

# Is the Government Fiscally Blind? An Empirical Examination of the Effect of the Compensation Requirement on Eminent-Domain Exercises

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## ABSTRACT

We empirically test the fiscal-illusion hypothesis in the takings context in Israel. Israeli law allows local governments to expropriate up to 40 percent of any parcel without compensation. In 2001, the Israeli Supreme Court created a carve out for takings of 100 percent, requiring full compensation in such cases. We analyze data for 3,140 takings cases in Tel Aviv between 1990 and 2014. There was no disproportionate share of takings of just under 40 percent. Nor was there a long-term drop in the share of 100 percent takings after 2001. Although a short-term drop in the share of 100 percent takings followed the 2001 decision, the trend was later reversed, and the share of 100 percent takings surpassed the pre-2001 level. Our findings do not corroborate the fiscal-illusion hypothesis in its strict form. Rather, they lend qualified support to the hypothesis that takings practices are largely shaped by planning needs and fairness considerations.

## 1. INTRODUCTION

The power of eminent domain and its limits lie at the core of property law in the United States and elsewhere. While there is broad consensus as

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to the justification for the eminent-domain power—namely, the need to overcome strategic-bargaining problems such as holdouts—there is disagreement among scholars as to the rationale behind the compensation requirement that exists in virtually every legal system (Shavell [2004], p. 127; Kelly [2011]; for a critique of the efficiency of using eminent domain, see López and Clark [2013]). Fairness-oriented theorists justify the compensation requirement by reference to the Supreme Court’s decision in *Armstrong v. United States*, in which the Court, per Justice Hugo Black, stated that “just compensation was designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole” (364 U.S. 40, 49). Law and economics scholars, by contrast, have advanced a very different justification for the compensation requirement. By their lights, the just-compensation requirement is necessary to remedy a fiscal-illusion problem that would otherwise afflict government officials. Under this theory, government officials ignore costs that are not reflected in the budget.<sup>1</sup> Consequently, they do not take account of the costs that their actions impose on private parties as long as those costs do not affect their budget. Government officials, who suffer from fiscal illusion, so the argument goes, will likely engage in inefficient exercises of eminent domain since they see only the public benefit of takings while ignoring the cost to condemnees. The imposition of a requirement to pay just compensation remedies the problem by incorporating the private cost of takings into the budget and forcing government officials to take full account of it.

Notwithstanding the strong scholarly rhetoric, the fiscal-illusion theory has never been empirically tested in the takings context. There is only one empirical study (Chang 2009) that examines the question of whether

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1. The generic term “fiscal illusion” is used in the economics literature to denote several hypotheses (Dollery and Worthington 1996; Dell’Anno and Mourao 2012). Outside of the context of eminent domain, the assumption is that “politicians deceive citizens by denying or obscuring the social reality that these rulers know is actually happening” (Dell’Anno and Mourao 2012, p. 273). The version referred to in the context of eminent domain does not assume that the government intentionally deceives its citizenry but, rather, that public officials are, like taxpayers, ignorant of unlisted costs.

government officials minimize compensation or maximize their political interest and finds that political interests are of greater importance, as anticipated by Levinson (2000, 2005). No study has sought to test empirically the question of whether in the absence of a legal duty to compensate the government will exercise its eminent-domain power excessively to the detriment of its citizenry. This paper seeks to fill the void by providing an empirical examination of how compensation rules affect eminent-domain practices. We test the fiscal-illusion hypothesis because it dominates the literature (the exceptions are Shavell 2004, p. 130; Rose-Ackerman 1988, p. 1706; Been and Beauvais 2003, pp. 92–93; Wyman 2007, pp. 259–60; Heller and Hills 2008, p. 1480). A finding that fiscal illusion does not provide a complete explanation of governmental behavior in this context invites a reassessment of its significance (Epstein and Martin 2014, p. 155).

We take advantage of the particular design of the Israeli law pertaining to eminent-domain compensation. Israeli property law provides a unique opportunity to empirically test the validity of the fiscal-illusion theory because the local government is allowed to expropriate up to 40 percent (by size) of any parcel without paying compensation when the land is taken by the zoning commission for certain types of local public uses, such as roads, open public spaces, and public buildings. In other words, Israeli law gives the local government a call option on up to 40 percent of all private land at a perceived exercise price of 0 (Wagner 1976).<sup>2</sup> The local government must compensate only for takings that exceed this percentage. For example, when the government chooses to take 45 percent of a lot, it is required to pay compensation for 5 percent (45 – 40 percent) of the property's market value. To the best of our knowledge, a similar prerogative does not exist in any other state.<sup>3</sup> What stands to justify this law is the assumption that the part not taken (the remainder) is benefited by the public use.<sup>4</sup> Partial compensation is, therefore, fair.

2. Clearly, any taking, total or partial, involves administrative costs other than those required by compensation laws (Merrill 1986).

3. It does not imply, however, that other means to secure private participation in the supply of public needs are not utilized. See, generally, Alterman (2010, chs. 1–3).

4. If the value of the remainder in fact decreases because of the partial taking, owners may petition the Minister of Interior for additional hardship compensation. However, hardship compensation for takings of the kind included in this study—for local, community-oriented purposes—is very rarely granted and, if so, only in cases in which the special personal circumstances of the owner justify it. (We arrived at this conclusion after a review of the case law, the relevant legal literature, and interviews with land lawyers and experts.)

As of June 12, 2001, a carve out is made for total takings, in which 100 percent of a parcel is taken. In an important precedent, the Israeli Supreme Court ruled that the government would be required to pay full compensation whenever it takes a parcel in its entirety. That is, the ruling forces the government to pay 100 percent of the property's market value in cases of total takings (instead of just 60 percent of the property's market value, as previously required). This decision came as a complete surprise. It overturned previous rulings of the court that repeatedly and consistently recognized the power of local governments to deduct 40 percent in cases of total takings.

Consequently, Israeli just-compensation law creates a large convex kink point around the 40 percent point, where the deduction of compensation is fully phased in and, therefore, the greatest amount of land can be extracted for the lowest amount of compensation. In addition, for the post-2001 takings, there is a notch point at the 100 percent mark since an incremental change in the taking share at the left of this point triggers a discrete change in the compensation award. A taking of 99 percent of a parcel requires compensation at 59 percent of the market value of the parcel, while a taking of 100 percent of a parcel necessitates compensation for the full market value of the parcel (100 percent). Hence, two different compensation schedules apply before the notch and at the notch.

To test the fiscal-illusion hypothesis, we use an interrupted time-series quasi experiment. We collected and coded data on all exercises of eminent domain for local uses by the city of Tel Aviv between 1990 and 2014. We were able to collect full data for 3,140 cases (97 percent of the general population), which compose our sample group. Following the logic of the fiscal-illusion hypothesis, we expected to find a correlation between compensation rules and governmental behavior (Saez 2010; Slemrod 2013). In particular, we expected to see, for the post-2001 group, bunching just below the 100 percent taking share notch point to avoid the loss of eligibility for the 40 percent exemption. In addition, we expected to see bunching around the 40 percent kink point. Concerns about potential litigation regarding judicial determinations of the exact percentage taken should move the discontinuity points slightly to the left of the 40 percent and 100 percent marks.

