Economic Value or Fair Market Value? The Efficient Standard of Physical Takings Compensation

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ECONOMIC VALUE OR FAIR MARKET VALUE?
THE EFFICIENT STANDARD OF PHYSICAL TAKINGS COMPENSATION

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ABSTRACT
The literature has generally accepted that if full takings compensation is paid, owners will over-invest. Condemnors are often assumed to be either a social wealth maximizer or suffer from fiscal illusion. Costs and accuracy of assessing property value for takings compensation purposes are important, yet have never been systematically analyzed. I argue that under current law, owners hardly have incentives to over-invest no matter economic value or fair market value is awarded as compensation. Government officials as condemnors maximize their own political interests, not their agency’s or the society’s interests. Considering condemnors’ and condemnees’ incentives alone, economic value compensation is the most efficient; fair market value compensation will be sub-optimal. After taking into account assessment costs and assessment accuracy as well, I argue that fair market value plus a schedule of proportional bonus (based on the length of tenure, etc.) should be given to homeowners. Non-residential property owners, because their economic value approximates fair market value, are entitled only to fair market value compensation (without bonus).

KEYWORDS
Economic value, fair market value, takings compensation, incentives
Assessment costs, assessment accuracy, assessment method

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**TABLE OF CONTENTS**

I. **INTRODUCTION** ........................................................................................................ 1

II. **CONDEMNNEES’ INCENTIVES** ................................................................................ 4
   A. *Over-investment Due to Full Compensation?* ......................................................... 5
      1. *The Inaccurate Analogy of Insurance and Moral Hazard* ................................. 5
      2. *Illusionary Over-investment* .......................................................................... 7
   B. *Sub-optimal Behaviors Due to Less-than-full Compensation* ................. 8

III. **CONDEMNORS' INCENTIVES** ........................................................................ 10
   A. *Benevolent Theory* ........................................................................................ 10
   B. *Fiscal Illusion Theory* ................................................................................... 11
   C. *Political Interest Theory* ................................................................................ 12

IV. **ASSESSMENT COSTS AND ASSESSMENT ACCURACY** ................................ 14
   A. *Definition, Importance, Relation* ................................................................. 14
   B. *Assessment Methods: A New Framework* ..................................................... 16
      1. *Landowners vs. Non-landowners* .............................................................. 16
      2. *Ex Ante vs. Ex Post* .................................................................................. 17
      3. *Proponents and Implementing Jurisdictions* ............................................ 18
   C. *Ex Ante Assessment by Landowners* ............................................................. 20
      1. *Mathematical Model of an Ideal Type* ...................................................... 21
      2. *Impossible to Fulfill Parity Condition and Inverse Condition in the Real World* ............................................................................................................. 23
      3. *Implementing as Another Imperfect Substitute* ...................................... 24
   D. *Ex Post Assessment by Landowners* ............................................................... 25
   E. *Ex Ante Assessment by Non-landowners* ....................................................... 28
   F. *Ex Post Assessment by Non-landowners* ...................................................... 30

V. **FAIR MARKET VALUE PLUS A SCHEDULE OF BONUS** ................................ 32

VI. **CONCLUSION** ...................................................................................................... 34
I. INTRODUCTION

What should condemnees receive when their properties are physically condemned by the government? Law and Economics literature debates the efficiency of compensating economic value and that of compensating fair market value. Fair market value is “the amount a willing buyer would pay a willing seller of the property, taking into account all possible uses to which the property might be put other than the use contemplated by the taker.” Economic value is fair market value plus the “(unique) subjective value.” For real estate investors, the subjective value is close to zero. For homeowners, the subjective value, derived from, say, the memory of growing up in the family houses, is usually positive and sometimes quite large. Thus, economic value is higher than or equal to fair market value. Most people would agree that at least fair market value should be compensated when the government physically condemns a property. But should the subjective value be part of the compensation package?

The literature suggests that there is a dilemma (or trade-off) in awarding takings compensation. When full compensation (or for that matter, economic value

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1 This Article focuses on physical takings. Regulatory takings are excluded. In the following text, “takings” represent “physical takings.”
2 The proponents of economic value compensation include RICHARD A. EPSTEIN, TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN 183 (1985); RICHARD A. EPSTEIN, BARGAINING WITH THE STATE 182 (1993)(“Ideally, the state should be required to pay not the market value, but the subjective value that the individual attaches to the property.”); Abraham Bell & Gideon Parchomovsky, Taking Compensation Private, 59 STAN. L. REV. 871, 873 (2007); Michael Heller & Rick Hills, Land Assembly District, 121 HARV. L. REV. 1465, 1474-75 (2008); Steven J. Eagle, Privatizing Urban Land Use Regulation: The Problem of Consent, 7 GEO. MASON L. REV. 905, 915 (1999).
3 The proponents of fair market value compensation include United States v. 564.54 Acres of Land, 441 U.S. 506, 511 (1979)(Justice Marshall, in the majority opinion, arguing that market value is a useful compromised standard for assessing takings compensation required by the Constitution); Thomas J. Miceli & Kathleen Segerson, Takings, in 4 ENCYCLOPEDIA OF LAW AND ECONOMICS: THE ECONOMICS OF PUBLIC AND TAX LAW 328, 332 (Boudewijn Bouckaert & Gerrit de Geest ed. 2000)(arguing that, all things considered, market value compensation may be the best choice); WILLIAM A. FISCHER, REGULATORY TAKINGS: LAW, ECONOMICS, AND POLITICS 211 (1995)(same).
5 Judge Posner defined market value as “not the value that every owner of property attaches to his property but merely the value that the marginal owner attaches to his property.” (Emphasis original.) Coniston Corp. v. Village of Hoffman Estates, 844 F.2d 461, 464 (7th Cir. 1988).
6 I use fair market value and market value as synonyms. “The term ‘fair’ hardly adds anything to the phrase ‘market value’, which denotes what ‘it fairly may be believed that a purchaser in fair market conditions would have given’, or, more concisely, ‘market value fairly determined.’” (citation omitted) U.S. v. Miller, 317 U.S. 369, 374 (1943).
9 See Heller & Hills, supra note 2, at 1475.
The Efficient Standard of Physical Takings Compensation

compensation) is paid, the condemners have incentives to take into account the social costs of condemnation, but compensation, especially full compensation, creates moral hazards — the condemnees ignore the possibility of takings and over-invest. On the other hand, when zero compensation is paid, although condemnees now have the right incentives to invest, condemnors would ignore the social costs of takings and condemn too many properties. Torts law faces the same problem of balancing the incentives of tortfeasors and victims. The negligence rule is the most prominent solution to the problem. There is nothing similar to negligence in takings law; thus, some scholars propose partial compensation instead. In this Article, I will argue that this dilemma actually only exists if we make certain assumptions about the takings laws and the incentives of condemnors and condemnees. But in reality, the compensation regime will hardly induce owners to over-invest. Furthermore, the behaviors of government officials (the condemnors) do not follow the pattern assumed by most takings theorists. I argue that, as far as condemnors’ and condemnees’ incentives are concerned, economic value compensation is the most efficient compensation standard; fair market value compensation is sub-optimal.

The administrative costs of assessing takings compensation (assessment costs) and the accuracy of the appraised property value (assessment accuracy), however, also have to be taken into account in determining the most efficient physical takings compensation standard. My mathematical model shows that economic value can only be assessed accurately if the following necessary conditions hold: property owners periodically report their economic value (ex ante self-assessment); the disclosed value is used to levy property taxes and award takings compensation (tax-compensation combination); and the condemnation probability the owners face has to equal the property tax rate (parity condition). If owners are risk-neutral, instead of risk averse, the condemnation probability has to be inversely related to the property tax rate and

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7 In this Article, I use “full compensation” and “economic value compensation” interchangeably.

Robert Cooter proposes a “second-best theory of takings” in which “one party will have efficient incentives and the other party will have distorted incentives.” See ROBERT D. COOTER, THE STRATEGIC CONSTITUTION 295 (2000).

the parity condition has to hold only when owners disclose their true economic value (inverse condition). The parity condition can only hold if only stochastic condemnation is allowed, which is extremely costly and arguably unconstitutional. The inverse condition can only hold when the government knows the true economic value of every owner, an impossible task. Therefore, it is impossible to assess economic value accurately. Given that condemnation probabilities are usually lower than property tax rates, the mathematical model predicts that owners will under-assess. Nevertheless, the administrative costs of the self-assessment regime could be quite low, as long as the government does not try to manipulate property tax rates and especially condemnation probabilities. By contrast, fair market value can be assessed fairly accurately and low-cost, especially when econometric models of appraising property value can be used.

Taking into account all four necessary factors for efficiency — condemnees’ incentives, condemnors’ incentives, assessment accuracy, and assessment costs — I argue that fair market value assessed by “ex post assessment by non-landowner method” (hedonic regression analysis is the most accurate of such method) will better be able to approximate the real economic value than the under-assessed economic value produced by “ex ante self-assessment method.” Furthermore, bonus compensation should be awarded in addition to fair market value, so that the total compensation is more likely to attain full compensation. The bonus compensation rate, however, should not be flat, as it has been advocated in the past.12 Rather, a schedule of bonus rates that, for example, gives an owner-occupant who lives in her house longer a higher bonus rate is more likely to reflect the amount of her subjective value. As for non-residential property owners or owners of investment residential properties, fair market value compensation should be the norm. Note that I advocate the use of fair market value compensation not because it can partially reduce owners’ over-investment,13 but because some owners have low, if any, subjective value and the assessment of economic value itself cannot be accurate.

This Article thus contributes to the literature in several ways. First, I find that while the well-accepted condemnee-overinvestment thesis is theoretically sound, it does not fittingly describe condemnees’ incentives under the current law. Second, I point out that the behavioral assumptions regarding condemnors employed in most of the previous papers are not the most realistic one, thus misleading their conclusions.

13 Or, similarly, some commentators argue that fair market value compensation is partial compensation, similar to partial insurance, giving condemnees better incentives. See, e.g., Louis Kaplow, An Economic Analysis of Legal Transitions, 99 HARV. L. REV. 509, 603 (1986).
Third, I systematically analyze assessment costs and assessment accuracy by proposing a framework of assessing property value for takings compensation purposes and find out that, contrary to claims by scholars, it is impossible to accurately assess economic value in the real world, *ex ante* or *ex post*. Fourth, while no previous paper I know systematically consider the four efficiency-related factors together,¹⁴ I comprehensively look into the pros and cons of choosing between economic value and fair market value by the measure of these four factors. Finally, I distinguish between residential homeowners and non-residential property owners and tailor takings compensation standards for them: fair market value plus a schedule of bonus for the former and fair market value only for the latter.

