



# Who benefits from rental assistance? Evidence from a natural experiment<sup>☆,☆☆</sup>

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## ABSTRACT

Rent subsidies were provided to students living in central Jerusalem between 2006 and 2011 in order to encourage urban renewal. This program led to a marked increase in the number of students renting apartments in the city center. Using diff-in-diffs hedonic estimations, we find that 70–80% of the rent subsidies remained in the hands of the students, within the broad range of incidence rates found worldwide.

## 1. Introduction

Urban renewal programs are widespread around the globe, and have had an important role in the urban planning agenda over the last three decades. The implementation of urban renewal programs is shaped by various socioeconomic and environmental factors. Sometimes, rent subsidies are granted to young and dynamic populations, such as students, in order to encourage their relocation to declining neighborhoods. However, rent subsidies are usually given to low socioeconomic groups to enhance housing affordability. Part of the rent subsidies may accrue to the landlords and thus undermine the achievement of the program's objective.

Recently, urban renewal programs have been playing an important role in Israel as a tool for coping with the housing crisis and for improving housing affordability. Rent subsidies were implemented as part of those programs. Although rent subsidy incidence has not been examined in Israel to date, there are a few studies that were carried out worldwide. In

the United States, [Collinson and Ganong \(2018\)](#) found that a national increase of one dollar in the rental assistance ceiling led to an increase of 46 cents in rent over the next six years. [Susin \(2002\)](#) showed that the national rental assistance voucher system caused an increase in total rent paid by low-income non-recipients that was higher than the value of the vouchers. [Gibbons and Manning \(2006\)](#) showed that 60–66% of a national reduction in the subsidy to (new) tenants in Britain was rolled over to the landlords. [Fack \(2006\)](#) found that 78% of a rental assistance expansion in French accrued to the landlords, and [Letremy-Grislain and Trevien \(2014\)](#) discovered that the vast majority of the expansion went to landlords. [Kangasharju \(2010\)](#) and [Viren \(2013\)](#) revealed that landlords took 30–70% of an increase in the national rental assistance ceiling in Finland. Taken together, the subsidy incidence rate estimates are broad, apparently as a consequence of differences in the structure of rental markets and the supply and demand elasticities.

The present study focuses on subsidies given to students who rented accommodations in central Jerusalem between 2006 and 2011, and

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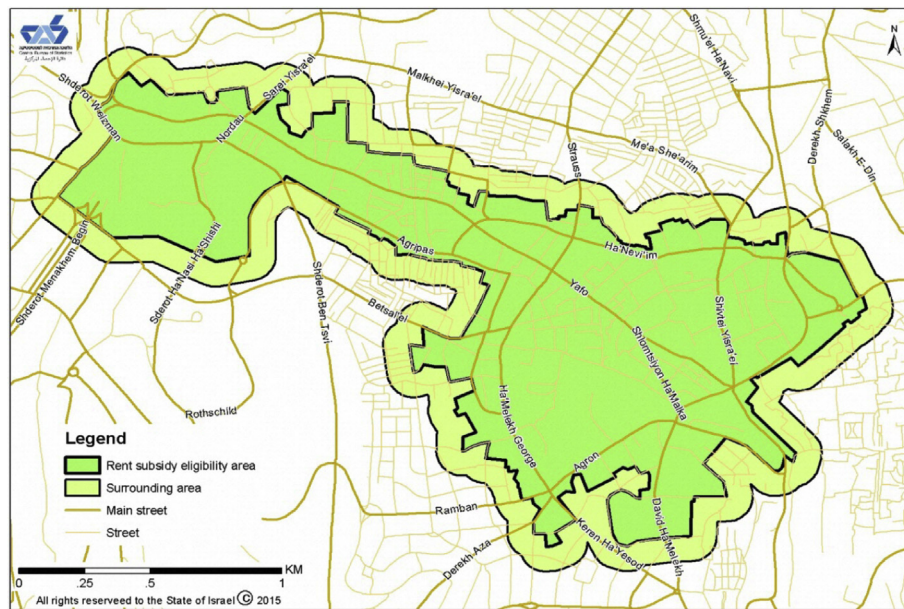
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**Fig. 1.** The center of Jerusalem eligible for rent subsidy. (dark green).

Note: The light green area is up to 100 meters away from the rent subsidy eligibility area ("surrounding area").

**Source:** Jerusalem Development Authority and Central Bureau of Statistics.

examines the rent subsidy incidence. It is based on rental notices, augmented by administrative data on subsidy recipients. Hedonic difference-in-differences rent estimations were applied.

