SOCIAL CONSTRUCTION AND THE PROGRESSIVITY OF LOCAL TAX RELIEF[1]

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Abstract

This paper reveals a noticeable difference between a high degree of progressivity of income-related local property tax relief versus the proportional or regressive incidence of recognition tax relief. Recognition tax relief is tax relief given to specified social sectors that recognizes either their contributions to society or their identity-related suffering. Social groups that are characterized by political power and positive image following social construction process are expected to receive more favorable tax treatment regardless of their material needs. This study advances our understanding by showing that the degree of progressiveness of a tax system is shaped by social construction, which implies a more complex trade-off between equality, efficiency, and social construction in designing the tax system.

Keywords: tax relief, property tax, tax progressivity, social construction

1. INTRODUCTION

This paper examines the degree of progressivity of residential property tax relief in Israel, where a large share is granted to low-income households, while some are surprisingly granted to high-income ones. The annual property tax expenditures exceed NIS 5 billion, with NIS 3.5 billion being for residential tax relief. In 2018, residential property tax relief was larger than or equal to well-known welfare programs, such as income support (NIS 2 billion), unemployment benefits (NIS 3.5 billion) and the Earned Income Tax Credit (less than a billion shekels). The prevalence of tax relief is also reflected in the total number of recipients

of property tax relief, which was about 1.4 million households in 2018, or more than half of all households in Israel (about 2.5 million).

Property tax relief due to low income reflects the importance placed by a society on preventing excessive economic inequality, which is particularly relevant to Israel with its exceptionally high poverty rates and inequality (Dahan 2021). In order to provide local services, Israeli municipalities tax their residents according to the property size and its location, regardless of their current level of income or wealth. To adjust the amount of property tax to the current economic conditions of a resident, municipalities offer property tax relief ranging from 20 percent to 90 percent, depending on the level of income (Table 1). For the same reason, elderly recipients of income supplements from the Israeli social security (known as National Insurance Institute, NII) are entitled to a 100 percent discount (Table 1). All such means-tested tax relief is here called income-related relief.

Table 1
The rate of tax relief according to the main grounds for eligibility

Eligibility criteria	Relief Rate	Comments
Senior citizens receiving income supplement	100%	Up to 100 square meters
Serving in the IDF as well as local and national or civil service: Soldiers (up to 4 months after service) A soldier's parent who is funded by his son's salary National service volunteer Serving in the civil service in a full time Serving in the civil security service	100%	Up to 70 square meters (up to 90 if household includes more than 4 people)
A blind man carrying a blind certificate	90%	
New immigrant	90%	Up to 100 square meters, for 12 months out of 24 months from the date of registration as an immigrant
Maximum discount according to income test	90%	20% - 90% by income scales
A disabled person who has been determined to have a degree of incapacity for work of 75% or more	80%	Up to 100 square meters
Nursing care allowance	70%	
Victims of war: Disabled IDF veteran Disabled police Disabled prison service Disabled hostilities Bereaved family (soldier who perished or was injured in hostilities)	66%	Up to 70 square meters (up to 90 if household includes more than 4 people)

Holocaust survivors: Beneficiaries from Germany Beneficiaries from the Netherlands Beneficiaries from Austria Beneficiaries from Belgium Holocaust survivors who did not receive monthly allowances due to their persecution Holocaust survivors receive annuities under the Claims Conference agreement.	66%	Up to 70 square meters (up to 90 if household includes more than 4 people)
Righteous among the nations	66%	Up to 100 square meters
Prisoner of Zion	66%	Up to 70 square meters (up to 90 if household includes more than 4 people)
A disabled person whose degree of medical disability is 90% or more	40%	
Beneficiaries of a disabled child (including in a foster family)	33%	Up to 100 square meters
Senior citizen who meets the income test according to the Senior Citizens Law	30%	Up to 100 square meters
Senior citizen receiving old age/ survivors' pension	25%	Up to 100 square meters
Single parent	20%	
Redeemed captives	20%	
Active reservist	5%	

Inspecting the long list of Israel's residential property tax relief reveals that many residents are entitled to receive tax relief regardless of their economic status (Table 1). High-income earners are entitled to a tax deduction if they serve in the Israel Defense Forces (IDF) or are disabled through Israel Defense Forces (IDF) service, bereaved family members, Holocaust survivors or victims of hostilities. Why do these social groups benefit from tax relief regardless of their material need? According to Schneider and Ingram's theory (1993, 1997, 2005), which emphasizes social and political aspects, public resources are channeled to groups with political power and a positive image, created in a long process of social construction that dictates the deserving groups. In the spirit of this theory, which is a cornerstone in the literature on public policy design, it is argued here that the driver of tax deductions for certain sections of the population reflects the recognition of their contribution to society (disabled IDF service members and bereaved families) or their suffering (Holocaust survivors, victims of hostilities). Tax relief granted to these groups is here called recognition tax relief. This recognition tax relief has both direct and indirect effects on local tax progressivity. It directly reduces the degree of progressivity of local taxation, as it is also given to high-income earners. In addition, the loss in local revenue indirectly decreases

progressivity due to a lower level of municipal services that disproportionally benefit low-income residents.[2]

This study reveals striking differences between the two types of property tax relief (income-related relief and recognition-related relief) in terms of their impact on the degree of progressiveness. Income-related property tax relief have a large negative income elasticity, a finding that indicates a high level of progressivity. In contrast, the income elasticity of recognition tax relief is positive and approximately unit-elastic, indicating neutral tax incidence that reduces the overall local tax progressivity. The effect of recognition tax relief on the overall actual degree of progressivity might be even stronger to the extent that low-income residents receive lower local public goods following the loss in local revenue.

An unintended consequence of recognition tax relief is a more progressive incidence of the local tax system in Arab municipalities (compared with in Jewish municipalities), which are characterized by both larger income-related tax relief and lower recognition-related tax relief. A similar outcome is expected in ethnically mixed cities, such as Tel Aviv (with approximately 80 percent Jews and 20 percent Arabs), compared with in more homogeneous cities, such as Givatayim. No significant difference has been found between Druze municipalities (populated by Arabic-speaking citizens who tend to serve in the Israel Defense Forces) and Jewish municipalities, implying that ethnically biased policy is not the main cause of the differences found between Arabs and Jews.

This study contributes to limited literature that attempts to find out the factors that shape the level of progressivity. The economic literature on optimal taxation suggests that the desired degree of progressiveness depends on the intensity of inequality aversion, efficiency considerations and the pre-tax distribution of earnings (Mirrlees 1971, Diamond 1998, Dahan and Strawczynski 2000, Saez 2001). In recent years, sociological literature has emphasized the relations between the degree of progressiveness of the taxation system and social and political structure. Studies examining the tax system in developed countries have found a surprising empirical regularity, according to which generous welfare states in Western Europe tend to rely more on regressive taxes, such as consumption taxes or social security contributions (up to an income ceiling), compared with countries such as the United States that provide a limited social safety net (Steinmo 1993, Wilensky 2002, Kato 2003, Lindert 2004, Prasad and Deng 2009). A comprehensive investigation of the incidence of all types of taxes revealed that property tax, which is the main type of local tax, is regressive in all advanced economies examined: Denmark, Sweden, Finland, Norway, Switzerland, France, Australia and the United States (Prasad and Deng 2009). The same conclusion follows from a review of additional studies in the United States (Oates and Fischel 2016) and in Israel (Horn 2008, Portnov et al. 2001).

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[2] Studies comparing changes in inequality have shown that the distribution of social services is more equal than the distribution of taxes (Rainwater and Smeeding 2003, Kenworthy 2011).

Prasad and Deng (2009) have raised intriguing hypotheses regarding the reasons for the difference between European countries' generous welfare states with regressive taxation and the progressive tax system in the United States. These hypotheses, however, have not been tested. The only study I am aware of that examines the causal relations between a social structure and tax incidence finds that the degree of progressivity declines with increases in the proportion of residents of Latin descent (O'Brien 2017). That study presents evidence suggesting that a regressive tax structure is motivated by the sense of threat felt by the white majority following an increase in the share of minority groups in the population and that such sense increases the intra-group solidarity of white populations while weakening their solidarity toward minorities.