The structure of this Article is as follows: Part II re-examines the current theses regarding the effects of compensation on condemnees’ incentives, while Part III does the same with condemnors’ incentives. Part IV systematically analyzes assessment costs and assessment accuracy, including proposing a framework of understanding them and examining in detail the merits and demerits of the four prototypes. Part V coherently analyzes the four factors and proposes the most efficient takings compensation standard. Part VI concludes.

II. CONDEMNNEES’ INCENTIVES

According to the literature, the amount of takings compensation affects condemnees’ incentives in several ways. First, compensation, especially full compensation, induces owners to over-invest on their properties because compensation protects them from bearing the risk of condemnations. This is often called the moral hazard problem.¹⁵ Second, less than full compensation will motivates some owners to over-invest on their properties to increase their value, because condemnors usually condemn low-value properties. That is, owners over-invest to avoid takings.¹⁶ Third, less than full compensation may also induce owners to under-invest to reduce losses if takings ultimately happen.¹⁷ Fourth,

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¹⁴ The importance of at least three factors (excluding assessment accuracy) has long been noticed at least since Blume & Rubinfeld (*supra* note 4, at 582-83), though no comprehensive analysis of assessment costs and assessment accuracy to my knowledge has appeared.

¹⁵ See Kaplow, *supra* note 13, at 537-41.

¹⁶ See MICELI & SEGERSON, *supra* note 4, at 28.

owners will take political actions to prevent takings if they (expect to) receive less than full compensation.\textsuperscript{18} Other things being equal, proponents of the first theory will argue for less, even no, compensation, while advocates of the last three theories will argue for more, preferably full, compensation.

This Part will argue that the first three theories are either unwarranted worries or unimportant concerns \textit{under current law}. Only the rent-seeking costs noted by the last theory should concern us. My conclusion is that as long as condemnees’ incentives are concerned, economic value compensation is the most efficient. In the following, I address the four theories in turn.

A. \textit{Over-investment Due to Full Compensation?}

Scholars frequently draw an analogy between takings compensation and insurance.\textsuperscript{19} And over-investment by potential condemnees owing to guaranteed compensation payments is labeled a moral hazard problem,\textsuperscript{20} which is common in the insurance context. In the first sub-section, I argue that while delineating takings compensation as insurance and over-investment as moral hazard have deepened our understanding of the takings problems, the subtle distinction between compensation/over-investment and insurance/moral hazard will deter us from fully comprehend the distinctive nature of the takings compensation problems.\textsuperscript{21} In the second sub-section, I argue that while the concern about over-investment is theoretically sound, it is an unnecessary worry under current law. That is, the current compensation regime hardly gives condemnees incentives to over-invest.

1. \textit{The Inaccurate Analogy of Insurance and Moral Hazard}

To simplify the discussions and highlight my main point, suppose the law mandates full compensation for condemnees. As the over-investment thesis goes, to attain efficiency, owners should take into account the probability of condemnation of their properties when determining the level of investment on their properties. However, with a guaranteed full compensation of all investments, owners will invest on the properties as if the probability of condemnation were zero, even though they know it is positive. As a result, property owners over-invest, and it is inefficient. This is the nature of the over-investment problem.

\textsuperscript{18} See Ulen, \textit{supra} note 17, at 170.
\textsuperscript{19} See, e.g., Blume et al., \textit{supra} note 8.
\textsuperscript{20} See, e.g., Fischel & Shapiro, \textit{supra} note 17, at 272.
\textsuperscript{21} For other criticisms of the insurance theory, see Farber, \textit{supra} note 17, at 127-29.
The nature of the moral hazard problem in, say, fire insurance is different. When homeowners are fully insured against fire, they could be indifferent between fire insurance payments and a not-burnt-down house, and thus are less cautious in preventing a fire from happening than they would have been without insurance. The moral hazard problem here differs from the over-investment problem above in the following ways.

First of all, fire is wealth-reducing while a condemnation can be efficient. Moral hazard is undesirable because we want as few fire incidents as possible and owners’ precaution is critical in attaining this goal. By contrast, physical takings are not necessarily a social loss. We do not want to minimize the number of condemnations. Hence, it is in fact undesirable if fully-compensated owners try their best to obstruct each and every condemnation.

Second, every insured owner can take certain precautionary measures against fire originating around the house, but many condemnees have no political clout or legal knowledge to influence a condemnation decision. Thus, even if one somehow thinks that every condemnee should try their best to stop condemnation, condemnees’ inability to do anything politically meaningful should not be analogized to homeowners’ ability to stop fire.

Third, while condemnees theoretically could invest on their properties before condemnation to acquire more compensation and, as a side effect, create more social loss, the insured usually could not invest to acquire more insurance payments because the value of the properties often have been pre-specified in the insurance contract. Fourth, owners do not pay anything similar to an insurance premium in order to enjoy takings compensation.

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22 For instance, the condemnation and revitalization of properties in Lincoln Center and Times Square in New York City arguably creates more social benefits than social costs. Many other condemnations are also efficient.

23 It is desirable to minimize the number of inefficient condemnations. Nevertheless, it is unrealistic to expect that condemnees can tell efficient from inefficient condemnations, and condemnees have no incentives only to stop the latter. Condemnees only care about their own compensation. Giving them full compensation, they rest and wait for condemnations to come, even if inefficient ones. Giving them under-compensation, they fight even if the condemnation is for the common good.

24 If owners cannot take any precautionary action against fire, there is no moral hazard, since owners do not become less careful. Thus, not all types of insurance incur moral hazard; only those that change relevant parties’ behaviors do. For instance, insurance of, say, a meteor strike does not create moral hazard, because homeowners can do nothing to change the probability or magnitude of damages caused by a meteor strike.

25 See Blume & Rubinfeld, supra note 4, at 593(“Moral hazard occurs when the party to be insured can affect the probability or the magnitude of the event that triggers payment.”)(emphasis added).

26 In this sense, the “moral hazard” problem in the condemnation context is more serious, because condemnees can better affect the magnitude of the event that triggers payment. See id. Nevertheless, as the next sub-section will show, in reality condemnees can hardly affect that magnitude of losses.
In summary, the analogy of insurance and moral hazard may be helpful for initial analysis but is misguided afterwards. From now on, I will deal with the over-investment problem in takings context directly. Below I first argue that over-investment is a mischaracterization in the theoretical level as well, and then I demonstrate that over-investment is not an issue under current law anyway.

2. **Illusionary Over-investment**

Owners over-invest only if the investment increases the properties’ compensable value. (If owners’ increased investment will not be compensated, owners will surely take into account the probability of condemnation before investing.) This condition holds if the compensable value is assessed according to the *current use* of the properties. Under current law, however, condemnees are compensated with the value of their properties in their “highest and best use” rather than their current use.\(^\text{27}\) (The value of highest and best use is fair market value.\(^\text{28}\)) For example, suppose the property’s highest and best use is a luxurious condo, its owner will receive the value of such condo as takings compensation — no matter it is currently a run-down pre-war walk-up apartment or one in great shape. An owner cannot increase her compensation by re-painting the façade of the apartment before condemnation.

Granted, the condition could also hold if investment on properties can increase the value of properties in their highest and best use. Nevertheless, owners can seldom increase the fair market value of their properties under the current assessment regime. In takings proceedings, appraisers assess fair market value of properties by taking into account immovable traits, like lot/building size, location, timing, etc.\(^\text{29}\) A hedonic regression model\(^\text{30}\) — which real estate economists use to estimate fair market

\(^{27}\) See Michael Rikon, “What’s It Worth—Who Wants to Know?”—The Valuation of Real Property in Litigation, *in CONDEMNATION LAW AND PROCEDURES IN NEW YORK* 161, 164 (Jon N. Santemma ed. 2005); Edward Flower, *Highest and Best Use Defined and Applied*, *in CONDEMNATION LAW AND PROCEDURES IN NEW YORK* 173, 176-77 (Jon N. Santemma ed. 2005).


\(^{29}\) See the detailed accounts of how appraisers work in, for instance, two New York City district court cases, *In the Matter of the Application of the City of New York to acquiring title in fee simple and other interests in certain real property not heretofore acquired for POWELL’S COVE ENVIRONMENTAL WATERFRONT PARK, QUEENS* (Index No. 14010/00) [Powell’s Cove] and *In the Matter of the Application of the City of New York, relative to acquiring title in fee simple absolute to certain real property where not heretofore acquired for the same purpose, required as the site for the NEWTON CREEK WATER POLLUTION CONTROL PLANT UPGRADE (SECOND TAKING)* (Index No. 30021/97) [Newton Creek].

\(^{30}\) “At its simplest, a hedonic equation is a regression of expenditures (rents or values) on housing characteristics. The independent variables represent the individual characteristics of the dwelling, and the regression coefficients may be transferred into estimates of the implicit prices of these
value — considers many more characteristics of properties, but those characteristics are also mostly immovable, such as building class, corner location, lot shape, etc.\textsuperscript{31} Granted, some characteristics of properties, like zoning or floor-area ratio, can be altered, but such endeavors are very costly.\textsuperscript{32} Therefore, owners hardly have incentives to over-invest to acquire more compensation, because what matters most for takings compensation is not (easily) changeable, and property characteristics that can be improved, such as the condition of the outer walls, are irrelevant to the calculation of fair market value.

What if economic value compensation is required? Economic value, in practice, is unlikely to be affected by owners’ strategic investment, either. If owners report the economic value \textit{ex ante},\textsuperscript{33} the \textit{ex post} investment does not change the value. If they report it \textit{ex post},\textsuperscript{34} they can name the same price with or without the investment. If the economic value is calculated by adding lump-sum bonus or percentage bonus to the fair market value, just like fair market value itself, it will not be affected by owners’ investment.

Note that scholars have demonstrated that if compensation payment is lump-sum, owners have no incentive to over-invest.\textsuperscript{35} The aforementioned way of assessing fair market value and economic value fits the definition of awarding condemnees lump-sum payments, because investment on the current condition of the properties does not affect the amount of takings compensation. This is probably the reason why there is no empirical evidence that condemnees over-invest to acquire more compensation — the current regime does not provide owners with such incentives.