The main findings are that 70–80% of the rent subsidy accrued to the students. These incidence rates are within the broad range of findings worldwide, although the Israeli rent subsidy program was very local, in contrast to the nationwide programs studied in the literature.

The rest of the paper is organized as follows. Section 2 describes the rent subsidy program; Section 3 presents the data, the estimation method, and the way the rent subsidy incidence was calculated; Section 4 shows the results of the estimations; Section 5 displays the rent subsidy incidence rates, and Section 6 concludes.

## 2. The rent subsidy program

The center of Jerusalem has long suffered from functional and physical deterioration. In 2001, an urban renewal plan was implemented. The plan included laying track for Jerusalem's first light railway (in operation since August 2011), rehabilitating public spaces, and so forth (Ramon et al., 2011).

During the 2005/06–2010/11 academic years, the Jerusalem Development Authority gave an annual grant (hereinafter "rent subsidy") to students in institutions of higher education who were living in rented accommodations in the city center (Fig. 1), with the aim of encouraging a young and dynamic population to take up residence there.

The rent subsidy was not mean-tested, and, in the case of an apartment with a number of students, each of the students was eligible for a full subsidy. The rent subsidy level declined over the years (Table 1). The subsidy as a percentage of the rent had broad distribution (Fig. 2) due to differences in the levels of the rent; however, for 80% of the subsidy recipients, it covered 10–30% of the annual rent.

There is no doubt that the program led to a considerable increase in the number of students renting apartments in central Jerusalem: the number of subsidy recipients rose from approximately 1,000<sup>1</sup> in 2006/07

**Table 1**

Rent subsidy level and the number of recipients.

Academic year	Full annual subsidy (Current NIS <sup>a</sup> )	Number of recipients
2005/06	6,600	650
2006/07	5,400	1,027
2007/08	5,004	1,278
2008/09	4,200	1,345
2009/10	3,800	1,550
2010/11	3,400	1,510

<sup>a</sup> The average exchange rate between the NIS and the \$US was 3.98 in July 2005–June 2011.

**Source:** The Jerusalem Development Authority.

to about 1,510 in 2010/11 (Table 1 above). Calculations based on the 2008 census show that the number of students who rented an apartment on the open market (not in dormitories) in Jerusalem was 17,500 (of whom 2,100 were in the city center<sup>2</sup>), and therefore more than 3% of the students moved to the city center. In the peak years of the program, students receiving the subsidy occupied three-fifths of the apartments rented in the city center.

## 3. Data and methodology

### 3.1. Data

The primary dataset we used in this study is based on rental notices collected by a private company from Internet sites, newspapers, etc. For each notice there is information on date of publication, address of the apartment, number of rooms, and the asking rent on the date of publication. The time span of this comprehensive dataset runs from January 2000 to December 2012.

<sup>2</sup> This number is higher than the number of subsidy recipients because entitlement to a subsidy was limited to three years and was restricted to students in institutions of higher education funded by the Council for Higher Education or in a multiyear program in post-secondary art schools sponsored by the Ministry of Culture and Sport.

<sup>1</sup> In the first academic year of the program's implementation (2005/06), the number of subsidy recipients was small, apparently because the program took effect only toward the end of the year.

