IDEOLOGY, RELIGION, AND CHEAP HOUSING: ISRAELI SETTLEMENT OF THE WEST BANK

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Abstract

We show that religious belief and national-ideological worldview affect response to economic factors among Israeli West Bank settlers. We identify households that likely hold divergent views on West Bank settlement using political party support as inferred from local statistical area national election results. Findings of aggregate polytomous logistic model estimation show that economic opportunity, notably lower housing costs, prompt West Bank moves among all household types. Also, West Bank moves are elevated among households with deeply held national-religious ideology and ultra-orthodox religious beliefs and in their moves to settlements with similar ideological and political stance. Belief divergence affects response to common economic and policy factors: lower housing costs are more important to West Bank moves among households holding national-religious views, whereas those same factors are mediated and substantially less salient among households lacking fundamental ideological imperatives for settlement. Research findings are corroborated in estimation and simulation of micro-based proportional hazard models of Israeli household West Bank moves. Results have implications for policy and for future control of West Bank territory. Ongoing settlement among all belief groups growth remains importantly dependent on favorable pecuniary economic returns to migration.

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1. INTRODUCTION

Considerable political controversy and policy debate surround Israeli settlement of the West Bank. Longstanding Israeli policy has sought to encourage sizable influx of settler population, to redress demographic imbalances, assure a Jewish presence throughout the biblical Land of Israel, and bolster Israeli security. On the other hand, the Palestinian Authority views Israeli settlement activity as a threat to national self-determination and sovereignty. The United States and Europe often have pressured Israel to limit West Bank construction to reduce tensions and retain options for a two-state solution. All parties view the magnitude and determinants of West Bank settler flows with particular concern, given their implications for control of territory and conflict resolution.[1]

Although the impetus for Israeli settlement of the West Bank is often ascribed to national-religious ideological factors, economic forces play a salient role. In media surveys preceding 2019 general elections in Israel, West Bank settlers commented "…*just because I live on the other side of the Green Line doesn't mean that I'm here for ideological reasons, rather I'm here because of economic and quality of life differentials—just 10 minutes away from [the Tel Aviv suburb of] Kfar Saba*". Another interviewee mentioned "*the population in my settlement is not extremist in their political views, the vast majority is secular*."[2] Similarly, among those interviewed for a recent *Wall Street Journal* article on the West Bank, one settler commented "*we came here because it's easier to buy here…..it's so easy to live here*".[3] Indeed, assessment of settler voting patterns in Israel general elections over the 2000-2015 period indicates that 48 percent and 7 percent of the 126 Israeli settlements may be classified as "non-ideological secular" and "non-ideological ultra-orthodox religious," respectively.[4] While Israeli settler population rose post-1967 to almost 400,000 in 2015 (see Figure 1), 45 percent of those settlers resided in non-ideological settlements.

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[1] The territories beyond the Green Line, commonly referred to as the "West Bank," where occupied by Israel during the Six-Day War in 1967 and are often referred to using different names in the popular discourse—contingent upon the political stance of the speaker (e.g., "the Occupied Territories" vs. "Judea and Samaria"). In this paper, our purpose is not to take sides in this charged political discussion, but rather to examine the interaction among ideological, religious, and economic factors in determination of Israeli population moves to that area. Hence, in what follows, we refer to the area in question as the "West Bank," without taking one side or another in the political debate.

[2] https://m.ynet.co.il/articles/5475181.

[3] *The Wall Street Journal*, "It's So Easy to Live Here. Jewish Settlements Go Mainstream in Israel", November 12, 2019.

[4] In our study, we only refer to the 126 West Bank Jewish settlements established by Israeli governments. We do not refer to a similar number of Jewish settlements that exist in the West Bank, however, were not formally approved by Israeli governments; total population in those settlements is low relative to the settlements included in our analysis.

As shown in Figure 2, the large majority of settlements are located close to the 1949 Green Line demarcation of the West Bank and within commuting proximity of Israel's largest metropolitan areas.[5]

As suggested above, West Bank moves may be governed by standard economic factors associated with household location choice, notably including housing costs and returns, workplace access, and quality-of-life differentials. Substantial literature has documented the role of such factors in the determination of both intra-metropolitan and inter-regional household moves (see, for example, Gabriel and Rosenthal, 1989; Greenwood and Hunt, 1989; Gabriel, Mattey and Wascher, 1995; Razin, Sadka, and Swagel, 2002; Sasser, 2010; and Zabel, 2012).[6] Other papers have assessed those same economic factors in reference to inter-regional migration in Israel (see, for example, Gabriel, Justman and Levy, 1987a and 1987b; Portnov, 1998a, 1998b, Ben-Shahar, Gabriel, and Golan, forthcoming 2019b). Among settler households, economic incentives and related policy interventions could importantly affect the scope and location of Israeli presence in the West Bank. However, economic factors may be mediated and of diminished salience among non-ideological households lacking deeply-held religious beliefs or national ideological imperatives for West Bank settlement. Assessment of those factors may yield important insights into the relative efficacy of economic and policy incentives in determination of West Bank household location choice among households of fundamentally divergent ideological or religious belief. Further, such insights could be important to control of territory and future West Bank policy initiatives.

Recent literature suggests that belief disagreement may mediate household response to economic factors. Indeed, divergent ideological, political, or religious worldview may affect household decisions taken in response to market or policy signals. In financial markets, trading and returns may vary when investors hold different models of the world (see, for example, Kandel and Pearson, 1995, Carlin, Longstaff, and Mantoba, 2014). Meeuvis, Parker, and Schoar (2018), for example, use data on political party affiliation to show that agents hold different models of the

[5] The Green Line refers to the 1949 armistice lines established between Israel and its Arab neighbors in the aftermath of the 1948 War of Independence. Beyond the Green Line laid the Jordanian-controlled West Bank and the Egyptian-ruled Gaza Strip.

[6] Other studies consider policy-related and other shocks pertinent to migration, including welfare and inequality (e.g., Bougheas and Nelson [2010]); tax policy and revenues (e.g., Liebig, Puhani, and Sousa-Poza [2007] and Razin, Sadka, and Swagel [2002]); international trade (e.g., Bougheas and Nelson, 2013); and political voting (e.g., Razin, Sadka, and Suwankiri [2010] and Razin and Sadka [2017].

world and that such heterogeneity of belief affects portfolio investment decisions. Substantial literature in political science similarly suggests that people with divergent worldviews may differ in their response to political events (see, for example, Barels, 2002 and Gaines et al, 2007). Numerous analyses, including Stulz and Williamson, 2002, Kumar, Page, and Spalt, 2011, and Shu, Sulaeman, and Yeung, 2012 show that religious belief affects investment and financial market outcomes.

In this paper, we show that belief divergence affects response to common economic factors among Israeli West Bank settlers. We use localized information on support for political parties in national elections to infer differing worldview and belief among households moving to settlements in the West Bank. That same information allows us to categorize West Bank settlements by religious and national-religious ideological orientation. Substantial prior research (see, for example, Meeuwis, Parker, and Schoar, 2018, Curtin, 2016, Gaines et al, 2007, and Bartels, 2002) similarly uses small area voting patterns and party affiliation to identify divergent worldviews. In our analysis, localized voting patterns in national elections proxy for divergent beliefs regarding West Bank settlement imperatives and serve to mediate economic incentives pertinent to West Bank migration and settlement choice.

The analysis below reports on religious, ideological, economic and other factors associated with Israeli household moves to the West Bank.[7] We comprise and test for those factors using aggregate local-area directional migration data from the Israel Central Bureau of Statistics. We then corroborate findings in analysis of micro-data on Israeli household moves. Our model considers both pecuniary and non-pecuniary net returns to migration, the latter of which may be elevated among settlers who view a West Bank residential location choice as a national-religious ideological imperative.

Central to our analysis is the hypothesis that constraints on housing supply and related housing cost burdens among households in Israel may serve as a catalyst to household moves to proximate and less expensive areas of the West Bank. Indeed, as shown in Figure 3A, quality-adjusted house prices trended up markedly over the 2007-2015 period among most areas in Israel and the West Bank; by 2015, house prices in the Jerusalem and Tel Aviv metropolitan areas exceeded those of West Bank settlements by roughly 45 percent. Figure 3B presents similar

[7] There is limited parallel literature on the role of economic opportunity in Palestinian emigration from the West Bank. See, for example, Gabriel and Sabatello [1986].

quality-adjusted house price trends for West Bank settlements as a whole and by type of settlement (ultra-orthodox, national-religious, and non-ideological; see further description below) over the 2000-2015 time period. As is evident, while house prices rose among all settlement types from the relatively low levels recorded in the early 2000s, that increase was substantially damped among ideological settlements. To further assess pricing advantages of West Bank settlements, we undertake a well-qualified border analysis using a sample of home sales over the 2000-2015 period in adjacent localities on either side of the Green Line. Upon controlling for housing structural characteristics and time of transaction, we find that housing in Israeli localities just west of the Green Line was about 35 percent more expensive on average than identical units in nearby West Bank settlements.[8]

In the below analysis, we control for variations across time and space in house prices and housing investment returns, access to employment, public services and amenities, ideology/religious orientation and other locational and migrant mobility characteristics in determination of West Bank moves. As suggested above, we test for heterogeneity in response to economic factors among mover households and settlement locations characterized by divergent religious and ideological beliefs. We are not aware of prior analyses of how households holding fundamentally divergent worldviews parse economic incentives in moves to or from a conflict zone.

Our primary finding is that economic factors are both statistically significant and economically salient in determination of West Bank moves among households regardless of religious belief or ideological orientation. Results of estimation of an aggregate polytomous logit model indicate that while moves to the West Bank are, *ceteris paribus*, less likely overall than moves to localities within (west of) the Green Line, price discounts for quality-adjusted West Bank housing prompt Israeli household moves to the West Bank. Also, elevated electoral support for national-religious and ultra-orthodox parties in the origin statistical area, as proxies for national ideological settlement imperatives and ultra-orthodox religious beliefs among origin populations, not only encourage moves from those areas to the West Bank, but also are associated with moves

[8] To assess the price difference between proximate localities on either side of the Green Line, we observe different locality couplets—one to the east and the other to the west—of the Green Line, whose distance from one another is no more than six kilometers. For each couplet, we compute the difference between quality-adjusted average housing prices. Results show that the average price within the Israeli localities west of the Green Line is about 35% greater than average price of the matched localities in the West Bank (i.e., east of the Green Line)—difference is significant at the 1%-level.

from those areas to like national-religious ideological and ultra-orthodox settlements, respectively. Results show a heterogeneous response to economic incentives among belief groups; in that regard, cheap housing in the West Bank is more important to movers holding national-religious and ultra-orthodox religious worldviews. Those same economic factors are mediated and of substantially diminished importance among settler households lacking fundamental religious or ideological imperative for West Bank settlement. Results of survival analysis of a large and representative micro-level panel sample of West Bank movers from origin localities west of the Green Line corroborate findings of the aggregate logistic model. Specifically, proportional hazard model findings indicate that factors including origin area housing affordability constraints and support for national-religious or ultra-orthodox religious parties significantly raise the likelihood of migration to the West Bank in general, and in particular to ideological and ultra-orthodox settlements, respectively. Similarly, the effect of housing affordability constraints on West Bank moves is elevated among movers from areas with a higher share of electoral support for national-religious parties.

We also simulate the statistical models so as to further gauge the economic significance of economic incentives to West Bank moves and among households characterized by belief disagreement. Results suggest, for example, that among the 75 percent of settler moves associated with cheaper housing in the West Bank over the 2000-2014 period of analysis, a 10 percent increase in the housing price ratio between origin and West Bank destination locations is associated with a 78 percent increase in the total number of moves to those settlements (from about 180,500 to about 321,000 persons). By settlement type, this change in price differentials between origin and destination locations is associated with about 54 percent, 117 percent, and 66 percent increase in population moves to non-ideological, national-religious, and ultra-orthodox settlements, respectively. Moreover, simulation findings aptly demonstrate the quantitative salience of belief disagreement. In the context of the above specified increase in price divergence, a 30 percent increment in origin zone support for national-religious parties is associated with a further increase in West Bank settlement moves to 443,000, of which about 241,000 go to national-religious ideological settlements.

Findings have important implications for policy. For example, ongoing growth among all major settlement types remains importantly dependent on favorable pecuniary economic returns to migration. Those moves could be damped or even reversed in the wake of either inadvertent or

intended government policies to incentivize moves to Israeli localities west of the Green Line. For example, recent largescale release of land for housing development as well as transportation infrastructure investment among Israeli localities west of the Green Line likely enhances the relative attractiveness of those areas.

The plan of the paper is as follows. In the following section, we provide metrics as well as historical and policy backdrop to Israeli West Bank settlement activity. In section 3, we describe data resources. Section 4 reports on estimation and simulation of an aggregate polytomous directional logistic model of residential location choice among Israeli households. That model is parsed so as to identify the differential effects of economic and location-specific factors on moves to West Bank settlements among households characterized by differing ideological worldviews and religious beliefs. In Section 5, we corroborate aggregate findings via micro-based hazard model estimation and simulation of West Bank household location choice. In Section 6, we discuss implications and conclusions.

2 SETTLEMENT IMPERATIVES AND METRICS

The recent history of the area known as the West Bank of the Jordan River dates from the November 1947 United Nations Partition of British Mandatory Palestine into independent Jewish and Palestinian states (UN General Assembly Resolution 181 (II)). In the immediate aftermath of May 1948 British withdrawal from Mandatory Palestine, Israel declared independence and was attacked by Egyptian, Jordanian, and Palestinian forces rejecting the U.N. Partition and the creation of a Jewish state. Official cessation of the first Arab-Israeli war came in July 1949. The U.N.-brokered Armistice line between Israel and Jordan and Egypt was denoted the Green Line. Areas east of the Green Line, including the West Bank and East Jerusalem, were incorporated into the Hashemite Kingdom of Jordan. The 1949 Armistice failed to lead to normalized relations between the parties and armed conflict again erupted in June 1967. In the June 11, 1967 cease-fire agreement to the Six-Day War between Israel and Egypt, Jordan, and Syria, the West Bank came under Israeli control.