B. \textbf{Sub-optimal Behaviors Due to Less-than-full Compensation}

Following the logic elaborated in the previous Section, owners are unlikely to


\textsuperscript{32}Some characteristics I used in the hedonic regression models in my previous paper, such as the existence of garage or extension, could be relatively easier to improve. Yun-chien Chang, \textit{An Empirical Study of Compensation Paid in Eminent Domain Settlements: New York City 1990 – 2002}, 39 J. LEGAL STUD. (forthcoming Jan. 2010). But one could quarrel with whether these two factors are proper concerns when estimating the value of the highest and best use.

\textsuperscript{33}See infra IV.C.

\textsuperscript{34}See infra IV.D.

\textsuperscript{35}For a technical definition of lump-sum compensation payment, see Blume et al., \textit{supra} note 8, at 78.
over-invest to reduce the probability of condemnation. Most investments on properties do not increase their fair market value, and thus will not alter condemnors’ plans.\textsuperscript{36} Even if investment indeed raises fair market value, over-investing is still a two-edged sword, because if the property is eventually condemned, owners would lose more.\textsuperscript{37} Therefore, under current law, owners are unlikely to over-invest in order to reduce the probability of takings.

On the other hand, owners may recognize their inability to affect takings decisions and choose to under-invest to reduce the potential loss.\textsuperscript{38} Nevertheless, takings are generally a low-probability event for most property owners,\textsuperscript{39} so unless owners suffer from “availability heuristics”\textsuperscript{40} or other psychological defects,\textsuperscript{41} they are unlikely to overly under-invest\textsuperscript{42} — though, of course, it depends on the extent of under-compensation. Besides, when condemnations become more and more possible for certain owners, they reduce or stop investing on their properties. This may be better characterized as correctly taking the risk of condemnation into account, rather than as under-investing.

Property owners, however, will not just silently swallow the under-compensation. Their most likely response is to take political actions to request for more compensation or avoid condemnation. Some scholars have argued that condemnees will be successful,\textsuperscript{43} while others have cast doubt on condemnees’ political clout.\textsuperscript{44} I have proposed that whether condemnees will take actions and whether they will succeed depend on the political environment, especially the existence of other special

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\textsuperscript{36} This assumes that condemnors consider only the costs of condemning properties. If condemnors (like government officials) pursue political interests, not minimizing compensation, owners still do not have to over-invest on their properties to avoid condemnation — they should divert the money to campaign contributions, for instance. See more discussions on condemnors’ behaviors infra Part III.

\textsuperscript{37} See Kaplow, supra note 10, at 174 n.22.

\textsuperscript{38} This is especially the case when over-investment is not cost-justified. For example, an owner may need to spend $999 to increase her property’s value from $5,000 to $5,500. The amount of full compensation is $5,500, rather than $5,999 (=\$5,000+\$999). So the owner loses more if she spends the $999.

\textsuperscript{39} See Frank Michelman, Property, Utility, and Fairness: Comments on the Ethical Foundation of “Just Compensation” Law, 80 HARV. L. REV. 1165, 1214 (1969); Kaplow, supra note 13, at 561. Under-investment is part of what Michelman famously called “demoralization costs.”

\textsuperscript{40} See Kaplow, supra note 13, at 548.

\textsuperscript{41} Availability heuristic is “a pervasive mental shortcut whereby the perceived likelihood of any given event is tied to the ease with which its occurrence can be brought to mind.” Timur Kuran & Cass R. Sunstein, Availability Cascades and Risk Regulation, 51 STAN. L. REV. 683, 685 (1999).

\textsuperscript{42} “People rely on the availability heuristic and other cognitive shortcuts…fear risks not solely on the basis of the expected harm, but on the basis of irrelevant factors such as the degree to which the risks are subject to public discussion, the harm is vivid, the technology is new, the results are irreversible, and so forth.” Eric A. Posner, Law and the Emotions, 89 GEO. L.J. 1977, 2002 (2001).

\textsuperscript{43} See Miceli & Segerson, supra note 2, at 334.

interest groups fighting for the same pool of resources.\footnote{See Yun-chien Chang, Empire Building and Fiscal Illusion? An Empirical Study of Government Official Behaviors in Takings, 6 J. EMPIRICAL LEGAL STUD. 541 (2009).} But because all these rent-seeking actions do are transferring wealth (money change hands between condemns and condemnees), political actions, be it successful or unsuccessful, are inefficient.

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In sum, the most important contribution in this Part is pointing out that under current law, owners will not over-invest even if they are guaranteed full compensation in the event of physical takings. In addition, although owners are unlikely to inefficiently over- or under-invest when less than full compensation will be awarded in takings, and although many owners may not take rent-seeking political actions, these low-probability inefficient decisions or actions will add up to huge waste in social resource. It is then obvious that as long as condemnees’ incentives are concerned, full compensation is the most efficient. But we cannot jump to the conclusion that full compensation is efficient now, because three other factors have to be examined first. The next Part starts with condemns’ incentives.

III. CONDEMNORS’ INCENTIVES

Government officials are usually characterized as the incarnation of condemns. There are three widely different theories about government officials’ incentives: benevolent theory, fiscal illusion theory, and political interest theory, which I examine in turn below. I conclude that, however, the key to determine the effects of compensation standard on condemnees lies in the behaviors of developers, who have clear incentives to over-use the takings mechanism (through lobbying government officials) if less than full compensation is required. Thus, full compensation will be most efficient.

A. Benevolent Theory

The benevolent theory assumes that government officials aim to maximize social welfare.\footnote{See Fischel & Shapiro, supra note 17, at 276; Fischel & Shapiro, supra note 11, at 120; Benjamin E. Bermelin, An Economic Analysis of Takings, 11 J. L. ECON. ORG. 64, 69 (1995).} In Fischel & Shapiro’s term, it is a “Pigovian model of government,” which several important articles have relied on.\footnote{See Fischel & Shapiro, supra note 17, at 285 (observing that Blume et. al., Blume & Rubinfeld, Kaplow, etc. adopted this position). But cf. Fischel & Shapiro, supra note 11, at 121 (arguing that the} According to this theory, we do not
have to worry about how the choice of takings compensation standard affects government officials’ behaviors, because no matter how much compensation is mandated, government officials will always take into account all the relevant social benefits and social costs (including the value of the condemned properties) when making condemnation decisions. This theory, therefore, focuses on the effects of compensation standard on condemnees.

The obvious problem of this theory is that we do not live in an ideal world in which all (if any?) officials are saints. There is no particular reason to believe that while condemnees are all self-interested, condemnors are all public-spirited. This theory is an interesting starting point for discussions, but not the end point.

B. Fiscal Illusion Theory

Another popular model of government official behaviors is the fiscal illusion theory, which believes that government officials are trying to minimize takings compensation. According to this theory, the choice of takings compensation standard is critical to the efficiency of the takings system, because the required amount of compensation is the only money that the condemnor will award; that is, it is the only social costs that the condemnor will internalize. Hence, as far as condemnors’ incentives are concerned, full compensation is the most efficient, because full compensation forces condemnors to take into account all social costs of the takings, and less than full compensation forces condemnors to internalize only part of the social costs.

Fiscal illusion theory has an advantage of being easy to model mathematically, because condemnors and condemnees make decisions using the same measure—the monetary value of condemned properties. Nevertheless, I quite doubt that fiscal illusion theory is the best characterization of government officials’ behaviors. The theory itself has been heavily criticized, and a previous paper of mine has shown

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DANA & MERRILL, supra note 3, at 41-46 (arguing that the fiscal illusion theory is “almost certainly correct”); Thomas W. Merrill, Incomplete Compensation for Takings, 11 N.Y.U. ENVTL. L.J. 110, 131-32 (2002).

49 See the interpretation of this theory in Chang, supra note 45, at 562-63.

50 See, e.g., Vicki L. Been, Lucas v. The Green Machine: Using the Takings Clause to Promote More Efficient Regulation?, in PROPERTY STORIES 221, 248-49 (Gerald Korngold & Andrew P. Morris eds.,
that the theory is not borne out by empirical evidence.\textsuperscript{51} Life would have been much easier if government officials are so single-minded in minimizing takings compensation, but I believe that the next theory is more accurate.

C. \textit{Political Interest Theory}

Political interest theory argues that government officials make decisions according to their own calculus of political costs and benefits.\textsuperscript{52} While fiscal illusion theorists believe that full compensation requirements can induce government officials to condemn efficiently, political interest theorists are far less optimistic. For this theory, government officials think in political terms, not monetary terms. And because government officials do not internalize the monetary costs of paying compensation, requiring full compensation does not necessarily induce condemnors to condemn properties efficiently.\textsuperscript{53} Suppose full compensation is a legal mandate, few, if any, owners will protest the condemnation of their own properties. Government officials can thereby condemn properties efficiently or inefficiently to maximize their own political capital.\textsuperscript{54} For instance, if the amount of full compensation is $900 and the social benefit is $750, government officials will still decide to condemn the properties if doing so best increases their political capital.\textsuperscript{55}

For political interest theory, therefore, a takings compensation standard is a blunt tool to induce government officials to condemn efficiently, because political calculus seldom overlaps with efficiency calculus. Requiring government officials to do cost-benefit analysis before condemnation and only allowing takings in which

\[2004\text{)} \text{arguing that the assumption of governments’ maximizing monetary profits is unlikely to be accurate); Vicki Been & Joel C. Beauvais, } \text{The Global Fifth Amendment? NAFTA's Investment Projections and the Misguided Quest for an International “Regulatory Takings” Doctrine, 78 N.Y.U. L. REV. 30, 88-100 } \text{(2003); Kaplow, } \text{supra note 13, at 567-70; Carol M. Rose, What Federalism Tells Us About Takings Jurisprudence, 54 UCLA L. REV. 1681, 1690-92 } \text{(2006); linking the discussions of federalism with the demerits of fiscal illusion theory); Farber, } \text{supra note 17, at 130; Note, Taking Back Takings: A Coasean Approach to Regulation, 106 HARV. L. REV. 914, 923-25 } \text{(1992); arguing that takings compensation is not the only way to force cost internalization in a Coasean world where marketable police power servitude is sold); Daryl J. Levinson, Empire-Building Government in Constitutional Law, 118 HARV. L. REV. 915, 916, 969 } \text{(2005).} \text{See Chang, } \text{supra note 45.} \text{ See Levinson, } \text{supra note 50; Levinson, } \text{supra note 43; Nicholas Bagley & Richard L. Revesz, Centralized Oversight of the Regulatory State, 106 COLUM. L. REV. 1260, 1293-94 } \text{(2006).} \text{ See Wyman, } \text{supra note12, at 259. Cf. Susan Rose-Ackerman, Against Ad Hocery: A Comment on Michelman, 88 COLUM. L. REV. 1697, 1706 (1988); arguing that compensation requirement may have } \text{little impact on government officials.)}. \text{Kaplow has suggested that requiring compensations leads to more condemnation. See Kaplow, } \text{supra note 10, at 194.} \text{ Note that the political capital does not have to surpass $900 or $150 (=}$900-$750). What government officials care is “political opportunity costs.” Simply put, whether using the $900 budget elsewhere can earn government officials more political interests.
benefits surpass costs are theoretically a more plausible way to ensure efficiency. But this regulatory overview approach further demonstrates the uselessness of compensation standard in producing right incentives for government officials. In this sense, we should perhaps disregard government officials’ incentives when determining which compensation standard is the most efficient.