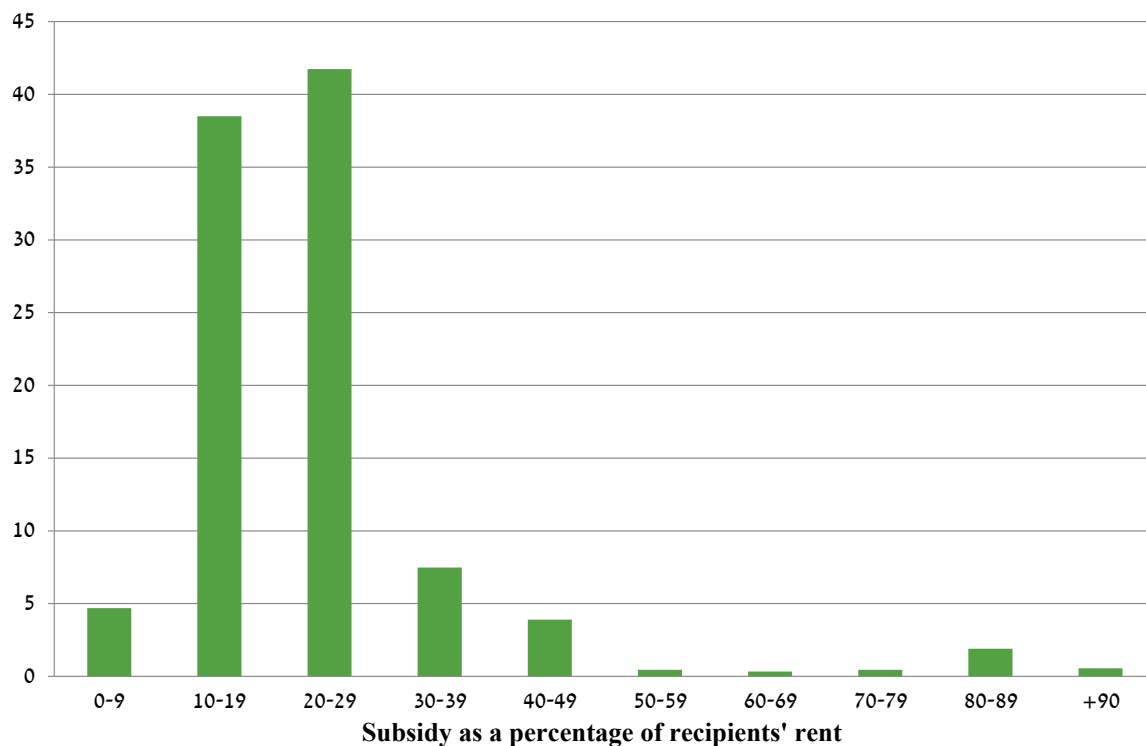


Fig. 2. Distribution of the rent subsidy as a percentage of the rent. (2009/10 academic year, percent).

Source: Jerusalem Development Authority and authors' calculations.

The database was supplemented with geographical information about the apartments: precise location, statistical area (sub-neighborhood), socioeconomic ranking of the residents in the area (according to the 2008 census), and so on. We were able to determine the precise location of 73,400 rental notices (94.2% success rate),<sup>3</sup> of which 2,690 were in the city center.

To confirm that asking rents behave like actual rents, we used the Central Bureau of Statistics Survey of Rents, which comprises a random sample of rented apartments in urban localities in Israel. We identified 4,420 apartments in Jerusalem covered by the Survey of Rents (91.5% success rate), of which 95 were in the city center.<sup>4</sup> The correlation between the actual rent and the asking rent, at the neighborhood level, is approximately 0.9 (Appendix Figure A1), and the correlation between the annual change in the actual rent and the annual change in the asking rent (after using hedonic quality adjustment for apartment size and neighborhood composition) is also around 0.9.<sup>5</sup> Thus, the development of the asking rent was similar to that of the actual rent.

### 3.2. Methodology

The subsidy to students living in rented apartments in central Jerusalem (the treatment group) in 2005/06–2010/11 academic years (the treatment period) allows us to utilize the difference-in-differences estimation method.

The estimations do not differentiate between rented apartments in the city center inhabited by subsidy recipients and other apartments, due to

lack of data, and consequently we assume that there is no price discrimination in the case of rental notices.<sup>6</sup> The hedonic equations have the following general structure:

$$\log(P_{\text{int}}) = \alpha + \beta' x_i + \delta TP_t \cdot N_n + \gamma_n + \eta_t + \varepsilon_{\text{int}}, \quad (1)$$

where:

- $P_{\text{int}}$ —Monthly asking rent (in New Israeli Shekels – NIS) for apartment  $i$  in neighborhood  $n$  on date  $t$  of notice publication;
- $x_i$ —Vector of apartment characteristics: number of rooms and socioeconomic ranking (according to the 2008 census) of the statistical area (sub-neighborhood). The ranking scale is from 1 to 20 (20 = most affluent statistical area);
- $TP_t$ —Treatment period: an indicator that takes a value of 1 during the rent subsidy period (2005:Q3–2011:Q2) and 0 otherwise;
- $N_n$ —Treatment group: an indicator that takes a value of 1 for the city center (rent subsidy eligibility area) and 0 for all other neighborhoods;
- $\gamma_n$ —Neighborhood fixed effect;
- $\eta_t$ —Year-quarter fixed effect;
- $\varepsilon_{\text{int}}$ —Error term.

The coefficient  $\delta$  captures the percentage change in rent in the city center, relative to rent in other neighborhoods, as a result of the rent subsidy. It should be emphasized that the diff-in-diffs estimations do not take into account the negative effect of the subsidy on rent outside the

<sup>3</sup> Almost all other rented apartments are located in Arab neighborhoods. These neighborhoods were excluded from the study (see below).

<sup>4</sup> Due to the limited number of apartments in central Jerusalem that were included in the Survey of Rents, the study is based solely on rental notices.