Our findings appear to call into question the prominence of the fiscal-illusion hypothesis as a single explanation for government behavior in the takings context. While 43 percent of the takings were in the 1–40 percent taking share range, we do not observe a discontinuity at or around the

40 percent kink point. In fact, there were relatively few cases in which the taking share was between 35 percent and 45 percent (only 3 percent of all cases), so an optimization error (including a preference for avoiding takings that border on 40 percent, which might invite litigation) cannot explain this finding (Chetty 2012). Most of the takings in the 1–40 percent range were around 25 percent or less. The only discontinuity point was at a taking share of 100 percent, where nearly half of the takings were concentrated. In only 15 percent of the cases, the taking share was larger than 40 percent and smaller than 100 percent. Moreover, contrary to the prediction of the fiscal-illusion theory, the rate of total takings in the post-legal-change subset was significantly higher, and, thus, there was no greater bunching at the 100 percent notch point after 2001. However, we observe reversible changes in the takings practice around 2002, which could be attributed to the legal change. Over time, these changes disappeared. We therefore find that the Supreme Court’s decision that mandated full compensation for total takings had no lasting observable effect on the government’s engagement in such takings.

The remainder of the paper unfolds in four parts. We open, in Section 2, with a short review of the theoretical justifications for eminent-domain compensation, specifically the fiscal-illusion hypothesis. In Section 3, we explain the Israeli just-compensation law and describe the research design. In Section 4, we introduce the specifics of the study settings and detail our findings. In Section 5, we discuss possible interpretations of our findings and point out the limitations of the study. A short conclusion ensues.

## 2. THEORETICAL JUSTIFICATIONS FOR EMINENT-DOMAIN COMPENSATION

There is a broad scholarly consensus that the power of eminent domain is necessary to overcome holdout problems that would otherwise thwart public development projects. However, there is no similar scholarly convergence as to the justification for the just-compensation requirement that is triggered by eminent-domain exercises.

The Supreme Court and some legal scholars have justified the compensation requirement on fairness grounds. The fairness justification is rooted in notions of equality. The gist of the fairness argument was captured by Justice Black in *Armstrong v. United States*. It maintains that the cost of development and progress should not fall on a handful of prop-

erty owners whose land is condemned to enable the attainment of socially desirable goals but, rather, should be borne by society at large.

Law and economics scholars, on the other hand, have proffered a very different rationale for the compensation requirement. They have argued that the payment of just compensation is necessary to overcome a fiscal-illusion problem that afflicts government officials, making them ignore costs that do not appear in the budget. Yet full compensation for property takings might lead property owners to overinvest in the improvement of their properties and to treat the government's duty to compensate as an insurance scheme (Blume, Rubinfeld, and Shapiro 1984; Blume and Rubinfeld 1984).

The correlation between the compensation requirement and landowners' investments has been the subject of ongoing studies, mostly theoretical (for example, Bell 2003; Miceli 2008; Shavell 2010; Pecorino 2011; Bar-Gill and Porat 2014). Since there is a sort of a trade-off between governmental incentives and landowners' incentives (Miceli 2011, p. 95), it is important to consider the governmental side of the equation as well. That is the focus of the current paper.

The idea of fiscal illusion was hypothesized long before it was applied to the compensation for governmental taking (McCulloch [1845] 1974). John Stuart Mill ([1848] 1994, p. 237) asserts that "[p]erhaps . . . the money which [the taxpayer] is required to pay directly out of his pocket is the only taxation which he is quite sure that he pays at all. . . . If all taxes were direct, taxation would be much more perceived than at present; and there would be a security which now there is not, for economy in the public expenditure."<sup>5</sup> Mill suggests that relatively "invisible" taxes cause taxpayers to underestimate the tax burden, and, as a result, the government is involved in "excessive" public expenditure (Sausgruber and Tyran 2005, pp. 39–40). It was, however, Nobel Laureate James Buchanan who took the pioneering path of exploring the effects of fiscal illusion on decision makers' behavior (Buchanan 1967).

The roots of the fiscal-illusion hypothesis as an explanation for takings compensation can be traced back to the 1960s. For example, Sax (1964) expresses the concern that the government's power to set its goals and to select the means for executing them might result in excessive zeal to take land if a compensation rule is not adopted. Likewise, Michelman's seminal article on takings (Michelman 1967) suggests that payment of com-

5. The term "fiscal illusion" was probably coined by an Italian scholar in a monograph that was never published in English (Puviani 1903).

pensation might furnish a necessary assurance against capricious redistributions.<sup>6</sup> Importantly, Michelman endorses an alternative explanation for the compensation mandate, one that relies on demoralization costs—the effect of uncompensated takings on individuals’ utilities and loss of future production.

The term “fiscal illusion” was first introduced into the takings literature in Blume, Rubinfeld, and Shapiro (1984, p. 72), who note that “[p]ublic investment choices are often made subject to a form of budgetary fiscal illusion in which only dollar outlays are included as costs in its benefit-cost calculation. Compensation will force the government to make correct project choices” (see also Blume and Rubinfeld 1984).

Soon after Blume, Rubinfeld, and Shapiro (1984), the fiscal-illusion justification for takings compensation gained prominence in the law and economics literature. Kaplow (1986, p. 567) writes that “[n]umerous commentators favor providing compensation for takings to alleviate fiscal illusion.” Since then, the fiscal-illusion hypothesis has become a staple in law and economics works on takings (for example, Fischel and Shapiro 1988; Heller and Krier 1999; Dagan 2000; Fischel 2004b; Dana and Merrill 2002; Serkin 2005; Niemann and Shapiro 2010; Aisbett, Karp, and McAusland 2010; Pecorino 2011; Cooter and Ulen 2012; Chang 2012; Göller and Hower 2014).

As Posner (2011, pp. 73–74) writes, “What remains to justify the just compensation requirement today is that without it government would have an incentive to substitute land for cheaper inputs that were, however, more expensive to the government. . . . Of course, this assumes that the government makes its procurement decisions approximately as a private entrepreneur would do, that is, on the basis of private rather than social costs unless forced to take social costs into account. The assumption is realistic; government is sensitive to budgetary expense.”

Similarly, Miceli (2004, p. 224) argues that in the absence of a compensation requirement or when the compensation mandated by the law is too low, the government “will likely take too much” (see also Miceli 1997, p. 141). Furthermore, Miceli (2011, p. 95) states that “[t]he assumption of a benevolent government that always acts to promote social welfare is perhaps overly naïve. More realistic models suppose instead that the government acts in the interests of the majority of landowners, subject to budgetary constraints.”

6. For other early references to compensation as a mechanism to assure against inefficient governmental behavior, see Berger (1974) and Johnson (1977).

According to the fiscal-illusion theory, there should be a strong correlation between compensation rules and governmental takings behavior. In other words, the extent of the duty to compensate should have an effect on the frequency of exercising the power of eminent domain in terms of the number of takings and the size of the land taken.

### 3. RESEARCH DESIGN AND ISRAELI JUST-COMPENSATION LAW

In the United States and in other Western countries, the government is required to pay compensation whenever it engages in a physical taking—large or small—of private land. The government is under a duty to compensate even if it takes only a fraction of a percentage of a particular parcel. No amount is considered *de minimis*.

The design of US compensation law has two salutary effects when viewed through the lens of the fiscal-illusion theory. First, it forces the government to take account of the cost its actions impose on private individuals. Second, it eliminates, to a large extent, the incentive of the government to act strategically in deciding what share of the property to take. Given that there are no discontinuity points in the compensation that the government must pay, government officials will be inclined, *ceteris paribus*, to take the efficient amount of private property—namely, the amount at which the marginal benefit to the government equals the marginal cost.

