

SELF-ASSESSMENT OF TAKINGS COMPENSATION:
AN EMPIRICAL STUDY

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ABSTRACT

Several scholars have proposed using property owners' periodic assessments of properties' economic value as takings compensation, replacing the current U.S. regime which uses *ex post, ad hoc* governmental assessments of properties' market value. No empirical study has yet been done to examine whether the proposed *ex ante* self-assessment method produces accurate takings compensation. This Article fills the empirical gap by analyzing data from Taiwan's 1954–1977 regime, which is similar to the proposed scholarly models.

I find that most landowners' *ex ante* self-assessments are below market value, not to mention their economic value. The monetary incentives to report lower self-assessments in order to reduce property taxes appear to outweigh the risk that low self-assessments will result in under-compensation. The *ex ante* self-assessment method, if implemented in the U.S., will likely produce inaccurate property value assessments as well.

KEYWORDS

Self-Assessment, Economic Value, Ex Ante, Takings Compensation, Property Value

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I. INTRODUCTION

Should landowners determine the takings compensation of their land? Some scholars think so; they propose using landowners’ periodically reported self-assessment of property value, instead of an *ad hoc* governmental assessment,¹ as takings compensation (Levmore 1982; Bell and Parchomovsky 2005; Note 2005).² Self-assessment proponents claim that the governmental assessment regime has produced inaccurate³ takings compensation (Bell and Parchomovsky 2005).⁴ Furthermore, these scholars argue that the “market value”⁵ compensation currently

¹ Most (if not all) American states assess property value for takings compensation only if, and *after*, a decision to condemn properties is made. I called this method “*ex post* assessment by the non-landowners,” one of the four proto-typical assessment methods. The other three methods are *ex ante* assessment by landowners; *ex post* assessment by landowners; *ex ante* assessment by non-landowners.

In this Article, I use “*ex ante* self-assessment” and “*ex ante* assessment by landowners” interchangeably. Non-landowner assessors are not necessarily officials in the administrative branch. It could be the court, for example. To simplify, I call the current American regime “*ex post* assessment by the government” (Chang 2010c).

² See also the discussions of self-assessments of property value in Harberger (1965); Holland and Vaughn (1969); Tideman (1969; 1990); Niou and Tan (1994); Fennel (2005); Plassmann and Tideman (2008).

³ In this Article, I refer to assessments as “accurate” when they are equal to economic value. Accordingly, “under-assessment/under-compensation” (or “over-assessment/over-compensation”) means assessments/compensations lower (or higher) than economic value.

⁴ Non-self-assessment proponents also have the same observation, *see, e.g.*, Garnett (2006, p.104).

⁵ Dana and Merrill (2002, pp.169-70) has offered a good definition of “fair market value” as “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.” Judge Posner defined

awarded is not just compensation. Just compensation requires “economic value”⁶ compensation (Bell and Parchomovsky 2005).⁷ In these scholars’ self-assessment models, owners would not only report the economic value of their property, but also do so accurately. While several empirical papers have supported the claim that the government has been awarding inaccurate takings compensation,⁸ there is no empirical study evaluating whether property owners report accurate assessments of economic value in a self-assessment regime.

There are two major self-assessment models.⁹ Levmore (1982) proposes that property owners periodically report their own assessments of the economic value of their property, and be bound by the assessments if their properties are taken by governments (or any private person). As long as owners retain title to the properties, they would be taxed according to their reported self-assessments. Bell and Parchomovsky (2005) offer a variant, in which property owners would not only be bound by their self-assessed value for tax and condemnation compensation, but also would be forbidden to sell the properties at a price lower than their self-assessments.¹⁰

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 Judge Posner (1998, p.12) defines economic value as “how much someone is willing to pay for it or, if he has it already, how much money he demands for parting with it.”

Different terms and descriptions have been used to refer to this concept. For example, Krier and Serkin (2004, p.866) use fair market value plus consumer surplus to represent economic value. Fennel (2004, pp.963-65) uses the term “subjective value” instead of economic value, defining it as fair market value plus subjective premium.

I choose to use market value and unique subjective value as the two components of economic value, as do Blume and Rubinfeld (1984, p.619).

⁷ Other non-self-assessment proponents have also argued for economic value compensation. Epstein (1993, p.182) argues, “ideally, the state should be required to pay not the market value, but the subjective value that the individual attaches to the property.” See also Becker and Posner (2009, p.54). Epstein (1985, p.184; 2008, p.91) proposes a fixed bonus above fair market value as compensation.

But see 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); Fischel (1995, p.211); Miceli and Segerson (2000, p.332)(arguing that, all things considered, market value compensation may be the best choice).

⁸ Burger and Rohan (1967) finds that in Nassau County, NY, from 1960 to 1964, in 84.4% of cases, the compensation condemnees received was less than the lower one of the two assessed value; in 56.9% of the cases, the compensation was lower than 90% of the assessed value. Munch (1976) finds that in Chicago, Illinois, from 1962 to 1970, low-valued properties received less than market value and high-valued properties received more than market value. Clauretie *et. al.* (2004) finds that in Clark County, Nevada, the government compensated landowners 17% above market value. Garnett (2006) finds that in St. Joseph County, IN, the total compensation—sale price plus relocation assistance—for condemnation settlements is on average 157.18% of the average appraised value of the property. Chang (2010a) finds that 90% of the condemnees in New York City during 1990–2002 did not receive fair market value as compensation.

⁹ In my terms, these are “*ex ante* assessment by landowners” or “*ex ante* self-assessment.” The proposed method is *ex ante*, instead of *ex post*, because self-assessments are reported before a decision to condemn is made (Chang 2010c).

¹⁰ Note that in their published version (Bell and Parchomovsky 2007), Bell & Parchomovsky revised

In my prior work (Chang 2010c), I have argued that these proposed self-assessment models are theoretically unsound, and that *ex ante* self-assessment is not necessarily a better choice to remedy the inaccurate assessment problem in the current regime.¹¹ Levmore (1982, pp.858-59) argued that “[t]he strengths and weaknesses of a self-assessment system can be evaluated only after a particular system is designed carefully and then only by comparison to the characteristics of the conventional assessment system that it would replace.” I take up his invitation to empirically test the accuracy¹² of the self-assessments produced by a regime similar to what he and Bell & Parchomovsky proposed;¹³ namely, the legal regime implemented in Taiwan from 1954 to 1977.¹⁴ I use Taiwan’s data to test the scholarly model because Taiwan is one of the only five jurisdictions in world history that has implemented this assessment method.¹⁵ Taiwan used this method for more than 20 years, longer than any other jurisdiction; moreover, data from no other country but Taiwan are available.

I find that, contrary to the predictions of scholars such as Levmore and Bell & Parchomovsky, landowners’ assessments were lower than landowners’ own economic value and, therefore, inaccurate. The monetary incentive to report lower assessments in order to reduce taxes appears to outweigh the risk that the same assessment will result in under-compensation in the relatively unlikely event that the property is condemned. I further argue that Taiwan’s regime during this period is similar enough to the scholarly models to render a verdict on their utility. Therefore, if the U.S. implements the *ex ante* assessment by landowner method proposed by the scholars, it is unlikely to produce accurate takings compensation.

This paper is structured as follows: Part II describes self-assessment proponents’ assertions that I will empirically test in subsequent Parts. Part III outlines Taiwan’s legal regime. Part IV describes the data and the empirical strategy I used to test the scholars’ assertions. Part V reports the results that most Taiwanese landowners

their model and proposed a hybrid model of *ex post* self-assessment and *ex ante* self-assessment. The two models are similar in many respects, but since the working-paper model more resembles Levmore’s model and Taiwan’s regime, I draw on the assertions of their working-paper model in this paper. For discussions of their published-version model, *see* Chang (2010c).