In the wake of cessation of hostilities in 1967, both the Israeli Government and national-religious groups in Israel advanced plans for civilian settlement of the West Bank. One influential proposal, the 1967 Alon Plan, called for Israeli agricultural settlements in the sparsely populated

Jordan Valley in proximity to the Jordan River, Israel's eastern border with Jordan.[9] Other emerging plans for settlement reflected popular support for a return to and civilian presence in areas of Jewish religious or historical significance.[10] As regards the latter, in 1968, a group of religious-ideological activists celebrated the Passover Seder in Hebron and refused to leave, ultimately leading to the establishment of the Kiryat Arba settlement at a site of Jewish religious significance.[11,12]

A few years later, in 1974, a new religious-ideological movement for settlement of the West Bank, known as Gush Emunim, was convened. Gush Emunim was founded under the slogan "The Land of Israel, for the people of Israel, according to the Torah of Israel."[13] Its founders perceived the State of Israel as the instrument through which God would bring redemption, making it imperative that the people of Israel and the state take practical steps to ensure Jewish sovereignty over all parts of the Land of Israel as defined in the Bible.

Further, what began post-1967 as security-related and religious-ideological settlement evolved over time into the pragmatic movement of middle-class Israeli households to areas east of the Green Line, where affordable housing and "quality-of-life" were available within close proximity to the core Tel Aviv and Jerusalem metropolitan areas (Newman, 2009). This process led to the emergence of what we now refer to as "non-ideological" settlements. For example, the settlement of Ma'ale Adumim, originally established by Gush Emunim in 1975 some seven kilometers east of Jerusalem, ultimately evolved into a largely secular Jewish city in the West Bank. According to comments by a municipal spokesperson of Ma'ale Adumim in 2004, the vast majority of residents likely moved there not for national-religious ideological reasons but for affordable housing and higher living standards within easy commute to jobs in Jerusalem.

Economically-motivated settlement similarly was prevalent among the religious ultra-orthodox Haredi (non-national-ideological) community. During the 1980s and 1990s, eight ultra-orthodox settlements were established in the West Bank in response to housing scarcity and lack of affordable housing among religiously-segregated ultra-orthodox Haredi communities west of the Green Line. According to Cahaner and Shilhav (2013), the ultra-orthodox community did not

[9] The original plan sought to avoid Israeli settlement in heavily populated Palestinian areas of the West Bank.
[10] This point of view was espoused by Ze'ev Jabotinsky, an influential right-wing leader of pre-state Israel.
[11] According to the Book of Genesis, Kiryat Arba is the place where Abraham buried his wife, Sarah.
[12] The first Israeli settlement in the West Bank post-Six-Day War was Kfar Etzion, re-established in September of 1967 at the site of Jewish agricultural villages destroyed during the 1948 war of independence.
[13] https://www.myjewishlearning.com/article/gush-emunim/ (visited, March 31, 2019).

see settlement in the West Bank as a national-ideological imperative but rather as an inevitable solution to housing distress in religious neighborhoods of Jerusalem and greater Tel Aviv area. For example, the ultra-orthodox settlement of Beitar Illit, originally established in 1985 and located about 10 kilometers south of Jerusalem, now comprises one of the largest settlements of the West Bank with a population of just under 55,000 in 2017.

As evident, post-1967 war, a myriad of security, national-ideological, and economic factors were put into play in establishment and development of Israeli West Bank settlements.[14] Subsequent decades witnessed substantial settlement activity consistent with those settlement imperatives. As shown in Figure 4, settlement development expanded markedly during the 1977-1985 period in the wake of the 1977 election of a right-wing Likud Government headed by Menachem Begin. During that period, 83 new settlements were established. Further, in contrast to principles outlined in the Alon Plan, the new right-wing government permitted settlement in densely-population Palestinian areas of the northern and southern West Bank. As shown in Figures 2A and 2B, the vast majority of ideological and ultra-orthodox settlement activity occurred during those years and in those areas. In contrast, the founding of non-ideological settlements occurred largely in the 1980s and prior to a freeze on new settlement construction under the Labor Government of Prime Minister Yitzhak Rabin.[15] As shown in Figure 2A, many of the large non-ideological settlements were located close to the Green Line whereas a large number of ideological settlements were established in the highlands of the West Bank in proximity to densely populated Palestinian areas. Per above, other smaller non-ideological settlements shown in Figure 2A were put into place in the late 1960s in Jordan Valley in proximity to the Jordanian border. As shown in Figure 4, only 6 of 126 West Bank settlements (formally approved by Israeli governments) have been established since 1990. However, substantial expansion of and migration to existing settlement villages and towns has been ongoing. As shown in Figure 1, Israeli settler population beyond the Green Line rose steadily over recent decades to roughly 400,000 persons in 2015.[16]

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[14] For a detailed chronology of events related to the establishment and development of Israeli West Bank settlements, see, e.g., Handel (2009). Also, it should be noted that the Palestinian Authority of the West Bank views ongoing Israeli settlement construction as adverse to territorial integrity consistent with "right of the Palestinian people to self-determination" as affirmed in the 1993 Oslo Accord.

[15] For more on the establishment of non-ideological settlements in the West Bank see, e.g., Newman (2017).

[16] U.S. Central Intelligence Agency, World Fact Book (https://www.cia.gov/library/publications/the-world-factbook/geos/we.html – visited March 31, 2019). In 2017, the Palestinian population of the West Bank was estimated at 2.7 million.

Among settlement policy initiatives, Israeli population growth in the West Bank was facilitated as well by provision of transportation infrastructure. That infrastructure largely consisted of new freeway and by-pass roads, allowing settlers efficient access to jobs in Jerusalem and greater Tel Aviv. The provision of new by-pass roads accelerated in the wake of the 1987-1993 and 2000-2005 Palestinian "Intifadas" (uprisings) and related attacks on settlers. An early example of new road provision was the 1978 construction of the Trans-Samaria Highway connecting the major West Bank settlement of Ariel and other proximate settlements to jobs in central Israel. In 2006, the Israeli Government announced plans for construction of 140 kilometers of new roads in the West Bank.[17] An important example is the 2008 opening of Route 398 (the "Liberman Road") connecting the Har Homa suburb of Jerusalem to settlements southeast of Bethlehem. That road dramatically shortened travel time to Jerusalem and allowed settler by-pass of Palestinian villages. A 2009 advertisement for housing in Nokdim and Takoa, viewed as isolated and distant settlements prior to construction of Route 398, stressed *"a rare location, close to the city"* and *"a house for the price of an apartment in Jerusalem."*[18]

As suggested above, movement of Israeli population to the West Bank also was facilitated by significant economic incentives notably including the availability of affordable housing. In many cases, settlements were established on the sites of former Israel Defense Forces military bases or designated state lands made available for development at minimal costs.[19] Those sites often were in close proximity to expensive urban land on the west side of the Green Line. In the wake of significant increments to West Bank developable land, housing supply increased substantially and at quality-adjusted prices well below Israeli localities on the west side of the Green Line. As suggested above, our analysis of proximate couplets of localities on either side of the Green Line indicates that prices are higher by roughly one-third among quality-adjusted housing units located just west of the Green Line. Figures 3A and 3B provide further evidence of sizable and persistent discounts on West Bank settlement housing relative to counterparts in the Tel Aviv or Jerusalem metropolitan areas.

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[17] Handel (2009).

[18] See, among others, Peace Now (2015), "Liberman Road: The Impact of Bypass Roads on the Settlements" http://peacenow.org.il/wp-content/uploads/2016/01/leiberman-road-report.pdf (page visited March 30, 2019).

[19] As of 1969, more than 70 percent of West Bank land was not registered in the Tabu Land Registry. The lack of land registry facilitated the Israeli Government designation of "state land" that was often made available for settlement construction.

West Bank settlements further benefitted from substantial government investment in local public education. For example, as shown in Table 4, settlements enjoy smaller class sizes and higher rates of per capita municipal expenditures on education relative to Israeli localities west of the Green Line. Further, settlements often are located in areas of pastoral beauty. Indeed, settlement advertisements often contain reference to scenic views and quality-of-life.[20] Further, to address Israeli security concerns stemming from the 2005 Second Intifada, a security barrier was put in place along a perimeter not far from the Green Line. The vast majority of Israeli settlers are now located inside (or west of) the security barrier.

Below we test the role of economic and national-religious ideological belief-related motivations in determination of Israeli population moves to the West Bank. Further, we seek to shed light on the extent to which standard economic proxies are mediated by systematically divergent ideology and belief systems. Our findings have implications not only for the salience of economic factors in determination of household location choice, but also for economic policy initiatives pertinent to ongoing Israeli presence in the West Bank.

3. DATA

Data for this study derive from four primary databases. Firstly, we employ two population censuses from the Israel Central Bureau of Statistics conducted in 1995 and 2008 and comprising about 380,000 households (about 20% of households in Israel during the period of analysis). The Israel Central Bureau of Statistics assisted us in extending the two population censuses into a household panel, whereby the socio-economic, demographic, and residential locational characteristics of each household are sampled annually over the period 2000-2015. Table 1 includes variable description and summary statistics from the household panel. Notably, for purposes of this study, the panel data includes information on household geographic mobility (including origin and destination localities and date of move).

Secondly, we employ a dataset from the Israel Tax Authority on the universe of all housing transactions in Israel. This dataset comprises more than one million observations spanning the period 2000-2015 and includes information on transaction prices and housing characteristics, so as to allow estimation of quality-adjusted house prices over time and space as well as related

[20] See, e.g., Newman (2009).

individual level measures of housing affordability for use in the micro-data hazard model analysis. Table 2 presents the variables and summary statistics of the housing transaction data.

Thirdly, we use annual data from the Israel Central Bureau of Statistics on characteristics of localities over the 2000-2015 period. In addition, we include voting patterns for the Knesset (Israel Parliament) according to polling station. We assign each polling station to a statistical area so as to allow us to characterize the voting patterns in the small geographic area of each household.[21] As described in the methodology section below, we use the political data to control belief disagreement regarding settlement imperatives associated with household directional moves in the aggregate logistic estimation. Table 3 provides a description and summary statistics of variables used in the aggregate locality-level estimation.

Finally, we collected data on locational, socio-economic, and demographic characteristics of all 126 Israeli settlements east of the Green Line.[22] Table 4 presents average socio-economic and demographic characteristics by settlement type and for localities west of the Green Line. In that regard, we categorize settlements along dimensions of national-religious ideology and ultra-orthodox religiosity into the following groups: "national-religious" (ideological), "ultra-orthodox" (Haredi) religious, and other including "non-ideological" (secular). As shown in table 4, over the period of analysis, average household income among localities west of the Green Line was elevated relative to that of households residing in West Bank settlements. Among settlement types, per capita municipal expenditures on education as well as population socioeconomic status were substantially elevated in non-ideological settlements relative to other West Bank settlements (national-religious and ultra-orthodox) and Israeli localities west of the Green Line. Further, average annual housing construction (starts, completions) in ultra-orthodox settlements were well in excess of levels recorded in other localities on either side of the Green Line.

[21] A statistical area—the Israeli equivalent of a census tract—is the smallest geographic area examined by the Israel Central Bureau of Statistics.

[22] These only include settlements that were formally established by Israeli governments.

4 AGGREGATE ANALYSES OF WEST BANK MOVES

Following Gabriel, Shack-Marquez, and Wascher (1992) and Gabriel, Mattey, and Wascher (1995), among others, we employ a polytomous logistic model to estimate directional moves among Israeli households. In that model, we assume a finite number of migrant alternatives. In particular, we assume that the decision to migrate from location *i* to *j*, *i*, *j* = (1 ,…, *n*), at time *t* is an index M_{ijt} that is defined as a function

$$M_{ijt} = \alpha_0 + \alpha_1 \ln C_{ijt} + \vec{\alpha}_2 \ln Z_{it} + \vec{\alpha}_3 \ln Z_{jt} + \vec{\alpha}_4 \ln T_{it}, \quad (1)$$

where Z_i and Z_j are economic and amenity attributes of the origin (*i*) and destination (*j*) locations, C_{ij} is the cost of moving from *i* to *j*, T_i is a vector of household traits associated with the propensity to migrate, ln is the log operator, and $\alpha_0 - \alpha_1$ and $\vec{\alpha}_2 - \vec{\alpha}_4$ are parameters and vectors of parameters, respectively. The analysis uses a full set of controls to account for moves among populations of divergent ideological and religious worldviews among all Israeli localities including those both west and east of the Green Line. Those controls allow us to assess the role of religious and ideological factors in determination of household location choice and in mediating economic factors pertaining thereto.