In most respects, Israeli eminent-domain law closely resembles US takings law. There is one critical difference, however. In 1936, in the days of the British Mandate for Palestine, the law empowered local governments to take up to 25 percent of any parcel without paying compensation if the land was taken for construction of local roads, playgrounds, and playfields (Town Planning Ordinance, 1936, S27 [Isr.]).<sup>7</sup> In 1965, the uncompensated share was enlarged to 40 percent and was extended for other public purposes: parks, sports and recreation, education, culture, religion, and health. The compensation requirement comes into play only after 40 percent of a particular parcel is taken, and then it is applied only

7. This power was later extended to expropriations of the central government (Land [Acquisition for Public Purposes] Ordinance, 1943, S20 [Isr.]). Earlier versions of these ordinances, from 1921 and 1926, included more restrictive powers in this regard. In fact, the Mandate for Palestine maintained an Ottoman law from 1891 according to which owners are not compensated for 25 percent of an undeveloped parcel when the purpose of taking is road paving (Goadby and Doukhan 1935, pp. 315, 332).



on the margin; that is, if the government takes 41 percent of a certain parcel, it will have to pay compensation for 1 percent of the property's market value (Planning and Building Law, 5725-1965, S190[a][1] [Isr.]; Land [Acquisition for Public Purposes] Ordinance, S20). The justification advanced for this rule is that, in general, the public use to which the property taken is put enhances the value of nearby properties, including that of the remaining portion of the property taken, and, moreover, that it is fair to require individual property owners to shoulder some of the burden implicated by the provision of public amenities to the community.

In an unexpected landmark decision in 2001, the Israeli Supreme Court deviated from past precedent (CA 377/79 *Pfizer v. Ramat Gan Planning and Building Commission* 35[3] PD 645 [1981] [Isr.]) and ruled that in cases of total taking, in which the government condemns 100 percent of a parcel, full compensation would be awarded to condemnees, and the government would not be able to avail itself of the standard 40 percent deduction (CA 5546/97 *Kiryat Ata Planning and Building Commission v. Holzman* 55[4] PD 629 [June 2001] [Isr.]).<sup>8</sup>

This legal change provides us with a natural opportunity to examine how public officials react to different compensation regimes. The court's ruling occurred as a truly exogenous event whose timing and occurrence were not in response to longitudinal patterns in the use of eminent domain. In addition, the legal change could not have been anticipated by the relevant governmental actors.<sup>9</sup> Where the treatment is applied randomly, not as a policy response to trends in levels of activity and without relation to the prior state of affairs of the dependent variable, "the correlation between pretest scores and exposure to treatment is zero" (Campbell and Ross 1968, p. 40). Even though in such cases it is reasonable to interpret trends prior to, and after, the introduction of the legal change as evidence of its causal impact (Gerring and McDermott 2007, p. 694), caution should be exercised when inferring causality because of our inability to produce sufficient control.

Given that the legal change was uniformly implemented in all cities in

8. For a translation of this ruling, see *Kiryat Ata Planning and Building Commission v. Holzman* ([http://elyon1.court.gov.il/files\\_eng/97/460/055/106/97055460.106.pdf](http://elyon1.court.gov.il/files_eng/97/460/055/106/97055460.106.pdf)).

9. In December 1999, for instance, the Supreme Court cited *Pfizer* as the prevailing doctrine (CA 6663/93 *Zaig v. Rishon Le'Zion Planning and Building Commission* 55[1] PD 49 [1999] [Isr.]). Alterman (1985) criticized the *Pfizer* doctrine. So did Lewinsohn-Zamir (1994) and Dagan (1997). However, these critiques were ignored by the Supreme Court until the *Holzman* case. (We arrived at this conclusion on the basis of citation analysis of court decisions for 1985–2001.)

Israel, a proper control group does not exist, not even a nonequivalent one. Similar remote jurisdictions are not available. As Campbell and Ross (1968, p. 46) put it, “[F]or matters of either weather or culture adjacency and similarity are apt to be strongly associated.” In our case, the pretreatment state of affairs is unique to the studied group. For these reasons, we cannot test causality, but we describe the results, test whether the legal change is associated with changes in the taking share, and suggest this case study only as a prediction (Privitera 2014, p. 272).

The logic of the fiscal-illusion argument, which emphasizes direct out-of-budget costs as meaningfully different from other costs of governmental behavior, would suggest that fiscally afflicted government officials will respond to the peculiarities of the Israeli compensation regime in two distinct ways. First, they will tend to disproportionately engage in takings of 40 percent, or just under 40 percent because of optimization error, as doing so gives them the highest payoff at the least cost. Given that the perceived cost (in terms of compensation) remains fixed at \$0 between 1 percent and 40 percent, if government officials are assumed to behave as rational maximizers of self-interest, they should also elect to take 40 percent and not a lesser share. For any taking, and for every taking share, that is not required for public uses, there are costs.<sup>10</sup> These include due-process costs (Merrill 1986), loss of property tax, and costs of managing unneeded properties. These costs are deemphasized or overlooked by proponents of fiscal illusion (Berger, forthcoming).

Second, and more important, an anticipated effect of the Israeli compensation regime is that since 2001 Israeli local government officials should have shied away whenever possible from total takings, as these impose a disproportionately high cost on the public fisc. This is so for the simple reason that any taking of 41–99 percent of a parcel imposes on the government a cost (in terms of compensation) that can be assumed to increase linearly, on average, at a steady rate proportionate to the benefit the government receives. A taking of 100 percent, however, raises government expenses by a very large amount, as it deprives the government of its ability to refrain from compensating for the first 40 percent taken relative to a taking of 99 percent or any lesser share (that is higher than 40 percent). Hence, one would expect to see a relatively smaller share of total takings after 2001. We can also assume that a purely strategic

10. We assume that the cost of a move from no taking to a taking of, say, 5 percent is different from the cost of a move from, say, a taking of 5 percent to a taking of 10 percent. Also, since our data go back only to 1990, we have no information about takings that preceded that year.

behavior on the part of the government, such as the taking of exactly 99 percent, might be invalidated by the courts as unfair.<sup>11</sup> The possibility of an optimization error should also be incorporated into the analysis. It is therefore reasonable to expect that the effect of the 2001 legal change will be observed around a taking share of 90 percent.

Israeli law, therefore, contains two potential discontinuity points. The first one is at or around the 40th percentile, and the second is around the 100th percentile, for a pre- and post-2001 comparison.

Against this legal backdrop, we set out to test the hypotheses that after 2001 the share of cases of total takings will be relatively smaller than in the pre-2001 period, that the rate of cases between 41 and 90 percent will be larger, and that the 100 percent point or around it will appear as a notch point after 2001. In addition, we test whether there are cases in the range of 1–35 percent and whether there is a clear discontinuity kink point at 40 percent or around it and a hole of no cases to the right of this point.

#### 4. METHODOLOGY AND EMPIRICAL FINDINGS

##### 4.1. Methodology

In Israel, in order to take private property for local uses, the local government must first enact a zoning map (or amend an existing one) and designate land for public uses. It must then comply with the dictates of takings law. In large cities like Tel Aviv, the local planning and building commission (zoning commission) is composed of the members of the city council, headed by the mayor, so there is an overlap between the planning body and the elected local government. Municipal elections for mayor and the city council, and thus for a seat on the zoning commission, were held in Tel Aviv in 1993 and every 5 years thereafter.<sup>12</sup>

The zoning commission is responsible both for approving the designation of certain lots for public uses and for their ensuing taking. The central government and other agencies are not involved in takings decisions. Compensation is paid out of a specific allocation in the city's budget. The

11. According to the attorney general of Israel's 2003 instructions, if the remaining part of land taken in a partial taking is only a few percentage points away from being the entire lot, full compensation should be paid.

12. In 1993 Roni Milo was elected to replace Mayor Shlomo (Chich) Lahat after 20 years in office; in 1998 Ron Huldai replaced Milo and ever since then Huldai has been reelected.

central government and other agencies are not involved in the compensation process.<sup>13</sup>

After a zoning map is amended to designate property for public use, the commission may publish a public notice declaring its intent to take the designated property and demand immediate transfer of possession. In Tel Aviv, in most cases these public notices contain information about the parcel size and the taking size. The procedures required for a taking are independent of the amount or share of land taken: the same procedure applies to all cases.