¹¹ Levmore’s (1982) and Bell and Parchomovsky’s (2005) proposals may lead us closer to the ideal of economic value compensation. But I address only the accuracy problem in this paper.

¹² Both Levmore (1982) and Bell and Parchomovsky (2005) have argued that self-assessments are accurate and low-cost. I focus on the accuracy in this paper.

¹³ To complete the comparison proposed by Levmore, I also conduct empirical studies on a “conventional assessment system”—New York City from 1990 to 2003 (Chang 2010a; 2010b).

¹⁴ The legal regime took effect in 1954, but land value reporting did not start until 1956. So actual data in this paper are collected from 1956 on.

¹⁵ The other four jurisdictions are Ancient Athens, New York City in 1658 (then called New Amsterdam, governed by Dutch), New Zealand from 1891 to 1896, and Columbia in 1954 and 1963. *See* Chang (2010c); Colwell (1990); Bird (1986); Plassmann and Tideman (2008).

self-assessed their properties at less than their economic value. I also offer a theory about why Taiwanese landowners routinely under-assessed, but only within certain limits. Part VI argues that Taiwan's experience can be generalized to other contexts. Part VII concludes.

II. ASSERTIONS OF SELF-ASSESSMENT THEORISTS

In 1983, Saul Levmore proposed that landowners be required to report their property value and be bound by this reported value for property tax, condemnation compensation, and "forced sale" compensation. In his model, any private party or the government can take a property at its owner's self-assessed value at any time. Because self-assessments are used to calculate both taxes owed by the property owner and compensation owed to the property owner, Levmore (1982) argues that landowners would be motivated to report accurately.

In Bell and Parchomovsky's (2005) model, owners self-assess and pay taxes accordingly. Only the government, however, can take a property at its owner's self-assessed value. A penalty fee would be imposed if owners sell their properties for lower than the self-assessed value.

Both models claim to induce accurate self-assessments from property owners (Levmore 1982, p.779; Bell and Parchomovsky 2005, p.6).¹⁶ That is, they assert that landowners will report their assessments as exactly their economic value.¹⁷ Bell & Parchomovsky further argue that compensation based on market value constitutes "under-compensation," because it leaves an owner worse off than she would have been if she still held the property.¹⁸ Economic value, they argue, is the appropriate standard for compensation.¹⁹

¹⁶ Sometimes Levmore (1982, p.782) is more conservative, claiming only that his model will "encourage self-assessors to announce a value *closer to* the true internal value of the property" (emphasis added). Interestingly, sometimes Bell and Parchomovsky (2005, pp.33, 45) also show conservativeness, stating that "while our model does not yield a first best result—compensation at precisely the owner's reserve price—it brings us *much closer to* accurate compensation at a reasonable administrative cost." (emphasis added) and "under our proposal, owners will, in some cases, exaggerate in their self-assessments."

¹⁷ Levmore (2005, p.778) uses the term "internal value or reservation price," defined as "the amount of money a property owner would require to be indifferent between a sale and keeping his property." Levmore's expression is another way of saying economic value. Bell and Parchomovsky (2005) uses the term "subjective value" instead of economic value.

¹⁸ Levmore is less explicit on this point, probably because he approaches the assessment issue from the standpoint of property tax.

¹⁹ Bell and Parchomovsky (2005, p.6). Note that in later part of their paper Bell and Parchomovsky (2005, pp.26-27) seem to use market value as the standard of under-compensation.

III. TAIWAN'S REGIME: 1954 – 1977

[The flow chart of Taiwan's regime in the Appendix may be put here instead.]

In 1954, the Equalization of Land Rights in Cities Act²⁰ adopted the *ex ante* self-assessment method for determining compensation awards in cities. Under the Act, every several years, local governments are required to investigate recent transaction prices of land parcels and assign (mostly through extrapolation) each land parcel an official land value,²¹ called Publicly-Announced Land Value (PALV).²² Landowners then, with PALV in mind, report self-assessments of land value, called Declared Land Value (DLV), to their local governments.²³ If owners fail to report DLV, PALV is the default land value.²⁴ Landowners are also required to report to the government any sale of the land.²⁵ This reported transaction price is called Current Transfer Value (CTV).

If the property is condemned, compensation is based on DLV, unless a transaction took place after the DLV was reported, in which case compensation is based on the latest CTV.²⁶ That is to say, during this period, condemnation compensation was based on landowners' assessments on land value, and under-assessments by landowners would result in under-compensation.

Landowners were also taxed according to their self-assessments. Specifically, local governments levy two types of taxes. A land value tax is levied annually

²⁰ As the name of the law suggests, this regime only applied to land itself, excluding constructions or crops on the land. The Act only determined the tax payment and compensation regarding land. Constructions and crops are compensated and taxed in different ways, which will not be covered in this paper.

Non-cities are regulated by different models stipulated by a different law (the Land Act) and will not be discussed in this paper for lack of data.

²¹ Local governments provide official assessments of each property's value for several reasons: as a benchmark value for under-informed landowners, as the default land value in case landowners do not report, and as the standard to determine whether self-assessments are too low. Given the official assessments' multiple functions, it is reasonable to believe that local governments would take seriously the matter of assessing official land value.

²² SHISHI DUSHI PINGJUE DIQUEN TIAOLI [Equalization of Land Rights in Cities Act] art. 7 (Taiwan)(repealed).

²³ Equalization of Land Rights in Cities Act art. 8 (Taiwan)(repealed).

²⁴ Equalization of Land Rights in Cities Act art. 9 (Taiwan)(repealed).

²⁵ Equalization of Land Rights in Cities Act art. 25 (Taiwan)(repealed).

Since 1964 local governments would announce another official value, Announced Current Land Value (ACLV), as a reference for landowners to report the CTV. Landowners were actually encouraged to report ACLV as CTV.

²⁶ TUDI FA [The Land Act] art. 239 (Taiwan)(repealed).

There are three types of condemnations in Taiwan: "ordinary condemnations," "zone condemnations," and "condemnation at self-assessed land value." Due to data limitation, this paper does not discuss zone condemnation, defined as condemning a large number of adjacent land parcels at a time. Zone condemnees can be compensated in-kind by taking back post-development land. Condemnation at self-assessed land value is only discussed in V.C, to better understand the phenomena related to ordinary condemnation.

according to the DLV; the tax rate ranges from 1.5% to 6.5%.²⁷ When titles of land are transferred, a landowner has to pay land value increment tax,²⁸ which is calculated based on the difference between (roughly speaking) the last two land values reported by landowners. Namely, in a land parcel's "first" sale, the tax base is the reported CTV of the sale minus the DLV.²⁹ Otherwise, the tax is based on the difference between the last two CTVs.³⁰

Between 1954 and 1964, if a land parcel's DLV was below 80% of its PALV, local governments had only two options: they could either accept the DLV, or condemn the land for the DLV.³¹ From 1964 to 1977, local governments could accept the DLV, condemn the land for the DLV, or levy land value tax based on 100% of the PALV.³²

In sum, in Taiwan between 1954 and 1977, landowners reported DLV, which local governments then used both to levy annual land value tax and to compensate landowners.³³ DLV can be considered the self-assessed value advocated by scholars. In the following part, I will empirically examine the relationship between DLV and landowners' economic value.