<sup>5</sup> An hedonic estimation of rent shows that the gap between actual rent and asking rent in the city center and in other neighborhoods during the subsidy period was similar to the gap in the pre- and post-subsidy periods combined.

<sup>6</sup> Discrimination in *actual* rent between subsidy recipients and others could be of limited importance due to the following facts (based on the 2008 census and Jerusalem Development Authority data): (1) the vast majority of tenants in the city center were students receiving a subsidy and (2) many of the subsidy recipients shared apartments with non-recipients.

city center due to a decline in demand for rental apartments there.<sup>7</sup> However, the upward bias in the  $\delta$  coefficient is expected to be negligible since the share of rented apartments in the city center out of total rented apartments in Jerusalem is extremely small.

The socioeconomic composition of city center residents may have changed and affected rent. In order to deal with this concern we used two additional data sets, covering central Jerusalem residents and containing the following information: (a) households receiving a municipal tax discount, by cause, available for 2011 onwards (source: Jerusalem municipality); and (b) education level of all the residents, available for 2007 onwards (source: Central Bureau of Statistics).<sup>8</sup> We found that the number of households receiving a municipal tax discount due to low income remained stable as the subsidy program expired; The share of residents with a high school matriculation diploma or academic degree increased slightly (from 65% to 67%) during 2007–2012. Thus, we conclude that the socioeconomic composition of the city center residents

$$s_2 = \Delta P \times (\text{number of households renting in the city center}) / (\text{total rent subsidy per month}).$$

was almost constant during the subsidy period and immediately afterward.

The rent in central Jerusalem is compared to the rent in other neighborhoods, which were selected in the following manner. Jerusalem neighborhoods are segregated by ethnicity (Jews and Arabs) and by religiosity in the Jewish sector (secular and religious versus ultra-Orthodox). The city center is predominantly occupied by non-ultra-Orthodox Jews.<sup>9</sup> Furthermore, calculations based on the 2008 census show that only 13% of the students living in rented apartments were in ultra-Orthodox neighborhoods. Thus, all the comparison groups in our study include non-ultra-Orthodox Jewish neighborhoods.

The city center renewal, and especially the construction of the light railway in that area, could have undermined our diff-in-diffs identification strategy. Therefore, we included in the second comparison group neighborhoods outside the city center that are also near railway stations (and tracks).<sup>10</sup>

The urban renewal project covered an area larger than the rent subsidy eligibility area. Thus, the third comparison group consists of neighborhoods surrounding the eligibility area by up to 100 m (herein after “the surrounding area”); see Fig. 1 above.

### 3.3. Calculating rent subsidy incidence

The share of the subsidy that found its way into the hands of the landlords was calculated in the following way (see also Fack, 2006):

<sup>7</sup> This argument is more relevant to rental apartments near the city center because they may be a perfect substitute for apartments in the center. However, hedonic estimations reveal that during the subsidy period trends in rent for those apartments and for apartments in neighborhoods further away from the city center were not significantly different. Neighborhoods outside Jerusalem couldn't serve as a comparison group since the development of rent in Jerusalem had its own trend.

<sup>8</sup> Unfortunately, other socioeconomic indices are not available at the neighborhood level throughout the entire research period.

<sup>9</sup> A negligible percentage of the students receiving the rent subsidy studied in religious/ultra-Orthodox institutions, an indication that almost all of them were non-ultra-Orthodox Jews. During the research period the number of Israeli ultra-Orthodox Jews studying in secular institutions of higher education was very small.

<sup>10</sup> In all the neighborhoods near railway stations, laying of the tracks took place during the subsidy period, and the date when the railway first became operational was the same.

- The absolute change (in NIS) in the average monthly rent ( $\Delta P$ ) is the product of  $\delta$  and the average monthly rent in the city center.
- The proportion of subsidy recipients out of total dwellers in recipients' apartments is  $\alpha$ .
- The level of the subsidy is  $S$  NIS per month. Assuming that the average number of subsidy recipients per apartment is  $n$ , the average subsidy per apartment is  $nS$  NIS per month.
- The percentage of the subsidy that found its way into the hands of the landlords was  $s_1 = (\alpha \Delta P) / (nS)$ . Thus,  $1 - s_1$  is the fraction of the subsidy that the renters received.