The probability of migrating from *i* to *j* in period *t*, $Prob_{ijt}$, is then

$$Prob_{ijt} = \exp(M_{ijt}) / \sum_{j=1}^{n} \exp(M_{ijt}) \quad (2)$$

where $Prob_{ijt}$ is computed as the number of households who migrate from *i* to *j* of the total number of movers from *i* (to any *j*) at time *t* and $\sum_{j=1}^{n} Prob_{ijt} = 1$. It follows that

$$\ln(Prob_{ijt}/Prob_{iit}) = M_{ijt} - M_{iit} = \alpha_1 \ln C_{ijt} + \vec{\alpha}_2(\ln Z_{jt} - \ln Z_{it}) + 2\vec{\alpha}_4 \ln T_{it}, \quad (3)$$

where $Prob_{iit}$, the probability of remaining in the origin location *i* (or not migrating to *j*), is used as a normalization factor.[23]

Following (3), we estimate the following model

[23] Note that T_i and C_{ij} do not cancel out after expressing (4) in a ratio form as T_i, which is generally positively associated with the propensity to migrate, positively affects M_{ij} for $i \neq j$, however, negatively affect M_{ii}, while it is assumed that C_{ij}=0 when households move within *i*; hence ln(C_{ij}) is ignored.

$$\ln\left(Prob_{ijt}/Prob_{iit}\right) = \theta + \alpha_1 \ln C_{ijt} + \vec{\alpha}_2[\ln(Z_{jt}/Z_{it})] + \alpha_3 PriceRatio_{jit} + \vec{\alpha}_4 \ln T_{it} + \alpha_5 Dum\_Settlement_{jt} + \alpha_6 Dum\_Ideological_{jt} + \alpha_7 Dum\_Ultra-Orthodox_{jt} + \alpha_8 Vote\_National_{it} + \alpha_9 Vote\_Ultra-Orthodox_{it} + \vec{\alpha}_{10} PriceRatio_{jit} \times Dum\_Y_{jt} + \vec{\alpha}_{11} PriceRatio_{jit} \times Vote\_X_{it} + \vec{\alpha}_{12} Dum\_Y_{jt} \times Vote\_X_{it} + \vec{\alpha}_{13} PriceRatio_{jit} \times Dum\_Y_{jt} \times Vote\_X_{it} + \varepsilon_{1ijt}, \quad (4)$$

where $PriceRatio_{jit}$ on the right-hand side of (4) is the log of the ratio between average quality-adjusted house prices in localities *j* and *i* at time (year) *t*, specifically proxying the nominal housing incentive to move from *i* to *j*. Also, *Dum_Ideological*, *Dum_Ultra-Orthodox*, and *Dum_Settlement* are dummy variables representing West Bank national-religious (ideological) settlements only, West Bank ultra-orthodox Haredi (non-ideological) settlements only, and other (non-ideological and non-ultra-orthodox) settlements only, inclusive of all 126 settlements of the West Bank. West Bank settlements were coded as "ideological" ("ultra-orthodox") in the most recent general election post period *t*, if electoral support for the national-religious (ultra-orthodox) parties exceeded four times the national average support of those parties in the same elections.[24] We use that same electoral information to control for the national-religious or ultra-orthodox stance of the origin locality: we include on the right-hand side of (4), *Vote_National* and *Vote_Ultra-Orthodox*, respectively representing the percentage of origin locality votes in most recent national elections for national-religious and ultra-orthodox parties. As further described below, in order to examine the varying effects of the nominal house price differential between locations *j* and *i* ($PriceRatio_{jit}$), we also interact $PriceRatio_{jit}$ with type of destination West Bank settlement, *Dum_Y*, *Y*=(*Settlement*, *Ideological*, *Ultra-Orthodox*) as well as with electoral support for national-religious and ultra-orthodox parties in the origin location, *Vote_X*, *X*=(*National*, *Ultra-Orthodox*). Finally, in equation (4), θ, α_1, α_3, and $\alpha_5 - \alpha_9$ are estimated parameters and $\vec{\alpha}_2$, $\vec{\alpha}_4$, and $\vec{\alpha}_{10} - \vec{\alpha}_{13}$ are vectors of parameters, respectively, ε_1 is a random disturbance term and all other variables and parameters are as described above.

While recent years have witnessed new research on topics of housing affordability, the link between affordability and household moves remains relatively unexplored. Some exceptions

[24] In over 70% of the localities, the classification that follows any single election campaign between 1999 and 2015 is identical. The classification is robust to changing the threshold from 4 to 2,3, or 5, with identical classification in 84-99% of the localities. We further compare our classification to the classification conducted by Peace Now organization and find 89% match.

include studies by Sasser (2010), Lux and Sunega (2012), and Greenlee and Wilson (2016) that use macro-level data from the United States and the Czech Republic to examine the extent to which housing affordability explains population moves among residential areas. Ben-Shahar, Gabriel and Golan (2019) provide recent evidence of the importance of housing affordability to household moves from Tel Aviv, Israel's dominant superstar city. Other related studies focus on the relationship between house prices and migration (see, e.g., Gabriel, Shack-Marquez, and Wascher [1992]; Gabriel, Mattey, and Wascher [1995]; Jones and Leishman [2006]; Zabel [2012]; Plantinga, Détang-Dessendre, Hunt, and Pigue [2013]; and Foote [2016]). While the role of housing opportunity in Israeli household moves to the West Bank has been the subject of some speculative discussion in the popular media (e.g., Shabi [2010], Magal [2017], Melnitcki [2019], and Schwartz [2019]), this phenomenon has yet to be evaluated systematically in academic study.

As suggested above, a primary variable of interest in equation (4) is *PriceRatio*, the log of the ratio between average nominal quality-adjusted house prices in the destination (*j*) and origin locations (*i*). Other arguments characterizing differences between *j* and *i* in the vector $Z_{jt} - Z_{it}$ include the ratios of numerous controls including population size in *j* and *i*, share of households aged 30-44 years-old in *j* and *i*, socio-economic index score in *j* and *i*, maximum tax benefits (incentives) in *j* and *i*, average household income in *j* and *i*, and distance to Tel Aviv in *j* and *i*.[25] The cost of migrating from *i* to *j*, C_{ij}, is proxied by the geographical distance between the origin and destination locations. Finally, the aggregate model includes a vector of location-specific household traits associated with the propensity to migrate, T_i, such as average age of household head, average household income, and average number of children per household. We also include a control for the change in the Israel quality-adjusted national housing price index. A list and definitions of modelled variables are contained in Table 3. Finally, to address possible concerns about endogeneity of the house price differential in $PriceRatio_{jit}$ to $Prob_{ijt}/Prob_{iit}$ in equation (4), we also estimate a version of (4), where the origin and destination location controls are lagged. Outcomes are robust to using contemporaneous and lagged versions of the controls (results are not reported and available upon request).

[25] The socioeconomic index of each locality (provided by the Israel Central Bureau of Statistics) ranges from -3 to +3 and is generated by 16 indicators of the locality, clustered into 4 groups: standard of living, employment and welfare, schooling and education, and demography (see Israel Central Bureau of Statistics, 2013). Also, location tax incentives are proxied by the maximum possible tax benefit provided by the government to households living in the respective area.

The model in (4) is estimated for a representative sample of movers from Israeli localities (west of the Green Line) to all destinations both west and east of the Green Line (i.e., West Bank). We use aggregate recent mover data among 1,271 localities in Israel and the West Bank over the 2000-2014 period. Per above, model specification includes controls for differences between origin and destination housing prices, socio-economic index, amenity, and religious/ideological characteristics, migration distance, locality distance to Tel Aviv, and other population demographic and economic characteristics. Housing market controls include national quality-adjusted house price returns as well as origin-destination differences in quality-adjusted housing prices. Origin population religious/ideological beliefs are based on shares of national election votes for national-religious and ultra-orthodox parties in the origin locality. That same categorization of votes is used to identify the religious/ideological stance of the destination settlement in the West Bank.

Results of Estimation of the Polytomous Logistic Model of Place-to-Place Migration

Table 5 contains results of estimation of the polytomous logistic directional household migration model presented in equation (4). The model is estimated without interaction terms (column 1), with simple interaction terms (column 2), and with double-interactions (column 3; see further description below) to control for both the interaction of housing opportunity with religious/ideological worldview of the destination settlement and the interaction of housing opportunity with religious/ideological beliefs of the moving population.

Specifically, as shown in column 1 of Table 5, results indicate that West Bank settlement category controls, including *Dum_Settlement*, *Dum_Ideological*, and *Dum_Ultra-Orthodox*, are equal to -0.58, -0.53, -0.40 (significant at the 1%-, 1%-, and 5%-levels, respectively), implying that households are overall less likely to move to settlements in the West Bank (compared to alternative destinations located west of the Green Line). Also, as expected, relatively higher quality-adjusted house prices in the origin relative to the destination locality (*PriceRatio*), as a proxy for improved housing affordability and related economic impetus to migrate, serve to prompt household moves. The estimated coefficient is 2.49 and highly significant.

Column 2 in Table 5 presents outcomes of the estimation of equation (4) including interactions among the house price term (*PriceRatio*) with the religious/ideological worldview of the destination settlement (*Dum_Ideological*, *Dum_Ultra-Orthodox*, *Dum_Settlement*) as well as

interactions of the house price term (*PriceRatio*) and the electoral support (share of votes) for national-religious and ultra-orthodox beliefs in the migrant origin locality (*Vote_National* and *Votes_Ultra-Orthodox*). Column 2 also contains interactions of destination settlement type and migrant origin statistical area voting/belief stance. Among key results, the coefficient on *Votes_National* is equal to 1.19 (significant at the 1%-level), while the coefficient on the interactions *Dum_Settlement x Vote_National*, *Dum_Ideological x Vote_National*, and *Dum_Ultra-Orthodox x Vote_National* are equal to 2.51, 2.90, and 6.17 (all significant at the 1%-level), implying that while households from origin localities with elevated national-religious beliefs experience a greater propensity to move overall, households from those same areas are three to six times as likely to relocate to national-religious and ultra-orthodox settlements within the West Bank. Similarly, the coefficient on *Vote_Ultra-Orthodox* is equal to 1.22 (significant at the 1%-level), while the coefficients on the interactions *Dum_Ultra-Orthodox x Vote_Ultra-Orthodox, Dum_Ideological x Vote_Ultra-Orthodox*, and *Dum_Settlement x Vote_Ultra-Orthodox* are 2.82, 0.85, and 0.65, respectively (all significant at the 1%-level), implying that households from origin localities with ultra-orthodox beliefs not only are more likely to move overall, but in particular are almost thrice as likely to migrate to ultra-orthodox communities in the West Bank.

Column 3 in Table 5 presents outcomes from the estimation of equation (4) including double-interactions among the housing opportunity term (*PriceRatio*), religious/ideological worldview of destination settlement (*Dum_Settlement*, *Dum_Ideological*, *Dum_Ultra-Orthodox*), and support for national-religious/ultra-orthodox parties in origin location (*Vote_National*, and *Vote_Ultra-Orthodox*). Interpretation of the results from this estimation is provided in the simulations below.

Simulation of the Polytomous Logistic Model

Drawing on estimation results as presented in column 3 of Table 5, we next simulate the effects of house price differentials (*PriceRatio*) and other controls on moves to the West Bank by settlement worldview and among origin localities characterized by varying levels of national-religious ideology and ultra-orthodox belief. In exploring these outcomes, we first calibrate our sample to fit the actual population moves to the West Bank over the 2000-2014 period.[26] Figure 5

[26] Calibration is done by factoring the total annual sample number of moves to all settlements of the West Bank so as to equal annual population moves to the West Bank as recorded by the Israel Central Bureau of Statistics.

shows population moves to settlements in the West Bank—overall (Israel Central Bureau of Statistics) and by settlement type (based on estimation of our model)—over that period. Provided that population moves to the West Bank over the period 2000-2014 totals about 241,000, simulation of our model shows that moves to non-ideological and non-ultra-orthodox, national-religious (ideological), and ultra-orthodox religious settlements amounted to roughly 109,500, 67,000, and 64,500 persons, respectively.

In order to examine the effect of house price differentials on household migration to the West Bank, we stratify population moves to the settlements by *PriceRatio*<0 and *PriceRatio*>0 (i.e., average quality-adjusted house price at original location being respectively greater and lower than that of destination settlement). Figure 6 shows population moves to West Bank settlements for which *PriceRatio*<0—overall and by settlement type—over the period 2000-2014. It follows from the figure that about three-fourths of total population moves to West Bank settlements are associated with *PriceRatio*<0 (roughly 180,500 of 241,000 population moves). By settlement type, 61 percent, 84 percent, and 90 percent of moves to non-ideological, ideological, and ultra-orthodox settlements are associated with *PriceRatio*<0. In particular, some 84-90 percent of moves to religious-ideological and ultra-orthodox settlements are associated with improved housing affordability. Overall, results provide graphic evidence of the importance of lower West Bank house prices in determination of settler moves.[27]

To further gauge the economic significance of house price differentials to West Bank moves, we simulate the effect a 10 percent increase in the housing price of origin locations to population moves to those settlements for which *PriceRatio*<0. Figure 7 presents projected population moves to settlements of the West Bank for which *PriceRatio*<0 (i.e., average quality-adjusted price at the origin locality west of the Green Line is greater than that of the destination settlement) when we divide the ratio between the housing prices in *j* and *i* by 1.1.[28] Results indicate that West Bank moves to all settlement types are highly responsive to the simulated changes in origin locality-settlement house price differentials. A 10 percent increase in the quality-adjusted price of origin location is associated with about a 78 percent increase in the total number of moves to those settlements for which *PriceRatio*<0 (from about 180,500 to about 321,000). By settlement

[27] In comparison, only about 54% of household moves to destinations west of the Green Line exhibit *PriceRatio*<0.
[28] As the ratio between the housing prices in *j* and *i* is computed in log, we simply subtract ln(1.1) from the variable *PriceRatio* for the subsample for which *PriceRatio*<0.

type, this change in price differentials between origin and destination locations is associated with about 54 percent, 117 percent, and 66 percent increase in population moves to non-ideological, national-religious, and ultra-orthodox settlements, respectively.[29]

Finally, per a central focus of the paper, we simulate the effects of changes in economic incentives on populations of divergent ideologies and beliefs. Specifically, we analyze the effects of changes in the house price factor on moves to West Bank settlements by origin population worldview (as reflected in small area voting patterns). We simulate the effect of a change in the *PriceRatio* on moves to the West Bank by share of local origin votes for national religious/ultra-orthodox political parties (*Vote_National* and *Vote_Ultra-Orthodox*). Figure 9 presents the simulated projected accumulated population moves to settlements in the West Bank (total and by settlement type) by 2014 for which *PriceRatio*<0 in the cases where *Vote_National*=[0, 0.5], i.e., increasing shares of votes from 0.0 to 0.5 in the origin to national-religious political parties; and *Vote_Ultra-Orthodox*=0, i.e., zero share of votes in origin location to ultra-orthodox parties. Figure 10 shows results of this same simulation in the case where the quality adjusted price in origin location *i* is increased by 10% [i.e., decreasing the log of the house price ratio between the origin locality and destination settlement by log(1.1)]. Several outcomes are noteworthy. First, it follows from Figure 9 that, as expected, the greater the share of votes in the origin locality to national-religious political parties, the greater the population moves to all settlement types. Indeed, upward adjustment in origin small area share of vote from 0.0 to 0.5 results in an approximate eightfold increase in movers to West Bank settlements. Moreover, it follows from Figures 9 and 10 that supporters of national-religious parties are highly sensitive to economic incentives to migrate in the form of house price differentials between origin and destination localities. Results of this