We use an interrupted time-series quasi experiment to test our hypothesis. Our data include all taking notices for local purposes that were signed and published in public records between January 1, 1990, and December 31, 2014, by the Tel Aviv Planning and Building Commission. We were able to compile full data for 97 percent of the population. Throughout the period we examine, there were no changes in record keeping. In total, there were 488 notices.<sup>14</sup> These notices cover 3,140 cases of takings for 449 development projects.<sup>15</sup> The purpose for which the land was taken (for example, road, park, and so forth) appears in 725 (23 percent) of the cases in our data set. For a sample of cases in our data (1,923 observations), we measured the time lag (in years) between the designation for a public use in an amended zoning map and the date of announcing the taking of that land (median = 3; mean = 9.45; SD = 11.94).

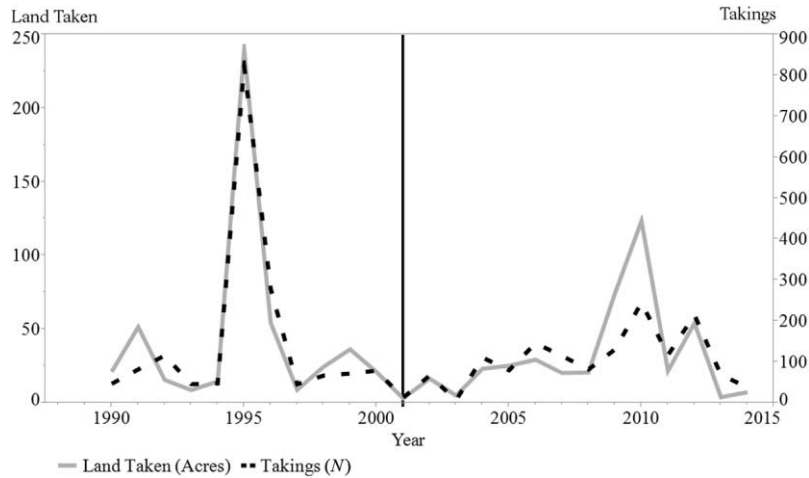
We begin with a general description of the levels of takings activity and then test the implications of the 2001 legal change.<sup>16</sup> Our main de-

13. Because the city pays compensation out of its own budget (and not out of the central government's grants), we are not bothered by the problem reported in Fischel (2004a), in which earmarked federal and state money distorted condemnation decisions in Poletown in Detroit.

14. As a quality check, we collected another set of condemnation notices. These notices are published when the local government desires to transfer full ownership of the land taken, typically for purposes of land registration. Between 1990 and 2014, there were 359 such notices, which includes 1,791 observations that match our data set. Only in rare cases was there a change in the size taken after completing the formal procedure, which indicates consistency throughout the process. Obviously, total takings are more likely to appear in the subset of cases in which the government registers title to the parcel taken. The fact that it is possible to match most of our records with a separate set of records provides an assurance of the quality of the records used in our main findings.

15. If for a given project more than one notice was published within no more than a year, we refer to it as one project, which is the case for a couple of dozen notices.

16. We use the date of the court's decision at the time of resolution (June 12, 2001) (see Wagenaar and Komro 2011). In 2001, there was one taking observation after that date, which we attribute to the post-legal-change group.



**Figure 1.** Land taken and number of takings per year, 1990–2014

pendent variable is Total Taking, which is tested per discrete taking observation and per project as the unit of observation. While we observe differences between the pre-legal-change group and the post-legal-change group, we also describe patterns in specific years such as election years. We use parcel size, taking size (amount of land taken), taking share, and before or after treatment as measures per unit of observation. We also use an additional data set for compensation paid out of the city's budget.

#### 4.2. Levels of Takings Activity

As shown in Figure 1, the number of takings varies from year to year without a visible trend. The number of takings peaked in 1995 with 822 discrete takings (26 percent). The lowest number of takings was 7 in 2003, and the annual average was 126 takings. The years 2001–3 exhibit low levels of activity. Separating the observations before and after 2001 results in a rather balanced picture of the number of takings observations; 1,716 (55 percent) are before the legal change, and 1,424 (45 percent) are after that date (clustered into projects, the pre-change group includes 223 development projects [50 percent], while the post-2001 group includes 226 projects [50 percent]). Figure 1 also summarizes the amount of land taken each year. We see that the variables are rather stationary, except for 1995 and 2010. There is a correlation between the two series ( $r = .93$ ;  $p < .001$ ).

**Table 1.** Land Taken and Takings before and after the 2001 Legal Change

	Years	Mean	SD	<i>t</i> -Ratio	<i>p</i> -Value
Land taken per year (acres):					
Before	12	41.68	64.41	-.43	.67
After	13	32.76	33.54		
Takings per year ( <i>N</i> ):					
Before	12	143.08	224.19	-.5	.63
After	13	109.46	65.87		

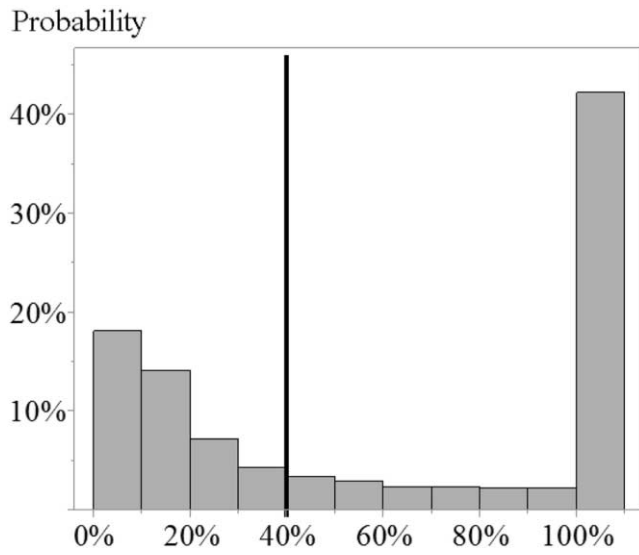
Since we detected no significant autocorrelation for both series, we conducted a *t*-test to examine the change between the periods. Table 1 shows that there is no significant change in the annual measures before and after the legal change in terms of the amount of land taken or the number of takings. Note, however, that the number of observations is so small (25) that even large differences may not be statistically significant.

#### 4.3. Taking Share per Discrete Taking

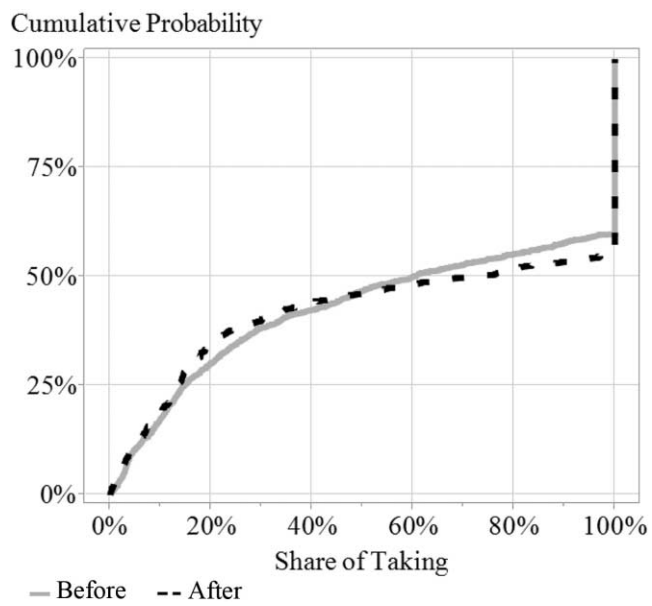
We now inspect the main variable, taking share, measured by the size of the part taken relative to the overall size of the parcel. Figure 2 provides a histogram of the taking share for the full sample (3,140 observations), which can be characterized as bimodal with high frequency toward the ends of the range. It is clear that there is only one breaking point along the range, at a taking share of 100 percent. For 1,324 observations (42 percent), total taking was declared. Partial taking of 40 percent of a parcel or less was declared for 1,357 observations (43 percent), which leaves only 459 observations (15 percent) in the 41–99 percent range. There are 95 observations (3 percent) at a taking share of 35–45 percent. In other words, the most frequent taking share is either high (100 percent) or low (40 percent or less). Medium shares of takings are rather rare.

