - \text{Annual income with the regulation}$$

These three methods of determining compensation are straightforward, but carry with them implicit assumptions about the operation of land markets. I will discuss the most problematic of these next.

### **The simple approach treats the landowner like a monopolist**

To compute compensation, we need to determine the value of the land without the regulation. A question we must address is: In this hypothetical case, do we remove the

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<sup>3</sup> I am assuming that annual income is measured in current dollars (see more discussion of current dollars below) and that landowners are not to be compensated for foregone investment opportunities—namely, the opportunity to have invested historical losses due to the regulation.

regulation from only the single parcel under consideration, or do we remove it from all parcels subject to the regulation? The simple approach sketched above assumed the regulation was removed only from the parcel being evaluated. The land appraiser estimated how much the parcel could sell for if development were allowed. This implicitly assumes the regulation still applies to other parcels. In other words, we computed compensation under the assumption that the landowner had exclusive rights to develop land previously subject to the regulation. Or, we computed the income that would have accrued to a monopolist in the land market. In doing this, we are allowing the landowner to benefit—get higher compensation—from the restrictions imposed by the regulation on other properties.

There are two immediate objections to computing development income in this way. First, anyone whose property is affected by the regulation is eligible for compensation. This is an argument for why our hypothetical value should be defined under the assumption that all such landowners pursue development. Second, the text of the measure refers to the reduction in fair market value. As discussed above, this is often interpreted as the sales price in a competitive market characterized by a large number of potential buyers and sellers. Assuming that only a single owner can develop a parcel would be incompatible with the definition of fair market value.

What would be the value of the land assuming the regulation does not apply anywhere? If the zoning regulation currently restricts development of a large number of agricultural parcels, then in the hypothetical world without the regulation a single agricultural parcel will just be one of many that could be developed. Competition will drive down the value of the parcel for development. Suppose that the agricultural parcel in our example is located relatively far from centers of economic activity and does not have any distinguishing characteristics (e.g., a scenic

view). If this is the only parcel without the development restriction, then the development value could be high. But, if the zoning regulation is removed from all parcels, then the development value of this unexceptional parcel is likely to be quite low. Indeed, it could be the case that in this hypothetical world, agriculture—not development—is the most profitable use of this parcel. If this is true, then the value with and without the regulation is the same, suggesting compensation should be zero.

The above discussion suggests that locational advantages and unique characteristics will increase the value of parcels for development. In a competitive market, these features of the parcel would “earn” income, relative to parcels without such features. The zoning regulation denies the landowner the opportunity to realize this income. If we can value these distinguishing attributes of a parcel, then we have an estimate of the compensation required under Measure 37. Economists have developed a technique—hedonic price analysis—for doing just this. The details of hedonic price models are beyond the scope of this paper, but the basic idea is to separate prices for property (land, houses, etc.) into components measuring the value of each attribute.<sup>4</sup> In principle, the results of these studies could be used to develop compensation schedules listing how much owners would be paid given the particular attributes of their parcel. This would, however, be a challenging and substantial undertaking.

### **Can compensation be based on the original purchase price?**

When an individual purchases a parcel of land, he or she is acquiring the income stream generated by the land. More specifically, the price of the land will reflect the market’s valuation

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<sup>4</sup> For example, Oregon State University researchers estimated the effects of elevation on housing values in Portland, Oregon. For each 100 foot gain in elevation, the price of housing increased by \$2.39 per square foot (or about \$5,000 for a 2,000 square foot house). The citation for this study is: Wu, J., Adams, R.M., and A.J. Plantinga. 2004. Amenities in an Urban Equilibrium Model: Residential Development in Portland, Oregon. *Land Economics* 80(1):19-32.

of the income stream assuming the land is allocated to its most profitable use. Why the most profitable use? Suppose the price of the land was based on a use that generates a smaller income stream. Then, buyers could make money by purchasing the parcel and allocating it to its most profitable use. In a competitive market, many buyers will try to do this, and they will bid up the price of the land until its price exactly reflects the stream of income from the most profitable use.