Government officials, however, are not the only parties involved on the condemnors’ side. As *Kelo v. City of New London* shows, private developers or private corporations are often important partners with government officials in the takings enterprise. That is, government officials gain political interests from collaborating with developers. Here the amount of compensation is extremely important. When less than full compensation is required, these developers have incentives to bypass voluntary transactions and request the government to condemn properties for them, because the latter way will probably be monetarily cheaper. The lobbying efforts in this context are dead-weight losses, and because the price tags are wrong, developers are very likely to lobby the government to condemn too many land parcels, which are also inefficient. In this respect, the closer the compensation standard is to full compensation, the better. When full compensation is required, developers will only request condemnation when there are true “hold-outs” (not “hold-ins”).

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So far I have examined the effects of physical takings compensation on condemnors’ and condemnees’ incentives. I find that the most likely effect on condemnees is that under-compensation motivates condemnees to take inefficient political actions. In addition, political interest theory probably describes condemnors’ behaviors most accurately. The theory, however, suggests that government officials

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56 545 U.S. 469 (2005).
57 This phenomenon is similar to what Thomas Merrill called “secondary rent-seeking.” Prof. Merrill used this term to describe developers’ incentives to acquire the legislative grant of the eminent domain power when the surplus of eminent domain power is not awarded to condemnees. See Thomas W. Merrill, *The Economics of Public Use*, 72 CORNELL L. REV. 61, 85-88 (1986). Heller & Hills expands the use of the term to describe the rent-seeking activities when landowners’ “true loss” is not compensated. See Heller & Hills, supra note 2, at 1482.
58 Granted, the price the government charges developers may be higher than the compensation paid by the condemners to the condemnees (I thank Chris Serkin for pointing this out). But if the former price is higher than economic value, developers will use land assembly instead; there won’t be takings. If the former price, though higher than compensation, is lower than the economic value, it will still skew developers’ decisions, inducing them to use condemnations instead of land assembly.
59 Lobbying may not always be a bad thing. But developers’ lobbying here only leads to inefficient takings action. So lobbying here is a social waste.
60 See Gideon Parchomovsky & Peter Siegelman, *Selling Mayberry: Communities and Individuals in Law and Economics*, 92 CALIF. L. REV. 75, 83 (2004)(defining “holdins” as people who refuse to sell because they place high subjective value to the properties, as oppose to people/“holdouts” who strategically refuse to sell to obtain higher compensation).
are unlikely to condemn efficiently, no matter what the compensation standard is. But the concerns about developers’ rent-seeking activities and their lobbies for inefficient condemnation also lead to the conclusion that below-economic-value compensation is undesirable. Nevertheless, it will be rash to throne economic value compensation before examining assessment costs and assessment accuracy, two considerations that have been alluded to from time to time but never analyzed systematically in the literature, to which I turn to in the next Part.

IV. ASSESSMENT COSTS AND ASSESSMENT ACCURACY

So far economic value compensation is the leading candidate for the most efficient compensation standard, but it still has to pass two more tests: assessment accuracy and assessment costs. The first section provides the basic ideas of these two concepts. The second section proposes a new framework of assessment methods for systematically analyzing assessment costs and assessment accuracy. The following four sections first investigate whether economic value can be assessed accurately and inexpensively, and then examine whether fair market value, another leading candidate for the most efficient takings compensation standard, can be assessed accurately and inexpensively.

A. Definition, Importance, Relation

Assessment accuracy is defined as how close the assessed compensation is to the compensation standard. Most previous articles focused on the effects of compensation standard itself on the incentives of condemnors and condemnees, on the implicit assumption that assessments of property value are always accurate. Under the rubric of assessment accuracy, I discuss the incentives of condemnors and condemnees when assessments are inaccurate (that is, actual compensations deviate from the compensation standard). Simply put, inaccurately low compensation

61 For a general discussion of the desirability of accuracy in legal adjudication, see Louis Kaplow, The Value of Accuracy in Adjudication: An Economic Analysis, 23 J. LEGAL STUD. 307 (1994). Epstein also argues, “setting cash compensation correctly, moreover, is critical to the sound functioning of our condemnation system.” RICHARD EPSTEIN, SUPREME NEGLECT: HOW TO REVIVE CONSTITUTIONAL PROTECTION FOR PRIVATE PROPERTY 89 (2008).

62 Some commentators have noted the inaccuracy in assess takings compensation, but they do not analyze this issue systematically. See, e.g., Guido Calabresi & A. Douglas Melamed, Property Rules, Liability Rules, and Inalienability: One View of the Cathedral, 85 HARV. L. REV. 1089, 1108 (1972); Wyman, supra note 12, at 265-66; Blume & Rubinfeld, supra note 4, at 619-20; Merrill, supra note 57, at 84.

63 Thus, one can argue that there are just three major concerns in determining efficient compensation standard, with assessment accuracy as part of the concerns of property owners’ or government officials’ incentives. This is a fair point. I highlight the effects of assessment accuracy for two reasons. First,
creates or aggravates the incentives for developers and owners to lobby government officials to condemn or not to condemn properties, respectively. Furthermore, inaccurate assessments create a new problem that has not been discussed so far — over-compensation. When assessed property value is higher than economic value, it is arguably over-compensation. Expecting over-compensation, owners will welcome takings, even lobby for one. Their political efforts are wasted from a social standpoint. Moreover, over-compensation could even affect incentives of third parties. Unduly high compensations will eventually incur higher taxes (than accurate compensation will do) to defray the compensation expenses — taxes would distort people’s incentives to work.

Assessment costs, the resources expended in calculating the amount of takings compensation, include, to name a few, costs of employing professional appraisers to assess properties, costs of processing the self-assessments of landowners, and costs of maintaining and monitoring a crew of government employees that are in charge of property value assessment. Assessment costs are critical for a fairly obvious reason: Resource is limited. Money saved from assessing property value (an activity in ascertaining elusive, man-made information) can be used more productively elsewhere (like producing more or better food for the poor). Economic value is subjective; the verification of it could consume a lot of resource. Therefore, if economic value is difficult to be appraised accurately and/or assessed in a cheap enough fashion, some other types of compensation standard, based on more objective criterion, such as fair market value, could be more desirable.

Assessment accuracy positively correlates with assessment costs. Given an
assessments be produced.\textsuperscript{68} Nevertheless, some assessment methods can achieve higher accuracy with lower costs than others can. Because assessment accuracy and assessment costs are both necessary factors in determining the most efficient compensation standard, higher accuracy is not always more preferable to lower accuracy, if the cost of achieving the former is substantially higher than that of achieving the latter. In other words, 100\% accuracy, even if attainable, is not necessarily the optimal level of accuracy.

\section*{B. Assessment Methods: A New Framework\textsuperscript{69}}

The choice of assessment methods influences assessment accuracy and assessment costs. An assessment method is the set of procedures governing how a property value is assigned for takings compensation purposes. Most articles on takings implicitly assume that the government should perform the assessment.\textsuperscript{70} A few papers dispute the standard assumption, arguing that condemnees should assess property value for their takings compensation.\textsuperscript{71} Nevertheless, the government-condemnee dichotomy neglects another layer of this issue — when property value should be assessed for takings compensation. I thus propose a new framework of four prototypical assessment methods based on who assesses property value for takings compensation purposes and at what time.

\subsection*{1. Landowners vs. Non-landowners}

Assessments can be done either by landowners or by non-landowners such as a condemnor agency, a professional appraiser, a court, or a jury. Assessments by landowners and non-landowners are different in two important ways. First, landowners and non-landowners have different information. Economic value is subjective and only landowners have direct information about it.\textsuperscript{72} On the other hand, fair market value is relatively objective, and usually non-landowners have better returns of assessment costs will eventually decrease sharply.\textsuperscript{68} In his seminal paper on accuracy in adjudication, Kaplow assumes that “more accuracy can be obtained only at a higher cost.” Kaplow, supra note 61. See also Bell & Parchomovsky, supra note 2, at 874.\textsuperscript{69} For a detailed account of the framework, see Yun-chien Chang, Takings Compensation Assessment: Theoretical Framework and Empirical Studies (May 15, 2009)(unpublished JSD dissertation, NYU School of Law)(on file with author).\textsuperscript{70} See, e.g., Miceli & Segerson, supra note 2, at 328.\textsuperscript{71} See Saul Levmore, Self-assessed Valuation Systems for Tort and Other Law, 68 VA. L. REV. 771 (1982); Bell & Parchomovsky, supra note 2.\textsuperscript{72} See Heller & Hills, supra note 2, at 1471.
knowledge and economy of scale in assessing it. For this practical reason, below I assume that only the two assessment by landowner methods will be used to assess economic value and only the two assessment by non-landowner methods will be used to assess fair market value. But readers should beware that theoretically all assessment methods can be used to assess economic value or fair market value. I omit some possibilities because they are intuitively costly and inaccurate.

Second, landowners and non-landowners have different incentives. Landowners’ self-interest will cause them to exaggerate on their assessments for compensation as much as possible. By contrast, non-landowners do not necessarily under-assess or over-assess. Part of the reason is that non-landowners are not homogenous. Non-landowners could be a condemnor agency, the finance department (in charge of local property tax assessments), a professional appraiser, a court, or a jury. A judge and a jury (member) may very well have different incentives. Furthermore, some non-landowners, for instance a condemnor agency, are not homogenous entities, either. The career-service government employees and the politically appointed agency head may have different goals in mind. All non-landowners, however, do have one thing in common — they determine the amount of compensation but they do not pay personally. For example, government officials, as discussed above, are expected to maximize their political interests when assessing property value.