The next section outlines the historical background of the development of residential property tax relief in Israel. Section 3 presents the conceptual framework by which the research hypotheses were formulated, and section 4 describes the methodology and econometric model. Section 5 and 6 present empirical analysis and findings. The last section summarizes the findings of this study and provides a brief discussion of their implications.

2. HISTORICAL BACKGROUND

The Municipality Ordinance of 1934 during the British mandate is the first ordinance regulating the payment of taxes to local government institutions by law. Section 118 of the ordinance, entitled "Dismissal Due to Poverty," states that "a council may, with the approval of the Governor, reduce or waive any tax payment on account of the poverty of the person liable to pay that tax." As evidenced by that ordinance, the first stated justification for granting relief on local tax payment was the low income of individuals.

The Municipality Ordinance has been amended over the years (Local Councils Ordinance of 1941), and one of the main amendments is the addition to the original section that "the council may reduce or waive any tax payments on account of the poverty of the person liable to pay the tax, or for any other reason approved by the Minister [of the Interior]".[3] The addition of "any other reason" has enabled municipalities to add various discretionary tax relief due to the limited actual oversight by the Minister of Interior. Until 1992, the actual discretion regarding property tax relief was in the municipalities' hands (Office of the State

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[3] Local Councils Order, Regulations File, January 10, 1951 (p. 486). This loophole was formally enshrined in an amendment to the Municipalities Order enacted in 1952. In 1964, the Municipalities Ordinance was amended, which already officially stated, under a section entitled "Reduction of Property Taxes," that "the council may reduce or waive any tax payments on account of the poverty of the person liable to pay the tax, or for any other reason approved by the Minister [of the Interior]" (section 280 of the Municipalities Ordinance, No. 5714 197). This version appeared in the orders of local councils, which were published with their establishments, such as in the case of Metula.

Comptroller Audit Report, 1992).[4] Following the State Comptroller's report, which found an incoherent system of property tax relief, the budget for the year 1993 included a major reform that determined a uniform list of local tax relief that all municipalities should follow.[5] The list covers a discount to low-income households whose rate varies according to their income per capita, senior citizens, individuals with a disability and new immigrants (Table 1).[6] The recipients of local tax relief have expanded since then and today include SLAs (2002), single parents (2005) and reservists (2018).

Injured soldiers, bereaved families, victims of hostilities and Holocaust survivors have received special treatment since Israel's beginning as a state. A few years after the establishment of the state of Israel, the Municipalities Law was enacted in 1953 and granted a full or partial exemption (two-thirds) from the payment of property taxes for these groups.[7] Although the addition of "any other reason" allowed municipalities to grant an exemption from property tax to war victims and military officers, it was subject to the will of each municipality. Such state of affairs has been viewed as disrespectful to those individuals who pay a price, and that has motivated the change in the legal status, as can be seen in the following explanatory memorandum: "… the fact that the exemption was granted by grace and not by a right was a lack of respect for the people who needed it…" (Explanatory Memorandum for Municipalities Law, 1953).

In general, employing tax relief as a policy tool instead of direct public benefits might be driven by either efficiency or equality considerations. For example, senior citizens can be assisted through a monetary transfer or by lowering the costs of living. Ostensibly, the advantage of reducing local taxes over social assistance is its built-in adjustment to geographic differences in the cost of living. The local purchasing power of nationally uniform monetary social assistance varies depending on the place of residence due to differences in the level of local property tax, unlike in property tax relief, which automatically takes into account the local cost of living. However, this reasoning assumes that differences in the level

[4] General Property Tax – Charges, Discounts and Exemptions, Audit Report of the Local Government, Office of the State Comptroller, 1991.

[5] The central government plays a key role in regulating the property tax relief, which is determined within the framework of regulation in arrangements in the state economy (Israeli government budget), although formally the local authority is not obligated to grant them. The asymmetry between the authority of the central government to enact services and the responsibility of the local government to provide them creates an incentive for the central government to be more generous in granting local tax relief. In contrast, local government officials advocated for eliminating all property tax relief given to individuals (Barzilai committee report, pp. 69).

[6] Arrangements of Regulations in the State Economy (Property Tax Deduction), 1993.

[7] This exemption has a size ceiling, and today, it is given for 70 square meters of the house/apartment area for a family with four people or fewer and for 90 square meters for a family with more than four people.

of property tax between municipalities do not affect the quality of service that residents receive, as it is more likely that municipalities that charge more also provide more services.

Savings on administrative costs are another possible motivation for granting property tax relief instead of direct transfer of social benefits.[8] Under certain conditions, using a tax relief may be more efficient than providing direct social assistance, which requires two interventions of spending and taxing and two government bureaucracies (Tyson, 2014). In contrast, tax relief receives less public oversight compared with government spending, which is re-examined annually during the budget approval process. To increase transparency, some countries, including Israel, present the money value of the tax expenditures budget separately to inform the general public of the budgetary costs of granting tax relief. In Israel, municipalities go one step further in terms of budget transparency and include the property tax relief in overall expenditures (as well as on the revenue side to neutralize the effect of tax relief on the budget deficit). Differences in the costs of providing local public goods are an additional potential motivation for property tax relief. Granting property tax relief to senior citizens may compensate them for their reduced consumption of certain local services, such as kindergarten and schools (Shan, 2009). These efficiency considerations, however, do not explain why elderly Holocaust survivors receive greater relief than other elderly people do or why bereaved families receive greater tax relief compared with what otherwise equal families receive. The next section presents a conceptual framework that rationalizes why these groups nevertheless receive property tax relief.

3. CONCEPTUAL FRAMEWORK

In a series of groundbreaking works, Schneider and Ingram have shown that citizens are not equal before public policy (Schneider and Ingram 1993, 1997, 2005). According to their theory, groups with political power that enjoy a positive image following a long process of social construction are more likely to benefit from a generous and respectful public policy than groups that suffer from a negative image, regardless of their material need.

Schneider and Ingram classify social groups according to two types of resources—image in the eyes of the public and political power—which form four distinct groups: The advantaged group has a positive image and large political power; the dependent group is characterized by a positive image but lacks significant political power; the contender group suffers from a negative image but has large political power; and the deviant group suffers from a negative image and lacks political power. According to this theory, the design of public policy toward an advantaged group is expected to be in the form of "carrot" policies (rights, positive incentives or education) as opposed to "stick" policies toward a deviant group (denial of rights, negative incentives, punishment).

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[8] Tarshish et al. (2022) explore the administrative burden of passported benefits which include local property tax reliefs.

A particular design of public policy is also derived from political incentives that may affect the behavior of elected officials. Politicians seeking re-elections are likely to gain more political support if they pursue policies that are in favor of advantaged groups, and thus public policy is not only influenced by politics but also influences it, as Schattschneider (1935) suggested. This relation has received empirical support in several studies (Pierson 1993, Soss 1999, Mettler 2005, Bruch et al. 2010, Ben-Bassat and Dahan 2018).

According to Schneider and Ingram's theory, the share of benefits of an advantaged group, which has a positive image, will be greater than their share in the tax burden required to finance those benefits. Public policy toward such a group is not only more generous but also more respectful. The design of public policy directed toward this group is expected to include universal benefits for all of its members and follow a considerate procedure, such as fewer tests required to receive benefits or even automatic provision of those benefits. The government or quasi-public organizations are likely to invest special efforts in reducing incomplete take-up of public benefits channeled to advantaged groups by a shift to automatic enrollment. Benefits given to these groups are predicted to last longer compared with benefits given to groups that suffer from a negative image, involves extended discretion and a designated agency.