These findings are inconsistent with the expectation that there would be almost no cases between 1 percent and 35 percent and that there would be a clear kink point where a large portion of the takings would bunch under 40 percent. We also note that there is a moderate correlation between parcel size and taking size (see Appendix Figure A1 and Table A1).

To see if there is any indication for adjusting the taking share to the changes in the compensation criteria, we next inspect the distribution of the taking share over time. The 2001 legal change triggers the hypothesis that we should find a smaller share of cases of total takings after 2001 (a



**Figure 2.** Distribution of taking shares, 1990–2014 ( $N = 3,140$ )



**Figure 3.** Cumulative distribution of taking shares before ( $N = 1,716$ ) and after ( $N = 1,424$ ) 2001.

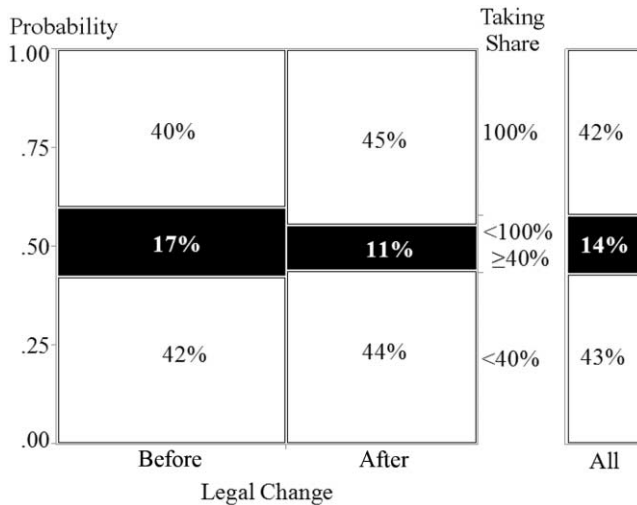


Figure 4. Composition of taking shares before (N = 1,716) and after (N = 1,424) 2001

notch point around the 90 percent mark). Figure 3 provides an overlay of the cumulative distribution function of the share of taking by treatment group. From this graph it appears as though there is no substantial change in the shape or the position of the curves. This comparison is not consistent with our hypothesis’s two predictions—that the share of total takings would be relatively lower after 2001 and that the share of takings in the range of 41–90 percent would be larger.

In light of the patterns of the taking share variable, it can be best characterized as an ordinal categorical one. The first category contains the takings of less than or equal to 40 percent, a top category has total takings, and a midrange category is for the rest. Figure 4 indicates a significant difference between the periods by treatment group. The direction of the change is opposite the prediction: the share of total takings is higher in the post-2001 group, at the expense of the midrange category ( $\chi^2_{(2, 3,140)} = 23.92, p < .001$ ).<sup>17</sup>

To examine whether the probability of a total taking grew over the years and whether it changed after the court’s decision in *Holzman*, we estimated a multiple logistic regression. The dependent variable is one for

17. Considering the possibility that a transition period might have influenced our results, we tested the data without observations between 2001 and 2003 (N = 87, or 2.77 percent of the full sample). The difference between the groups by treatment is similar ( $\chi^2_{(2, 3,053)} = 30.06, p < .001$ ) with a similar distribution.



**Table 2.** Regression Analysis for Total Takings

	$\beta$	Exp( $\beta$ )	SE	$\chi^2$	<i>p</i> -Value
Intercept	-151.113		46.525	10.55	.0012
Year	.076	1.079	.023	10.52	.0012
Parcel Size	-4.97E-06	1.000	1.00E-06	24.5	<.0001
Legal Change	-1.460	.232	.215	45.96	<.0001
Year $\times$ Legal Change	.081	1.084	.030	7.34	.0068
Parcel Size $\times$ Legal Change	-4.58E-06	.999	.000	6.48	.0109
Election Year	-.504	.604	.141	12.74	.0004

**Note.**  $N = 3,140$ ; McFadden's  $R^2 = .05$  for log odds of total/less than total.

Total Taking and zero otherwise. The independent variables are Year, Parcel Size, the dummy Legal Change, and the dummy Election Year. Table 2 shows the parameter estimates of the model in which Year and Parcel Size are centered and interacted with Legal Change.

As can be seen from the odds ratios in Table 2, the odds are all very close to 1.0 (consistent with no effect) except for those for Legal Change and Election Year. The positive coefficient for Year indicates that the share of total takings was growing by 8 percent per year in the years before the legal change. Therefore, without the legal change, in a business-as-usual scenario, we would have expected to see this trend continue. Furthermore, the positive coefficient for Year  $\times$  Legal Change indicates that after 2001 the propensity for total takings grew faster (by 16 percent each year).

The coefficient for Legal Change is negative, which indicates that at 2002 there was a discontinuity of the probability for total takings in comparison to the trend line of the pre-change period (see Figure 5). The substantial negative shock to the probability of total takings immediately after 2001 might be consistent with the fiscal-illusion hypothesis. We further address this issue in Section 5.

The coefficient for Parcel Size is negative, which indicates a diminishing propensity for total takings as the parcel size grows. In addition, the negative sign of its interaction with Legal Change indicates that in the post-change period the slope is even a bit steeper.

The negative coefficient for Election Year indicates that, controlling for all other variables in the model, the probability of a total taking in an election year is lower by 40 percent. Considering the limited number of election years in the sample ( $N = 5$ ), caution is required. Looking more closely at the activity per election year, we observe that for some

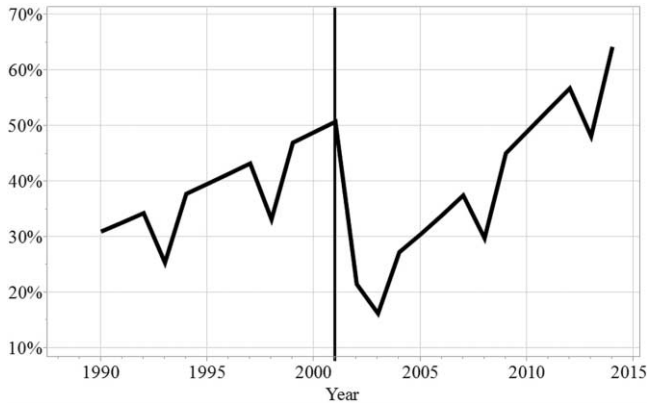


Figure 5. Predicted probabilities for total takings

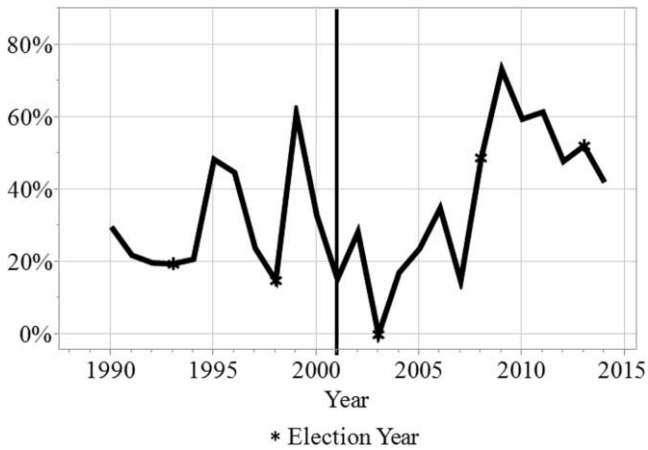


Figure 6. Share of total takings per year, 1990-2014

election years (1998, 2003) the share of total takings was relatively small when compared with the shares of 1-2 surrounding years, while in other years (1993, 2008, 2013) the share of total takings was similar to or higher than the shares of 1-2 surrounding years (see Figure 6). Note that in 2003 there were only seven cases, and 1998 belongs to the pre-legal-change period.