Under our maintained assumption of no price discrimination, the subsidy would have led to an equal rent increase in the city center not only for recipients but also for other tenants, whether or not the latter shared accommodations with the recipients. The ratio between the additional rents and the subsidy payments is:

## 4. Results

The development of the monthly asking rent in the city center vs. in other neighborhoods is presented in Fig. 3. In the period preceding the subsidy program, rents in the city center and in other neighborhoods had a common trend, although prices in the city center exhibited more variation due to a small number of observations. During the program period rent in the city center rose more rapidly and after the program was cancelled, the relative rent decreased. Rents in neighborhoods outside the city center and in neighborhoods near railway stations displayed a very similar trend.

The results of hedonic estimations of asking rent, using the diff-in-diffs method (equation (1)), are shown in Tables 2 and 3.<sup>11</sup>

The coefficients of the control variables are as expected: each additional room raised the rent by 24%; A one-unit increase in the socioeconomic ranking of the statistical area (on a scale of 20 units) added about 2.1% to the rents (Table 2, column 1).<sup>12</sup>

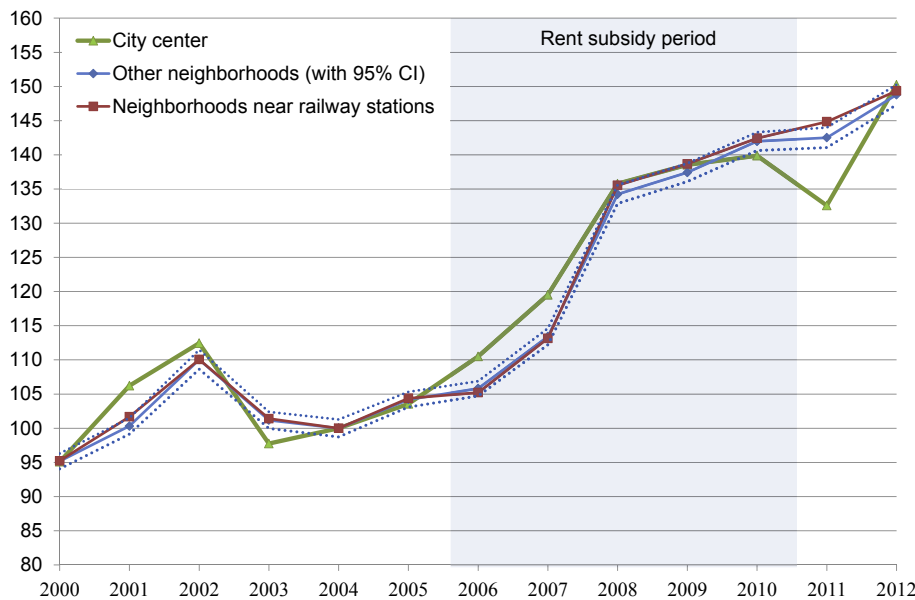
During the subsidy period, monthly rent in the city center increased by 2.1% relative to rents in other neighborhoods.<sup>13</sup> The construction of the light railway in the city center (2008:Q3–2010:Q3) may have downward biased the estimated effect of the subsidy on rent. Therefore, in column 2 we included in the comparison group neighborhoods near railway stations (and tracks). The subsidies increased rent in the city center by 2.7% relative to rents in neighborhoods near railway stations.<sup>14</sup>

<sup>11</sup> The estimations are restricted to apartments with up to 4 rooms, in line with the Central Bureau of Statistics methodology for constructing the rent index. Including larger apartments in the estimations (8% of all rented apartments) does not alter the results. Estimations that include asking rent and actual rent observations produce very similar results, since the share of the latter out of the total number of observations is only 6%.

<sup>12</sup> Replacing the socioeconomic ranking variable with the median annual labor income per capita in the statistical area leaves the other coefficients almost unchanged.

<sup>13</sup> We run alternative specification of Equation (1), where subsidy period  $\times$  city center was replaced by subsidy period  $\times$  subsidy level (the annual subsidy level in the city center during the subsidy period and 0 otherwise). We found that a subsidy of NIS 1,000 increased monthly rent by 0.16%. Since the average number of subsidy recipients per apartment was 1.7 and the average annual subsidy per recipient was NIS 4,170, the subsidy increased rent by 1.1% ( $\cong 0.16 \times 1.7 \times 4,170/1,000$ ). This effect is not statistically significant (at a 10% level) because the total annual subsidy remained stable over time.

<sup>14</sup> Omitting rented apartments located along railway tracks doesn't alter the effect of the subsidy program on rent.



**Fig. 3.** Monthly asking rent in Jerusalem: City center vs. other neighborhoods, 2000–2012. (Index, 2004=100).

Note: The solid lines are based on estimations (separately for each group) of the log asking rent on the number of rooms, the socioeconomic ranking of the statistical area and years and neighborhood fixed effects. The coefficients for the years are shown in the figure. All notices in the figure were limited to apartments of up to 4 rooms.