In the spirit of that theory, an advantaged group is expected to enjoy universal categorical tax relief, which is defined here as a tax relief granted to a particular social group regardless of income of its recipients. Universal categorical tax relief allows for a respectful process, automatic extension from year to year and even automatic enrolment. The granting of tax relief regardless of income might also be motivated by preventing the bureaucratic burden that is otherwise imposed on those entitled to tax relief. Employing means-tested criteria for those who are entitled to tax relief is associated with psychological costs and considerable inconvenience, which may lead to a known problem of incomplete take-up of tax relief. Such policy design, intended to avoid the inconvenience that low-income households belonging to an advantaged group may experience, is also consistent with Ingram and Schneider's theory. In addition, a claim for a tax relief due to low income must be resubmitted annually even if economic conditions are the same, as opposed to an automatic extension of recognition tax relief.

Table 1 presents the social groups who receive universal categorical tax relief, such as elderly residents, bereaved families, and Holocaust survivors. The monetary benefits to these groups are not a response to the level of material need, as they are not limited to needy bereaved families or Holocaust survivors. The tax property relief in these groups reflects gratitude for their contributions to society (elderly people, military veterans, bereaved families, Righteous Among the Nations), the recognition of their suffering (Holocaust survivors, victims of hostilities) or special circumstances (blind persons and families with disabled child), and therefore is here called recognition tax relief. Every universal categorical tax relief is classified here as recognition tax relief unless it is driven by clear managerial justifications such as incentives to pay in advance.

The sorting of tax relief based on classification of various social groups according to the four categories suggested by Schneider and Ingram's theory is beyond the scope of the current research as it requires systematic examination of the sources of social construction and estimating the political power and public image of each and every social group in Israeli society. Instead, the current paper adopted a revealed preferences classification approach of tax relief together with supporting evidence on the political power and public image of selected groups.

a. External evidence on public perception and political power

Public opinion is a natural source to learn about the public perception of a social group that receives universal categorical tax relief. Florian, Malkinson and Kasher (1999) found in a public survey that the general public is more sensitive to bereaved families related to military activities than to families who lost their loved one in civilian circumstances and is more inclined to provide them with preferred economic assistance. Based on a more recent public opinion survey, Shalev and Gal (2018) discover that the general public is more likely to support economic aid to military-related disabled individuals, military veterans and Holocaust survivors (the social groups who receive universal categorical tax relief) than to victims of car accidents, large families and single parents. Moreover, the public tend to support non means-tested assistance to preferred groups (Shalev and Gal 2018). The elderly is another important group, benefitting from tax relief regardless of their income/wealth, and it is consistent with their positive perception. In addition, van Oorschot (2006) shows that elderly people across Europe are seen as most deserving in contrast to unemployed people who are seen as less deserving, and immigrants as least deserving of all.

The fate of policy proposals to scale back or to expand universal categorical tax relief to certain groups might offer selective evidence on the political strength of social groups who receive recognition tax relief. Since the inception of universal categorical tax relief, I found only one proposal to introduce means-testing to all recognition tax relief and that might reflect the implicit strong political power of these social groups. The Barzilai Committee, which was set up by the government in September 2006 to propose comprehensive reform in local taxation, recommended to limit local tax relief to low-income households but that only attempt was unsuccessful.

The political outcome of proposals to scale back tax relief to elderly people is quite similar. The property tax deduction rates to elderly people went up a few months after the introduction of a general law governing local tax reliefs in 1993. Since then, there were several failed attempts to eliminate the universal categorical tax relief to elderly people. In fact, elderly people with income less than the average wage gained in 1998 an additional 5 percent as part of a senior citizen law. In contrast, the abolition of property tax relief for the recipients of income support and alimony allowances, made in 2003, indicates the weak political power of their recipients.

b. The expected effects of recognition tax relief by ethnic groups

The distinction between recognition tax relief and income-related tax relief in the current study complements previous works, which divide social assistance programs between standard welfare benefits and public assistance to incentivize loyalty and sacrifice (Friedman and Shalev 2010, Shalev and Lazarus 2016, Shalev and Gal 2018) or compensating people who contribute to the common good (Gal 1998, Gal 2001). The Barzilai Committee also made a distinction between income-related property tax relief and recognition tax relief as stated in its report: "Tax relief for elderly people, soldiers and policemen reflect the will of society and the legislature to recognize and cherish the contributions of such individuals and groups" (Barzilai Committee, pp. 62. This report has been circulated but never published).

The provision of recognition tax relief to all members of a group without an income test has a moderating effect on the progressivity of the local tax system in Israel. The extent of the effect of recognition tax relief on the degree of progressivity depends on the size of the benefit and the position of the benefit's recipients on the income scale. Naturally, this effect will be different from the effect of income-related discounts designed to reduce the potential regressivity of residential property taxes.

The recognition tax relief is not distributed equally across municipalities. Unintentionally, the incidence of local taxation is expected to be more progressive in Arab municipalities compared with municipalities whose residents are mainly Jews or Druze (with similar economic characteristics) because the recipients of recognition tax relief are more likely to occupy the upper part of the socioeconomic status scale.[9] Most recognition tax relief is based on military service or related to the Holocaust and is therefore in favor of residents of Jewish and Druze municipalities. For the same reason, the degree of progressiveness of property tax relief in ethnically mixed municipalities, such as Tel Aviv and Jerusalem, is expected to be greater than in more homogenous municipalities, such as Givatayim or Hod HaSharon. In contrast, property tax relief in Haredi (due to Holocaust-related tax relief) and Druze (due to military-related tax relief) municipalities are expected to be less progressive compared with in Arab municipalities. The empirical analysis is mainly devoted to non-Haredi Jewish and Arab municipalities, which together constitute most municipalities in Israel.

The two hypotheses summarize the discussion above:

Hypotheses:

H1: Recognition tax relief is expected to be less progressive compared with income-related tax relief and, as a result, to reduce the degree of overall progressiveness of residential tax relief.

H2: The progressiveness of residential tax relief is expected to be greater in Arab municipalities compared with in non-Haredi Jewish municipalities.

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[9] Property tax is expected to be regressive (the property tax rate from the value of the property decreases as the value of the property increases) if the monetary value of a square meter at the margin increases following an increase in the value of property.

4. METHODOLOGY

To examine these two hypotheses, a measure of property tax relief incidence is outlined below that captures the actual beneficiaries of tax relief by income level and degree of progressivity.

a. Degree of Progressiveness

Over the years, public economics literature has developed a variety of progressiveness measures, which differ in their degree of sensitivity to the extent of inequality before tax, the average tax rate, and the structure of tax brackets (Kakwani 1997).[10] Arthur Pigou developed the first measure of the progressiveness of taxes, which is the ratio between the change in average tax rate and the change in income (Pigou, 1928), and since then, the inventory of summary statistics measures of progressiveness has expanded. An additional measure of progressiveness, which is commonly used by scholars, international and national institutions, is the gap between pre-tax and after-tax income inequality, developed more than seventy years ago (Musgrave and Thin 1948).[11] For example, using such measure Kuypers et al. (2018) show a lower redistributive effect of taxes after considering the joint distribution of income and wealth.

Computing progressivity based on differences in income inequality before and after tax relief requires disaggregated data on income and tax relief at the individual level. However, individual-level data on property tax relief that is available from the Israeli household expenditure survey is not detailed enough to test the above hypotheses. For example, there is no information regarding tax relief related to military service, which is essential for examining the impact of recognition tax relief on progressiveness. Moreover, the calculated aggregate residential tax relief in the expenditure survey are considerably biased downwards and are less than half the amount that is actually granted, making the survey even less suitable for estimating the progressiveness of all tax relief.

I chose income elasticity of property tax relief to measure the degree of progressivity because the data on property tax relief by eligibility criteria and income are available only at the municipality level. Estimating income elasticity at the municipality level allows me to

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[10] For example, the Suits index is not sensitive to the tax rate, and this is a weak point that reduces the attractiveness of this index.