IV. EMPIRICAL METHOD AND SUMMARY OF DATA

To compare landowners' reported self-assessments (DLV) with the economic value of their land, I need to use the official assessments (PALV) and market value as bridges. First of all, a landowner's economic value should be higher than or equal to the market value of the land; otherwise landowners would have already sold the land, unless transaction costs are higher than the gains from trade (Fennel 2005, p.963;

²⁷ Equalization of Land Rights in Cities Act art. 14 (Taiwan)(repealed).

The tax rate slightly changed for a few times during this period.

²⁸ From 1954 to 1964, the land value increment tax rates are 30%, 50%, 70%, 90% or 100%. From 1964 to 1977, the tax rates are 20%, 40%, 60%, or 80%. Different tax rates apply to different part of the increase in land value. The lowest tax rate applies to the first 100% increase in value of a land parcel. That is: $(CTV-DLV)/DLV < 100\%$. The second lowest tax rate applies to the second 100% increase in value of a land parcel. That is: $100\% < (CTV-DLV)/DLV < 200\%$. And so on.

²⁹ To be more exact about "first" sale:

From 1954 to 1968, for land parcels sold for the first time *after landowners report DLV*, the tax base is the reported CTV of the sale minus the *latest* DLV.

From 1968 to 1977, for land parcels sold for the first time *ever*, the tax base is the reported CTV of the sale minus the DLV reported in 1964 (if a land parcel does not have DLV until after 1964, its first-ever DLV).

³⁰ The Land Act art. 167 and art. 178 (Taiwan).

³¹ Equalization of Land Rights in Cities Act art. 9 (Taiwan)(repealed).

³² Equalization of Land Rights in Cities Act art. 9 (Taiwan)(repealed).

³³ This is the case when no transaction happens between the DLV-reporting date and the condemnation date.

Merrill 2002, p.119).

In addition, market value, the literature unanimously asserts, was significantly higher than PALV before 1977.³⁴ According to scholars' estimation, PALV was approximately only 60% of the market value³⁵ because the agencies in charge of deciding PALV—the local Land Evaluation Committees—maintained PALV under market value to alleviate landowners' tax burdens and prevent inflation of real estate price.³⁶ I have encountered no arguments disputing the assertion that local governments under-assessed, and I can think of no good reason to challenge it.

Since PALV is lower than market value, which is not higher than economic value, if DLV is lower than PALV, landowners' declared value is therefore lower than their economic value. By contrast, If DLV is higher than PALV to a certain extent, it will be difficult to ascertain the relative magnitude of DLV and economic value.

I collected data, originally recorded by the Taiwanese government, to show the relationship between DLV and PALV from 1954 to 1977. My direct sources for the data used in Figure 3 are the internal documents of the Taiwan Provincial Government. These over fifty-year-old, previously undisclosed documents were recently scanned by Academia Historica, Taiwan and made available to the public in 2007.³⁷ The data in Figure 2 and most of the data in Figure 1 come from governmental publications,³⁸ although the government currently does not have a readily-accessible archive that contains these data (Telephone Interview 2006a; 2006b). Academic writings from the

³⁴ From the internal documents of Taiwan Provincial Government, I found records of a hundred plus actual cases whose official assessments are much lower than market value. In Kaoshiung City, in 1958 the PALV of the 39 recorded cases is on average 51% of market value; in 1959 the PALV of the 70 recorded cases is on average only 38% of market value. *See* internal documents of Taiwan Provincial Government, available at Academia Historica, Taiwan (on file with author).

Note that PALV and market value on the records should both be assessed in 1956, but the market value could be assessed in 1958 and 1959. The document is a little unclear about this. But since it is unlikely that in that era market value would more than double in two years and triple in three years, market value in 1956 should be higher than PALV and DLV in 1956 in any case.

³⁵ Zhao (1967, p. 65) finds that PALV is 60%~70% of market value. Su (1978, pp.74-75) finds that before 1975, PALV is only 56% of government-assessed market value). Chen (1980, p.89) finds that PALV is only 50%~60% of government-assessed market value.

³⁶ Using PALV to prevent inflation of real estate price is an unsound economic policy, which has been empirically refuted by econometric studies in Taiwan (Lin 1989). As for why local Land Evaluation Committees prefer to alleviate landowners' tax burden, *see* Chang (2009).

³⁷ The full-text internal documents can only be search on-site, but the indexes and excerpts of these files can be searched at Academia Historica – Digital Archives Program, <http://db1n.sinica.edu.tw/textdb/dmhbrowse/browse.php> (last visited May 1, 2007).

³⁸ I do not have a good theory as to why Taiwan government agencies compiled these data, which they keep at least until 1983, when the data were published. These data are indeed useful for the government. For example, in 1986, observing that almost all landowners report and almost all of them report 80% of PALV (when the default is 100% PALV), the government decided to change the default rule to 80% of PALV, to save administrative costs. *See* Council for Economic Planning and Development (1988, pp.51-52).

1980s reported similar data, which occasionally varies slightly from the governmental sources. In cases of discrepancy, I used the data recorded in governmental publications.

The data cover every jurisdiction in Taiwan in *every* round of PALV-assigning-and-DLV-reporting (hereinafter “DLV-reporting”) between 1954 and 1977.³⁹ The data are irregular because the law did not mandate regular DLV-reporting, but instead required a new round of DLV-reporting only if two or more years had passed since the last round of DLV-reporting *and* the market value of land had fluctuated more than 50%.⁴⁰ Figure 1 presents data from Taiwan Province, whose jurisdiction before 1967 included the entirety of Taiwan Island and Penghu Islands. In 1967, when Taipei City was upgraded to its own political entity, its PALV and DLV data began to be published separately from those of Taiwan Province, as shown in Figure 2.

As the notes to Figures 1 and 2 indicate, the data size is so large and the landowners’ DLV reporting rate is so high that these samples almost resemble the populations. In Figures 1 and 2, the data from each round of reporting is divided into four groups. From left to right, these four groups represent “DLV divided by PALV” <80%, =80%, =100%, and >100%. The height of the bars indicates the percentage of cases in the category. Figure 3 presents the 1956 jurisdiction-level data in a similar way, but with an additional bar, situated right in the middle, representing “DLV divided by PALV” 80%~100%.

I show only 1956 jurisdiction-level data for two reasons. *First*, even if one is concerned about governmental manipulation of published data, one does not have to worry about the authenticity of the 1956 data, because the data were recorded in internal government documents at the time they were collected. The data were not supposed to go public; indeed, the internal documents were accessible to the public only after more than 50 years had elapsed. By contrast, other data I have were published by the government at least several years after collection, or were not officially published. *Second*, post-1956 data mysteriously lack the “80%~100%”

³⁹ Throughout 1954 to 1977, the method for assessing PALV remained unchanged, though the appraisal technique should have improved. The only reasonable (but not necessary) inference from the improved technique is that the later the PALV was assessed, the more accurate (less under-assessed) it was. But even if PALV approximated market value, it does not change my observation that landowners’ self-assessments were below market value.

⁴⁰ Equalization of Land Rights in Cities Act art. 11 (Taiwan)(repealed).

Starting from 1968, consecutive three years had the DLV-reporting process. The reason is: Equalization of Land Rights in Cities Act applied only to cities. As population grew, more jurisdictions fell into the definition of cities under this Act. Land in new cities needed to go through the DLV-reporting process. New cities are not restricted by the two-year clause.

category, while 1956 data do not have such a gap, giving us a better idea of landowners' decision-making process when they choose to report below 100% of PALV.