[29] We also simulate population moves to settlements in the case that the latter communities were hypothetically located among other Israeli towns west of the Green Line rather than in the West Bank. In other words, for all sample observations, we place a 0 value on the categorical variables for *Dum_Settlement*, *Dum_Ideological*, and *Dum_Ultra-Orthodox* and simulate moves to settlement destinations. Results are presented in Figure 8. As expected, population moves to the settlements would have increased from about 241,000 to about 341,500 (an approximate 42 percent increase) had they been located west of the Green Line. By settlement type, hypothetical placement of settlement towns and villages on the west side of the Green Line would have led to 71 percent, 52 percent, and -19 percent changes in the number of moves to non-ideological, national-religious, and ultra-orthodox settlements, respectively. The latter implies not only that being east of the Green Line greatly limits population moves to non-ideological and ideological settlements of the West Bank, but also that moves to ultra-orthodox settlements are resilient to being located east of the Green Line. That projected migration to ultra-orthodox settlements somewhat decreases had those settlement been located west of the Green may be rationalized by (*a*) low sensitivity of ultra-orthodox religious population to relocating into the West Bank; and (*b*) the fact that the two major ultra-orthodox settlements in the West Bank, Beitar Illit and Modi'in Ellit, are located just across the east side of the Green Line.

simulation aptly demonstrate the quantitative salience of belief divergence. Specifically, increasing the quality-adjusted price in origin location by 10 percent when *Vote_National*=0.3 (*Vote_National*=0.5) is associated with an increase in simulated accumulated moves to West Bank settlements from about 227,000 (758,000) to about 443,000 (5.6 million), where about 241,000 (2.6 million) of which goes to national-religious ideological settlements.

We next repeat this exercise, this time varying the share of votes in the origin location to ultra-orthodox political parties (*Vote_Ultra-Orthodox*), holding *Vote_National* = 0. Figures 11 presents simulated projected accumulated population moves to settlements in the West Bank by 2014 for the sample for which *PriceRatio*<0, substituting all observations with *Vote_Ultra-Orthodox* = [0, 0.5], i.e., varying shares of votes in the origin statistical area to ultra-orthodox parties and *Vote_National* = 0, i.e., zero share of votes in the origin location to national-religious ideological parties. Figure 12 presents results of this same simulation when we further increase the quality-adjusted price in origin location by 10 percent. It follows from Figure 11 that the share of votes to ultra-orthodox parties in the origin location is associated with greater population moves to all settlement types. Furthermore, interestingly, Figures 11 and 12 show that, while voters with ultra-orthodox religious beliefs are sensitive to the house price differential between origin and destination locations, they are considerably less sensitive to this effect in their moves to West Bank settlements, compared to voters for national-religious ideological political parties. Specifically, a 10 percent increase in the price of origin location when *Vote_Ultra-Orthodox* = 0.3 (*Vote_National*=0.5) is associated with increased simulated accumulated moves to West Bank settlements from about 146,000 (284,000) to about 192,000 (529,000), about 15,000 (51,000) of which to ultra-orthodox settlements.

Finally, as shown in Table 5, our specification also controls for and lends credence to the role of fundamental socio-economic and geographical factors in determination of Israeli household moves to the West Bank. For example, moves are damped to destinations with reduced population size and reduced share of household heads aged 30-40. Also, increased difference between origin and destination locality in distance to Tel Aviv, Israel's singular superstar city, serves to spur the move probabilities. Also, as expected, distance between origin and destination localities (*DistanceRatio*) as a proxy for pecuniary and non-pecuniary transactions costs of moving is associated with significantly damped inter-locality population flows. Finally, origin population

mobility characteristics including average household income and number of children (age) serve to significantly damp (spur) move propensities among all stratifications of the sample.

5 HOUSEHOLD WEST BANK LOCATION CHOICE

In this section, we employ microdata to comprise a household-level panel dataset so as to undertake parallel micro-based survival analysis of the role of belief and ideology disagreement in mediating economic factors associated with Israeli household West Bank moves. Consider the following Cox proportional hazard regression model:

(5)

$$h(t) = h_0(t)\exp\left(\gamma_1 Afford_{it} + \gamma_2 Vote\_National_{it} + \gamma_3 Vote\_Ultra-Orthodox_{it} + \gamma_4 Afford_{it} \times Vote\_National_{it} + \gamma_5 Afford_{it} \times Vote\_Ultra-Orthodox_{it} + \vec{\gamma}_6 Y_{it} + \varepsilon_{2it}\right)$$

where *i* and *t* denote households and time periods respectively, $h(t)$ is the hazard rate of migrating to a settlement on the West Bank (dummy variable that equals 1 for moving into a settlement; zero otherwise), and $h_0(t)$ is the baseline to the hazard function. Independent variables in equation (5) include *Afford*, a measure of housing affordability in the origin locality (see further description below); *Vote_National*, the share of origin statistical area vote for the Israel Parliament (Knesset) in the most recent (pre-period *t*) national election for right-wing national-religious ideological parties; and *Vote_Ultra-Orthodox*, the share of origin statistical area vote for the Israel Parliament (Knesset) in the most recent national election for ultra-orthodox religious parties. Y is a vector of other controls, including *DistToSettlement*, the geographical distance (in kilometers) from origin location to the nearest West Bank settlement; *Age_F* and *Age_M*, the respective ages of female and male household heads; *Degree*1, *Degree*2 and *Degree*3, dummy variables that equal 1 if the household head holds a high school degree, undergraduate degree, and graduate degree, respectively (zero otherwise); *Years_F* and *Years_M*, number of years residing in Israel for female and male household head as reflective of potential new immigrant status of household; *Income*, household total income; *Adults*, number of persons 18 or over in the household; *Children1*, *Children23*, and *Children4*, dummy variable that equals 1 if 1, 2-3, or 4 and more children in the household (zero otherwise); *NR*, number of rooms in the housing unit at origin; *NR-NR$_{adj}$*, the difference between actual and consumption-adjusted number of rooms (see definition of *NR$_{adj}$* below); *SES*, socio-economic index of the statistical area where housing unit is located in origin

location; and *Peripheral*, an index of the Israel center-periphery of the origin locality as published by the Israel Central Bureau of Statistics.[30] Finally, $\gamma_1 - \gamma_5$ and $\vec{\gamma}_6$ are estimated parameter and vectors of parameters, respectively; and ε_2 is a random disturbance term.

Among primary terms of interest in equation (5), we focus on the coefficient of *Afford*, representing the association between housing affordability in the origin locality west of the Green Line and moves to settlements east of the Green Line. We assess *Afford* using two alternative proxies for housing affordability. The first is simply the hedonic-based price of housing, labelled *Price*—estimated based on a hedonic transaction price equation. Alternatively, we estimate a more refined quality- and consumption-adjusted measure of origin locality housing affordability [see Ben-Shahar *et al.* (2019)]. To compute the latter, we employ extensive micro-data on Israeli households over the 2000–2015 period to identify the typical housing consumption bundle of households stratified by demographic and locational characteristics. We then match each household in our sample to their appropriate housing consumption bundle and compute the hedonic-based price thereof—see appendix for a detailed derivation of *Price*, $Price_{Adj}$, and NR_{Adj}.

Results

Column 1 in Table 6 presents results from estimating the Cox proportional hazard model [equation (5)] for the full sample of all movers, where $h(t)$ is the hazard rate of migrating to West Bank settlements (categorical term equals 1 for migration to West Bank settlement; zero for migration to Israeli localities west of the Green Line) and where *Afford* is measured by the estimated price of the actual housing unit consumed by the household at origin location, *Price*. Among key results, as expected, the coefficient on *Price* is positive (significant at the 1%-level), indicating that elevated house prices in the origin locality encourage moves to West Bank settlements. In addition, the coefficients on *Vote_National* and *Vote_Ultra-Orthodox* (share of votes for national-religious and ultra-orthodox parties, respectively, in the household origin statistical area in the most recent general elections to the Knesset) both are positive (significant at the 1%-level), implying that the likelihood of migration to the West Bank settlements is positively associated with both national-religious ideology and ultra-orthodox beliefs. Further, the interaction *Price x Votes_National* is positive (significant at the 1%-level) implying that affordability

[30] This index captures access among residents of all Israeli towns to employment, services, and amenities associated with the country's primary Tel Aviv metropolitan area.

concerns in the origin location specifically spur moves to West Bank settlements from statistical areas with higher share of votes for national-religious parties. Among other significant controls: household income, household head age and education (high school or academic degrees), distance of origin locality to the nearest West Bank settlement, number of children, number of rooms, and socioeconomic status in the origin statistical area are negatively associate with moves to the West Bank, whereas the mismatch between actual and consumption-adjusted normative price of origin locality housing, residence in Israel for longer period, and periphery origin region are positively associated with the propensity to migrate to settlements on the West Bank. As regards the latter, given the substantial house price differential between the periphery and Tel Aviv, the more affordable housing of West Bank settlements may offer residents of the periphery a more economically-viable means of locating within proximity to Israel's primary commercial area.

Columns 2, 3, and 4 in Table 6 present the results from re-estimating equation (5) where $h(t)$ are the hazard rates of moving to national-religious, ultra-orthodox, and non-ideological settlements of the West Bank, respectively (dummy variable that equals 1 for moves to national-religious, ultra-orthodox, and non-ideological settlements, respectively; zero for moves to either other settlements or localities west of the Green Line). As expected, it follows from columns 2, 3 and 4 that *Price* and *Vote_National* are both positive and significant, indicating that both affordability concerns and national-religious ideology encourage moves to all settlement types in the West Bank. Further, the estimated coefficient on *Vote_National* in the origin is sizable in the hazard of moving to a national-religious ideological settlement. Similarly, it follows from column 3 that *Price*, *Vote_National*, and *Vote_Ultra-Orthodox* are positive (all significant at the 1%-level), indicating that affordability concerns, national-religious ideology, and ultra-orthodox religious beliefs all encourage moves to ultra-orthodox settlements. In addition, *Price* and *Vote_National* are positive and significant in column 4, indicating that affordability concerns and national-religious ideology also are associated with an elevated hazard of moving to a non-ideological settlement. Finally, the coefficient on the interaction *Price x Votes_National* is positive in columns 3 and 4 and significant at the 5%- and 1%-levels, respectively, implying that affordability concerns in origin location characterized by higher electoral support for national-religious parties encourage household moves to ultra-orthodox and non-ideological settlements in the West Bank. In contrast, coefficients on the interaction *Price x Votes_Ultra-Orthodox* are insignificant across all specifications (only marginally significant in column 1), implying that while households coming

from statistical areas with higher share of votes for ultra-orthodox parties are more likely to move to settlements of the West Bank, their move is less sensitive to economic motivations (the latter is consistent with results of the above macro model estimation).

We re-estimate the above variations of equation (5), replacing the affordability measure with the household's quality- and consumption-adjusted house price, $Price_{Adj}$ (rather than actual price) at the origin location. Column 1-4 in Table 7 contain results of this estimation. Evidence indicates that results are robust to this specification. Overall, consistent with above macro polytomous logistic model findings, results of household level hazard model estimation provide support for the role of both economic and ideological/religious factors in determination of moves to West Bank settlements. Further, those findings corroborate results of the aggregate analysis that ideology and religious belief disagreement serves to mediate common housing incentives in West Bank moves and in choice of West Bank settlement.

Simulation of the Hazard Model

Figure 13 provides results of simulation of the hazard model by household belief (national-religious, ultra-orthodox, and non-ideological). In that simulation, we compute all movers' projected probability of survival west of the Green Line (i.e., not moving to a settlement in the West Bank). The simulation is based on the estimation of equation (5), where projected survival probability of the national-religious group is computed by substituting *Vote_National* = 1 and *Vote_Ultra-Orthodox* = 0 for all sample observations (recall that the sample includes all movers—either east or west of the Green Line). Similarly, simulated projected survival probability of the ultra-orthodox religious (non-ideological) group is computed by replacing *Vote_National* = 0 and *Vote_Ultra-Orthodox* = 1 (*Vote_National* = 0 and *Vote_Ultra-Orthodox* = 0) for all sample observations. It follows from Figure 13 that households from origin statistical areas with 100 percent (0 percent) of the vote for national-religious (ultra-orthodox) parties exhibit a 20 percent probability of moving to settlements in the West Bank over the period 2000-2015. Equivalent rates for ultra-orthodox religious and non-ideological households are 2 percent and 1 percent, respectively. As 2018 Jewish population in Israel is estimated at about 6.67 million (CBS, 2019), of which 12 percent is national-religious (Miskar, 2009[31]), model simulations suggest that the number of national-religious persons moving to settlements in the West Bank over the coming 16 year period (assuming conditions as evidenced during the 2000-2015 period are roughly constant)

[31] https://www.miskar.co.il/he/articles/ (September 2019; in Hebrew).

is about 133,000 *ceteris paribus*. Similarly, as the ultra-orthodox religious population was estimated at 940,000 people in 2018 (about 14 percent of the Jewish population in Israel), our estimates show that about 38,000 ultra-orthodox religious persons will move to the West Bank within the next 16 years, *ceteris paribus*.[32] Finally, as 2018 number of secular Jews in Israel is estimated at about 3,025,000 (CBS, 2019), our projections indicate that about 30,000 non-ideological (non-ultra-orthodox and non-national-religious) persons will move to the West Bank over the next 16 years.