[11] The gap between the marginal tax rate and the average tax rate is another measure of progressiveness proposed that year by an economist in the U.S. Treasury Department (Slitor 1948). Later the inventory of progressiveness indices increased further, and two of them are noteworthy. The first is a Gini-like tax index, equal to one less than twice the area under the curve describing the relationship between cumulative income and cumulative tax (Suits 1977), and the second is the difference between tax centralization and pre-tax income inequality (Kakwani 1977). A use-friendly graphical explanation of this index appears in: Murray et al. 2003: page 515.

control for other factors that may affect the amount of tax relief, such as demographic composition. Thus, income elasticity is easier to interpret as a measure of progressiveness using aggregated administrative data at the municipality level on property tax relief.

Income elasticity of the tax relief is defined here as a percentage change in property tax relief divided by a percentage change in income, to present the level of progressiveness. Employing this index, the property tax relief is of neutral incidence if the elasticity is positive and unitary, and it is regressive if the elasticity is positive and greater than one. In contrast, the property tax relief is of progressive incidence if the elasticity is less than one, and its degree varies according to the value of elasticity. Progressiveness is high if the elasticity is negative, moderate if the elasticity is equal to zero, and low if the elasticity is positive and less than one. The elasticity index corresponds to the popular definition of progressiveness that is based on the relations between tax relief to income ratio and income levels, where increasing, decreasing and constant ratios indicate regressive, progressive and neutral incidences of tax relief, respectively.

b. Incidence of Property Tax Relief

Economists prefer to measure tax incidence by identifying the people who actually bear the burden (economic incidence), rather than the people who are required by law to pay tax (legal incidence). A tax imposed on employers who manage to pass the tax fully on to their employees is an example of the potential difference between the legal incidence, according to which taxes are paid by employers, and the economic incidence, according to which employees actually bear the tax burden. Measuring the distribution of tax burden based on legal incidence is relatively easy compared with measuring based on economic incidence, which requires research effort to determine who actually bears the tax burden.

This opens the door to a dispute over tax incidence, which is particularly controversial with respect to local taxes, such as property taxes, and is expressed in three competing approaches (Oates and Fischel, 2016). According to the first approach (old view), property tax is a tax on housing services whose share in the consumption bundle decreases with income, and therefore, the property tax has a regressive incidence. According to the second approach (capital-tax view), property tax is a progressive tax because it falls entirely on the property owners, who tend to be at the top of the income ladder (assuming zero flexibility of capital in general equilibrium). According to the third approach (benefit view), property tax is not a tax but rather a payment for municipal service, and therefore, it does not make sense to measure its incidence. The debate over the incidence of local property taxes has suppressed the appetite for exploring the empirical degree of progressiveness to the point that Wallace Oates and William Fischel open their article with the sentence: "Our understanding of the application of local property taxes is poor" (Oates and Fischel, 2016). These researchers note that studies that estimated the incidence of local tax in the US employing legal incidence found it to be regressive (Oates and Fischel, 2016). Based on legal incidence, there is also

empirical support for the regressivity of local tax in other developed countries, such as the Scandinavian countries, Switzerland, France and Australia (Prasad and Deng 2009).

In this paper, I employ legal tax incidence, which is in line with studies conducted in recent years that have found that actual incidence is related to legal incidence (Saez et al. 2012; Saez et al. 2019). The design of property tax relief in Israel that is based mainly on the characteristics of a tenant rather than of an apartment provides additional justification for using the legal incidence. The value of an apartment should not be affected by property tax relief under such a policy design, to the extent that information regarding tenant's eligibility for property tax relief is not readily available to landlords.[12] However, income-related property tax relief may affect the incentive of low-income individuals to work, generating a potential wedge between legal and economic incidence. As a result of such a behavioral change, a measure of progressiveness would be biased upward. Note that work-related incentives are not affected by recognition tax relief because they are given regardless of income. In principle, property tax relief may affect other decisions, such as internal migration, the desired location and the degree of tax compliance. Nevertheless, property tax relief in Israel are very similar everywhere and therefore are not expected to affect emigration between municipalities.

Measuring the incidence of property tax relief at the municipality level is only an approximation of tax incidence at the individual level, as it takes into account variation between municipalities but ignores variation within municipalities. The progressivity of income-related tax relief using aggregate data at the municipality level likely underestimates its true degree compared with employing individual data because it overlooks its positive effect on inequality within a municipality. In addition, the incidence of property tax relief reflects a partial analysis that does not take into account indirect effects of revenue loss. Property tax relief requires a reduction in local spending (or an increase in local tax rate), and this has an effect on both inequalities between and within municipalities. The inequality in local services increases within municipalities to the extent that low-income residents receive a larger share. Inequality between municipalities also intensifies due to reduced local services, because the share of low-income residents is not uniform across municipalities. Municipalities with a high concentration of low-income residents provide a lower level of local services due to smaller tax base compared with more affluent municipalities with small share of low-income households. Note that widening gaps in local services between municipalities due to tax relief counteracts the impact of balancing grants as a policy tool for reducing gaps between municipalities.[13]

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[12] High property tax relief lead to lower municipal services that may affect the value of the apartments, and hence, the property owners will bear part of the burden.

[13] Dahan (2022) examines the impact of balancing grants on inequality between municipalities.

c. The Econometric Model

To study the degree of progressiveness of property tax relief, the following statistical model is estimated:

$$\text{Log}(TR_i) = a_0 + a_1 \text{Log}(I_i) + a_2 PSI_i + a_3 E_i + a_4 \text{Log}(P_i) + a_5 A_i + a_6 SG_i + \varepsilon_i$$

Where TR_i is the amount of property tax relief per resident in municipality i, and I_i is the average wage per worker (employees and self-employed) in municipality i. PSI_i is the proportion of seniors receiving income supplement in municipality i, and E_i is the ratio between the number of employees and self-employed to the number of residents aged 30 to 64 in municipality i, which captures the employment rate. P_i is the number of residents in municipality i and A_i is the percentage of residents in a municipality i aged 65 and over. SG_i represents a vector of three dummy variables for an Arab, Druze and Haredi (ultra-Orthodox) Jewish municipality, compared with non-Haredi Jewish municipality (omitted variable). ε_i is the unexplained residual. The coefficient of wage level per employee provides an estimate of income elasticity because the dependent and independent variables are expressed in logarithmic terms. That is, a_1 represents the percentage change in the amount of tax relief per resident relative to the percentage change in income per employee. Property tax relief is of neutral incidence if a_1 is positive and equal to one, and regressive if it is positive and greater than one. In contrast, property tax relief is highly progressive if a_1 is negative. The level of progressiveness is moderate if a_1 is not significantly different from zero and low if the coefficient is positive and less than one.

To uncover differences in income elasticity and degree of progressiveness between the two types of tax relief, I carried out separate estimations of the econometric model for recognition tax relief and income-related tax relief. Separated estimations allow the use of different coefficients based on the social affiliation of municipalities. For example, the sign of a coefficient of Arab municipalities is expected to be negative in recognition tax relief regression due to a low number (or zero) of war-related family members and zero or positive in income-related tax relief regression because of lower socioeconomic conditions.

5. DATA

Data on residential property tax relief used in this study were provided by the audit department of the municipalities in the Ministry of the Interior, which began collecting data on tax relief in 2010. Detailed data on property tax relief by eligibility criteria for almost every municipality are collected and certified by accountants hired by the Ministry of the Interior, which allows me to classify the property tax relief into income-related relief, recognition-related relief, and all other tax relief.[14] I estimated the degree of progressivity

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[14] Property tax relief data for 2018 are not available for the three municipalities, Jisr a-Zarqa, Kaukab Abu al-Hija, and Rama.

based on a cross section of municipalities for the year 2018 (the most recent available year), as this is a common method used in tax incidence literature.