[Insert Figure 1, 2, and 3 about here.]

V. FINDINGS AND EXPLANATIONS

A. *Self-assessment Lower Than Economic Value in Taiwan*

Figures 1 and 2 reveal that, in the six rounds of DLV-reporting in Taiwan Province and two rounds of DLV-reporting in Taipei City from 1954 to 1977, more than two-thirds of Taiwanese landowners reported their self-assessments (DLV) to be lower than the official assessments (PALV). No more than 3% (and usually less than 1%) of the landowners reported their self-assessments to be higher than official assessments.⁴¹

Figure 3 shows that the tendency to under-assess is prevalent in every jurisdiction; when landowners decided to report below 100% of PALV, they predominantly chose to self-assess at exactly 80% of PALV, rather than some figure between 80% and 100%. One may wonder whether the “=80%” data in Figures 1 and 2 also include those DLV from 81% to 99%. Figure 3 suggests that even if the first two figures did classify all “81%~99% data” also as “=80% data,” most landowners in that category might indeed report at exactly 80%.

Now I turn to the key question: do Taiwanese landowners' self-assessments approximate the economic value of their land? Given that this article finds that self-assessments were lower than official assessments, which were themselves lower than market value, and given that market value is usually not more than economic value, the Taiwanese data show that landowners' self-assessments were lower than their economic value. That is, self-assessment \leq official assessment $<$ market value \leq economic value. Self-assessment theorists' empirical predictions that self-assessments approximate economic value are not borne out by the evidence from Taiwan.

⁴¹ The reasons for over-assessments are to reduce land value increment tax or to get higher condemnation compensation (Huang 1999, p.72).

B. Under-Assessing Is Strategic

Landowners tend to over-assess land value to gain more compensation if there is no counteracting legal discipline (Chang 2010c). Accordingly, governments usually bundle self-assessed compensation with taxes in order to curb landowners' tendency to over-assess. Despite countervailing taxes, landowners may still over-assess if doing so would maximize their gains. For example, a landowner would do so when the probability of condemnation is high and the tax burden is negligible. But when the disincentives provided by taxes are large enough, landowners will, instead, tend to under-assess.

In Taiwan, landowners' concerns about taxes trumped their concerns about compensation, so they reported DLV to be beneath market value,⁴² not to mention economic value. There are several reasons why they were more attentive to taxes than to the possibility of condemnation. First of all, condemnations were infrequent between 1954 and 1977. As shown in Figure 4, between 1958 and 1977, no more than 0.3% (and on average only 0.04%) of total private land was condemned per year.⁴³ Condemnation was rare, probably because Taiwan's central government agencies and local governments were running on very tight budgets⁴⁴ and could not afford to condemn too much land.⁴⁵ Because of the infrequency of condemnation, landowners expected to keep the land (or at least to sell it on their own timetable) and pay taxes on it for the foreseeable future, increasing the weights of the tax concern.⁴⁶

[Insert Figure 4 about here]

In addition, not all condemnations were compensated. For example, in the 1950s, the military condemned land without paying compensation (Chang 2006). The government was also known for using private land as roads and designating private land as "reserved land for public infrastructure" without legally condemning it (not to

⁴² If the literature is correct in stating that official value was only 60% of market value, *probably all* landowners reported their assessment to be lower than market value.

⁴³ If excluding the data points of 1974 and 1975, when condemnations were extraordinarily numerous, the average probability of condemnation reduces to 0.02%.

⁴⁴ See Figure 5 for GDP statistics, which are suggestive of the tight budgets the government would have.

⁴⁵ In exploring the reasons why self-assessment regime failed in Columbia in 1950s and 1960s, Bird (1986) attributes part of the reasons to the government's inability to condemn land because of fiscal constraint.

⁴⁶ Chang (2010c) argued that theoretically, under an ideal *ex ante* self-assessment model, which is similar to (but not the same as) Taiwan's regime, risk-averse landowners would have incentives to honestly report their economic value only if the condemnation probability is equal to the tax rate. In Taiwan, the condemnation probability is much lower than the tax rate. Thus, it is not surprising that landowners in Taiwan under-assessed.

mention compensating).⁴⁷ These phenomena also reduce the significance of compensation concerns to landowners.

Finally, the prevalent poverty among Taiwanese landowners might play an important role (see Figure 5 for GDP index). I am not saying that only poor landowners under-assess. Rich landowners under-assess if they believe that doing so will increase their long-term welfare. My point is that poor landowners will under-assess even when doing so does not maximize their long-term welfare,⁴⁸ because they cannot afford to pay taxes based on accurate assessments—not to mention strategic over-assessments.

[Insert Figure 5 about here.]

In sum, given that Taiwanese landowners were mostly poor before mid-1970s and that under-assessing is usually wealth-maximizing (because condemnation and compensation are unlikely), it is not surprising that most landowners chose to report low assessments. To state my point more theoretically, landowners *do not* determine what assessment to report by calculating the economic value of their property. Rather, self-assessment is a strategic process influenced not only by economic value, but also by exogenous institutional settings (such as land value tax rate and the probability of condemnation and compensation), and by the wealth of individual landowners, among others things. It follows that self-assessments are not likely to be accurate reflections of economic value.

C. *Additional Disincentives Deter Further Under-Assessments*

As shown in Figures 1, 2, and 3, while more than two-thirds landowners report their DLV to be 80% of PALV in all rounds of DLV-reporting, no more than 1% landowners reported their DLV to be under 80% of PALV. One may wonder why landowners who craved lower tax burdens did not minimize reported self-assessments. Landowners had good reasons to refrain from further under-assessing between 1964 and 1977. During that period, if the DLV was lower than 80% of PALV, the government could choose to accept the DLV, condemn the land, or tax the land based on 100% of PALV. There is evidence that the government rarely condemned in this situation (Dong 1979, p.129; Ministry of the Interior 1982, p.64; Ministry of the

⁴⁷ See Taiwan Justices of the Constitutional Court, Judicial Yuan, Interpretation No. 400. The English translation of this interpretation is available at http://www.judicial.gov.tw/constitutionalcourt/en/p03_01.asp?expno=400.

⁴⁸ Poor landowners could be risk-averse and willing to over-assess, in order to reduce the chance of their land being condemned (the higher the land value, the lower the chance of condemnation).

Interior 1983, p.103). Indeed, the government most often levied taxes on land according to 100% of PALV. Thus, reporting DLV below 80% of PALV likely resulted in a heavier tax burden and entailed an additional risk of condemnation. Thus, it was an irrational step for ordinary landowners to take.

The story is more complicated between 1954 and 1964, when the government did not have the option of levying taxes at 100% of PALV for land whose DLV was below 80% of PALV. The government could only accept the DLV or condemn the land. A landowner could enjoy a lower tax burden by reporting a DLV below 80% of PALV only at the risk of being condemned at the reported low value. As noted earlier, ordinarily, the risk of condemnation was low. But in 1956, the only round of DLV-reporting in this period,⁴⁹ only 1% of the landowners chose to report DLV below 80% of PALV (see Figure 1). Two disincentives deterred landowners from further under-reporting.

The first disincentive was that the lower the DLV is, the greater the land value increment tax the landowner would have to pay to transfer the land, because the tax base is the difference between the DLV and CTV. The land value increment tax rate in 1956 was 30%, 50%, 70%, 90%, or 100%.⁵⁰ Reporting DLV as low as possible does not necessarily serve landowners' best interests.