**Table 3.** Takings per Project: Before and after the 2001 Legal Change

	<i>N</i>	Mean	SD	<i>t</i> -Ratio	<i>p</i> -Value
Projects per year ( <i>N</i> ):					
Before	12	18.58	10.48	-.33	.75
After	13	17.38	7.58		
Mean takings ( <i>N</i> ):					
Before	223	7.7	19.8	-.9	.36
After	226	6.3	11.92		
Mean taking size (acres):					
Before	223	.46	1.07	-.15	.87
After	226	.44	1.13		
Land taken (acres):					
Before	223	2.24	12.88	-.39	.69
After	226	1.88	4.45		
Share of total takings:					
Before	223	.37	.44	.15	.87
After	226	.37	.45		

**Table 4.** Regression Analysis for the Share of Total Takings per Project

Term	$\beta$	SE	<i>t</i> -Ratio	<i>p</i> -Value
Intercept	-25.084	19.155	-1.31	.191
Legal Change	-.228	.094	-2.43	.0155
Year	.013	.010	1.33	.1845
Year $\times$ Legal Change	.012	.013	.93	.3503
Election Year	-.078	.061	-1.29	.1979

Note.  $N = 449$ ;  $R^2 = .023$ .

#### 4.4. Taking Share per Project

Another way to examine the effects of the legal change is by checking whether post-2001 takings were less aggressive (that is, more limited in their scope) as a result of budgetary concerns due to the legal change. To test this, we compared the average number of projects per year and the intensity of the projects by measuring the average number of discrete takings per project, the average taking size per project, the amount of land taken per project, and the share of total takings per project. Despite some differences between the groups, none of these are significant. Notably, the share of total takings per project remains exactly the same for the pre-2001 and post-2001 groups (see Table 3).

We regressed the share of total takings for each project against Year, the dummy Legal Change, and the dummy Election Year. Table 4 pro-

vides the parameter estimates in which Year was centered and interacted with Legal Change.

As can be seen, the coefficient for Year is insignificant, which indicates no trend over the years before the legal change in the share of total takings per project. For the post-2001 period, we estimate the slope using the sum of coefficients for Year and Year  $\times$  Legal Change, which is  $\beta = .025$ ,  $SE = .009$ ,  $p = .006$ . Therefore, we conclude that for the post-legal-change period, the share of total takings per project grows by 2.5 percent per year. The coefficient for Legal Change is significantly negative, which indicates that in 2002 there was a drop in the share of total takings, a trend that is also identified in the discrete-taking model (see Table 2) and is discussed in Section 5. The coefficient for Election Year is insignificant.

#### 4.5. Compensation Paid out of the Budget

As was already noted, takings compensation in our case study is paid out of a specific allocation in the city's budget. We used the city's annual financial reports to compile an additional data set of the total amount of compensation paid each year out of the city's budget. Over the period examined, there were no dramatic budgetary changes, even in election years; we observe only incremental additions. We find a strong correlation between annual compensation amount and share of compensation out of the budget, which indicates budgetary flexibility to increased levels of compensation (see Table A2).

Figure 7 shows that there is no correlation between the amount of land taken and the amount of compensation paid that year. The election years 1998 and 2013 exhibit high compensation levels.

When implementing a time lag of 3 years between the date of taking and the timing of compensation payments, we observe a positive correlation ( $r = .72$ ,  $p < .001$ ). This correlation is wholly attributed to the high levels of takings activity in 1995 and 2010, which are followed by high levels of compensation 3 years later. The estimate drops ( $r = -.07$ ,  $p = .76$ ) when 1995 and 2010 are excluded, and we find no significant correlation between the annual amounts of land taken and annual amounts of compensation payments at any time lag.

#### 4.6. Public Use

For a portion of the full sample (725 takings), the specific public use for which the land was taken was identified in the taking notice. For 308 of

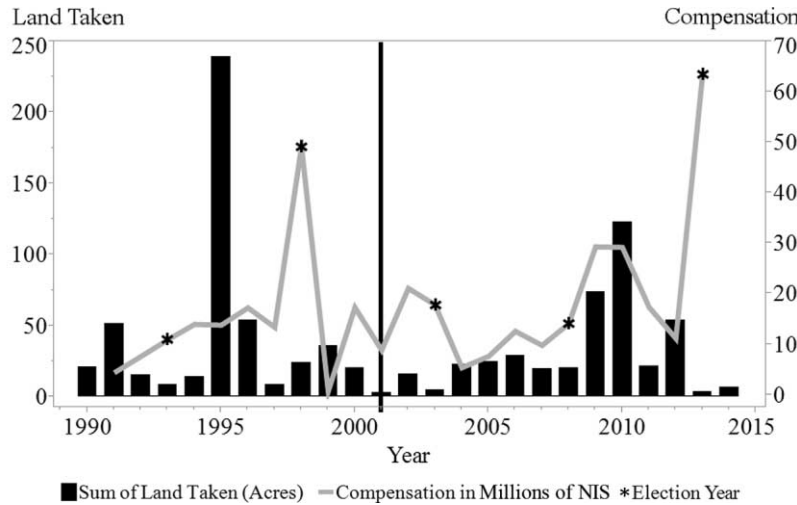


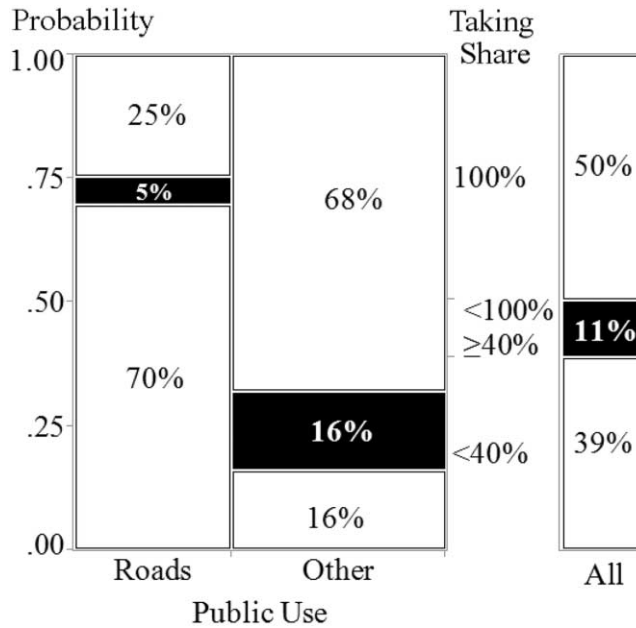
Figure 7. Land taken and nominal value of compensation paid, 1990–2014

the cases (42 percent), the purpose was local roads, while in the rest of the cases the property was taken for other local public purposes (mainly open public spaces, public buildings, parking, or combinations of these purposes with or without roads), which we grouped together ( $\chi^2_{(2, 725)} = 221.7, p < .001$ ). Figure 8 presents the partition of public uses by taking share.

The relationship between the public use and taking share is significant. Taking shares for roads were more likely to be smaller than for other uses and were mostly below 25 percent.