Examination of the raw files prepared by accountants revealed differences across municipalities in the quality of the data on tax relief. To reduce possible bias resulting from measurement errors, municipalities were rated between one (low) and five (high) according to the quality of the relief data file. For example, Al-Kasom regional council received a score of 1 because the document for 2018 was empty (only one municipality received this score). Municipalities received scores of 2 if the files which contained their data were nearly empty or lacked details concerning either the monetary value of the tax relief or the number of recipients (Kaabiyah-Tabash-Hajjajra, Neve-Midbar and Migdal HaEmek). I assigned a score of 3 to municipalities with zero recipients of means-tested tax relief, which is implausible, or an excessive amount of tax relief due to income support, which was cancelled in 2003 (18 municipalities were rated 3, including Be'er Sheva, Acre and Netanya). I assigned a score of 4 to municipalities with files that contained minor errors such unrecognized tax relief titles (66 municipalities) and a score of 5 for those with files that were flawless (164 municipalities). In the empirical analysis, I examine whether the main results were sensitive to the exclusion of municipalities that received scores of 3 and below.

I classified the data on property tax relief into 3 groups. The first group is income-related tax relief granted to households due their low income (means-tested), seniors who receive income supplement (this group receives a discount of 100 percent), seniors who do not receive income supplement but are entitled to a tax relief because their income is relatively low compared with the average wage in the economy (a discount of 30 percent), senior citizens and recipients of nursing allowances, recipients of income support prior to 2003, disabled individuals who have been determined to have a degree of incapacity for work of 75 percent or more and single parents. Tax relief for single parents are included in income-related tax relief because municipalities may employ means-tested methods to determine eligibility for that group. Table 2 shows that in 2018, income-related tax relief represented more than two-thirds of all residential property tax relief. The second group, recognition tax relief, consists of tax relief that are granted regardless of income and includes tax exemption for IDF soldiers and relief granted to disabled IDF veterans and bereaved families, victims of Nazi persecution, redeemed captives, victims of hostilities, civil and national service volunteers (not drafted to the military), Righteous Among the Nations, new immigrants. In 2018, recognition tax relief approximately accounted for one-fifth of all residential property tax relief (Table 2). The third group, which is classified as other tax relief, covers tax relief that is mainly motivated by managerial considerations such as early payment rebates, empty home and new home exemptions and tax relief under titles not included in the standard list eligibility criteria. Table 2 shows this category of tax relief represented a small share of all relief.

Table 2
Property tax relief, by eligibility criteria

	Number of Recipients	Tax relief per Recipient (NIS)	Average Tax relief per Recipient (NIS)
All Tax Relief	**1,406,599**	**316.7**	**2,589**
1. Income-Related Tax Relief	**790,711**	**214.3**	**2,427**
Income Test	227,145	91.5	3,183
75% Disabled	158,376	57.7	3,303
Senior Citizens Who Receive Income Supplement	140,836	28.8	2,712
Nursing care Allowance	70,008	16.8	3,027
Income Supplement	35,112	9.1	2,729
Senior Citizens Who Do Not Receive Income Supplement	84,321	5.2	1,182
Single Parent	74,912	5.2	849
2. Recognition Tax Relief	**454,382**	**65.0**	**1,881**
25% Senior Citizen	231,371	20.0	1,095
Disabled IDF Veteran and Bereaved Families	55,020	20.0	2,831
Families with Disabled Child	46,162	5.8	1,298
Blind	14,127	5.5	4,198
Victims of Nazi Persecution	37,293	4.8	2,378
General Senior Citizen	20,259	2.9	1,916
Soldiers Exemption	13,272	1.8	1,216
Hostilities Victims	6,776	1.5	2,259
Immigrant	14,115	1.1	1,620
Others	15,987	1.6	0
3. Other Tax Relief	**161,505**	**37.4**	**3,984**
Empty Building	70,734	16.3	10,221
90% Disabled	20,702	5.6	349
New Building	21,415	5.5	9,722
Other	14,053	3.9	3,095
Early Payment Rebates	27,219	2.1	514
Others	7,382	4.0	3

Sources: Ministry of the Interior and the author's calculations.

Table 3 conveys the main message of this research, even without relying on statistical analysis, demonstrating that income-related tax relief was highly progressive: The amount of the tax relief per resident in municipalities belonging to low socioeconomic clusters was higher compared with municipalities in high-socioeconomic clusters. In contrast, the amount of recognition tax relief per resident increased as socioeconomic status increased. A large gap between Jewish and Arab municipalities can also be observed in the amount of recognition tax relief recorded per resident. However, such gaps may have been due to differences in the characteristics of municipalities, which is explored in the statistical analysis presented below.

The data on tax relief were merged with the ICBS (Israel Central Bureau of Statistics) dataset, which provides a rich battery of economic and demographic characteristics of municipalities including socioeconomic index, average wage per employee and proportion of residents aged 65 and over. Table 4 presents descriptive statistics of these variables and information on the correlation between them. Elections data were also employ to classify municipalities by social affiliation (taken from Central Election Commission). A municipality is defined as Haredi if 50 percent or more of its residents voted in the 2015 Knesset elections for the Haredi parties (Yahaudt Ha'Tora and Shas). A municipality is classified as non-Haredi if half or more of its residents are non-Haredi Jews, and by the same token, a municipality is defined as Arab if most of its residents are Arabs (Muslims and Christians) and Druze if most residents are of Druze origin (Arabic-speaking citizens who tend to serve in the IDF). The last three definitions are based on data taken from ICBS.

Table 3
Tax relief per resident in 2018 by socioeconomic cluster and sector

	Income-related tax relief per resident (NIS)	Recognition tax relief per resident (NIS)	All Other tax relief per resident (NIS)	Share of Income-related relief to billing [b, c]	Share of Recognition relief to billing [b, c]	Share of Other relief to billing [b, c]
All Municipalities	**214**	**65**	**34**	**17.0%**	**3.7%**	**2.0%**
Jews: Non-Haredi (162)[a]	157	89	46	9.3%	4.7%	2.6%
Jews: Haredi (8)	322	20	18	36.7%	2.0%	1.7%
Arabs (66)	322	17	12	31.9%	1.5%	1.0%
Druze (15)	302	41	6	24.8%	3.4%	0.5%
Economic Clusters 1-2	**326**	**17**	**12**	**35.1%**	**1.7%**	**1.1%**
Jews: Non-Haredi (3)[a]	284	54	27	22.7%	4.0%	2.1%
Jews: Haredi (7)	331	19	12	38.6%	1.9%	1.2%
Arabs (37)	341	14	12	35.1%	1.5%	1.1%
Druze (4)	447	18	2	38.6%	1.7%	0.2%
Economic Clusters 3-4	**286**	**37**	**36**	**23.1%**	**2.8%**	**2.2%**
Jews: Non-Haredi (19)	236	56	81	16.7%	3.9%	4.4%
Jews: Haredi (1)	256	32	64	23.5%	2.9%	5.9%
Arabs (23)	341	16	12	29.6%	1.3%	1.0%
Druze (10)	259	51	6	20.6%	4.2%	0.5%
Economic Clusters 5-6	**185**	**63**	**43**	**12.0%**	**3.9%**	**2.8%**
Jews: Non-Haredi (54)	176	66	47	11.2%	4.0%	3.1%
Jews: Haredi (-)	-	-	-	-	-	-
Arabs (5)	289	37	3	20.6%	2.9%	0.2%
Druze (1)	151	36	17	10.7%	2.8%	1.3%
Economic Clusters 7-8	**129**	**110**	**38**	**6.6%**	**5.5%**	**1.9%**
Jews: Non-Haredi (76)	126	111	38	6.4%	5.6%	1.9%
Economic Clusters 9-10	98	118	47	2.4%	3.4%	1.3%
Jews: Non-Haredi (10)	98	118	47	2.4%	3.4%	1.3%

Sources: Ministry of the Interior, ICBS, and the author's calculations.
The number of authorities for which data on the amount of tax relief per resident are available.
Billing in the accounting year includes: initial charge + interest charges + additional charge.
The data presented are simple averages (without weighting the number of residents).