2. Ex Ante vs. Ex Post

Whoever assesses can either perform the assessment ex ante or ex post; that is, before or after the decisions to condemn properties are made. Ex ante assessments and ex post assessments should be distinguished for two major reasons. First, ex post assessments could be more accurate because of more information. Compensation laws usually indemnify landowners for the property value at the time of condemnation. Market value fluctuates from time to time, so the nearer the assessment date is to the condemnation date, all other things being equal, the more accurate the assessment is. Because ex post assessments are typically closer to the date of condemnation, they tend to be more accurate. Moreover, after the date of condemnation (ex post assessments could be done after properties are condemned), assessing a market

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73 See Kelly, supra note 66, at 26.
74 In this Article, under- or over-assessment means below or above market value (when the government assesses) or economic value (when owners assess).
75 Indeed, ex post assessments are frequently done after land parcels are condemned. Take New York City for example, takings compensations are usually determined in a post-condemnation settlements or court proceedings. See a detailed account of New York City condemnation laws in Chang, supra note 32.
The Efficient Standard of Physical Takings Compensation

value of a land parcel is no longer predicting future market value but verifying past market value — the latter is more accurate.\(^{76}\)

Economic value also changes over time; therefore, the above analysis also applies — the nearer the assessment date is to the condemnation date, the more accurate the estimation of future economic value becomes. When *ex post* assessments are conducted after the time of condemnation, an appraisal of her property value is verification of a past economic value, which is more accurate than an *ex ante* forecast of future economic value.

*Second*, assessors’ incentives are different. *Ex ante* assessments could be more disinterested than *ex post* assessments owing to different incentives provided by legal mechanisms. *Ex ante* assessments are made when condemnation plans are not certain, or when there is no specific condemnation plan at all,\(^{77}\) while *ex post* assessments are done after specific land parcels are targeted to be condemned or have been condemned.

Many legal mechanisms are available *ex ante* to make assessors more disinterested or assess more accurately. *Ex ante* assessments could be audited or used to tax assessors, to name a few. But there is hardly any effective incentive scheme to affect *ex post* assessments, for *ex post* assessors are rather sure about the costs and benefits of over-assessment and under-assessment, because they are soon to either condemn the land or have their land condemned.

3. **Proponents and Implementing Jurisdictions**

The four prototypes of assessment methods are *ex ante* assessment by landowners, *ex ante* assessment by non-landowners, *ex post* assessment by landowners, and *ex post* assessment by non-landowners. Table 1 exhibits the typology and lists in the cells scholars that have proposed the method and jurisdictions that have implemented it.

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\(^{76}\) Note that accurate assessments are not necessarily lower or higher than inaccurate ones.  
\(^{77}\) I do not claim that assessors know nothing about the possible condemnation or that assessors assume the probability of condemnation to be zero.
Table 1 Typology of Assessment Method and Its Proponents and Adopters

<table>
<thead>
<tr>
<th>Timing of assessment</th>
<th>Identity of the assessor</th>
<th>Non-landowners (e.g., government)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ex ante</strong></td>
<td>Harberger (1965); Tideman (1969); Levmore (1982); Niou &amp; Tan (1994); Bell &amp; Parchomovsky (2005); Plassmann &amp; Tideman (2008). New York City 1658; New Zealand 1891 – 1896; Taiwan 1954 – 1977; Columbia 1954, 1963.</td>
<td>Taiwan 1977 to date</td>
</tr>
</tbody>
</table>

Most (if not all) American states adopt *ex post* assessment by non-landowners. When a government plans to condemn specific properties, it commissions professional appraisers to assess them. Contemporary Taiwanese laws adopt *ex ante* assessment by non-landowners. Every year, local governments in Taiwan assign each land parcel an official assessment of its value. That land value is then used both to tax the land and to establish the compensations due for condemnations.

Saul Levmore proposed the *ex ante* assessment by landowner method, under which landowners periodically report their assessments on their land and are both taxed and (if condemnation occurs) compensated accordingly. Abraham Bell & Gideon Parchomovsky advocated a revised method of *ex post* assessment by landowners. In their design, when the government needs land, it asks landowners to report assessments and then decides whether to condemn the land or to leave the titles in landowners’ hands and tax them according to the self-reported value.

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In the following sections, I evaluate the assessment costs and assessment accuracy of these four prototypical assessment methods. Since economic value is the leading candidate for the most efficient compensation standard, I look into the methods that can be used to assess economic value first; namely, the two assessment-by-landowner methods. Because I find that none can attain 100% accurate
assessments at low costs (contrary to the claims by scholars\textsuperscript{78}), I further examine the two other methods that are better suited to assess fair market value. I find that, however, they cannot live up to the expectation, either. In the next Part, I will sum up all the analyses and propose the most efficient compensation standards.

C. \textit{Ex Ante Assessment by Landowners}

\textit{Ex ante} assessment by landowners is not a brand new proposal. It has been implemented in New York City in 1658 (then called New Amsterdam, governed by Dutch),\textsuperscript{79} New Zealand between 1891 and 1896,\textsuperscript{80} Taiwan between 1954 and 1977,\textsuperscript{81} and Columbia in 1954 and 1963.\textsuperscript{82} In modern U.S., the idea seems to originate with a Chicago economist, Arnold C. Harberger, in a conference in Chile in 1962.\textsuperscript{83} Niou & Tan’s economic models formalize, and then revise, Dr. Sun Yat-sen’s “self-assessment”\textsuperscript{84} mechanism proposed in 1920s.\textsuperscript{85} Economist T. Nicolaus Tideman has contributed to the discussions of self-assessments through papers published in 1969,\textsuperscript{86} 1990,\textsuperscript{87} and 2008.\textsuperscript{88} In the legal academia, Saul Levmore first proposed it in his seminal article in 1982,\textsuperscript{89} and has attracted discussions and refinements in recent years.\textsuperscript{90}

\textsuperscript{78} See Levmore, supra note 71, at 778-79; Bell & Parchomovsky, supra note 2, at 875.
\textsuperscript{79} In addition to NYC, Plassmann & Tideman also asserts that India, Korea, and Spain have implemented such method, but they do not provide any citation to the source. See Florenz Plassmann & T. Nicolaus Tideman, \textit{Accurate Valuation in the Absence of Markets}, 36 PUB. FIN. REV. 334 (2008).
\textsuperscript{80} Posner lists Ancient Greek as adopting this method in his law and economics textbook. See \textsc{Richard A. Posner}, \textsc{Economic Analysis of Law} 64-65 (1998).
\textsuperscript{81} See Richard Bird, \textit{Put up or Shut up: Self-assessment and Asymmetric Information}, J. POL’Y ANALYSIS MGMT 618, 619 (1986); Peter F. Colwell, \textit{Privatization of Assessment, Zoning, and Eminent Domain}, 4 ORER LETTER 1, 2 (1990), available at \texttt{http://www.business.uiuc.edu/orer/V4-2-1.pdf}.
\textsuperscript{83} Note that other papers have documented Taiwan’s regime incorrectly.
\textsuperscript{85} I use “ex ante assessment by landowners” and “self-assessment” interchangeably.
\textsuperscript{86} Dr. Sun Yat-sen, the National Father of Taiwan, is also widely respected in China because he led the revolution against the Qing Dynasty in the beginning of the twentieth century. For a brief introduction of Dr. Sun’s proposal, see Emerson M.S. Niou & Guofu Tan, \textit{An Analysis of Dr. Sun Yat-sen’s Self-assessment Scheme for Land Taxation}, 78 PUB. CHOICE 103, 104-05 (1994).
\textsuperscript{89} See Plassmann & Tideman, supra note 79.
\textsuperscript{90} See Levmore, supra note 71.
Elsewhere, I have provided a detailed account of why these aforementioned self-assessment models are not able to always produce accurate assessment of property value for takings compensation purposes and why these models are more costly than their proponents have claimed. 91 Below I use a mathematical model of an ideal type of self-assessment method to demonstrate why theoretically and practically this method cannot induce owners to disclose their true economic value.

1. Mathematical Model of an Ideal Type

In the ideal-type self-assessment method, a risk-neutral owner’s economic value of her property is W. She periodically reports a self-assessment, X=W+Q. Q is the amount of over- or under-assessment, or the deviation from true economic value. In each period, the owner pays property taxes, tX, once (t is the property tax rate); there is a probability, p, that the property will be condemned. Assume that condemnation probability p is determined regardless of self-assessments X. The wealth of the property owner is:

\[
f(X) = (1-p)(W-tX) + p(W-W+X-tX)
\]

[Substituting X=W+Q]

\[
= W - tX - pW + tpX + pX - ptX
\]

We can ignore W (1–t) because as long as the property tax rate is not larger than 100% — a very fair assumption — W (1–t) will be positive. If p>t, (p–t)>0. The owner can increase wealth, f(X), by making Q>0. Because X=W+Q, Q>0 means X>W. That is, the self-assessment is higher than the economic value. Similarly, if p<t, (p–t)<0. The owner can increase wealth, f(X), by making Q<0, which means that the self-assessment is lower than the economic value. If p = t (I call it the parity condition), the owner cannot increase wealth by over- or under-assessing. That,

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91 See Chang, supra note 69.
92 Mathematically, my model and Plassman & Tideman’s model are modeling similar things, though Plassman & Tideman use calculus, while I do not. Besides, Plassman & Tideman does not discuss the scenario when probability p is determined regardless of self-assessments X. Also, tX in my model represents property taxes, while in their model it is a specially-designed tax (property taxes will be levied using the revealed economic value). The most important distinction between us is that the same mathematical results are hailed in their model as a strong reason to adopt self-assessment regimes while I am pessimistic about the model’s practicability. See their model in Plassmann & Tideman, supra note 79 and my critique of their model specifications and interpretations in Chang, supra note 69.
The Efficient Standard of Physical Takings Compensation

However, does not imply that the owner will necessarily report Q=0 (self-assessing accurately), because that does not do her any good either. The owner will be indifferent to the amount of Q.

Now I relax the assumption that X does not affect p, because self-assessed property value usually does influence condemnation probability. X and p negatively correlate. If honestly reporting W would get p>t, owners will report a positive Q, but not as high as possible. Higher Q means higher X meaning lower p. When Q is high to a certain point, p becomes smaller than t, which reduces wealth. Similarly, if honestly reporting W would get p<t, owners will report a negative Q, but not as low as possible, because when X is too low, p becomes larger than t.