5. ANALYSIS

Our data reveal a discontinuity point at a taking share of 100 percent, at which nearly half of the takings were concentrated. We expected the share of total takings to drop following the 2001 legal change that requires the government to pay full compensation for total takings. Our findings show that the level of takings activity remained unchanged after 2001. We observe a discontinuity in trend in 2002, so the legal change itself is correlated with a drop in the share of total takings. However, overall, the break in trend is in the other direction, and, over time, the rate of total takings grew faster than before. Thus, generally, after 2001, there



**Figure 8.** Composition of public use by taking share: roads ( $N = 308$ ) and other uses ( $N = 417$ ).

was no shift from total takings toward partial takings of 90 percent of a parcel or any other percentile point. This result is not dependent on the unit of observation—discrete takings or development project. The bunching at the taking share of 100 percent is not correlated with the notch created by the new compensation rule.

Because of the methodological limitations of a quasi experiment of this type, in which the pretreatment state of affairs is unique to the studied group and the treatment (legal change) is implemented uniformly for all equivalent or semiequivalent groups, we have no control group. We cannot rule out the possibility that the share of cases of total taking would have increased even more sharply absent the 2001 legal change. Nonetheless, we note that the legal change was exogenously imposed by the Israeli Supreme Court without advance signs or warnings, and it had an ongoing effect on every taking after 2001. Furthermore, the pretreatment assessments provide us with a means to project the level and slope of posttreatment measures assuming that the legal change did not happen (Thyer 2012, p. 109). When employing this approach, we find

that in comparison to the pre-legal-change period, the propensity to engage in total takings doubled over the years after the legal change. This finding is supported by the per-project perspective: while the pre-legal-change group indicates no trend with regard to total takings, the post-legal-change group shows a positive trend over the years.

There are several ways to understand the discontinuity in trend immediately after the legal change. One possible interpretation is that the negative coefficient for Legal Change—but the positive coefficient for the interaction of Year and Legal Change—implies a substantial negative shock to the probability of a total taking, which is consistent with the fiscal-illusion hypothesis. If this is true, it indicates a somewhat weaker argument against the fiscal-illusion hypothesis, which suggests that even if there was a period of shock after the legal change, takings simply reverted to the long-term trend within a few years.

The difficulty with identifying such an effect is that a decision to exercise the eminent-domain power takes a long time, since it necessitates a careful planning process. The median time lag between approval of a zoning amendment and a taking decision is 3 years (with a higher mean of 9.45; SD = 11.94).<sup>18</sup> This time factor might have an effect on the takings in the years immediately after the legal change. Moreover, the years 2001, 2002, and 2003 exhibit very low levels of activity (13, 67, and seven takings, respectively, with an average of 29 per year, while the general average is 126), which indicates that greater caution should be taken when basing strong conclusions on them. In addition, these minimal levels of activity—and minimal shares of total takings—might be explained by other factors. They may be related to changes in the real estate market during those years, which also displayed low levels of new construction activity in general (see Figure A2).<sup>19</sup> We find this interpretation more convincing.

Election years have some effect on total takings activity per discrete observation, which is not repeated when projects are used as the unit of observation. Compensation for takings paid directly out of the city's budget indicates budgetary flexibility to increased levels of compensation. We observe a positive correlation between the amount of land taken and the

18. Relatedly, we noted a 3-year time lag between the date of taking and the timing of compensation payments.

19. In the aforementioned years, there was a recession following the burst of the dot-com bubble, the collapse of the peace process between Israel and its Arab neighbors, the eruption of violent conflicts throughout the West Bank, and multiple terror attacks in Israel, including in Tel Aviv. This, however, is merely conjecture.

amount of compensation paid when implementing a time lag of 3 years between the date of taking and the timing of the compensation payments. This correlation is wholly attributed to the high levels of takings activity in 1995 and 2010, which were followed by high levels of compensation 3 years later, in election years.

To conclude, it seems as if the 2001 Israeli Supreme Court decision that mandated full compensation for total takings had no lasting observable effect on eminent-domain practices. Over time, there is no meaningful drop in the rate of total takings after 2001, even though the government had to pay full compensation (100 percent) for total takings, while before the legal change it had to pay only partial compensation (60 percent) in such cases.

The fact that we observe bunching at 100 percent at an even greater magnitude in the years after the legal change does not necessarily stand in direct opposition to the fiscal-illusion hypothesis, notwithstanding the fact that the incentive to bunch to the left of the notch after 2001 should be a strong one given its impact (Ramnath 2013). This is especially likely given that we observe signs of a reversible shock. The point is that there are so many other constraints affecting government takings that fiscal illusion is simply not a first-order factor. Other limitations on governmental power can bring about the same result that the compensation requirement set out to achieve, as anticipated by Merrill's (1986) discussion of the due-process costs of eminent domain. Israeli property and administrative law impose a large set of constraints on government officials that are independent of compensation rules. First, the government must always act fairly and in good faith. As a consequence, the government cannot leave a token interest in the hands of private-property owners just to avoid paying them full compensation. Such attempts will be thwarted by the courts, which may cause expensive delays in development projects. Hence, the government cannot bypass payment of full compensation unless it has a genuine reason to take just below 100 percent. The burden of proof in such cases will be on the government, and it will be substantial. This, too, increases administrative, due-process costs to the government. Once the broader legal and regulatory context is taken into account, it is not entirely surprising that we do not see an ongoing drop in the rate of total takings after 2001.

We also find that smaller parcels tend to be taken in their entirety. For small parcels, a taking of more than 40 percent and less than 100 percent might result in the creation of excessively small and, thus, unusable tracts



of land. In such cases, the law allows the owner to file a suit demanding that the government take the parcel in its entirety (Alterman 1985, p. 224). However, the Israeli Supreme Court gave a very restrictive interpretation of this rule, which rendered it almost impractical. The court rejected all suits brought on the basis of this rule, even where the remainder was no more than 10 percent of the parcel, as long as it was of a certain minimal size (Lewinsohn-Zamir 1999, p. 378; AAP 4955/07 *Ra'anana Planning and Building Commission v. Torah and Avoda Fund* [2010] [Isr.]). It seems that the city realized that very small leftover tracts of land that cannot be efficiently developed create an urban-planning problem of unusable lots. This may explain why smaller parcels tend to be taken in their entirety. The fact that after 2001 the coefficient for Parcel Size is even a bit larger might indicate a government tendency to allow owners of small properties to enjoy full compensation by taking their properties in their entirety. It is also clear that in some cases properties cannot be divisible without rendering the purpose of the taking irrelevant. For instance, leaving a residential lot in the middle of a planned park might make no sense from a planning standpoint. And, indeed, our sample shows that for public uses other than roads—such as public parks—the tendency is to acquire the lot in its entirety. This may explain the bunching at the 100 percent taking share before, as well as after, the 2001 legal change.

The share of takings of 41–99 percent was relatively small. There were only 95 takings in which the share taken was between 35 percent and 45 percent, which amounts to only 3 percent of all takings. It is, thus, clear that the government does not always take exactly 40 percent of a lot. In fact, in the under-40-percent category, four of five takings were of 25 percent or less, far below what could have been explained by due-process costs or optimization error.<sup>20</sup> There appears to be a tendency to carry out takings of less than 25 percent when parcels are not taken in their entirety. These findings are inconsistent with the prediction that the design of Israeli compensation law will lead to an excessive share of takings of 40 percent even when smaller shares could have satisfied the public's need (Alterman 1985, pp. 216–20).