Figure 14 depicts the simulated projected survival rate (by 2015 – the last year of our sample) by population belief type and house prices in the origin location. We once again respectively substitute *Vote_National* = 1 and *Vote_Ultra-Orthodox* = 0, *Vote_National* = 0 and *Vote_Ultra-Orthodox* = 1, and *Vote_National* = 0 and *Vote_Ultra-Orthodox* = 0 to focus on alternative worldviews of different national-religious ideologues, ultra-orthodox religious, and other population groups. Here our focus is the household survival rate (east of the Green Line) in 2015 by varying house prices at the origin location. As above, results indicate that households with national-religious ideological worldviews are substantially more likely to move to West Bank settlements in the wake of simulated declines in origin locality housing affordability. Specifically, as shown in Figure 14, while about 18 percent of national-religious households are estimated to move to West Bank settlements by 2015 if origin zone house prices were 500,000 shekels (3.5 shekels ≈ 1 USD), a simulated rise in house price to 2M (4M) shekels would increase total moves among national-religious population to 26 (37) percent. Figure 14 further implies that West Bank moves among ultra-orthodox and other populations are more prevalent from origin statistical areas with lower house prices. Specifically, the likelihood of moving to the West Bank over the entire examined period among the ultra-orthodox (other) populations is equal to about 2 (1) percent from statistical areas whose house price is 500,000, while moves to the settlements largely vanish from areas with house prices in excess of 2,000,000 shekels.

6 CONCLUSION

[32] Importantly, it follows from Figure 13 that most of the ultra-orthodox population migration to settlements of the West Bank occurred post 2007-2008. This implies that our projected 2% probability of ultra-orthodox moving to the West Bank spans about 8 (rather 16) years – i.e., the second half of our period of analysis. This implies that, *ceteris paribus*, in the next 16 years, 4% of the 2018 ultra-orthodox population (about 38K people) will move to the West Bank within the next 16 years.

In this study, we assess the role of religious belief and national-ideological worldview in mediating the response to economic factors among Israeli migrants to West Bank settlements. We identify households that likely disagree on West Bank settlement imperatives using political party support as inferred from local statistical area national election results. We also use election data to characterize the ideological and religious worldview of West Bank settlements. Election data show that settlers are heterogeneous in beliefs: roughly one-half of West Bank movers can be described as secular and non-ideological. Further, results of border studies show that quality-adjusted house prices adjacent to but on the west side of the Green Line demarcation of the West Bank are about one-third more expensive than identical dwellings in neighboring settlements east of the Green Line.

Findings of aggregate polytomous logistic model estimation show that common economic and amenity factors, notably substantially improved housing opportunities, prompt West Bank moves among households of all beliefs. That said, findings further show salient divergence in household response to changes in economic factors among households with different ideological and religious beliefs. West Bank moves are elevated among households with deeply held national-religious ideology and ultra-orthodox religious beliefs and in their moves to settlements with similar religious and political worldview. Those same economic factors are mediated and substantially less salient among settler households lacking fundamental religious or ideological imperatives for West Bank settlement. Research findings are corroborated in estimation of micro-based proportional hazard models of Israeli household West Bank location choice.

Results have implications for policy and for political and economic futures of the West Bank. Ongoing settlement growth remains importantly dependent on favorable pecuniary economic returns to migration. Those moves could be damped or even reversed in the wake of changes in subsidy of household location choice, government land release for residential development, or investment in transportation infrastructure, particularly among Israeli localities west of the Green Line.

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Table 1: Selected Variables in the Household (Raw) Panel Data – Description and Summary Statistics

Variable	Description	Mean	SD	Min	Max
HH_size	Number of persons in the household	3.97	1.80	2.00	17.00
Age	Household-head age	47.76	14.32	18.00	113.00
Gender	Dummy variable for household-head gender (1 – female; 0 – male)	0.40	0.49	0.00	1.00
Immig_Yr	Household-head year of immigration	1,973	19	1,919	2,008
Yeshiva	Dummy variable for household-head who studied in a Yeshiva (place of Jewish religious learning) (1 – yes; 0 – no)	0.05	0.21	0.00	1.00
Inc_Emp	Household-head annual income as an employee (NIS)	99,172	110,576	0	1,163,540
Inc_Self	Household-head annual income as self-employed (NIS)	39,095	110,418	0	22,000,000
Inc_Emp2	Household-head's partner income as an employee (NIS)	95,540	120,573	0	1,163,540
Inc_Self2	Household-head partner income as self-employed (NIS)	39,044	117,959	0	21,200,000
Sqm	Household housing unit area (in sqm)	112	200	0	2640
Rooms	Household housing unit number of rooms	3.79	8.70	1	9
APT_Area_New	Household new housing unit area in sqm (if migrated)	135	1,099	0	18,500
APT_Rooms_New	Household new housing unit number of rooms (if migrated)	4.068403	7.680346	1	9
APT_Price_New	Household new housing unit estimated price (if migrated)	1,038,260	749,126	1	17,700,000

Notes: The household panel data is based on two population censuses (conducted in 1995 and 2008 by the Israel Central Bureau of Statistics), comprising about 380,000 households (about 20 percent of all households in Israel). With the assistance of ICBS, we compiled a panel of these households, wherein the socio-economic, demographic, and residential location characteristics of each households are sampled annually over the period 1998-2015. The table shows summary statistics of raw data before omission of erroneous and implausible figures.

Table 2: List of Selected Variables in the Housing Transaction Database (Israel Tax Authority), Description and Summary Statistics

Variable	Description	Avg.	Std.	Min	Max
Trans_P	Transaction closing price (in dollars)	216,469	130,185	17,106	1,800,000
Trans_Room	Total number of rooms	3.57	0.86	2	5
Trans_Age	The age of the structure (in years) at the time of the transaction	20.83	18.15	0	100
Trans_Story	The story on which the asset is located in the structure	2.83	3.01	0	40
Trans_DumNew	Dummy variable that equals 1 if *Age* is no more than 1 year; 0 otherwise	0.20	0.40	0	1

Notes: Raw data include more than 1 million observations over the period 1998-2015. Closing prices are originally expressed in new Israeli shekels (NIS); however, for ease of presentation, these were converted to US dollars using a 1:4 exchange rate (1$=4NIS).

Table 3: **List of Variables Included in the Polytomous Logistic Model Estimation, Definitions, and Summary Statistics**

Variable		**Mean**	**Std. Dev.**	**Min**	**Max**
Nijt	Number of households who moved from locality *i* to locality *j* at time *t*	0.33	1.59	0.00	98.00
N_it	Total number of households who moved from locality *i* at time *t*	94.73	118.76	6.00	682.00
Nijt_Nit	N*ijt*/N*it*	0.01	0.03	0.00	1.00
Dum_Settlement	Dummy variable equals 1 if the locality of destination is a non-national-religious and non-ultra-orthodox settlement	0.09	0.29	0.00	1.00
Dum_Ideological	Dummy variable equals 1 if the locality of destination is an ideological settlement	0.04	0.20	0.00	1.00
Dum_Ultra-Orthodox	Dummy variable equals 1 if the locality of destination is an ultra-orthodox religious settlement				
PriceRatio	The log of the ratio between average nominal quality adjusted prices in *j* and *i*	-0.02	0.38	-2.82	1.97
HPI	Current change in the national Housing Price Index	0.07	0.07	-0.05	0.19
Vote_National	Share of voters for national-religious parties in the city of origin	0.07	0.06	0.00	0.90
Vote_Ultra-Orthodox	Share of voters for ultra-orthodox religious parties in the city of origin	0.14	0.13	0.00	0.92
SESRatio	The log of the ratio between socio-economic index score in *j* and *i*	0.33	2.31	-8.00	8.00
PopulationRatio	The log of ratio between population size in *j* and *i*	-76.85	182.69	-849.4	849.4
Age30to44Ratio	The log of the ratio between the share of households whose head is 30-44 years-old in *j* and *i*	0.26	3.90	-22.84	22.84
TaxBenefitRatio	The log of the ratio between the maximal tax benefit in *j* and *i*	0.00	0.12	-0.57	0.57
DistanceTARatio	The log of the ratio between the distance to Tel Aviv in *j* and *i*	1.05	49.95	-279.3	279.3
Dum_Settlement X PriceRatio	Interaction between *Dum_Settlement* and *PriceRatio*	-0.02	0.15	-2.31	1.23
Dum_Ideological X PriceRatio	Interaction between *Dum_Ideological* and *PriceRatio*	-0.01	0.10	-2.27	0.92

Variable		Mean	Std. Dev.	Min	Max
Dum_Settlement X Vote_National	Interaction between *Dum_Settlement* and *Vote_National*	0.01	0.04	0.00	0.90
Dum_Settlement X Vote_Ultra-Orthodox	Interaction between *Dum_Settlement* and *Vote_Ultra-Orthodox*	0.02	0.07	0.00	0.92
Dum_Ideological X Vote_National	Interaction between *Dum_Ideological* and *Vote_National*	0.00	0.03	0.00	0.90
Dum_Ideological X Vote_Ultra-Orthodox	Interaction between *Dum_Ideological* and *Vote_Ultra-Orthodox*	0.01	0.05	0.00	0.92
HH_Age	Household head age in city of origin	53.95	5.03	32.16	66.79
HH_Income	Annual household income in city of origin (100k NIS)	2.54	0.77	0.49	6.42
HH_Children	Number of children in the city of origin	2.69	0.97	0.00	7.07

Notes: Table 3 provides a description and summary statistics of variables used in the aggregate locality-level estimation. Aggregate household data are formed based on the household panel data described in Table 1. Price data are based on computations of the Israel Tax Authority housing price data described in Table 2. Other data by locality are provided by the Israel Central Bureau of Statistics.

Table 4: **Average Socio-Economic and Demographic Characteristics by Location Type**

Characteristic	All Localities	Non-Settlement Localities	All Settlements	Non-Ideological Settlements	Ideological Settlements	Ultra-Orthodox Settlements
Natural growth (annual; per 1,000 habitants)	16.9 (7.67)	15.2 (5.94)	30.6 (6.75)	28.1 (7.39)	32.6 (4.04)	37.8 (7.77)
Share of immigrants (%)	6.4 (5.58)	6.1 (5.62)	8.3 (4.85)	7.6 (5.87)	9.1 (3.64)	10.0 (3)
Average number of pupils in class	24.6 (3.08)	24.9 (2.97)	22.0 (2.77)	22.1 (3.28)	22.1 (2.01)	21.2 (3.2)
Rate of matriculation entitlement (%)	54.6 (13.35)	54.4 (13.51)	56.6 (11.68)	56.3 (11.78)	58.3 (7.71)	45.7 (24.43)
Municipal expenditure on education (per capita; NIS)	2,534 (1185)	2,416 (1110)	3,521 (1325)	3,781 (1622)	3,240 (640)	2,599 (916)
Socio-economic status (scale of 1-lowest to 10-highest)	6.0 (2.21)	6.1 (2.21)	5.2 (2.03)	6.6 (1.43)	4.4 (1.53)	1.9 (0.35)
Average income (monthly; NIS)	6,945 (2095)	6,993 (2160)	6,538 (1362)	6,646 (1507)	6,552 (1137)	5,839 (1601)
Max tax benefit ("Mu'adafim")	4,279 (10,315)	4,531 (10,818)	2,174 (3,542)	2,064 (3,478)	2,446 (3,677)	2,270 (3,596)
Share of population 33-40 (%)	19.9 (2.83)	20.0 (2.78)	19.0 (3.12)	19.8 (3.52)	18.3 (2.2)	17.3 (2.17)
Population (thousands)	6.465 (32.18)	6.961 (33.97)	2.308 (4.56)	2.324 (5)	1.937 (1.63)	6.238 (11.15)
Housing unit completions (annual; units)	136.0 (174.34)	136.3 (173.48)	133.1 (181.4)	108.6 (157.6)	152.8 (194.46)	256.4 (230.7)
Housing unit starts (annual; units)	128.4 (172.45)	132.7 (178.31)	92.1 (103.9)	80.8 (100.48)	101.9 (104.04)	152.4 (117.63)
Density (population per square kilometer)	4,646 (3,689)	4,564 (3,617)	9,877 (4,386)	8,955 (3,315)	9,260 (2,876)	15,418 (7,161)
Municipal income per capita (annual; NIS)	9,146 (4,564)	8,673 (3,787)	13,113 (7,589)	15,171 (9,051)	10,761 (3,947)	8,184 (2,233)
Migration balance (annual; habitants)	211.2 (390.98)	192.8 (381.97)	366.1 (429.93)	298.9 (401.04)	431.3 (433.36)	590.0 (519.27)

Characteristic	All Localities	Non-Settlement Localities	All Settlements	Non-Ideological Settlements	Ideological Settlements	Ultra-Orthodox Settlements
Peripheral index (from 1-least central to 10-most central)	5.1 (1.58)	5.1 (1.65)	5.0 (0.84)	4.9 (0.88)	5.1 (0.77)	5.7 (0.45)
Distance to Green Line (for settlement only; kilometers)	11.4 (9.46)		11.4 (9.46)	12.7 (11.35)	10.7 (7.41)	8.7 (5.85)

Notes: Table 4 presents average and standard deviation (in parentheses) of locality characteristics for all localities and for West Bank settlements by settlement type. The Maximum Tax Benefit variable is the highest possible tax benefit provided by the government to households living in the respective area.