Source: Central Bureau of Statistics and authors' calculations.

**Table 2**  
The effect of the subsidy program on rent<sup>a</sup>.

Comparison neighborhoods:	All neighborhoods	Neighborhoods near railway stations <sup>b</sup>	Neighborhoods surrounding the city center <sup>c</sup>
	(1)	(2)	(3)
Subsidy period $\times$ city center	0.021 (0.009)**	0.027 (0.009)**	0.027 (0.015)*
Number of rooms	0.241 (0.001)***	0.227 (0.002)***	0.264 (0.004)***
Socioeconomic ranking	0.021 (0.001)***	0.017 (0.001)***	0.014 (0.003)***
Neighborhood Fes	YES	YES	YES
Year Fes	YES	YES	YES
Observations	57,985	17,529	5,235
R-squared	0.647	0.663	0.519

\*, \*\*, \*\*\* represent statistical significance at the 10, 5, and 1 percent levels.

Standard errors, clustered by statistical area, in parentheses.

<sup>a</sup> Asking rent on notices for apartments of up to 4 rooms. Non-ultra-Orthodox Jewish neighborhoods.

<sup>b</sup> Bet Ha-Kerem, Musrara, Pisgat Ze'ev, Qiryat Ha-Yovel, and Qiryat Moshe.

<sup>c</sup> The area outside the city center (eligible for a rent subsidy) by up to 100 m.

When the comparison group was restricted to the area surrounding the city center (see the light green area in Fig. 1), the relative rent also rose by 2.7% (column 3).

As the share of subsidy recipients in an apartment increases, rent is expected to rise; together with the tendency of students to live in large rented apartments (in order to reduce their rents), the effect of the subsidy on rent should increase with apartment size. Results of estimating equation (1) – for each apartment size (in groups of 1.0–2.5 and 3.0–4.0 rooms) separately – support our assumption (Appendix Table A1). Alternatively, we estimated equation (1) for all apartments, and included in the explanatory variables a triple interaction term “subsidy period  $\times$  city center  $\times$  number of rooms”. The coefficient of the interaction term indicates that during the subsidy period rent in the city center increased faster for large apartments relative to rents for similarly sized apartments in other neighborhoods, all in comparison to small apartments.

The estimations above examine rent in the city center throughout the

entire period of the subsidy program compared with rent in the pre- and post-subsidy periods combined, relative to rents in other neighborhoods during the same periods. In Table 3 we focus on the time window around the introduction of the subsidy program (2004:Q3–2005:Q2 and 2006:Q3–2007:Q2),<sup>15</sup> and separately on the time window around its cancellation (2010:Q3–2012:Q2). According to media reports, the program was announced only a few weeks before its implementation at the beginning of the 2005/06 academic year and the cancellation of the program was equally abrupt. Therefore, there is no anticipation effect. Moreover, the introduction/cancellation time windows do not coincide with the railway construction period.

Rent in the city center rose by 6.6% in the first full-year implementation of the subsidy program relative to rents in other neighborhoods (column 1). Rent in the city center rose by 8.4% relative to rents in neighborhoods near railway stations (column 2) and by 7.3% relative to rent in the area surrounding the city center (column 3). Focusing on the period around the cancellation of the rent subsidy program, we find that after the program was cancelled rent in the city center fell by 3.9%

<sup>15</sup> We excluded the first (non-full) academic year of the subsidy program (2005:Q3–2006:Q2) from the estimation because there were relatively few subsidy recipients during that period. As expected, the program had no significant effect on rent in the city center during the first academic year.



**Table 3**The effect of the introduction and cancellation of the subsidy program on rent<sup>a</sup>.

Comparison neighborhoods:	All neighborhoods (1)	Neighborhoods near railway stations <sup>b</sup> (2)	Neighborhoods surrounding the city center <sup>c</sup> (3)
<b>Panel A: Introduction</b>			
Subsidy period $\times$ city center	0.066 (0.030)**	0.084 (0.028)***	0.073 (0.041)*
Apartments' characteristics <sup>d</sup>	YES	YES	YES
Year-quarter Fes	YES	YES	YES
Observations	6,844	2,085	547
R-squared	0.595	0.601	0.523
<b>Panel B: Cancellation</b>			
Post subsidy period $\times$ city center	-0.039 (0.020)*	-0.050 (0.020)**	-0.047 (0.029)***
Apartments' characteristics <sup>d</sup>	YES	YES	YES
Year-quarter Fes	YES	YES	YES
Observations	14,100	4,127	1,626
R-squared	0.506	0.509	0.325

\*, \*\*, \*\*\* represent statistical significance at the 10, 5, and 1 percent levels.