Most importantly, when X and p negatively correlate and honestly reporting W would get p = t (I call it the inverse condition), the owner will then have incentives to report Q = 0. The reason is: if the owner reports Q > 0, p will reduce to become smaller than t. Consequently, Q (p–t) will be negative, meaning the total wealth of the owner dwindles. Similarly, if the owner reports Q < 0, p will increase and ultimately Q (p–t) will still be negative. Therefore, the owner will honestly disclose her economic value, because doing so maximize her wealth.

Now I assume that owners are risk-averse. If condemnation probability is independent of reported property value and p=t, risk-averse owners will have incentives to disclose honestly, because given the same expected wealth, reporting Q=0 minimizes the risk (that is, the payoff with or without condemnation is the same, W-Wt). If the inverse condition holds, risk-averse owners still disclose honestly, because reporting Q=0 not only minimizes risk but also maximizes expected wealth.

In sum, under the ideal type, when owners are risk-neutral, if condemnation probability is independent of reported property value, owners will not be induced to always disclose economic value honestly. If the inverse condition holds, owners will disclose economic value honestly. When owners are risk-averse, owners will honestly disclose economic value as long as the parity condition holds.

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93 In any case Q cannot be lower than -W, because reported value, X, cannot be 0 or negative, since the real economic value, W, is unlikely to be non-positive.

94 Therefore, the inverse condition contains the parity condition, with the additional requirements that (a) condemnation probability negatively correlates with reported property value; and (b) the parity condition can only hold when owners honestly report economic value; that is, p ≠ t when owners do not reveal their real economic value.


96 I thank Prof. Geoffrey Miller for pushing me to be clearer on the issue of risk-averse.
2. Impossible to Fulfill Parity Condition and Inverse Condition in the Real World

Though the conditions for accurate self-assessments are clear, they are impossible to achieve in the real world. First, the parity condition can only hold in a world where only stochastic condemnation is allowed (that is, condemnation for public use as we know it has to be banned). Second, the inverse condition can only hold if policymakers actually know each property owner’s economic value; this obviously begs the question. I explain them in turn.

Let me elucidate the first point with a hypothetical example. Suppose there are only two types of owners, Rich and Poor. Rich, Poor, and the government all know the given tax rate. The government wants to make Rich and Poor believe that their condemnation probabilities equal the tax rate, so that they will reveal their genuine economic value. Nevertheless, Rich knows that the probability of condemning her house for public use is fairly low, though it is difficult to estimate the exact probability, since condemnation for public use depends on a lot of uncertain factors, like whether the city council will approve of the budget for condemnation in a certain year. The government knows it as well. Even if the government can somehow manage to persuade Rich that the probability is actually, say, 0.5%, the government has to randomly condemn properties owned by Rich to make up for the shortfalls between the 0.5% condemnation probability and the, say, 4% property tax rate. And if the government cannot persuade Rich of its 0.5% estimate, the government has to give up the practice of non-stochastic condemnation. Otherwise Rich’s perceived condemnation probability will not equal property tax rate.

On the other hand, Poor knows that there are urban renewal projects undergoing in her blighted neighborhood. Even though she is not mathematically sure about the condemnation probability, she is quite convinced that the probability is well above 4%. Thus, unless the government raises Poor’s tax rate substantially, randomly gives back properties from Poor, or stops condemning non-stochastically, there is no way that Poor will think that her p equals t. That is why parity conditions can only hold in a world whether properties are only condemned stochastically, with the probability set at exactly the property tax rate. But this is impossible to achieve not only because of the extremely high costs but also because of the constitutional validity of stochastic condemnation.

To understand my second point, first bear in mind that the higher Q is, the higher reported value is, and the lower condemnation probability is. We know that the economic value of a representative owner, Black, is 100. The government only knows that his fair market value is 85, but guesses that the economic value is 95. The
schedule of condemnation probability is set and announced accordingly. That is, Black knows that if he reports 95, \( p = t \). If he reports \( >95 \) (\(<95 \) \( p < t \) (\( p > t \)). Will Black report honestly? Remember that the expected wealth of Black is \([W(1-t) + Q(p-t)]\). If Black reports 95 or 100, his expected wealth is both \( W(1-t) \). But if Blacks report anything between 95 and 100, his expected wealth is larger than \( W(1-t) \) because \( Q(p-t)>0 \). Therefore, a risk-neutral Black will certainly under-assess to maximize his expected wealth. If Black is risk-averse, he does not necessarily report honestly, either. The expected wealth of reporting between 95 and 100 is higher than reporting at 95 or 100, a not-so-risk-averse Black may be willing to trade it for higher risk. The same thing happens when the government over-estimates Black’s economic value. Therefore, to ensure that Black will honestly report his economic value, the government has to set \( p = t \) at Black’s economic value. But if the government already knows Black’s economic value, why do we need self-assessment methods?

3. Implementing as Another Imperfect Substitute

If policymakers do not manipulate condemnation probability or property tax rate, the self-assessment method can work as an inaccurate but low-cost option. We can expect that the self-assessment method will produce under-assessment of economic value because, as the above model suggests, if property tax rate is higher than condemnation probability, owners would report \( Q<0 \) to increase expected wealth. And probably in most jurisdictions condemnation probability is much lower than the property tax rate. Take Taiwan, where self-assessment regime was employed between 1954 and 1977, as a real world example. The property tax rate in Taiwan was at least 1.5\%, while the condemnation probability was on average 0.04\%, much lower than the tax rate. Take New York City as another example. Between 1990 and 2002, the property tax rate for most residential properties of up to three units was around 0.6\%, while that for other properties was around 4.5\%. During the same period, while

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97 If Black reports 95, \( p = t \). If Black reports 100, \( Q = 0 \). In either case, \( Q(p-t)=0 \).
98 \( Q \) is negative because Black under-assesses. \( P < t \) (because \( X > 95 \)), so \( (p-t)<0 \).
99 The assessment costs of implementing such method are generally low. All we need to do is record the self-assessments in a database. And the same self-assessed property value can be used for levying property taxes and providing takings compensation. In addition, since the owners themselves report the tax, the number of legal disputes could be reduced.
100 Owners will under-assess only to a certain extent, because in the real world, condemnation probability is indeed in reverse relationship with the compensable property value. This is the Law of Demand.
101 Evidence shows that, just as my model predicts, owners in Taiwan under-assessed. See Chang, supra note 81.
102 The nominal property tax rates were around 10\%. Property Tax Rates,
there were around one million properties in the city, on average only 35 condemnees either settled with condemnors or received court-adjudicated compensation awards. This number is far less than the necessary 6,000 to fulfill the parity condition.

In sum, implementing self-assessment method in the real world will probably give us under-assessment of economic value, which is imperfect. We need to examine whether another method of assessing economic value can do a better job.

D. Ex Post Assessment by Landowners

The ex post assessment by landowner method does not look like a major prospect, however. It requires that condemnors pay the price landowners demand after the condemnation decision has been made. Lee Fennell has argued in passing that this mechanism will fail. No country seems to adopt this method. Its unpopularity can be attributed to the fact that landowners have stronger incentives to exaggerate than non-landowners do and that the legal tools available ex post to counter the incentives to exaggerate are fewer than those available ex ante.

The pure form of the ex post method is impracticable, but it could be revised to grant the government an option to give up condemning the property and to tax the

\[\text{http://www.nyc.gov/html/dof/html/property/property_rates_taxrates.shtml}\] (last visited Nov. 14, 2008). The assessment ratio, which equals tax assessment divided by estimated market value, is 6% for most residential properties of up to 3 units and 45% for other types of properties. Determining the Annual Assessment, \[\text{http://www.nyc.gov/html/dof/html/property/property_val_assessment.shtml}\] (last visited Nov. 14, 2008). The tax assessment evaluates the current use, so it will be lower than the fair market value (which takes into account highest and best use) and the economic value. Thus, the real property tax rate is even lower than what the tax schedules show.


104 Granted, some condemnation cases end without legal disputes from condemnees. But I doubt there are 6,000 such cases annually in New York City. See estimation of such cases in Chang, supra note 32.

105 \[1,000,000 \times 0.006 = 6,000\]. 1,000,000 is the number of properties in NYC. 0.006 is the property tax rate.

106 See Fennell, supra note 90, at 1419.

107 Prof. AJ van der Walt, in his comparative analysis of constitutional property clauses, looked into the stipulations in Australia, Austria, Canada, Germany, Guyana, India, Ireland, Jamaica, Japan, Malaysia, Mauritius, Namibia, South Africa, Switzerland, Trinidad and Tobago, United States of America, and Zimbabwe. In my reading, none of them seems to adopt ex post assessment by landowners. In fact, because most of them specifically use market value as a benchmark for compensation (some countries do not have a clear benchmark), my guess is they adopt assessment by non-landowners. However, a few of them, like Zimbabwe, Jamaica, and Ireland, authorize laws to stipulate how to compensate landowners; Prof. van der Walt does not look into those detailed stipulations. See AJ VAN DER WALT, CONSTITUTIONAL PROPERTY CLAUSE: A COMPARATIVE ANALYSIS 58-60, 81-82, 92, 114-16, 150-51, 183, 219-21, 240-41, 253-54, 262-63, 273, 304-05, 315-16, 343-48, 372-73, 394-95, 440-41,489-92 (1999).

108 Taxing is ineffective, because owners can still name the price they want. Auditing cannot be effective, because the government cannot verify the true economic value.
The Efficient Standard of Physical Takings Compensation

property according to the landowner’s reported valuation thereafter. This idea is first
advanced by Bell & Parchomovsky.\footnote{See Bell & Parchomovsky, supra note 2.} Elsewhere, I have elaborated why their model
cannot achieve their goal of producing accurate assessments:\footnote{See Chang, supra note 69. See other critiques in Wyman, supra note 12, at 266.} First, their special
property tax regime neither increases the accuracy of assessments nor decreases the
assessment costs; rather, it induces rent-seeking activities. Second, their governmental
back-off option sometimes induces owners to over-assess and sometimes induces
owners to under-assess. Third, their life-time sale restraint cannot prevent owners
from under-assessing. Below I discuss the general merits and demerits of the revised
form of the \textit{ex post} method (“revised method”) in assessing economic value.