Table 5: **Outcomes from Estimation of Equation (4) Polytomous Logistic Model of Household Moves from Localities Within the Green Line**

	(1) **Without Interaction Terms**	(2) **With Simple Interaction Terms**	(3) **With Double Interaction Terms**
Constant	-6.83***	-6.58***	-6.57***
	(0.13)	(0.13)	(0.13)
PriceRatio	-2.49***	3.31***	3.34***
	(0.27)	(0.44)	(0.46)
Dum_Settlement	-0.58***	-0.84***	-0.86***
	(0.03)	(0.06)	(0.06)
Dum_Ideological	-0.53***	-0.80***	-0.74***
	(0.03)	(0.07)	(0.09)
Dum_Ultra-Orthodox	-0.40**	-1.30**	-1.32***
	(0.07)	(0.14)	(0.17)
Vote_National	1.99***	1.19***	1.18***
	(0.01)	(0.22)	(0.22)
Vote_Ultra-Orthodox	1.52***	1.22***	1.21***
	(0.08)	(0.09)	(0.09)
DistanceRatio	0.88***	0.89***	0.89***
	(0.00)	(0.01)	(0.01)
HPI	-1.00***	-1.15***	-1.15***
	(0.12)	(0.12)	(0.12)
SESRatio	0.04	0.07**	0.06*
	(0.03)	(0.03)	(0.03)
PopulationRatio	0.42***	0.43***	0.43***
	(0.00)	(0.01)	(0.01)
Age30to44Ratio	0.13***	0.01	0.02
	(0.04)	(0.04)	(0.04)
TaxBenefitRatio	0.01	0.00	0.00
	(0.00)	(0.00)	(0.00)
DistTARatio	-0.24***	-0.23***	-0.23***
	(0.01)	(0.01)	(0.01)
HH_Age	0.04***	0.03***	0.03***
	(0.00)	(0.00)	(0.00)
HH_Income	-0.19***	-0.17***	-0.17***
	(0.02)	(0.02)	(0.02)
HH_Children	-0.02	-0.04***	-0.04***
	(0.01)	(0.01)	(0.01)
PriceRatio X Dum_Settlement		0.67	-0.85
		(0.75)	(1.47)

	(1) **Without Interaction Terms**	(2) **With Simple Interaction Terms**	(3) **With Double Interaction Terms**
PriceRatio X Dum_Ideological		4.39*** (0.92)	5.87*** (1.86)
PriceRatio X Dum_Ultra-Orthodox		4.69*** (1.44)	3.97 (2.70)
PriceRatio X Vote_National		0.27 (4.48)	4.59 (4.78)
PriceRatio X Vote_Ultra-Orthodox		-37.04*** (1.52)	-39.03*** (1.62)
Dum_Settlement X Vote_Ultra-Orthodox		0.65*** (0.19)	0.68*** (0.19)
Dum_Ideological X Vote_Ultra-Orthodox		0.85*** (0.20)	1.38*** (0.28)
Dum_Ultra-Orthodox X Vote_Ultra-Orthodox		2.82*** (0.38)	3.62*** (0.52)
Dum_Settlement X Vote_National		2.51*** 0.65	2.70*** (0.67)
Dum_Ideological X Vote_National		2.90*** 0.70	0.75 (0.95)
Dum_Ultra-Orthodox X Vote_National		6.17*** 1.38	4.17* (1.77)
PriceRatio X Dum_Settlement X Vote_National			.36 (19.04)
PriceRatio X Dum_Ideological X Vote_National			-74.69*** (21.16)
PriceRatio X Dum_Ultra-Orthodox X Vote_National			-67.58* (33.66)
PriceRatio X Dum_Settlement X Vote_Ultra-Orthodox			7.73 (6.24)
PriceRatio X Dum_Ideological X Vote_Ultra-Orthodox			21.05** (7.08)
PriceRatio X Dum_Ultra-Orthodox X Vote_Ultra-Orthodox			25.00* (7.08)
Observations	97,797	97,797	97,797
R-squared	0.234	0.240	0.241

Notes: Table 5 presents the results of estimation of the polytomous logistic directional household migration model in equation (4). The model is estimated without interaction terms (column 1), with simple interaction terms (column 2), and with double-interactions (column 3). Standard errors in parentheses. One, two, and three asterisks denote significance at the 10%-, 5%-, and 1%-level, respectively.

Table 6: **Results Obtained from the Estimation of Equation (5) with the Variable *Price* as the Affordability Measure (*Afford*)**

h(*t*) equals 1 for moving to:	(1) **All settlement**	(2) **Ideological settlements**	(3) **Ultra-orthodox settlement**	(4) **Non-ideological settlement**
Price	.92***	.56***	.83***	.91***
	(.08)	(.16)	(.22)	(.10)
Vote_National	2.80***	4.49***	2.99***	1.38***
	(.17)	(.27)	(.60)	(.34)
Vote_Ultra-Orthodox	.85***	.50	1.52***	-.11
	(.13)	(.31)	(.29)	(.22)
Price X Votes_National	.75***	.58	1.51**	1.20***
	(.28)	(.46)	(.76)	(.41)
Price X Vote_Ultra-Orthodox	-.22*	.37	-.39	-.02
	(.12)	(.28)	(.28)	(.18)
DistToSettlement	-.01***	-.004	.008	-.026***
	(.002)	(.003)	(.005)	(.003)
Price X DistToSettlement	-.060***	-.040***	-.07***	-.06***
	(.004)	(.007)	(.009)	(.005)
Age_M (of householder head – male)	-.04***	-.05***	-.06***	-.02***
	(.005)	(.011)	(.012)	(.006)
Age_F (of householder head – female)	-.012***	-.02*	-.01	-.02***
	(.005)	(.012)	(.013)	(.007)
Years in Israel of householder head (male)	-.006***	-.009**	-.001	-.007***
	(.002)	(.004)	(.004)	(.002)
Years in Israel of householder head (female)	.009***	.008	.004	.010***
	(.002)	(.005)	(.005)	(.003)
Dummy for bachelor degree graduates	-.0127	.93***	-.81***	.126
	(.05417)	(.12579)	(.13469)	(.077)
Dummy for bachelor higher graduates	-.118*	.816***	-.79***	-.048
	(.066)	(.147)	(.20)	(.09)
Dummy for highschool graduates	-.188***	.079	-.522***	.097
	(.043)	(.117)	(.074)	(.062)
Income	-.026***	-.042***	-.104***	-.011***
	(.0017)	(.004)	(.007)	(.001)
Number of adults in the household	-.0108	-.093	.046	.017
	(.029)	(.081)	(.066)	(.036)
Dummy for 1 child	-.185***	-.371***	-.264**	-.039
	(.056)	(.132)	(.122)	(.073)
Dummy for 2 or 3 children	-.286***	-.258**	-.3826***	-.194***
	(.0517)	(.115)	(.109)	(.069)

	(1)	(2)	(3)	(4)
h(*t*) equals 1 for moving to:	**All settlement**	**Ideological settlements**	**Ultra-orthodox settlement**	**Non-ideological settlement**
Dummy for 4 children or more	-.434*** (.063)	-.116 (.135)	-.574*** (.120)	-.505*** (.098)
NR	-.307*** (.044)	-.087 (.089)	-.298*** (.099)	-.472*** (.062)
NR-NR$_{adj}$	.379*** (.044)	.225** (.089)	.462*** (.097)	.470*** (.061)
SES (origin)	-.101*** (.029)	-.076 (.067)	-.619*** (.076)	-.042 (.037)
Peripheral (origin)	.322*** (.029)	.107* (.058)	.407*** (.072)	.372*** (.040)
NR_diff_missing	.197* (.105)	-.526** (.221)	.633*** (.170)	.269 (.180)
SocecoSA_missing	.077** (.038)	.0205 (.086)	.56*** (.095)	.009 (.050)
Periph_missing	1.047*** (.164)	.243 (.311)	.609 (.459)	.937*** (.224)
Dummy for Vote_National _missing	-.956*** (.249)	.515 (.384)	-2.116** (1.062)	.115 (.395)
Dummy for Vote_ Ultra-Orthodox _missing	0 (0)	0 (0)	0 (0)	0 (0)
Dummy for Dist_To_Set_missing	2.049*** (.143)	1.319*** (.305)	3.420*** (.411)	-.807 (.530)
Dummy for Price_missing	.134 (.122)	.157 (.233)	-.577* (.349)	.674*** (.162)
Survey (either 1995 or 2008)	-.020*** (.003)	-.036*** (.008)	-.005 (.008)	-.016** (.008)
Number of observations	1,981,826	1,963,296	1,964,194	28,486
Number of subjects	170,722	167,872	168,000	3,835
Number of failures	3,598	755	882	757
Pseudo-R-squared	.0738	.095	.2197	.0653
Log likelihood	-38,368.3	-7,854.015	-7,930.077	-5,154.938

Notes: Table 6 presents the results from estimating the Cox proportional hazard model in equation (5) for the full sample of movers, where $h(t)$ is the hazard rate of migrating that equals 1 for: all West Bank settlements (column 1); ideological settlements (column 2); ultra-orthodox settlements (column 3); and non-ideological settlements (column 4). The variable *Afford* is measured by the estimated price of actual housing unit consumed at origin location, *Price*. Standard errors in parentheses. One, two, and three asterisks denote significance at the 10%-, 5%-, and 1%-level, respectively.

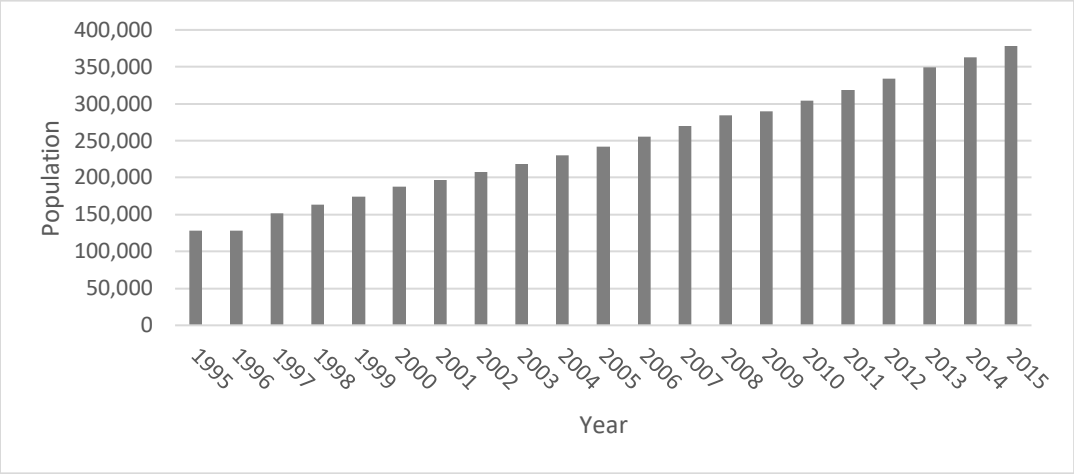
Table 7: Results Obtained from the Estimation of Equation (5) with the Variable *Price*$_{Adj}$ as the Affordability Measure

h(*t*) equals 1 for moving to:	(1) **All settlement**	(2) **Ideological settlements**	(3) **Ultra-orthodox settlement**	(4) **Non-ideological settlement**
Price$_{Adj}$	1.19*** (.09549)	.46** (.19817)	1.07*** (.25578)	1.22*** (.1278)
Vote_National	2.79*** (.18069)	4.59*** (.27804)	2.79*** (.60369)	1.17*** (.36447)
Vote_Ultra-Orthodox	.875*** (.14769)	.9417*** (.32689)	1.37*** (.29769)	-.158 (.24773)
DistToSetlementt	-.005** (.0023)	-.004 (.00357)	.008* (.00478)	-.0168*** (.00374)
Price$_{Adj}$ *X Dist_To_Set*	-.076*** (.00404)	-.046*** (.00788)	-.083*** (.00969)	-.079*** (.0057)
Price$_{Adj}$ *X Vote_National*	.860*** (.32074)	.619 (.54524)	1.78** (.9005)	1.68*** (.4837)
Price$_{Adj}$ *X Vote_Orthodox*	-.309** (.15399)	-.226 (.36526)	-.227 (.31239)	.011 (.24699)
Age of householder head (male)	-.039*** (.00522)	-.053*** (.01182)	-.065*** (.01205)	-.020*** (.00671)
Age of householder head (female)	-.017*** (.00571)	-.021 (.0128)	-.012 (.01322)	-.019*** (.00735)
Years in Israel of householder head (male)	-.006*** (.00185)	-.009** (.00441)	-.0018 (.00418)	-.007*** (.00234)
Years in Israel of householder head (female)	.0085*** (.00221)	.00792 (.00503)	.0034 (.00505)	.0099*** (.00282)
Dummy for bachelor degree graduates	-.011 (.05416)	.946*** (.12579)	-.817*** (.13479)	.125 (.07693)
Dummy for bachelor higher graduates	-.119* (.06639)	.833*** (.14762)	-.800*** (.19863)	-.052 (.08867)
Dummy for highschool graduates	-.183*** (.04307)	.086 (.11762)	-.518*** (.07484)	.099 (.06211)
Number of adults in the household	.001 (.02942)	-.076 (.08137)	.052 (.06666)	.028 (.03588)
Dummy for 1 child	-.180*** (.05652)	-.373*** (.13234)	-.258** (.12277)	-.035 (.07338)
Dummy for 2 or 3 children	-.272*** (.05175)	-.248** (.11564)	-.368*** (.10982)	-.180*** (.06989)
Dummy for 4 children or more	-.407*** (.06401)	-.096 (.13606)	-.536*** (.12035)	-.497*** (.09864)
NR	-.338*** (.04532)	-.096 (.09025)	-.314*** (.09681)	-.506*** (.06393)
NR-NR$_{adj}$	.439*** (.044)	.257*** (.090)	.463*** (.097)	.571*** (.063)
SES (origin)	-.113*** (.029)	-.069 (.067)	-.620*** (.075)	-.048 (.037)

h(*t*) equals 1 for moving to:	(1) **All settlement**	(2) **Ideological settlements**	(3) **Ultra-orthodox settlement**	(4) **Non-ideological settlement**
Peripheral (origin)	.331*** (.030)	.162*** (.058)	.386*** (.069)	.380*** (.041)
NR_diff_missing	.262** (.123)	-.417* (.228)	1.210*** (.368)	.208 (.201)
Dummy for SocecoSA_missing	.074* (.038)	.045 (.086)	.549*** (.094)	.007 (.050)
Dummy for Periph_missing	1.167*** (.170)	.601* (.338)	.494 (.420)	1.185*** (.248)
Dummy for Vote_National _missing	-.816*** (.253)	.722* (.386)	-2.099** (1.062)	.130 (.388)
Dummy for Vote_Ultra-Orthodox_missing	0 (0)	0 (0)	0 (0)	0 (0)
Dummy for Dist_To_Set_missing	1.978*** (.150)	1.230*** (.315)	3.473*** (.37)	-.771 (.523)
Dummy for Price$_{Adj}$ _missing	.0121 (.136)	-.271 (.27)	-.605 (.386)	.432** (.210)
Survey (either 1995 or 2008)	-.02141*** (.003)	-.03777*** (.008)	-.00518 (.008)	-.01695** (.008)
Sample	All households who moved	All households who moved	All households who moved	Households who moved to settlements
Number of observations	1,981,826	1,963,296	1,964,194	28,486
Number of subjects	170,722	167,872	168,000	3,835
Number of failures	3,598	755	882	757
Pseudo-R-squared	.074918	.0952458	.2206145	.065155
Log likelihood	-38324.65	-7856.821	-7920.931	-5155.902

Notes: Standard errors in parentheses. One, two, and three asterisks denote significance at the 10%-, 5%-, and 1%-level, respectively.