Table 4
Correlation among independent variables, 2018

	Average wage per employee (log)	Share of earners below the minimum wage (%)	Share of elderly receiving income supplement (%)	Share of age 65+ (%)	Population size (log)	Proportion of employees and the self-employed relative to ages 30-64 (%)	Average
Average wage per employee (Log)	1.00						9,152 NIS
Share of earners below the minimum wage (%)	-0.94	1.00					40.3%
Share of elderly receiving income supplement (%)	-0.73	0.67	1.00				19.4%
Share of ages 65+ (%)	0.57	-0.61	-0.31	1.00			9.5%
Population size (log)	0.04	-0.09	0.09	0.26	1.00		35,316
Proportion of employees and the self-employed relative to age 30-64 (%)	0.15	-0.21	-0.18	0.10	-0.23	1.00	123%

Sources: Ministry of the Interior and the author's calculations.

Comment: The average wage per employee and the size of the population presented here are in normal terms (without logarithmic conversion).

6. RESULTS

Table 5 presents the main findings of this study. The income elasticity of total residential property tax relief is negative but does not differ significantly from zero. As explained in the methodological section, estimated elasticity equal to zero means that tax relief is moderately progressive. Looking at the composition of residential property tax relief reveals that the income elasticities are different, depending on the type of tax relief. The income elasticity of income-related tax relief is negative and significant, indicating a high level of progressiveness. In contrast, the income elasticity of recognition tax relief is positive and close to one, where unitary elasticity means neutral incidence, which is consistent with the first hypothesis.[15] The estimated income elasticity of recognition tax relief is also unitary when the estimation is restricted to municipalities with high-quality data (Table 6), and it rises above one using tax relief per home (instead of per capita) as a dependent variable (Table 7). Income elasticity soars to 1.8 in the regression of property tax relief for IDF disabled and bereaved families only, indicating regressive incidence (Table 8).

The recognition tax relief may nevertheless be progressive, despite the positive association with income found here, if property tax relief were obtained mainly by low-income recipients who happened to live in a municipality with high-income households. However, the recipients of recognition tax relief seem to have lived in more affluent quarters of their place of residence. The data shows that those entitled to recognition tax relief resided in municipality areas that pay a higher property tax rate per square meter, which indicates their high socioeconomic status.[16]

The estimated degree of progressiveness of income-related tax relief could also be biased due to a non-linear relationship (i.e., low correlation) at the municipality level between average income and the share of low-income earners (e.g., very low-income residents tend to live more with very high-income residents, whereas middle-income people reside in separated municipalities). However, this risk is also limited due to the very high negative correlation between average income and the share of employees earning below the minimum wage in the municipality (-0.94).

In line with the second hypothesis, Table 5 shows that the coefficient of Arab municipalities in the recognition tax relief regression is negative and significant. The coefficients of Druze municipalities as well as Haredi Jewish municipalities in recognition tax relief regression are not significant (Table 5). This finding suggests that the gap between

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[15] To keep the same number of observations, zero tax relief were replaced by one value, thus avoiding a log of zero. Using levels instead of logs yields a similar empirical picture.

[16] The tariff per square meter is calculated by dividing tax relief by 66%, which equals the discount rate granted to war victims, and that product is divided by 75 square meters, which represents the estimated average apartment size for this group (recall that the discount is given on the first 70 square meters).

Table 5
The incidence of property tax relief per resident, 2018

	Dependent Variable (in logarithmic terms)					
	Total Property Tax relief per Resident[1]	Income-Related Tax relief per Resident	Recognition Tax Relief Per Resident	Other Tax relief per Resident	Income-Related Tax relief per Resident (without Single Parent and 75% Disabled Discounts)	Recognition Tax relief per Resident (without 25% Senior Citizen)
Average Wage per Employee (log), (2017)[3]	-0.305 (0.212)	-0.913*** (0.255)	0.685** (0.288)	-0.122 (0.521)	-1.211*** (0.280)	0.440 (0.949)
Share of Elderly Receiving Income Supplement	0.153 (0.316)	0.293 (0.380)	-1.559*** (0.429)	-1.052 (0.777)	0.991** (0.418)	-4.054*** (1.417)
Employment Rate[4]	1.518*** (0.294)	1.672*** (0.354)	1.903*** (0.399)	2.576*** (0.723)	1.455*** (0.389)	4.205*** (1.317)
Arab Muni.[5]	0.613*** (0.123)	1.020*** (0.148)	-0.527*** (0.167)	-0.883*** (0.303)	1.218*** (0.163)	-2.975*** (0.552)
Druze Muni.[5]	0.777*** (0.166)	1.199*** (0.199)	0.0923 (0.225)	-1.232*** (0.408)	1.349*** (0.219)	-0.265 (0.743)
Haredi Jewish Muni.[5]	0.640*** (0.215)	0.909*** (0.259)	-0.384 (0.292)	-0.412 (0.529)	1.355*** (0.285)	-0.125 (0.965)
Population Size (log)	0.133*** (0.0320)	0.213*** (0.0385)	0.0939** (0.0434)	0.252*** (0.0787)	0.230*** (0.043)	0.304** (0.143)
Share of Ages 65+	6.110*** (0.879)	6.871*** (1.058)	7.572*** (1.194)	7.224*** (2.163)	8.355*** (1.163)	11.13*** (3.941)
Constant	4.401** (2.130)	8.201*** (2.564)	-6.090** (2.894)	-2.125 (5.240)	17.08*** (2.818)	-2.833 (9.549)
Number of Muni.	251	251	251	251	251	251
Adj. R-squared	0.289	0.488	0.667	0.399	0.602	0.544
P-value: Wage Coefficient ≠1	0	0	0.28	0.03	0	0.52

Standard Errors are in parentheses under the coefficients.   ***$p<0.01$, ** $p<0.05$, * $p<0.1$

1. Total property tax relief is equal to the amount of income-related relief, recognition relief, and other relief, according to data provided by the audit division of the Ministry of the Interior. The total residential property tax relief according to the data provided by the audit division of the Ministry of the Interior are about 6% lower than the total residential property tax relief in the ICBS municipalities' data file. The difference between the sources is mainly due to the inability to isolate the discounts explicitly related to residence in the ministry of the interior data.

Source: Municipality file published annually by the ICBS (related to the ministry of the interior data).

2. The average wage of employees and the self-employed (weighted according to the rate of employees and the rate of self-employed) as of 2017.
3. The employment rate is equal to the ratio between the number of employees and self-employed and the number of residents aged 30 to 64.
4. Compared with non-Haredi Jewish municipality (omitted variable).

Jewish and Arab municipalities reflects recognition of the contribution or suffering of tax relief recipients rather than biased public policy against Arab residents.

The coefficient of Arab municipalities in the regression of income-related relief shows that their residents enjoyed greater tax relief compared with non-Haredi Jewish municipalities. This result is surprising because the level of wages per employee was included as a control variable. The coefficient is positive and significant even when the share of employees earning below the minimum wage was included as an explanatory variable, as was done in earlier versions (not reported here). These findings remain the same even when tax relief to single parents and disabled people with 75 percent (or more) incapacity for work are excluded from income-related tax relief (Table 5), when the estimation is limited to municipalities with high-quality data (Table 6), and when the dependent variable is the amount of tax relief per home (Table 7).

Three possible factors may explain this surprising finding. First, the excess of income-related tax relief in Arab municipalities compared with Jewish municipalities may stem from the fact that recognition tax relief is granted to both low-income and high-income individuals, and this reduced the number of recipients of income-related tax relief in Jewish municipalities. Second, residents in Arab municipalities received more tax relief due to their actual economic conditions, which may not be fully captured by the variables included in the regression. Finally, it is also possible that Arab municipalities granted more income-related tax relief because they operate more considerate income tests compared with non-Haredi Jewish municipalities. This suggestion is consistent with the positive coefficient of Arab municipalities in the means-tested tax relief regression (Table 8).