It is obvious that the revised method produces more accurate assessments than
the pure \textit{ex post} method does, because the possibility of using self-assessments to tax
is zero under the latter, while that is usually positive (zero if government never
reneges\footnote{The government may never renge because the law strictly limits its back-off discretion or because
landowners have complete information about the government’s decision-making concerns and take
advantage of it — for example, landowners can exaggerate to the extent that the self-assessed value is
still within the government’s willingness to pay.} under the former. It is, however, unclear whether the revised method
produces more accurate self-assessments than the pure \textit{ex ante} method does. On the
one hand, in terms of incentives, as long as governments cannot propose
condemnations at will (in order to increase tax revenue),\footnote{Bell & Parchomovsky proposes this restraint, which prevents willful condemnation proposals from
boosting property tax revenue. The status quo is that property owners pay property taxes according to
the government-assessed value, which is usually lower than fair market value, not to mention economic
value. When the government notifies a property owner of a possible condemnation, the owner, taking
into account the probability that the governments may back off, is likely to report a property value that
is higher than her tax assessment, in order to get higher takings compensation in case the condemnation
plan continues. The government, if reneging the condemnation plan, can levy higher taxes on the
property because its owner has increased its value. See Bell & Parchomovsky, supra note 2, at 900-01.
Of course, if the government often bluff, owners will not fall into the trap of reporting a much
higher property value only to be taxed. However, if the government only uses this trick infrequently, it
could increase property taxes due on some properties that it has no intention to condemn at all.}

On the other hand, if the self-assessments under the revised method are so high
that governments decide not to condemn, the high self-assessments will probably be
the property tax base for the rest of landowners’ lives, while in the pure \textit{ex ante}
method landowners could adjust assessments periodically. The expected costs of
over-assessing are higher under the revised method. On net, it is unclear which
method incentivizes owners to report higher self-assessments. In addition, theoretically, one cannot be sure whether a higher self-assessment is less accurate.

The information perspective can, however, tip the balance against the revised method. Under the revised method, landowners could gather information about the reservation price of the condemnor by accessing and analyzing condemnor agencies’ budgets and environmental impact statements, cost-benefit analysis of condemnation projects, and administrative guidelines that limit government officials’ discretion to renege on condemning. By contrast, this kind of information may not exist, or harder to acquire, under the pure ex ante method. Such information, acquired from ex post wasteful rent-seeking activities, enables landowners to have a better grasp of condemnors’ reservation prices and manipulate their self-assessments accordingly. And landowner’s over-assessment could deter efficient public projects. Hence, the revised method will produce usually inaccurately high self-assessments, because landowners take advantage of the information regarding the reservation prices to strategically report their economic value.

In terms of accuracy, the pure ex ante method in practice usually produces under-assessment, while the revised ex post method produces over-assessment. Neither is necessarily better. But as far as assessment costs are concerned, the revised ex post method is more expensive than the pure ex ante method. First, given that property taxes have to be assessed some way, under the ex ante method, every land parcel is assessed only once in a tax period at most, while the revised ex post method has an additional procedure for potential targets of condemnation. Second, as mentioned above, without manipulation of the parity condition, under the ex ante method, the administrative costs are mostly recording self-assessments. Legal disputes could be few because landowners determine the property value themselves. By contrast, under the revised ex post method, there could be a lot of legal disputes over why the government (does not) backs off condemning some properties.

In sum, the ex ante assessment by landowner method is the best way to assess economic value, but it is not perfect. To properly determine which compensation standard is the most efficient, we need to know how accurate fair market value can be assessed and at what cost. Below I discuss the two proto-types of assessment methods that can be used to appraise fair market value.

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113 Cf. Kaplow, supra note 13, at 603 (pointing out that most localities need to assess properties for tax purposes anyway).
E. Ex Ante Assessment by Non-landowners

Ex ante assessment by non-landowners is not implausible. In fact, this is the method employed by contemporary Taiwan laws. In a previous paper, I have empirically evaluated the Taiwanese system. Here, I use a stylized example to demonstrate that a “tax-compensation combination” design used in this type of method will still fail to attain the goal of accurate assessments.

In a “tax-compensation combination” regime, property value pre-determined by the government is employed not only to levy property taxes but also to determine takings compensation. Raising property value increases not only tax revenues but also potential takings compensation payments. This design intends to curb the official assessors’ inclination to under-assess land value — official assessors are more likely to under-assess if their assessments are only used to determine takings compensation. All these assume that the government (officials) suffers from fiscal illusion. While I believe that the political interest theory is more persuasive than the fiscal illusion theory, in the following model first I follow the presumptions of the latter, and then I discuss the model under the assumptions of the former.

Following fiscal illusion theory, I assume that the government aims to minimize takings compensations and prefer to have more budgetary inflow; assessors fully and only internalize the costs of compensations and the benefits of tax revenue in monetary terms. In such a model, assessors face:

Costs = Condemnation compensation = \{ \Sigma p_i * A_i \}

Benefits = Tax revenue = \{ \Sigma (1 - p_i) * A_i * t \}

where \( p_i \) represents the probability of condemnation of land \( i \); \( A_i \) represents the assessed value of land \( i \); \( t \) is the tax rate. The \( \Sigma \) sums up the costs and benefits of all land parcels.

An assessor, call her Joan, who internalizes the monetary costs and benefits, naturally aims to maximize net benefits (tax revenue minus takings compensation payments):

\[
f(A_i) = \Sigma [(1 - p_i) * A_i * t - p_i * A_i]
\]

If \( p_i < t/(t+1) \), \( f(A_i) \) is always larger than 0; in this case, Joan maximizes \( f(A_i) \) by increasing \( A_i \) as highly as possible. If \( p_i > t/(t+1) \), \( f(A_i) \) is always smaller than zero.

114 See Chang, supra note 45 (finding that between 2000 and 2007, governmental assessments in Taiwan under this regime are inaccurate).

115 I have argued that the fiscal illusion theory implicitly adopts this assumption. See id.

116 Higher \( A_i \) usually leads to lower \( p_i \) and lower expected \( p_i \) induces Joan to assess \( A_i \) higher. Therefore, the model itself, when \( p_i \neq t/(t+1) \), actually incentivizes inaccurate assessments. This shows the danger of putting the decision-making powers of assessing value and condemning in the same party’s hands.
Hence, Joan assesses land, as low as possible to reduce losses. If \( p_i = t/(t+1) \), \( f(A_i) = 0 \). Joan is indifferent to any amount of assessment. Because \( p_i \) varies, Joan may over-assess some land parcels while under-assess others.\(^{117}\)

The tax rate \( (t) \) is known while the probability of condemnation \( (p_i) \) is usually uncertain. Sometimes Joan would perceive \( p_i \) as obviously larger or smaller than \( t/(t+1) \) and over-assess or under-assess accordingly. Sometimes Joan is not sure about the relationship between \( p_i \) and \( t/(t+1) \). In this case, the rule of thumb for her may be assuming that \( p_i = t/(t+1) \). Then, as I just argued above, she is indifferent and still does not have incentives to assess accurately.

Some would contend that when Joan has nothing to maximize, she would simply assess accurately. Nevertheless, assessing accurately is more time-consuming than assessing inaccurately. Jane has no incentive to work harder for nothing — accurate or not, the expected net benefit for the government, \( f(A_i) \), is zero. Furthermore, to equate \( p_i \) with \( t/(t+1) \) in the first place, or to make assessors unsure which one is larger, the law has to adjust either the tax rate or the probability of condemnation (for every land parcel!). It is administratively very costly and politically unfeasible to adjust them only for the sake of getting accurate assessments.

Loosening the assumptions made above by the fiscal illusion theory and dealing with the complexities in reality, I argue that accurate assessments are even more difficult to arrive at. First, assessors may not internalize the monetary costs of paying compensations and the monetary benefits of receiving tax revenue. Because assessors do not personally pay compensations or receive tax revenue, neither of the above costs or benefits may affect their assessing decisions.\(^{118}\) Their personal concerns, like reducing accuracy to alleviate workload,\(^{119}\) may be more decisive.

Granted, assessors may partially internalize the above costs and benefits (because, say, insufficient tax revenue affects their bonus), but this does not ensure accurate assessments.\(^{120}\) Furthermore, assessors may also internalize other types of costs and benefits (such as those brought by the public use of the condemned land), which only make accurate assessment more unlikely.

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This result contrasts with the analysis of the ideal type of ex ante assessment by landowners, under which the inverse relationship between \( p_i \) and \( A_i \) keeps the self-assessments in check.\(^{117}\) The basic logic of this model is the same as that of the model in IV.C.1, but the incentives of the assessors are just the opposite.\(^{118}\) Even assume that the government as a whole does internalize costs if compensations are paid, assessors are not the government incarnate. They do not necessarily assess for the net benefits of the government as a whole.\(^{119}\) See STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 129-30 (2004); Michael S. Johnson, Assessor Behavior in the Presence of Regulatory Constraints, 55 S. ECON. J. 880, 881 (1989).\(^{120}\) Kaplow argues, “to the extent that both discounted in roughly the same proportions, no bias should result” (emphasis added). See Kaplow, supra note 13, at 568 (1986).
More fundamentally, as the political interest theory argues, assessors may perceive costs and benefits not in monetary units but in political units. If the correlation coefficient of “political costs versus monetary costs” and the correlation coefficient of “political benefits versus monetary benefits” do not approximate each other, using tax-compensation combination cannot achieve its goal of inducing accurate assessments.

In sum, the tax-compensation combination, the major design in the ex ante assessment by non-landowners method, appealing as it seems, can hardly provide the correct incentives that will induce non-landowners/assessors to make accurate assessments of fair market value, whether the government maximizes “monetary costs and benefits” or “political costs and benefits.” In the next section, I will examine whether another assessment method can do a better job in assessing fair market value.

F. Ex Post Assessment by Non-landowners

Ex post assessment by non-landowners is the method employed by most (if not all) American states. Take New York State as an example, when the government needs a specific property but cannot reach a voluntary deal with its owner, it condemns the property and asks a professional appraiser to assess the value of the property. Then the government offers the highest approved appraised value as compensation to the property owner. If the owner does not accept the offer as payment in full, the government negotiates a settlement with the owner. If negotiations fail, the court would adjudicate the amount of compensation due.

An ex post assessment by non-landowners model tends to be simpler than models designed according to other three types of assessment methods, as shown by the simplicity of the New York State regime. The simplicity is due to unavailability of ordinary incentive schemes. For example, the tax-compensation combination (imperfect as it is when employed ex ante) is not useful ex post, because the

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121 Assessors usually are not politicians, who perceive costs and benefits in political units, but politicians oversee assessors, so assessors may be required to perceive costs and benefits in political units.