Standard errors, clustered by statistical area, in parentheses.

Introduction period: pre-subsidy period – 2004:Q3–2005:Q2; subsidy period – 2006:Q3–2007:Q2.

Cancellation period: subsidy period – 2010:Q3–2011:Q2; post-subsidy period – 2011:Q3–2012:Q2.

<sup>a</sup> Asking rent on notices for apartments of up to 4 rooms. Non-ultra-Orthodox Jewish neighborhoods.<sup>b</sup> Bet Ha-Kerem, Musrara, Pisgat Ze'ev, Qiryat Ha-Yovel, and Qiryat Moshe.<sup>c</sup> The area outside the city center (eligible for a rent subsidy) by up to 100 m.<sup>d</sup> Number of rooms, socioeconomic ranking, and neighborhood fixed effect.**Table 4**

Rent subsidy incidence.

Comparison group	Period	Change in relative rent (%) $\delta$	Rent increase for subsidy recipients as a share of the subsidy (%) $s_1$	Rent increase as a share of the subsidy (%) $s_2$
Non-ultra-Orthodox neighborhoods	Subsidy program	2.1	10	34
	Entry to the program	6.6	20	97
	Exit from the program	-3.9	-24	-79
Neighborhoods near railway stations	Subsidy program	2.7	13	50
	Entry to the program	8.4	25	123
	Exit from the program	-5.0	-31	-101
Area surrounding the city center	Subsidy program	2.7	13	50
	Entry to the program	7.3	22	107
	Exit from the program	-4.7	-29	-95

relative to rents in other neighborhoods,<sup>16</sup> by 5.0% relative to rents in neighborhoods near railway stations, and by 4.7% relative to rent in the area surrounding the city center.

## 5. Rent subsidy incidence

Table 4 summarizes the rent subsidy incidence rates.

We begin with a demonstration of the way the rent subsidy incidence was calculated for the case displayed in the upper row of Table 4, following the method described in Section 4 and using administrative data on rent subsidy recipients.<sup>17</sup>

The estimated increase in the relative rent in the city center during the period of the subsidy was 2.1% (Table 2, column 1), and the average monthly asking rent for an apartment there was NIS 3,549. Rent thus rose by NIS 75 a month or approximately NIS 900 a year. The average number of recipients per apartment was 1.7 out of 2.2 tenants, so the increase in the recipients' monthly rent was NIS 58. The average subsidy was NIS 4,170 per recipient per year and the annual subsidy for a subsidized

apartment was NIS 7,090 or NIS 591 a month. Thus the average share of the subsidy accrued to the landlord ( $s_1$ ) was approximately 10% (58/591).

Landlords of non-recipients also benefited from the subsidy program. Therefore, we also calculated the ratio between the increase in the rental income of all the landlords in the city center and the subsidy payments ( $s_2$ ). According to the 2008 census there were 2,254 rented apartments in the city center (and we assume the number remained constant during the entire subsidy period). Hence, the average annual increase in total rent in the city center during the period of the program was NIS 2.03 million ( $\cong 2,254 \times 900$ ). A total of NIS 5.12 million in rent subsidies were paid on average each year. Therefore, the increase in rental income was 39% of the subsidy payments.

The following conclusions can be drawn from an examination of Table 4. Changes in relative rent, as well as subsidy incidence rates, are not very sensitive to the selection of the comparison group. Using the entire duration of the subsidy program as the treatment period, we find that the relative increase of rent in the city center was considerably less than that in the time windows around the program's introduction and cancellation. This may be explained by the fact that the railway tracks were laid during the subsidy program but not during the time windows. The rise in relative rent during the introduction of the program was higher (in absolute terms) than it was during its cancellation because the subsidy per recipient declined over time while rent in Jerusalem surged.

In summary, based on the estimations around the introduction/

<sup>16</sup> This estimate can be seen as a lower bound because the railway began running just after the rent subsidy program was terminated.

<sup>17</sup> The data file, obtained from the Jerusalem Development Authority, contains information on monthly rent, the number of tenants sharing the apartment and subsidy level.

cancellation windows of the subsidy program, we find that the percentage of the subsidy finding its way into the hands of the recipients' landlords was 20–30%, and the additional rent was equal to the subsidy.

## 6. Conclusion

To promote urban renewal and revitalize the city center of Jerusalem, the Jerusalem Development Authority subsidized rents for students who lived in the city center during 2006–2011. Their numbers surged and the Authority's aim was achieved.