Figure 1: Jewish Population East of the Green Line, 1995-2015

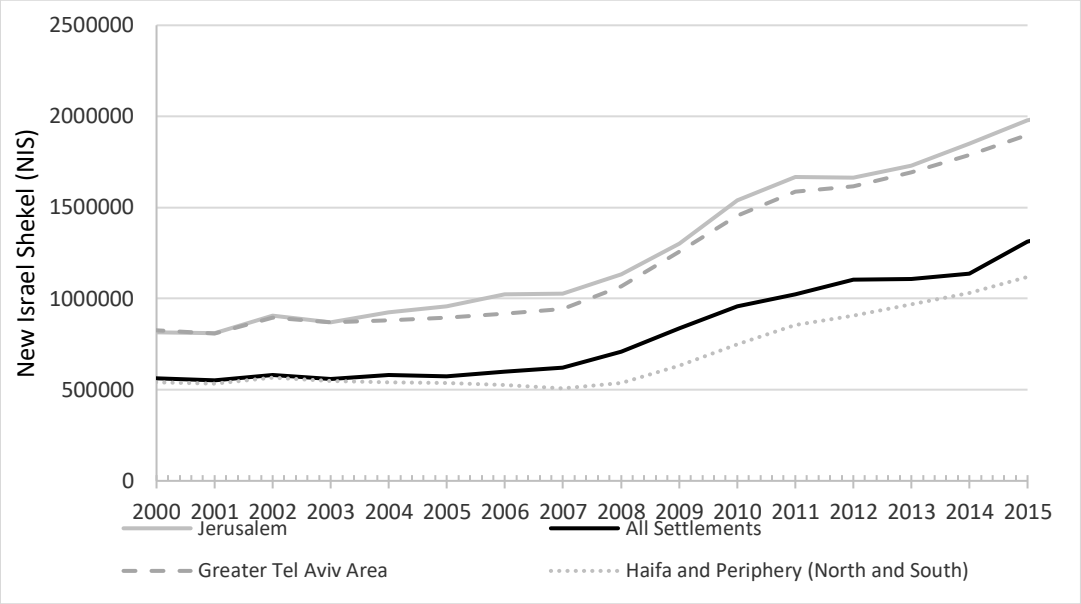


Source: Israel Central Bureau of Statistics.

Figure 2: Jewish Settlements in the West Bank by Type (4A) and Year of Establishment (4B), 1967-2015

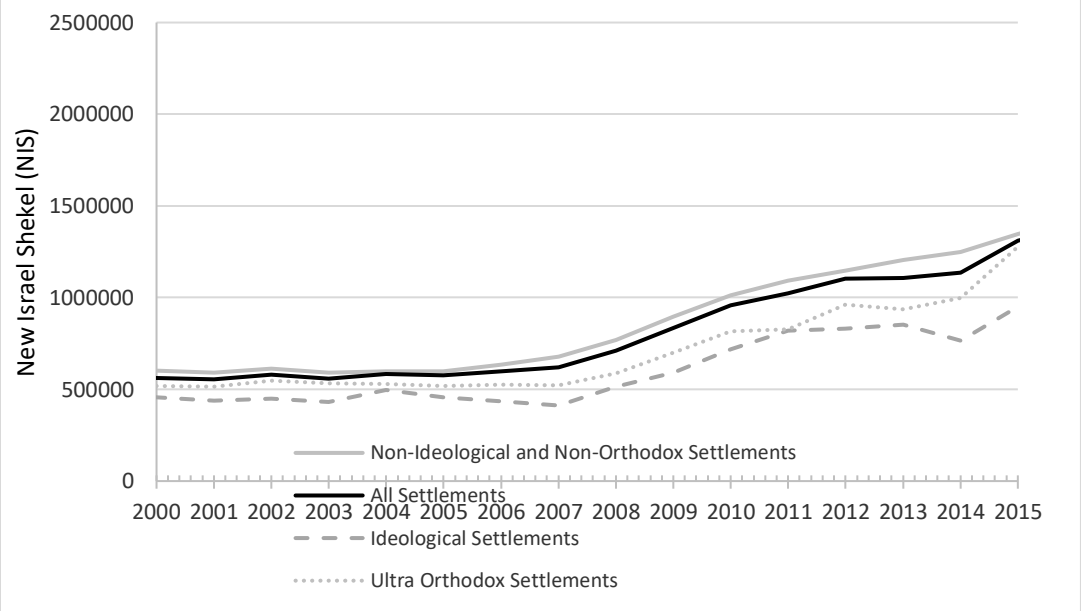
Notes: Israel Central Bureau of Statistics. Panel (A) shows Israeli West Bank settlements stratified by type: each hollow triangle represents a non-ideological settlement, each hollow circle represents an ultra-orthodox settlement, and each black triangle an ideological settlement. Panel B shows West Bank settlements stratified by year of establishment: settlements that were established prior to 1977 are represented by a triangle; settlements that were established between 1978-1985 are represented by a square and settlements that were established between 1978-1985 are represented by a circle. For ease of orientation, four major Israeli cities are added to the maps. These include Jerusalem (Mid-East) Tel Aviv (Mid-West) Haifa (North) and Be`er Sheva (South).

Figure 3A: Israel Quality-Adjusted Average House Price by Region, 2000-2015



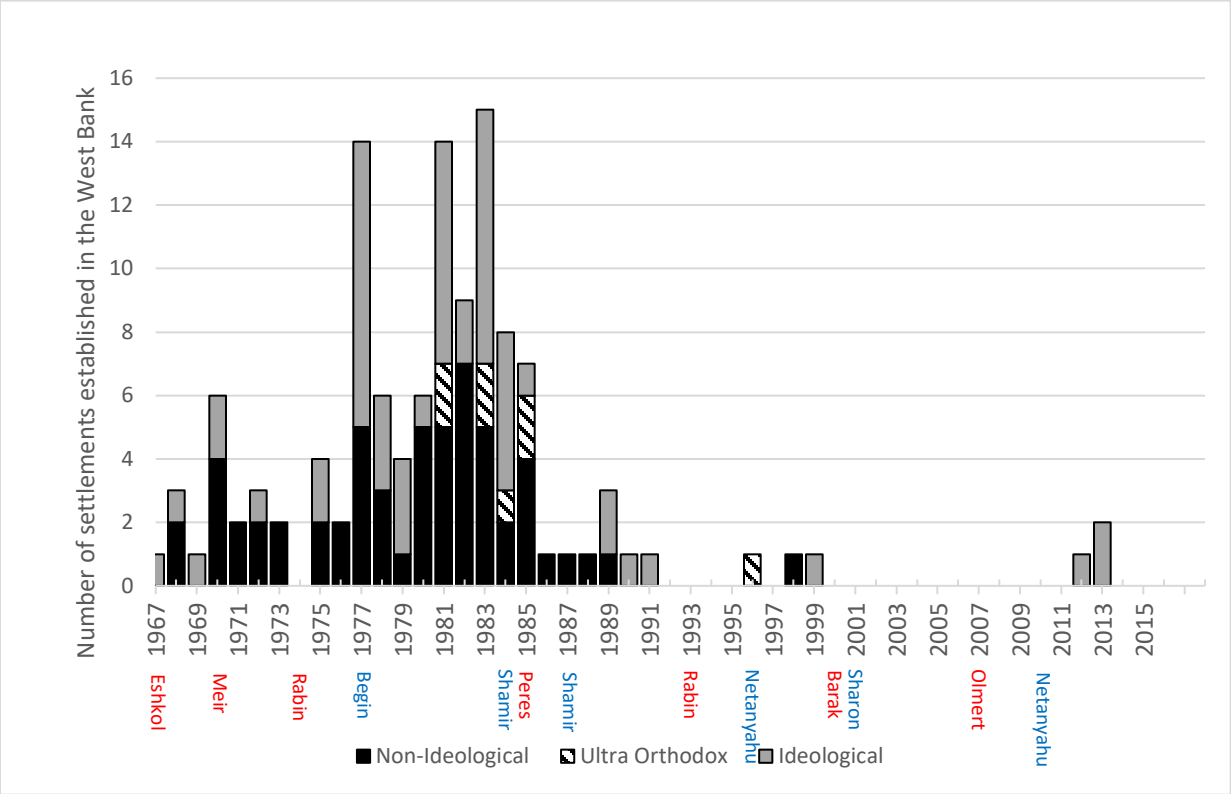
Source: Authors' computation based on data from the Israel Tax Authority

Figure 3B: **Quality-Adjusted Average Housing Prices in the West Bank by Settlement Type, 2000-2015**



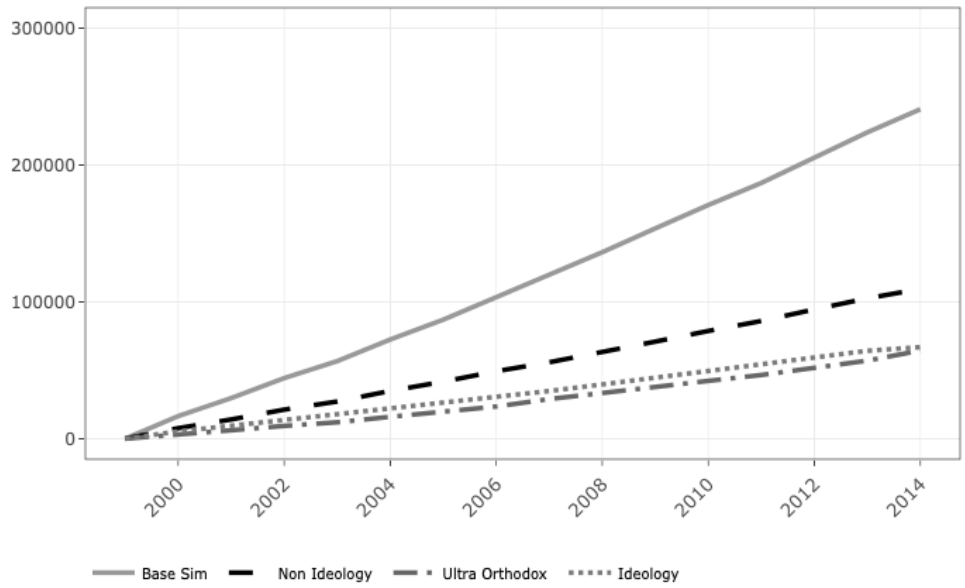
Source: Authors' computation based on data from the Israel Tax Authority

Figure 4: Establishment of Israeli Settlements in the West Bank by Government Ideology, Center-Left (Red) and Center-Right (Blue), 1967-2015



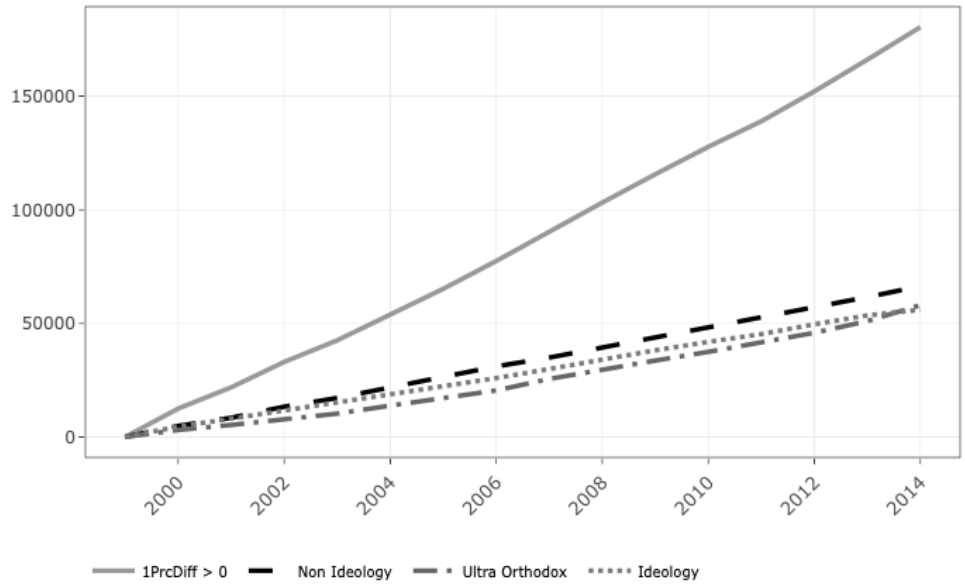
Notes: Source: Israel Central Bureau of Statistics. Below the graph are the names of the Prime Minister in the relevant year. Prime Ministers who enter office in July or later are recorded in the following year to their election. Left-center parties governed Israel from its establishment in 1948 until 1977. In 1977, the right-center party Likud won the election for the first time. Right- (left-) center prime minister in office is marked in blue (red).