Measure 37 provides compensation only to individuals who acquired property before the regulation went into effect. As such, the original purchase price of the property for qualifying claimants should reflect the income stream that would have accrued to the landowner in the absence of the regulation. The regulation forced the owner to accept a lower-valued income stream. In my example, this is the income from agriculture. Suppose we convert the annual agricultural income to a price for the parcel by dividing through by the interest rate. Then, compensation could be calculated as:

$$\text{Compensation} = \text{Original purchase price} - \text{Price with the regulation}$$

We would need to express prices in current dollars to account for inflation since the property was purchased. The point here is that prices for all goods tend to rise over time. This general price inflation implies, for example, that \$1 had greater purchasing power in 1965 than it does today. The consumer price index can be used to convert dollars from an earlier year to current dollars.<sup>5</sup> For example, a parcel of land purchased for \$325 in 1965 would have a price of \$1,970 in current dollars.

Compensation calculated in this way would be retrospective and prospective. It would compensate owners for losses between the time the regulation when into effect and the present

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<sup>5</sup> See the inflation calculator at <http://www.bls.gov/cpi/home.htm>.

and losses from now into the future. This approach has the advantage, in many instances, of using observable, rather than hypothetical, values. Often, the original purchase price is observable. In many cases, it will be the value generated when the regulation does not apply *to any parcels*—that is, it will be a fair market value.<sup>6</sup> Likewise, the income from agriculture is observable. This is the value generated in the existing world with the regulation.

One possible objection to this approach is that the market might have anticipated the eventual enactment of the regulation. If participants in the land market could see the regulation coming, then the original purchase price would not reflect the potential stream of income from development. This may seem to be a weakness of this approach, but, from one perspective, it is a strength. If the market anticipated the regulation, the landowner would have paid less for the property. In the extreme case, if the zoning restriction was predicted perfectly, the original price of the parcel would have reflected the stream of income from agriculture. As such, there is no difference between the income stream the landowner paid for originally and the income stream realized by the landowner. In fact, whatever the market anticipated, this approach always gets it right. The difference between the original purchase price and the income from agriculture equals the income stream landowners paid for when they purchased the property, but were later denied by the regulation.

There is a practical side to basing compensation on the original purchase price. Presumably, claimants have to demonstrate that they have owned the property since before the regulation was enacted. They could be required to produce a document at the same time showing the original purchase price of the property. But, what if the sales price was for a collection of assets? In our example, the owner may have purchased agricultural land, buildings,

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<sup>6</sup> Exceptions could arise with regulations that are enacted over time. But, in any case, owners would still be compensated correctly for lost income (see below).

farm equipment, and so on. However, it is only the value of the land that is affected by the regulation. Thus, we need a price (or appraisal) of the land separate from the other assets. This may not be available, and could be difficult to reconstruct.

### **Concluding remarks**

My main conclusion is that determining compensation under Measure 37 is not going to be easy. I have examined what I consider to be two logical approaches to measuring compensation: 1) a simple approach that considers the difference between current estimates of market value with and without the regulation and 2) an approach that considers the difference between the original purchase price and the market value with the regulation. As I have tried to demonstrate, both approaches have potential problems.

My assessment is that the problems are particularly severe with the simple approach based on current estimates of market value. This approach requires us to imagine a hypothetical world without the regulation. Defining that world as one in which landowners are participants in a competitive land market seems logical and consistent with the idea of fair market value. Otherwise, we are allowing owners to benefit from restrictions imposed by the regulation on other property owners. As well, the order in which claims are submitted matters, with early claimants receiving more compensation. However, obtaining accurate estimates of property values under the assumption of competitive markets will require the use of sophisticated valuation techniques such as hedonic price analysis.

Basing compensation on the original purchase price of the property is more straightforward because it typically would involve observable instead of hypothetical values. In this case, landowners are compensated for the income stream they paid for when they purchased

the property, but that was later denied by the regulation. Basing compensation on the original purchase price also treats all landowners the same—that is, landowners assumed to be participants in a competitive, rather than monopolistic, market. As I understand it, there is legal precedent for viewing compensation in this way. However, the major obstacle to this approach is that the affected property may be bundled other assets included in the original transaction.