The combination of a positive coefficient on an Arab dummy variable in income-related tax relief regression and a negative coefficient in recognition tax relief regression leads to the conclusion that local tax systems in Arab municipalities are more progressive compared with those in non-Haredi Jewish municipalities, a finding that is consistent with the second hypothesis of this study.

Table 6

The incidence of property tax relief per resident, 2018: high-quality data (score of 4 and over)

	Dependent Variable (in Logarithmic Terms)			
	Total Property Tax relief per Resident[1]	Income-Related Tax relief per Resident	Recognition Tax relief per Resident	Other Tax relief per Resident
Average Wage per Employee (log), (2017)[3]	-0.379** (0.169)	-1.122*** (0.205)	0.840*** (0.296)	-0.142 (0.540)
Share of Elderly Receiving Income Supplement	0.489* (0.263)	0.523 (0.318)	-1.242*** (0.460)	-1.217 (0.837)
Employment Rate[4]	0.565** (0.245)	0.575* (0.297)	1.638*** (0.430)	2.857*** (0.783)
Arab Municipality[5]	0.420*** (0.0991)	0.765*** (0.120)	-0.574*** (0.173)	-0.851*** (0.316)
Druze Municipality[5]	0.465*** (0.133)	0.795*** (0.161)	0.176 (0.233)	-1.146*** (0.425)
Haredi Jewish Municipality[5]	0.501*** (0.169)	0.664*** (0.204)	-0.307 (0.296)	-0.416 (0.538)
Population Size (log)	0.0850*** (0.026)	0.170*** (0.032)	0.0494 (0.0463)	0.255*** (0.0842)
Share of Ages 65+	5.278*** (0.720)	5.871*** (0.872)	7.421*** (1.261)	6.705*** (2.297)
Constant	6.830*** (1.700)	12.07*** (2.058)	-6.771** (2.976)	-2.283 (5.420)
Number of Municipalities	230	230	230	230
Adj. R-squared	0.354	0.618	0.663	0.386
P-value: Wage Coefficient $\neq 1$	0.00	0.00	0.59	0.04

See comments for Table 5. Calculations based on municipalities with high-quality data only.

The coefficient of the proportion of the population aged 65 and over is non-significant in the regression of income-related tax relief when tax relief per home instead of per resident is employed as a dependent variable (Table 7). This implies that the results are sensitive to a municipality's demographic composition. Demographic composition also affects that relations because the discount rate for low-income households depends on the number of people in the household for a given level of income. The coefficient of employment rate is unstable throughout the estimates, and this finding may stem from the fact that it captures both employment and demographic composition.

The positive sign of the estimated coefficient of the population in the regression of income-related tax relief is another interesting finding of this study, although it is not directly related to the main hypotheses. The positive sign suggests that large municipalities, in terms of the number of residents, tend to run more generous income tests compared with small municipalities, thus causing the residents of large municipalities to receive more tax relief due to low income (Table 5). This finding might also reflect that eligible people living in a small community may not be comfortable with disclosing their economic conditions to municipality tax collectors, who may be in the same social circles as their immediate or distant relatives and friends. Potentially, the economic heterogeneity of highly populated municipalities, expressed in a higher Gini index, is responsible for this finding. However, this suggestion seems less convincing because the positive sign of the population size coefficient remains the same even when controlling for inequality among the elderly (Table 5) and the share of employees earning below the minimum wage (not reported here).

To test the robustness of the main findings, the ratio of tax relief to property tax billing is employed as a dependent variable, which is less sensitive to differences in property tax rates between municipalities. The ratio between tax relief and property tax billing is equal to the share of those entitled to property tax relief (the number of recipients divided by the number of homes) times the average discount rate and is therefore less sensitive to the rate of property taxes.[17] Table 9 shows that the main findings are retained if the dependent variable is replaced with the amount of tax relief per resident with the tax relief to billing ratio (but certain coefficients become insignificant). Consistent with previous results, the wage coefficient in the income-related tax relief regression is negative, and the coefficient in the recognition tax relief regression is positive. As can be seen, the ratio will increase by 3 percent if the average wage increases by 1 percent (Table 9). The coefficients of the Arab variable in the income-related tax relief and recognition tax relief regressions remain the same, providing further confidence in the main findings.

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[17] The ratio between discounts and property tax charges is equal to the amount of tax relief recipients multiplied by the average property tax charge for an apartment multiplied by the average rate of tax relief divided by the product of the number of apartments and the average charge per apartment, and hence, this ratio is equal to the relative frequency of those entitled to property tax relief multiplied by the average discount rate. Using this ratio as a dependent variable allows for omitting demographic composition from the list of explanatory variables.

Table 7
The incidence of property tax relief per home, 2018

	Dependent Variable (in logarithmic terms)				
	Total Property Tax relief per Home	Income-Related Tax relief per Home	Recognition Tax relief per Home	Other Tax relief per Home	Relief for Disabled IDF Veterans and Bereaved Families (per Home)
Average Wage per Employee (Log), (2017)[3]	-0.186 (0.160)	-0.815*** (0.216)	0.937*** (0.339)	-0.649 (0.642)	2.117*** (0.778)
Share of Elderly Receiving Income Supplement	0.668*** (0.246)	0.933*** (0.330)	-1.231** (0.519)	-2.754*** (0.984)	-1.058 (1.192)
Employment Rate[4]	-0.500* (0.257)	-0.691** (0.346)	1.172** (0.544)	2.300** (1.030)	2.935** (1.249)
Arab Municipality[5]	0.237** (0.0978)	0.629*** (0.132)	-0.633*** (0.207)	-1.331*** (0.392)	-1.563*** (0.475)
Druze Municipality[5]	0.0332 (0.129)	0.407** (0.174)	-0.224 (0.273)	-1.755*** (0.517)	1.289** (0.627)
Haredi Jewish Municipality[5]	0.392** (0.161)	0.698*** (0.217)	-0.382 (0.340)	-0.974 (0.645)	-0.371 (0.782)
Population Size (log)	0.026 (0.025)	0.086** (0.034)	0.0593 (0.0533)	0.267*** (0.101)	0.183 (0.122)
Share of Ages 65+	-1.035 (0.713)	0.185 (0.959)	1.896 (1.507)	0.681 (2.855)	-3.420 (3.461)
Constant	9.039*** (1.673)	13.58*** (2.250)	-5.205 (3.536)	5.374 (6.700)	-21.03** (8.122)
Number of Municipalities	198	198	198	198	198
Adj. R-squared	0.428	0.660	0.549	0.366	0.420
P-value: Wage Coefficient ≠1	0.00	0.00	0.85	0.01	0.15

See comments for Table 5. Relief per home does not include regional councils due to lack of data.

Table 8
The incidence of property tax relief per resident, 2018 – by eligibility criteria

	Dependent Variable (in Logarithmic Terms)				
	Relief per Resident Due to Income Test	Relief per Resident to Senior Citizens Who Receive Income Supplement	Relief per Resident to Senior Citizens	Relief for Disabled IDF Veterans and Bereaved Families	Relief for Victims of Nazi Persecution
Average Wage per Employee (Log), (2017)[3]	-2.893*** (0.484)	-1.535** (0.633)	1.035** (0.477)	1.803*** (0.580)	1.026*** (0.324)
Share of Elderly Receiving Income Supplement	0.0147 (0.722)	3.053*** (0.944)	-1.466** (0.712)	-0.435 (0.866)	-1.285*** (0.484)
Employment Rate[4]	1.825*** (0.671)	2.535*** (0.878)	0.809 (0.662)	2.140*** (0.805)	-0.527 (0.450)
Arab Municipality[5]	1.574*** (0.282)	0.286 (0.368)	-1.514*** (0.278)	-1.046*** (0.338)	0.0619 (0.189)
Druze Municipality[5]	1.903*** (0.379)	1.002** (0.495)	-1.585*** (0.373)	1.280*** (0.454)	-0.165 (0.254)
Haredi Jewish Municipality[5]	1.207** (0.492)	-0.377 (0.643)	-0.324 (0.485)	-0.499 (0.590)	-0.262 (0.329)
Population Size (Log)	0.319*** (0.073)	0.253*** (0.096)	-0.0424 (0.072)	0.0814 (0.088)	0.239*** (0.049)
Share of Ages 65+	-2.084 (2.009)	11.36*** (2.627)	8.101*** (1.981)	0.736 (2.409)	10.31*** (1.346)
Constant	23.93*** (4.867)	8.854 (6.365)	-7.931* (4.799)	-17.86*** (5.837)	-10.82*** (3.261)
Number of Municipalities	251	251	251	251	251
Adj. R-squared	0.645	0.269	0.619	0.387	0.599
P-value: Wage Coefficient ≠1	0.00	0.00	0.94	0.17	0.94

See comments for Table 5.