The second disincentive was the sharply-increased probability of condemnation. The key here is that local governments made credible threats to condemn most of such under-valued land,⁵¹ because it was an arbitrage—local governments could condemn at below market value and sell at market value. For this point to be valid, two conditions must hold.

First, both landowners and the government had to recognize that DLV which was lower than 80% of PALV was lower than market value. Landowners were aware of the approximate market value of their own land; they should also have known that

⁴⁹ The 1964 data in Figure 1 should be counted as post-1964 because the law had revised before DLV was reported. So I only discuss 1956 data here.

⁵⁰ Equalization of Land Rights in Cities Act art. 23, 24 (Taiwan)(repealed).

⁵¹ In retrospect, "roughly 20%" of such land whose DLV is lower than 80% of PALV was condemned. But landowners in 1956 only knew of the 20% rate *after* they reported DLV, if they knew the condemnation rate at all. Even if landowners can somehow accurately estimate the percentage, a 20% probability of being condemned is substantial enough to explain why most landowners did not report land value to be below 80% of PALV.

I said "roughly 20%" because two different statistics were chronicled in the literature. One source indicates that, in 1956, 374 of 3015 (12.405%) such land is condemned (Zheng 1981, p.34). Two other sources (Taiwan Provincial Government 1997, p.169; Chen 1980, p.122) indicate that 682 pieces of land were condemned. According to Figure 1, there should be around 2582 pieces of under-assessed land (258,149*1%). Thus, the condemnation rate is 26.42% (682/2582). All sources claim to acquire their data from the government.

their DLV was lower than market value. Local governments also had a rough idea of market value from investigating transaction prices, and they knew that PALV was lower than market value. Both parties thus recognized that DLV, which was below PALV, was lower than market value.

Second, both landowners and the government had to know that the law permitted condemnation if the DLV of a land parcel was lower than 80% of PALV. The law required landowners to re-submit a new DLV if the previously assessed DLV was below 80% of PALV.⁵² The official notifications to landowners would make clear the risk of maintaining the low DLV—condemnation.⁵³ Local governments certainly knew this law.

In sum, landowners would regard governmental threats to condemn as credible because condemning such land was an arbitrage that even financially-restrained governments were able to do.⁵⁴ Consequently, landowners, as rational actors, rarely assessed DLV at below 80% of PALV. This inference is strongly supported by the literature — including one book published by the Ministry of the Interior — which asserted that most of the few land parcels with DLVs reported below 80% of PALV were owned by “desperate landowners” (Ministry of the Interior 1982, p.64; Dong 1979, p.129; Chen 1980, p.124).

“Desperate landowners” reported DLV to be below 80% of PALV. They may have preferred to have their land condemned, either because regulations had greatly reduced the land’s market value while official value remained high, or because the land was not marketable.⁵⁵ In other words, these are cases in which the PALV of land might be higher than its market value. Desperate landowners would report a DLV below 80% of PALV regardless of whether the condemnation rate was high or low,⁵⁶ because at the very least, they would pay lower taxes while awaiting condemnation.

⁵² Equalization of Land Rights in Cities Act art. 9 (Taiwan)(repealed).

⁵³ From the internal documents of Taiwan Provincial Government, I found several flyers advertising the contents of the law. Among them a flyer warned landowners that under-assessing to a certain extent leads to condemnation.

⁵⁴ Chen (1980, pp.125-28) reports that from 1956 to 1968, 67% of the plots condemned in this way were re-sold. The re-sale price in total, 63 million New Taiwan Dollar, is significantly higher than the condemnation compensation of all the condemned land, 34 million New Taiwan Dollar.

But Hou (1970, p.39) and Ministry of the Interior (1982, p.64) argue that when the building on the land is also owned by the landowner, the government has to condemn both. But it can not afford to.

Carrying the land until it is sold also costs local governments something.

⁵⁵ For example, there were regulations limiting rents of farm land (rent must be less than 37.5%). Owners of land parcels which have already been or about to be put to public use (without compensation) would also desire condemnation.

⁵⁶ Desperate landowners will not report land value as low as possible, because they still care about the amount of compensation.

Local governments had no way of inducing desperate landowners to report higher land value,⁵⁷ because local governments could not “threaten” to condemn desperate owners’ land—condemnation would be a blessing, not a curse, for desperate landowners. When confronting low DLV assessments reported by desperate landowners, local governments would not condemn desperate landowners’ land because doing so would not be cost-justified.⁵⁸ Official reports and scholarly papers confirm that local governments did shy away from condemning desperate landowners’ land and only taxed the land at the low self-reported value (Dong 1979, p.129; Ministry of the Interior 1982, p.64; Officials of the Ministry of the Interior 1983, p.103).

VI. GENERALITY OF TAIWAN EXPERIENCES

The incentives and disincentives that induced Taiwanese landowners to under-assess are not exceptional, but are generally faced by landowners. I apply standard economic analysis of law to Taiwan’s case. If American landowners were to assess their land under the proposed scholarly model, they would also take into consideration their own wealth, the tax rate, and the possibility of condemnation, just as Taiwanese landowners did. American landowners arguably also prefer to increase (if not maximize) their wealth. When asked to assess the value of their properties, many of them would be tempted to submit strategically-determined assessments to the government to increase their wealth.

Of course, strategically-determined assessments are not necessarily lower than economic value. They can be higher than (or even equal to) economic value. The lesson of Taiwan’s pre-1977 experience, therefore, is *not* that landowners will always under-assess under an *ex ante* self-assessment regime. Rather, the real lesson is that landowners’ assessment decisions are shaped by various incentives and disincentives provided by the legal regime. In addition, judging from most Taiwanese landowners’ decisions to report DLV at less than 100% of PALV, but rarely less than 80% of PALV, landowners’ assessment decisions are indeed sensitive to those incentives and disincentives. Inducing (American) landowners to report their true economic value is more difficult than previously envisioned.

⁵⁷ Local governments may prefer higher DLV for various possible reasons. For example, if DLV is higher, instead of lower, than 80% of PALV, tax revenues will be higher, assessments of land value are more accurate, and governments do not have to consider whether to condemn the land or not.

⁵⁸ It is not cost-justified because (1) desperate owners’ land is hard to re-sell for the same reason that those landowners were desperate for condemnation; (2) it is hard to create new use value from the land, because either there was no public project for using such land, or such land had *already* been put into public use without compensation.

It is tempting to ask whether a regime modeled after the proposals offered by Levmore or Bell & Parchomovsky, if implemented in the U.S., would also suffer from the same sort of routine under-assessment encountered in Taiwan. My conclusion is that, all other (un-discussed) things being equal,⁵⁹ Bell & Parchomovsky's proposal would probably result in under-assessments, just as in Taiwan's regime, while Levmore's proposal is less likely to produce under-assessments — though this in itself is no guarantee of accurate assessments. Below, I analyze the differences between the two scholarly models and Taiwan's regime, and defend my conclusion that these differences do not make Taiwanese landowners more prone to under-assess.

A. *Penalty Fees Do Not Prevent Under-Assessment*

In Bell & Parchomovsky's (2005, p.30) model, if landowners sell the land for a price lower than the self-assessed value, they have to pay "the government a fee equal to the difference between the sale price and the self-reported value." By contrast, there is no such requirement in Taiwanese laws. This design, however, is only useful to prevent over-assessment;⁶⁰ it is not able to prevent landowners in Bell & Parchomovsky's model from under-assessing.⁶¹

⁵⁹ I assume away many factors (e.g. culture) here, because they do not explain Taiwan's experience and are not discussed in the scholarly models. Since neither Levmore nor Bell & Parchomovsky has set a specific tax rate or condemnation rate in their papers, I assume that these two rates are similar to Taiwan's two rates.