122 For example, if political costs equal monetary costs while political benefits only translate into monetary benefits 50% of the time, assessors take too few monetary benefits into account and do not produce the accurate assessments as tax-compensation combination theorists expect.

123 See N.Y. EM. DOM. PROC. LAW (McKinney 1977). For detailed descriptions of the New York regime, see Chang, supra note 32.

124 One could argue that the New York regime is not an entirely pure type of ex post assessment by non-landowners, because when the compensation is determined in a settlement, property owners’ ex post assessments could have influenced the amount of compensation. But if a judge determines the amount of compensation, or the condemnee accepts the offer as payment in full, it is arguably a pure type.
probability of condemnation is 100% — there is nothing uncertain to balance the government assessors’ incentives. Furthermore, it will be absurd to grant the government a back-off option, since the amount of compensation is determined by the government itself.\footnote{Even if the government is required to commission independent appraisers to assess property value, as New York State is, the government can certainly ascertain property value before deciding whether to condemn. A back-off option neither enhances assessment accuracy nor induces responsible governance. They may sacrifice some accuracy of assessment to save workload. See literature cited in note 119. They may deliberately inflate assessments to reduce the chance that condemnees challenge the assessments in court, where they will face cross-examination. \textit{See} Curtis J. Berger & Patrick J. Rohan, \textit{The Nassau County Study: An Empirical Look Into the Practices of Condemnation}, 67 COLUM. L. REV. 430, 443 (1967)(arguing that in the case of Nassau county, the deliberate inflation thesis does not hold). Competition for appraisal commissions from the government may induce appraisers to try to deliver what they think is the government’s preferred assessments. \textit{See} S. Alan Aycock & Roy Black, \textit{Special Master Bias in Eminent Domain Cases}, 33 REAL ESTATE ISSUES 53, 53-54 (2008). An appraiser may assess conservatively in difficult cases, because they do not want to lose their designations or reputations because of extreme assessments.}

The assessment costs of the \textit{ex post} assessment by non-landowner method tend to be higher than the \textit{ex ante} methods. Under the \textit{ex post} models, all properties have to be assessed once in a tax period and additional assessments are necessary for condemned properties, while condemned properties under the \textit{ex ante} models using the tax-compensation combination design do not need to be assessed once again. Note, however, that the number of condemned properties each year is small; thus, the difference in assessment costs in this respect is slight.

Which method is more accurate is more difficult to ascertain. Assessors like government officials maximize political interests, which could lead to over-compensation or under-compensation. Assessors like real estate appraisers could have all kinds of incentives not to assess accurately.\footnote{They may sacrifice some accuracy of assessment to save workload. See literature cited in note 119. They may deliberately inflate assessments to reduce the chance that condemnees challenge the assessments in court, where they will face cross-examination. \textit{See} Curtis J. Berger & Patrick J. Rohan, \textit{The Nassau County Study: An Empirical Look Into the Practices of Condemnation}, 67 COLUM. L. REV. 430, 443 (1967)(arguing that in the case of Nassau county, the deliberate inflation thesis does not hold). Competition for appraisal commissions from the government may induce appraisers to try to deliver what they think is the government’s preferred assessments. \textit{See} S. Alan Aycock & Roy Black, \textit{Special Master Bias in Eminent Domain Cases}, 33 REAL ESTATE ISSUES 53, 53-54 (2008). An appraiser may assess conservatively in difficult cases, because they do not want to lose their designations or reputations because of extreme assessments.} Nevertheless, fair market value is an objective measure of property value, thus ascertainable by extrapolating from the sale prices of comparable properties. The incentive problem under non-landowner assessment methods is not that assessors are not honest about “their own” value, but that it could be their (political) interests to manipulate the objective assessed value. Additionally, assessors may not have incentives to work hard enough to ascertain a fair market value. Therefore, the assessment method that can appraise market value without counting on assessors’ incentives to work hard and prevent assessors from distorting assessments for personal interests is more likely to produce accurate assessment of market value. Hedonic regression analyses are a case in point, because hedonic regressions have generally accepted methodologies and the regression results (the estimated market value) can easily be replicated.

Hedonic regression analyses can be used \textit{ex ante} or \textit{ex post} to assess property value for tax purposes or compensation purposes. Nevertheless, because the
benchmark compensable value is the property value at the time of condemnation, *ex post* assessment will be more accurate. And if hedonic regression models are used in both taxing and compensating, the marginal costs of appraising property value are negligible; thus, the assessment costs of the *ex post* method can be considered equally low as those of the *ex ante* method. Hence, in jurisdictions where a hedonic regression model is applicable, the *ex post* method should be better.\(^{127}\)

V. FAIR MARKET VALUE PLUS A SCHEDULE OF BONUS

So far, I find that, in terms of condemnees’ and condemnors’ incentives, economic value compensation is optimal, fair market value is sub-optimal. Accurate assessment of economic value in practice, however, is impossible. Two options emerge from the above discussions: the first is implementing the *ex ante* self-assessment method without manipulating the parity condition; the second is implementing the *ex post* assessment by non-landowner method. The first aims at verifying economic value but can only get under-assessed economic value. The second aims at appraising fair market value. Thus, we are choosing between two under-assessed values. For the following four reasons, I argue that we should side with fair market value.

Fair market value should be preferred first because it does not always deviate from the actual economic value. Residential property owners usually have positive subjective value, while owners of non-residential properties (including those in commercial districts and industrial zones), and owners of investment residential properties do not attach much subjective value to the properties. Awarding fair market value could get the compensation roughly right when the government takes the latter types of properties. By contrast, under the self-assessment method, non-residential property owners and residential property owners alike under-assess.

In addition, the fair market value standard is easier to be improved upon. Some scholars have proposed to add bonus to the estimated fair market value in order to make up for the loss of subjective value.\(^{128}\) A bonus could also be added upon the under-assessed economic value to fill in the shortfall. Nevertheless, bonuses work better with fair market value. Suppose that the bonus is proportional to the compensable value.\(^{129}\) Under the *ex ante* self-assessment method, the bonus changes

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\(^{127}\) In some jurisdictions, hedonic regression analyses may not be applicable, because there is not enough number of sales. When traditional appraisal mechanisms are used, it is unclear whether the *ex ante* method or the *ex post* method is superior.

\(^{128}\) For such proposal, see, e.g., EPSTEIN, supra note 62, at 91.

\(^{129}\) Suppose that the bonus is constant — same for every condemnee. It is equally likely to be
owners’ expected value function and gives them even more incentives to under-assess. Eventually owners pay lower taxes and may still receive under-compensation. Under the *ex post* assessment by non-landowner method, the proportional bonus does not affect the estimates by hedonic regression models (though it may influence the appraised value by appraisers or government officials). Therefore, sticking with fair market value standard and adding bonus has a better chance of not awarding under-compensation.

Moreover, although hedonic regression analyses of fair market value cannot yet be used in every neighborhood, with the advent of ever more powerful computers and an increasing number of data, the applicability of hedonic regression analyses can only increase. At the very least, our knowledge from employing it can increase the accuracy of traditionally appraised property value.\(^\text{130}\) By contrast, there seems to be no practical way to improve the accuracy of assessed economic value. At the same time, advances in computer technology will continuously reduce the fixed costs and marginal costs of using hedonic regression models to estimate fair market value.

Finally, fair market value and the *ex post* assessment by non-landowner method has the advantage of being the incumbent compensation standard. Switching track to another compensation regime incurs administrative costs and thus requires good evidence of efficiency improvement. And the self-assessment regime and the under-assessed economic value are not obviously better. In sum, I believe that fair market value and the *ex post* assessment by non-landowner method should be chosen over under-assessed economic value and the *ex ante* self-assessment method.

Improvements can still be made on the fair market value standard. The proportional bonus discussed above is not the most ideal way of approximating the real economic value.\(^\text{131}\) A schedule of bonus rates,\(^\text{132}\) I believe, works better than a

\(^{130}\) See evidence in Chang, *supra* note 103.

\(^{131}\) Flat rate bonus proponents recognize that the bonus will not be perfect but argue that as long as the bonus compensation regime does not systematically over- or under-compensate condemnees, it will be better than the fair-market-value-only compensation regime, which systematically under-compensate condemnees. See RICHARD A. EPSTEIN, TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN 184 (1985).

flat (rate) bonus. Ideally, the schedule should be designed to reflect the various factors that affect subjective value. In reality, some factors (idiosyncratic preference, for one) are hard to verify and thus unlikely to be considered in the bonus schedule. Nevertheless, few would object that the length of tenure positively correlates with the magnitude of subjective value — a homeowner who just moved into the house has lower subjective value than a homeowner whose family has lived in the house for three generations does. Other factors could be important and manageable, but these factors as well as the details of the bonus schedule have to be examined or worked out, respectively, based on future empirical studies and cannot be discussed here. The schedule of bonus rates will not be perfect, but should be better than the flat bonus rate and is the second-best choice when direct assessment of economic value is unlikely to be accurate.

VI. Conclusion

In this Article, I find that, under current law, condemnees will not over-invest because of having guaranteed takings compensation. They will, however, be induced to take rent-seeking activities if takings compensation is expected to be higher or lower than economic value. Besides, it is difficult to design the compensation regime so as to induce government officials to condemn properties efficiently, because they pursue their own political interests. Nevertheless, it is clear that developers will lobby government officials for condemning land if property owners receive less than full compensation. Therefore, as far as condemnors’ and condemnees’ incentives are concerned, economic value is the most efficient compensation standard. But I also find that assessment costs are often not negligible and assessment of property value is not always accurate. Taking them into account, I propose that fair market value (appraised by hedonic regression models) plus a schedule of bonus should be the most efficient takings compensation standard. Owner-occupants of residential properties who live in the properties for a long time should receive the maximum amount of bonus, while owners of non-residential properties or owners of investment residential properties should receive minimum, if any, bonus, in order to reflect their differences in the magnitude of subjective value.

133 Ellickson’s and Merrill’s designs are based on this factor. See id.
Jeff Stake also argues that longer possession should trigger greater compensation. See Jeffrey Evans Stake, Just (and Efficient?) Compensation for Government Expropriations, in LAW, MIND AND BRAIN 299, 316 (Michael Freeman & Oliver R. Goodenough eds., 2009).