Table 9
The incidence of tax relief: tax relief relative to property tax billing, 2018

	Dependent Variable (in logarithmic terms)			
	Ratio of Total Property Tax relief to Billing[1]	Ratio of Income-Related Tax relief to Billing	Ratio of Recognition Tax relief to Billing	Ratio of Other Tax relief to Billing
Average Wage per Employee (log), (2017)[3]	-0.129*** (0.040)	-0.140*** (0.031)	0.028 (0.018)	-0.031* (0.017)
Share of Elderly Receiving Income Supplement	0.244*** (0.062)	0.222*** (0.048)	- -	-0.014 (0.027)
Employment Rate[4]	- -	- -	- -	- -
Arab Municipality[5]	0.074*** (0.020)	0.122*** (0.016)	-0.019 (0.011)	-0.026*** (0.009)
Druze Municipality[5]	0.053* (0.029)	0.086*** (0.023)	-0.002 (0.016)	-0.031** (0.013)
Haredi Jewish Municipality[5]	0.157*** (0.041)	0.184*** (0.032)	-0.011 (0.022)	-0.026 (0.018)
Population Size (log)	0.013** (0.006)	0.011** (0.004)	-0.019 (0.011)	0.001 (0.003)
Share of Ages 65+	- -	- -	- -	- -
Constant	1.198*** (0.378)	1.250*** (0.295)	-0.214 (0.162)	0.302* (0.162)
Number of Municipalities	251	251	251	251
Adj. R-squared	0.523	0.715	0.058	0.044
P-value: Wage Coefficient $\neq 1$	0	0	0	0

See comments for Table 5.
Billing in a particular accounting year includes: initial charges + current interest charges + linked interest charges on previous debts + additional charges.

Table 10

Incidence of overall residential property tax collection, 2018

	Dependent Variable (in logarithmic terms)		
	Property Tax Billing per Resident	Net Property Tax Billing per Resident	Actual Revenue of Property Taxes per Resident
Average Wage per Employee (log), (2017)[3]	0.653*** (0.136)	0.845*** (0.165)	1.000*** (0.143)
Share of Elderly Receiving Income Supplement	-0.645*** (0.202)	-1.343*** (0.246)	-1.123*** (0.213)
Employment Rate[4]	1.027*** (0.188)	1.312*** (0.230)	1.109*** (0.198)
Arab Municipality[5]	0.220*** (0.079)	0.203** (0.096)	-0.167** (0.0830)
Druze Municipality[5]	0.334*** (0.106)	0.356*** (0.129)	0.160 (0.112)
Haredi Jewish Municipality[5]	0.121 (0.138)	-0.072 (0.167)	-0.056 (0.145)
Population Size (Log)	0.011 (0.021)	0.020 (0.025)	-0.009 (0.022)
Share of Ages 65+	4.488*** (0.563)	4.988*** (0.684)	5.076*** (0.592)
Constant	-0.396 (1.363)	-9.719*** (1.661)	-3.808*** (1.435)
Number of Municipalities	251	250	251
Adj. R-squared	0.600	0.685	0.815
P-value: Wage Coefficient $\neq 1$	0.01	0.35	0.99

See comments for Table 5.

Billing in a particular accounting year includes: initial charges + current interest charges + linked interest charges on previous debts + additional charges.

Net billing equals the billing in the accounting year minus property tax relief.

Actual revenue refers to the collection of property taxes in the accounting year (principal + interest).

To supplement the main results on tax relief, estimates of the degree of the progressiveness of the overall property tax collection using three definitions are calculated. The first definition of local tax collection is the on-paper residential property tax charge per resident, which represents theoretical tax collection if there were no tax relief. Net property tax charges that capture tax collection potential after tax relief is deducted is the second definition, and actual property tax collection is the third one. The difference between the first two definitions reflects tax relief, and the difference between the last two definitions represents the extent of noncompliance. The income elasticity of the overall theoretical tax collection according to the first definition is significantly less than one and reflects regressive incidence (Table 10). In contrast, the property tax incidence becomes neutral when moving to a net tax charge, which shows the progressive role that property tax relief plays. This result is consistent with the findings shown above—that the overall tax relief is moderately progressive. The income elasticity of actual tax collection (the third definition) is higher, but it is still close to one, which indicates greater non-compliance in municipalities with low levels of income. According to this estimate, the actual collection of residential property taxes is of neutral incidence, in contrast to the findings of Horn (2008), who showed that the local tax rate decreases with income at the individual level (based on survey data). The gap between Horn's (2008) results and the current study might stem from inequality between residents within municipalities, which is not considered here.

7.   CONCLUSIONS AND DISCUSSION

This study explores the degree of progressiveness of residential property tax relief that is equal or larger than the budget of well-known social program such as unemployment benefits and income support to low-income households. Progressivity measures are estimated separately for two main types of tax relief according to the eligibility criteria. The first type is income-related property tax relief, which reflects equality consideration, whereas the second type represents the recognition of the recipients' contributions to society or their suffering (recognition tax relief). This paper reveals striking differences between the high-degree progressivity of income-related tax relief and the neutral incidence of recognition tax relief. It implies that residential property tax relief would have been more progressive had it not been for recognition tax relief.

An unintended consequence of this policy is a more progressive local tax system in Arab municipalities compared with Jewish and Druze municipalities. Similarly, property tax in ethnically mixed cities, such as Tel Aviv, is more progressive compared with more homogeneous cities, such as Hod Hasharon (other things being equal). However, this difference does not reflect a social bias in favor of Jews, as residents in Druze municipalities also benefit significantly from recognition tax relief.

To the extent that local services are provided disproportionately to low-income residents, the overall impact on progressiveness might be even larger due to tax revenue loss. The forgone revenue in municipalities with high shares of low-income earners due to income-related tax relief leads to lower levels of the provision of local services compared with municipalities with few recipients of property tax relief due to low income. In contrast, this paper shows that recognition tax relief actually reduces the disparity between localities because it adversely impacts the tax bases of advantaged municipalities more. The combined effect of the two types of tax reliefs increases the gap in favor of advantaged municipalities due to the larger size of income-related tax reliefs.

The main contribution of this paper is to show that the degree of progressiveness of a tax system or grant is not only affected by efficiency, inequality aversion and the pre-tax distribution of earnings, as economic theory suggests, but also by the social construction process that shapes public attitudes toward particular population groups. Following Schneider and Ingram's theory, property tax relief that is not given in response to economic hardship reflects the positive image and political power of its beneficiaries. Moreover, granting recognition tax relief to certain groups may be rewarded directly by their recipients and indirectly by the general public, which views channeling resources to favorable groups as a positive thing.

The findings of this paper suggest that designing the tax system involves a complex trade-off between equality, efficiency and social construction. A society might be willing to pay in terms of larger inequality to promote the welfare of certain groups by granting them tax concessions regardless of their material needs as found here in case of the Israeli society. A natural evolution of the current study would be to uncover the effect of social construction on the degree of progressivity in additional countries and other types of taxes such as income tax.

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