⁶⁰ This reflects Bell & Parchomovsky's presumption that landowners are more likely to over-assess than under-assess.

⁶¹ Theoretically, there could be another type of fee to counter under-assessments—if landowners sell the land for a price *higher* than the self-assessed value, they have to pay to the government a fee equal to the difference between the sale price and the self-assessed value. This type of fee has not been advocated by Bell & Parchomovsky or other scholars. It is discussed here because of its symmetry with Bell & Parchomovsky's fee and its similarity with Taiwan's land value increment tax.

This type of fee could arguably induce landowners to under-assess less, since the amount of under-assessments will be taxed away when the land is transferred. But such fee is the antithesis of the market logic. People buy when the price is lower than their willingness to pay and sell when the price is higher than their willingness to accept. Selling the land when the offered price is higher than the self-assessed value is not a signal for dishonest under-assessments. Such fee deterred under-assessment at the expense of reducing efficient transactions. Hence, such fee, though useful, could be easily branded as anti-market or unjust and thus be politically infeasible.

Taiwan's land value increment tax regime (discussed in text) is similar to such fee, but they are different in two important ways. First, the fee is like a land value increment tax with a flat 100% tax rate, while Taiwan's tax rate is from 30% to 100% (*see supra* note 28). Second, the fee is supposed to be a punishment for dishonest self-assessments, but it applies to almost everyone transacting in the market, honest or dishonest persons alike. By contrast, land value increment tax aims only to tax away the value increment that is not attributable to landowners' efforts. It is not intended to punish.

The relative merits of the tax and the fee design are not my concern in this paper.

B. Land Value Increment Tax Deters Under-Assessment

In Taiwan, a landowner has to pay land value increment tax when selling the land. There is no such tax proposed in the scholarly models. The tax base used to calculate land value increment tax is CTV minus DLV. If landowners plan to retain the title to the land, land value increment tax will not affect their assessments, and the system is directly comparable to the scholarly models. If landowners plan to sell the land, however, they have incentives to minimize the difference between CTV and DLV. It would not be easy for landowners to persuade buyers to under-report CTV, because the lower the CTV is, the more land value increment tax land buyers will have to pay when they sell the land in the future.

In any case, in order to reduce land value increment tax payment, landowners have incentives to increase DLV—*reducing* the extent of under-assessments. I am not arguing that landowners will over-assess DLV, because their land value tax payments would then be much higher. My point here is to show that land value increment tax does not give landowners additional incentives to under-assess DLV, and it may well do the opposite.

There are two counter arguments to this.⁶² First, the imposition of land value increment tax reduces the frequency of transactions. Landowners hold land titles longer, so they discount future payment of land value increment tax more. This point, however, does not refute my argument—as long as landowners still prefer less tax to more tax, even if the discounted tax payment becomes smaller, they still have incentives to increase DLV.

The second counter-argument contends that taxpayers prefer to delay payment of taxes as much as possible. That is, they would rather pay less tax now by under-assessing, even if they will have to pay a higher land value increment tax in the future. I do not deny this point. That being said, this does not contradict my argument, which *compares* two regimes. In the scholarly models, landowners want to pay less tax now, so they under-assess. In Taiwan's regime, landowners also want to pay less tax now, so they under-assess. The imposition of land value increment tax in the future can only induce Taiwanese landowners to under-assess less. There is no reason that such tax will motivate Taiwanese landowners to under-assess more than landowners in the scholarly models do.

⁶² I owe these two points to Prof. Christopher Serkin.

C. *Forced Sale Design Could Prevent Under-Assessment, if Implemented*

In Levmore's model, any person willing to pay self-assessed value can force a landowner to sell, while in Taiwan, only governments can take land at self-assessed value. It is fair to say that Taiwan's condemnation rate is unlikely to be higher than the condemnation rate plus the "forced sale" rate in Levmore's model. Thus, other things being equal, landowners in Levmore's model would not under-assess as much as Taiwanese landowners did. My concern is the political feasibility of the forced sale design, especially in the post-*Kelo*⁶³ United States. Actually, Levmore (1982, pp. 783-88) himself recognized the political hurdle long before *Kelo*. But as long as the forced sale design is implemented, the Taiwanese experience is less indicative of the assessment results in Levmore's model.

The bottom line is that Taiwan's regime is even stricter than Bell & Parchomovsky's model in preventing under-assessments, because, comparatively speaking, Taiwan's design of the land value increment tax provided landowners with more disincentives to under-assess. Taiwan's regime is also stricter than Levmore's model, if we exclude the influence of the forced sale component of his proposal. On the other hand, Levmore's model, as a whole, is more effective in deterring under-assessment than the Taiwanese regime was. His model would result in less under-assessment.⁶⁴ In brief, were an American state to adopt these scholars' models or similar programs, the new assessment method might not induce accurate self-assessments. Chances are, the extent of inaccuracy would be huge.

VII. CONCLUSION

Awarding accurate compensation is no easy task. From 1954 to 1977, Taiwan implemented self-assessments of takings compensation, but the land value most owners reported was lower than both market value and landowners' economic value. As a result, most Taiwanese condemnees in this period were compensated with less than market value. My study of the pre-1977 under-assessment phenomenon shows that landowners/assessors, in appraising land value, are responsive to the incentives and disincentives embedded in the assessment regime. Landowners/assessors care about their own monetary interests; this confirms the mainstream law and economics

⁶³ *Kelo v. City of New London*, 545 U.S. 469 (2005).

⁶⁴ I argued in Chang (2010c) that theoretically speaking, Levmore's model is unlikely to produce accurate assessments of economic value.

insights that people are self-interested and welfare-maximizing.

One final caveat is in order. This Article does *not* make a normative case against the self-assessment model. This empirical study shows that the scholarly self-assessment models and regimes similar to Taiwan's are likely to produce inaccurate self-assessments. But this does not rule out the possibility that other carefully-designed self-assessment models can do better.⁶⁵ In addition, if just compensation should be economic value compensation, self-assessment models may lead us closer to this normative goal than the current American regimes do.

Furthermore, one might argue that despite the inaccuracy, since assessments are voluntary and informed choices made by property owners, compensating condemnees with their self-assessments is efficient and just. This argument might be qualified by the fact that not all landowners or condemnees are equally informed, and some poor landowners can not afford to buy "takings insurance" by increasing self-assessments. Moreover, condemnation may not be an exogenous risk for all landowners — some can use their political clout to reduce their chances of being taken. These normative issues will be the topic for my future papers.

⁶⁵ Chang (2010c) pointed out that although the ideal self-assessment model can induce accurate self-assessment of economic value under certain conditions, the ideal model is unlikely to be implemented in the real world. That being said, an imperfect yet realistic model may be designed to induce reasonably accurate self-assessment. At least this empirical piece can not rule out this possibility.