The present study examined the distribution of the rent subsidy between tenants and landlords. It relied on data from rental notices and

utilized diff-in-diffs hedonic estimations. The main finding is that 70–80% of the rent subsidies accrued to the students, within the broad range of incidence rates found worldwide.

Some limitations of the study should be mentioned. The subsidy incidence rates may be upward biased since rent outside the city center may have fallen to a certain extent following the introduction of the program. Due to a lack of information, the study relied on rental notices and not on actual rents, although the correlation between the two is high. The rent subsidy program concentrated on a specific group of tenants in a restricted geographical area, where the lion's share of the tenants benefited from it. These features and more should be taken into consideration when comparing our results to findings in other studies.

## Appendix

**Table A1**

Differential effect of the subsidy program on rent by apartment size<sup>a</sup>.

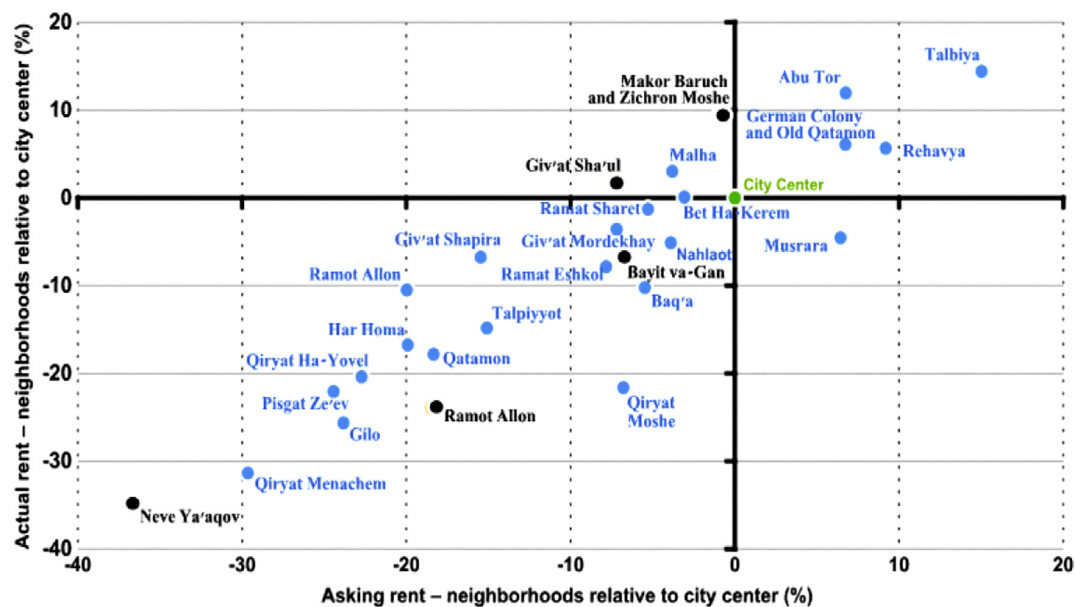
	Number of rooms:		All apartments <sup>b</sup>
	1.0–2.5	3.0–4.0	
Subsidy period $\times$ city center	0.019 (0.011)*	0.057 (0.016)***	0.029 (0.010)***
Subsidy period $\times$ city center $\times$ number of rooms			0.025 (0.002)***
Number of rooms	0.287 (0.003)***	0.218 (0.003)***	0.226 (0.002)***
Socioeconomic ranking	0.015 (0.001)***	0.026 (0.001)***	0.021 (0.001)***
Neighborhood Fes	YES	YES	YES
Year Fes	YES	YES	YES
Observations	24,652	33,333	57,985
R-squared	0.545	0.577	0.649

\*, \*\*, \*\*\* represent statistical significance at the 10, 5, and 1 percent levels.

Standard errors, clustered by statistical area, in parentheses.

<sup>a</sup> Asking rent on notices for apartments of up to 4 rooms. Non-ultra-Orthodox Jewish neighborhoods.

<sup>b</sup> The estimation includes the interaction term city center  $\times$  number of rooms.



**Fig. A1.** Asking rent vs. actual rent in Jerusalem, by neighborhood.

Note: The figures are based on the coefficients for the neighborhoods' fixed effects in estimations for the years 2000–2012 of log rent (separately for the asking rent and the actual rent) on the number of rooms and years and neighborhood fixed effects

Black points indicate ultra-Orthodox Jewish neighborhoods. City center: the area eligible for a rent subsidy. For some of the neighborhoods no information was collected in the Rent Survey.

Source: Central Bureau of Statistics and authors' calculations.

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