It is suggested that the paucity of takings of 25–99 percent is due to planning reasons and public use needs. For instance, in developed areas

20. If the government takes a part of a certain parcel more than once, the 40 percent rule applies to the cumulative share of the takings. One could argue that the government can split its takings from a certain parcel, so only the overall share of the taking should be counted. However, we found that only in 125 of 2,998 parcels (4 percent) was there more than one taking event per parcel.

where there is a need to expand a road, the government would only take the maximal amount of any developed lot that would not require the destruction of existing buildings or houses.<sup>21</sup> As we already noted, our sample of cases in which the particular public use was specified supports this assertion: the public use (local roads or any other public use) is strongly correlated with the taking share. A more detailed analysis is required to correlate the taking share with land-cover characteristics, prospective uses of the land taken, the location of the land taken with respect to other parcels being expropriated, and so forth.

Another factor that can explain why the government takes 25 percent when it can take up to 40 percent without compensation is that when land taken is not being put to a productive use, the government must bear the cost of maintaining the unused land, the loss of property tax, and the destruction of value from the creation of suboptimal land fragments in cases of partial takings. Another cost is due process. Any taking that borders on 40 percent will invite litigation. A governmental agency may prefer to avoid litigation by choosing a taking percentage that steers clear of the 40 percent kink point. In addition, for each taking, there must be a transparent public procedure in which officials are required to justify their actions. These indirect costs suggest that we ought to adopt a broader understanding of the cost structure faced by government officials in eminent-domain cases.

The main limitation of this study is that we do not have any real data on the demand for takings by the authorities. The distributions we plot show that the city sometimes requires small takings and, at many other times, larger ones. Therefore, one could argue that the government did not respond to the change in the compensation scheme because it first had to address changes in demand that occurred over the years. If this is true, then the hypothesis that budgetary concerns are the only force that shapes government decision making is refuted by our data: our findings refute the claim that without mandatory compensation, government officials will be oblivious to the private cost of their actions and will take the largest percentage of every lot that they can take without paying compensation.

We are unable to say whether the takings we studied were efficient; our data do not allow us to do so. Even if one assumes a benevolent gov-

21. Compare Kades (2008, p. 9), who suggests that “[i]n more densely populated states, new road routes will traverse occupied parcels with greater frequency. In less populated states, new roads more likely will go over farmland and other less intense uses.”

ernment, it does not mean of course that it acts efficiently. We did not test whether the uses to which the properties taken were put are more valuable than the private uses. These questions are beyond the scope of this project.

A final possible interpretation of our findings is that since takings compensation comes from the public fisc, government officials are not truly constrained by the compensation mandate. As agents who transact with other people's money, government officials are at liberty to promote their personal interests, such as political support. The fact that election years have some effect on the share of total takings and out-of-budget compensation further supports this interpretation. This explanation finds corroboration in Chang (2009), which also finds that political considerations play important roles in decision makers' determinations of how much compensation to pay.

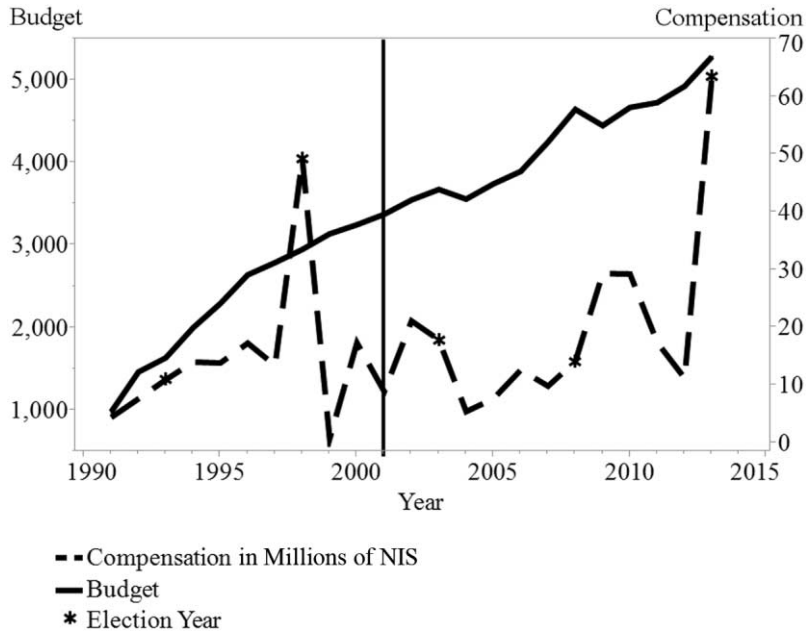
## 6. CONCLUSION

Our study gives reasons to reassess the centrality of the fiscal-illusion hypothesis as the single explanation for mandating compensation for takings. It calls into question the predominant hypothesis that government officials, when exercising their eminent-domain power, act as narrow maximizers of self-interest who are exclusively motivated by budgetary constraints, specifically those created by compensation rules. Our findings lend qualified support to the alternative hypothesis that government officials are largely motivated by a variety of budgetary and nonbudgetary considerations, such as actual needs, fairness, and political effects, when they take private property.

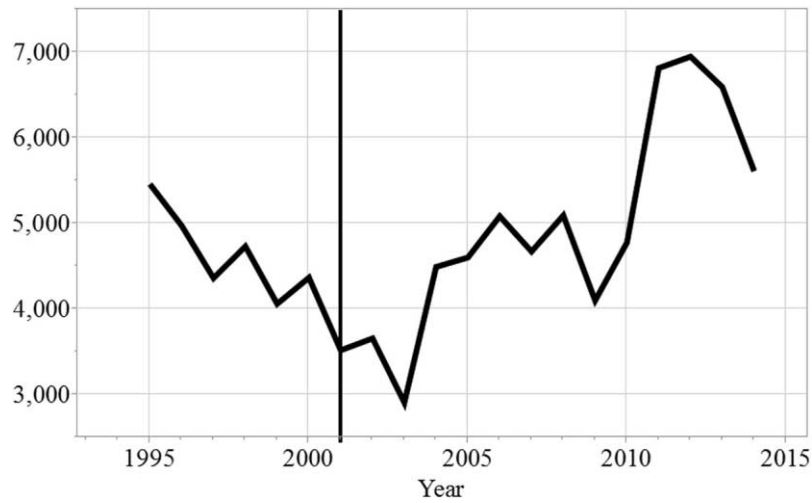
On the basis of our findings, future studies of fiscal illusion should proceed in two directions. First, they should try to identify the forces that shape government decision making in the takings context. Second, and equally important, there is a need to test the fiscal-illusion hypothesis in related contexts. Steven Shavell, one of the few law and economics scholars who expresses skepticism about the fiscal-illusion hypothesis as an explanation for the compensation requirement, queries why the fiscal-illusion problem afflicts government officials in the takings context but not in other cases (Shavell 2004, p. 130). Our study suggests that the fiscal-illusion theory, notwithstanding its theoretical elegance, exerts a much smaller effect on the behavior of government officials than previ-

ously hypothesized, even in the takings context. It, therefore, raises the possibility that the seeming anomaly noted by Shavell is not a real one.

**APPENDIX: SUPPLEMENTARY DATA**



**Figure A1.** Correlations among budget, nominal value of compensation paid, and election years, 1990–2014.



**Figure A2.** New construction in Tel Aviv, 1995–2014 (source: Israeli Central Bureau of Statistics).

**Table A1.** Correlations among Parcel Size, Taking Size, and Taking Share

	Taking Size	Taking Share
Parcel size	.56***	-.20***
Taking size		.15***

**Note.**  $N = 3,140$ .  
\*\*\*  $p < .001$ .

**Table A2.** Correlations among Annual Budget, Annual Compensation, and Budgetary Share of Compensation

	Budget	Compensation	Budgetary Share
Budget	1	.41	-.08
Compensation	.41	1	.85***
Budgetary share	-.08	.85***	1

\*\*\*  $p < .001$ .

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