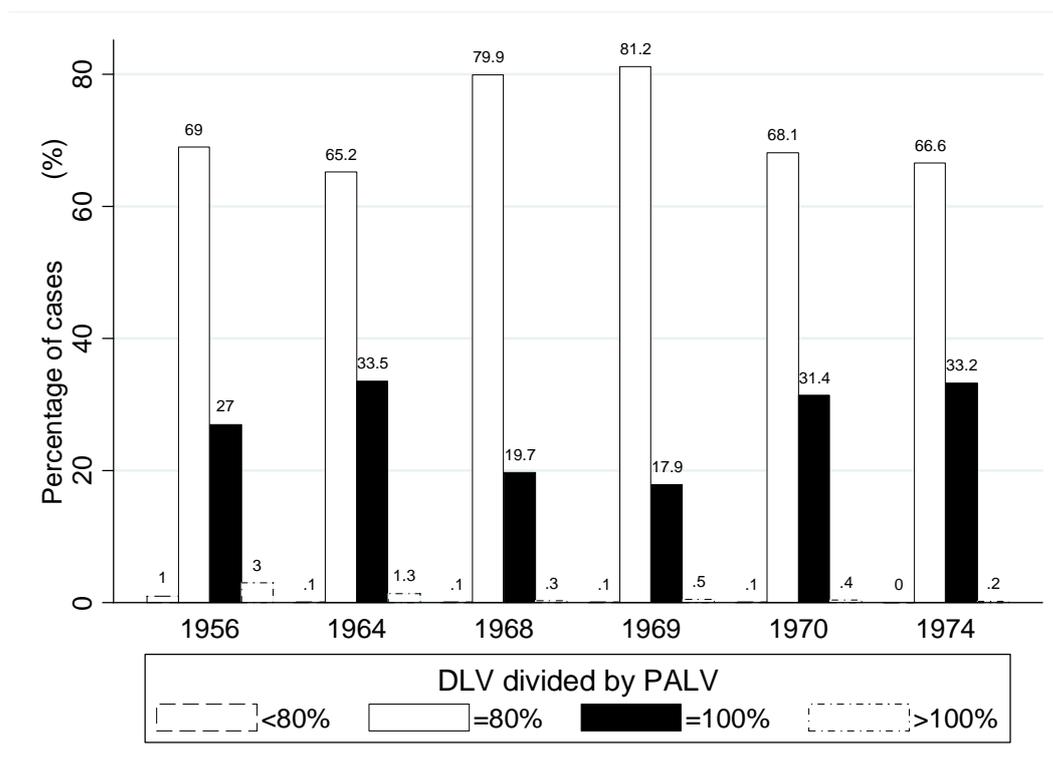


Figure 1. Landowners' self-assessment patterns in Taiwan Province, 1956 – 1974. DLV is landowners' self-assessments of property value, while PALV is the governmental assessments of property value. The data source indicates that the second (=80%) bar in 1956 represents DLV reported between 80% and 100%, *excluding* those DLV=100%. Also, the data source only indicates that, in 1974, 99.8% of the landowners report between 80% and 100%, *including* those DLV=100% and DLV=80%. In order to visualize the data, I follow the pattern in previous years, assigning two-thirds of the data to the “=80%” bar and one-third of the data to the “100%” bar. The number of DLV reported in these six rounds are (starting from the earliest) respectively 258,149; 762,330; 800,317; 24,095; 314,705; 1,826,667. Landowners' DLV reporting rate from 97.6% to 99.8%. Data after 1967 excluded Taipei City, whose data are listed in Figure 2.

Source: 1974 data from Chen (1980); other data from Ministry of the Interior (1983, pp.231-38).

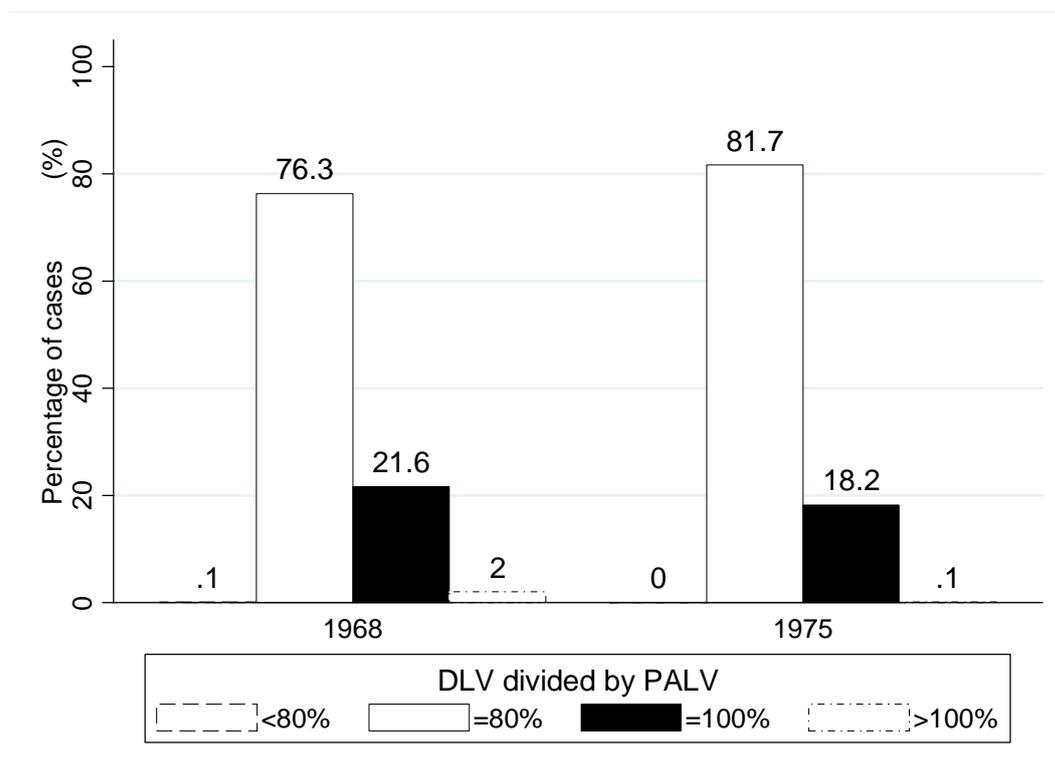


Figure 2. Landowners' self-assessment patterns in Taipei City, 1968 – 1975. DLV is landowners' self-assessments of property value, while PALV is the governmental assessments of property value. The number of DLV reported in 1968 is 171,799; the number of DLV reported in 1975 is 386,457. Landowners' DLV reporting rate from 97.0% to 98.6%.

Source: Taipei City Government (1970, p.55; 1975, p.58).

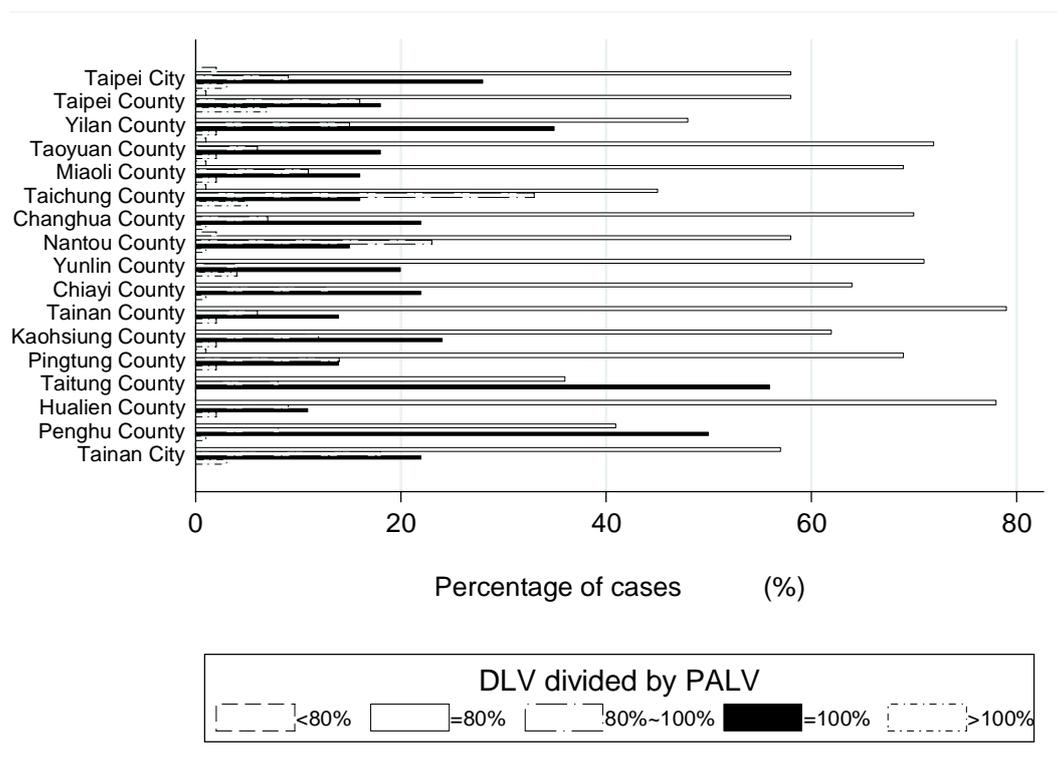


Figure 3 Landowners' self-assessment patterns in Taiwan Province (by jurisdiction), 1956. DLV is landowners' self-assessments of property value, while PALV is the governmental assessments of property value. In 15 of the 17 jurisdictions with available data, most landowners report their $DLV=80\% \cdot PALV$. In the 2 outlier jurisdictions, more landowners report $DLV=PALV$. Data in 6 other jurisdictions are missing.

Source: Internal documents of Taiwan Provincial Government, available at Academia Historica, Taiwan

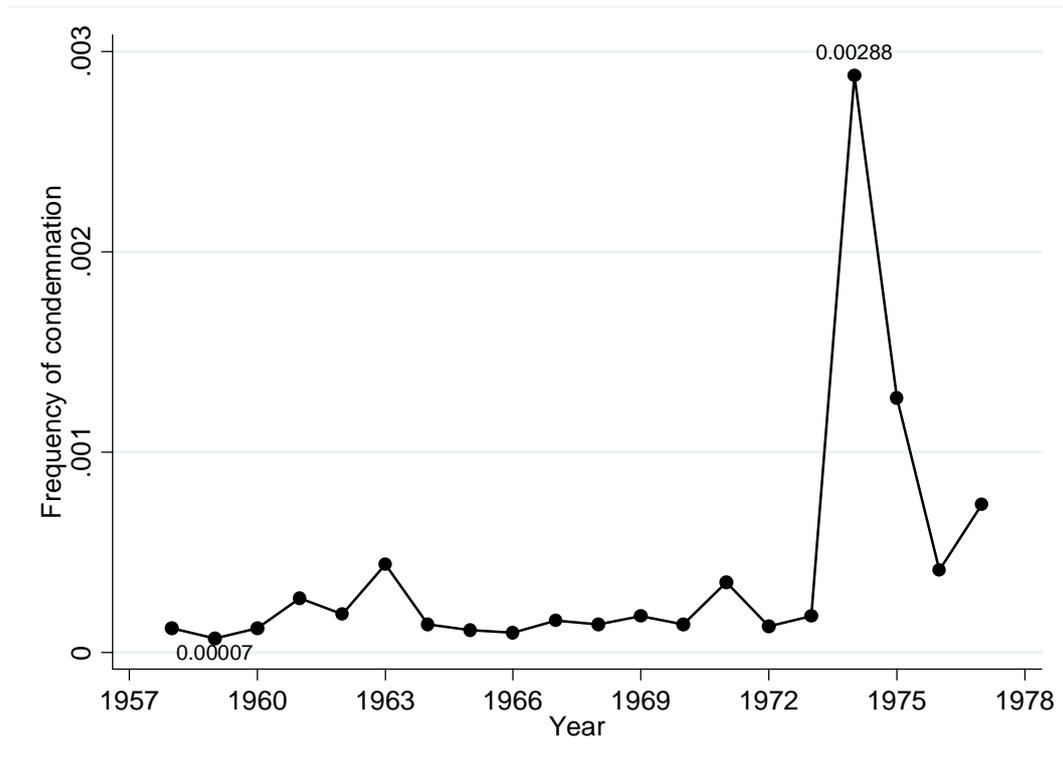


Figure 4. Frequency of Condemnation in Taiwan, 1958 – 1977. The average frequency of condemnation from 1958 to 1977 is 0.00041. I calculate the frequency of condemnation by “total areas of condemned land / total areas of private land.”

Source: Taiwan Provincial Government (1997).

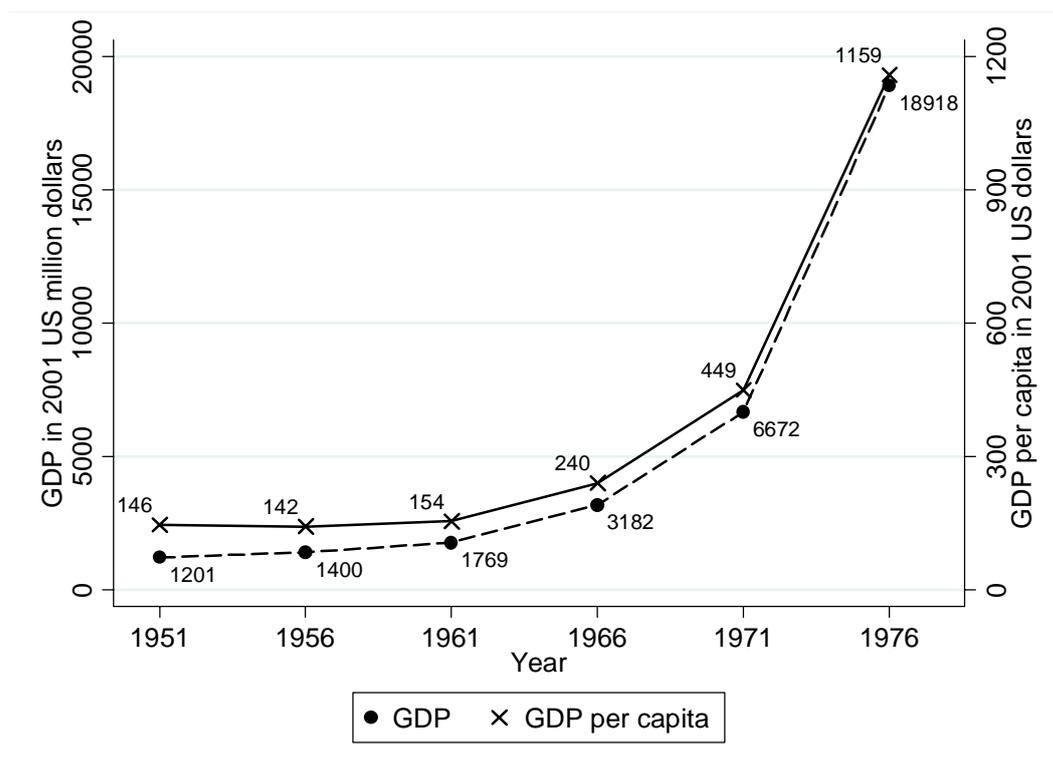


Figure 5. GDP and GDP per capita in Taiwan, 1951– 1976.

Source: National Statistics, Taiwan, <http://www.stat.gov.tw> (last visited Oct. 8, 2007).

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