Figure 5: Population Moves to Settlements of the West Bank by Settlement Type, 2000-2014



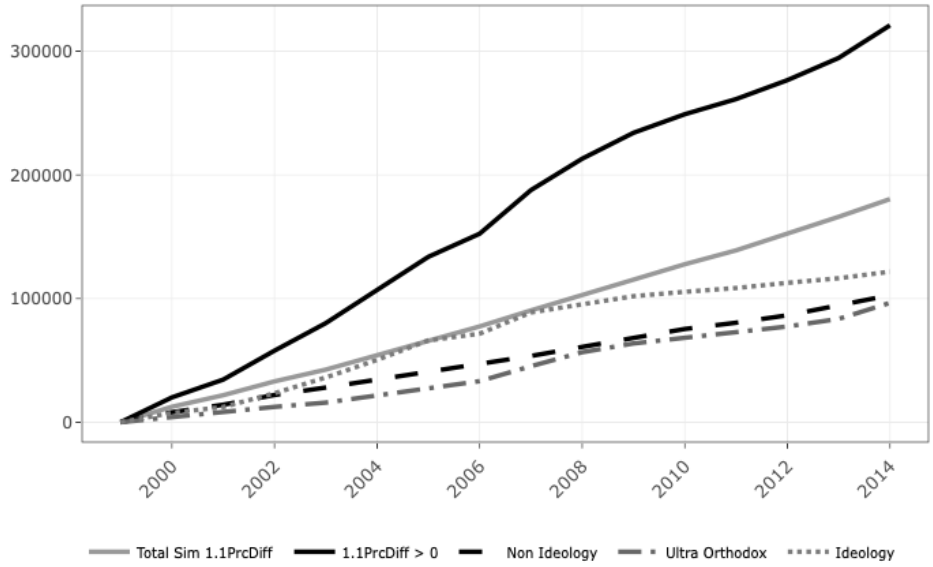
Notes**:** Figure 5 presents population moves to settlements in the West Bank—overall (denoted by "Base Sim") and by settlement type based on estimation of our model—over that period. By 2014, total population moves to the West Bank totals about 241,000 including 109,500, 67,000, and 64,500 persons to non-ideological non-ultra-orthodox, national-religious (ideological), and ultra-orthodox religious (Haredi) settlements.

Figure 6: Population Moves to Settlements of the West Bank for which *PriceRatio*<0, by Settlement Type, 2000-2014



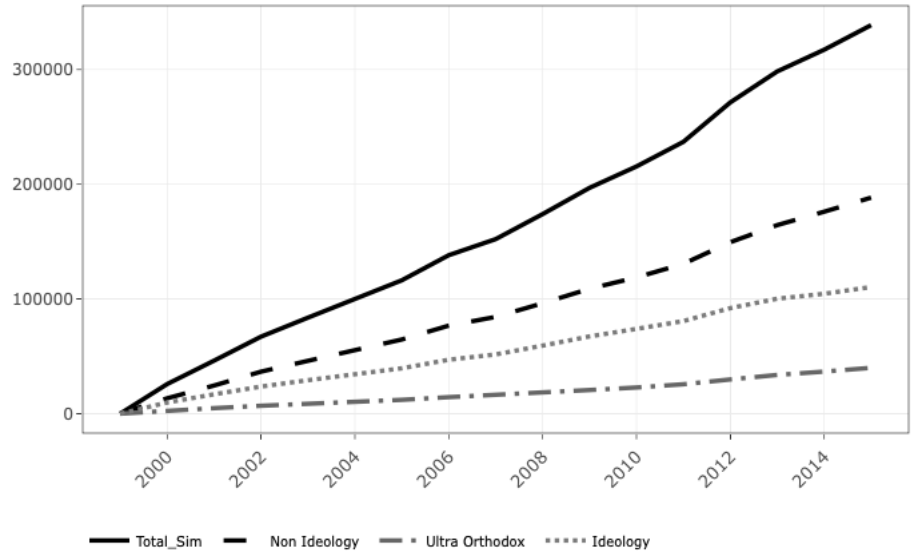
Notes: Figure 6 shows population moves to West Bank settlements for which *PriceRatio*<0—overall (denoted by "1PrcDiff>0") and by settlement type—over the period 2000-2014. By 2014, total population moves to settlements for which *PriceRatio*<0 totals about 180,500 of which 61 percent, 84 percent, and 90 percent of moves are to non-ideological, ideological, and ultra-orthodox settlements, respectively.

Figure 7: Projected Population Moves to Settlements in the West Bank when dividing the Price Ratio Between *j* and *i* by 1.1 for Settlements for which *PriceRatio*<0, by Settlement Type, 2000-2014



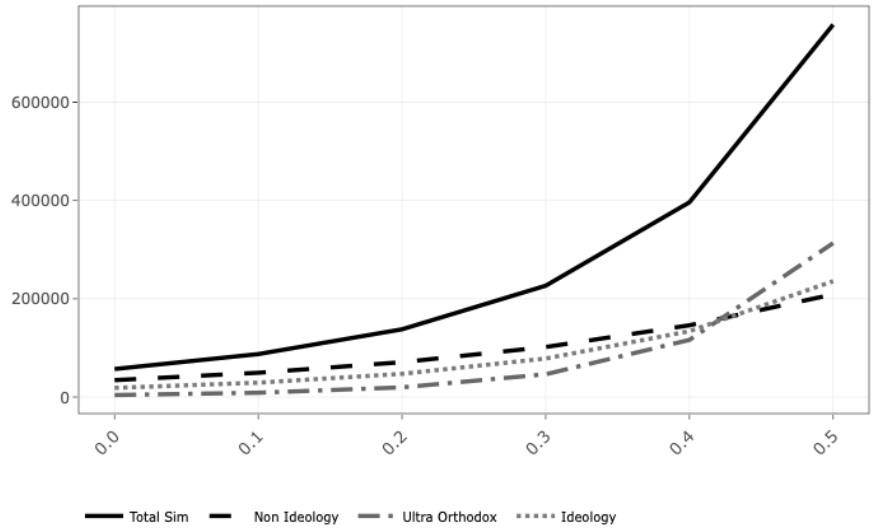
Notes: Figure 7 presents projected population moves to settlements of the West Bank for which *PriceRatio*<0 when we divide the ratio between the housing prices in *j* and *i* by 1.1. The graph shows that a 10 percent increase in the quality-adjusted price of origin location *i* is associated with an increase in the total number of moves to those settlements for which *PriceRatio*<0 from about 180,500 to about 321,000. By settlement type, this change in price differentials between origin and destination locations is associated with about 54 percent, 117 percent, and 66 percent increase in population moves to non-ideological, national-religious, and ultra-orthodox settlements, respectively.

Figure 8: Projected Population Moves to Settlements of the West Bank Had They Been Located West of the Green Line



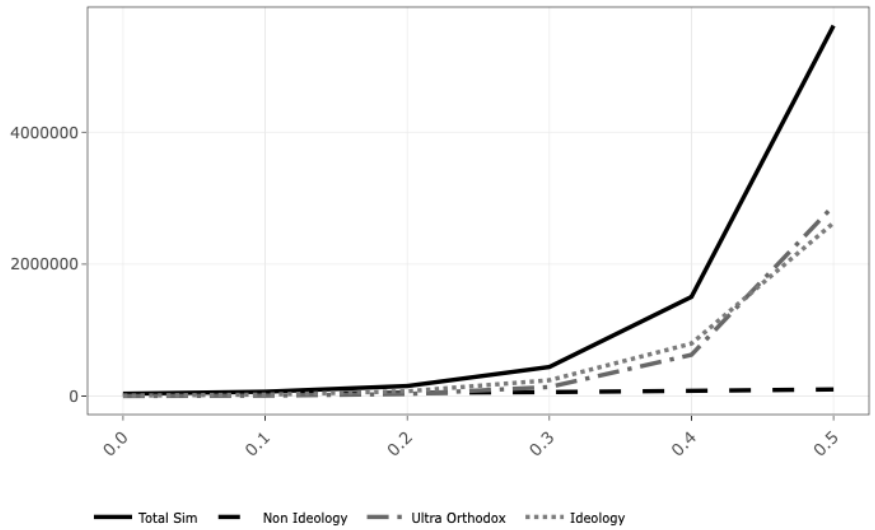
Notes: Figure 8 presents simulated population moves to settlements in the case that the latter communities were hypothetically located west of the Green Line (i.e., placing a 0 value on the categorical variables for *Dum_Settlement*, *Dum_Ideological*, and *Dum_Ultra-Orthodox*). Graphs show that population moves to the settlements would have increased from about 241,000 to about 341,500.

Figure 9: Projected Accumulated Population Moves to Settlements in the West Bank by 2014 for which *PriceRatio*<0, Simulated for Varying Levels of the Share of Votes in Origin Location to National-Religious Political Parties (*Vote_National*); Holding *Vote_Ultra-Orthodox*=0



Notes: Figure 9 presents the simulated projected accumulated population moves to settlements in the West Bank (total and by settlement type) by 2014 for which *PriceRatio*<0 in the cases where *Vote_National* =[0, 0.5] and *Vote_Ultra-Orthodox*=0. Upward adjustment of *Vote_National* from 0.0 to 0.5 results in an approximate eightfold increase in movers to West Bank settlements.

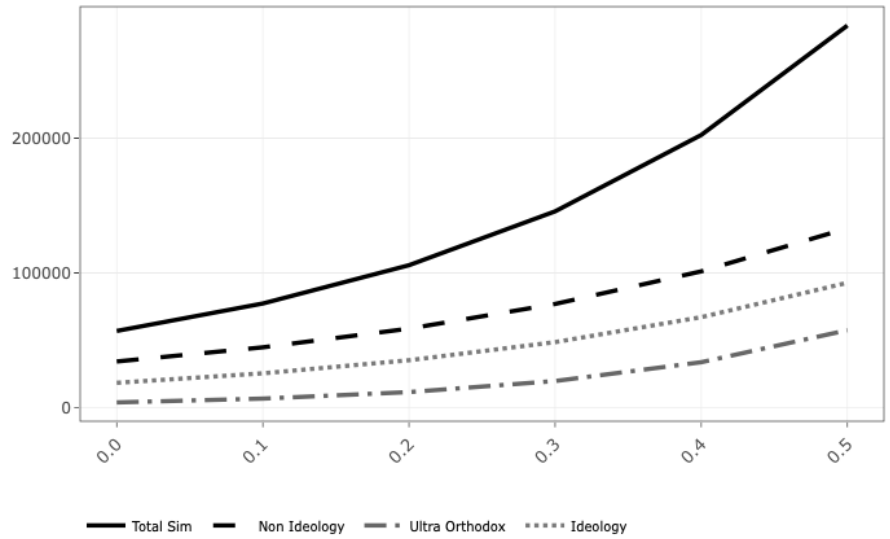
Figure 10: Projected Accumulated Population Moves to Settlements in the West Bank by 2014 for which *PriceRatio*<0, Simulated for Varying Levels of the Share of Votes in Origin Location to National-Religious Political Parties (*Vote_National*); Holding *Vote_Ultra-Orthodox*=0 and Increasing the Price in Origin Location by 10%



Notes: Figure 10 presents the simulated projected accumulated population moves to settlements in the West Bank (total and by settlement type) by 2014 for which *PriceRatio*<0 in the cases where *Vote_National* =[0, 0.5]; *Vote_Ultra-Orthodox*=0; and quality-adjusted price in origin location *i* is increased by 10%. A 10% increase in quality-adjusted price in origin location *i* when *Vote_National*=0.3 (*Vote_National*=0.5) is associated with an increase in simulated

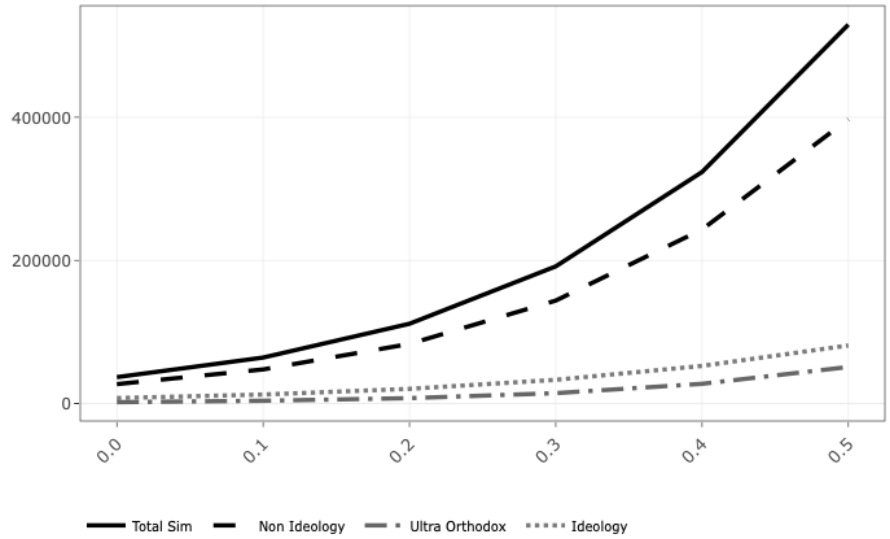
accumulated moves to West Bank settlements from about 227,000 (758,000) to about 443,000 (5.6 million), where about 241,000 (2.6 million) of which goes to national-religious ideological settlements.

Figure 11: Projected Accumulated Population Moves to Settlements in the West Bank by 2014 for which *PriceRatio*<0, Simulated for Varying Levels of the Share of Votes in Origin Location to Ultra-Orthodox Political Parties (*Vote_Ultra-Orthodox*), Holding *Vote_National*=0



Notes: Figures 11 presents simulated projected accumulated population moves to settlements in the West Bank by 2014 for the sample for which *PriceRatio*<0, substituting all observations with *Vote_Ultra-Orthodox* = [0, 0.5] and *Vote_National* = 0.

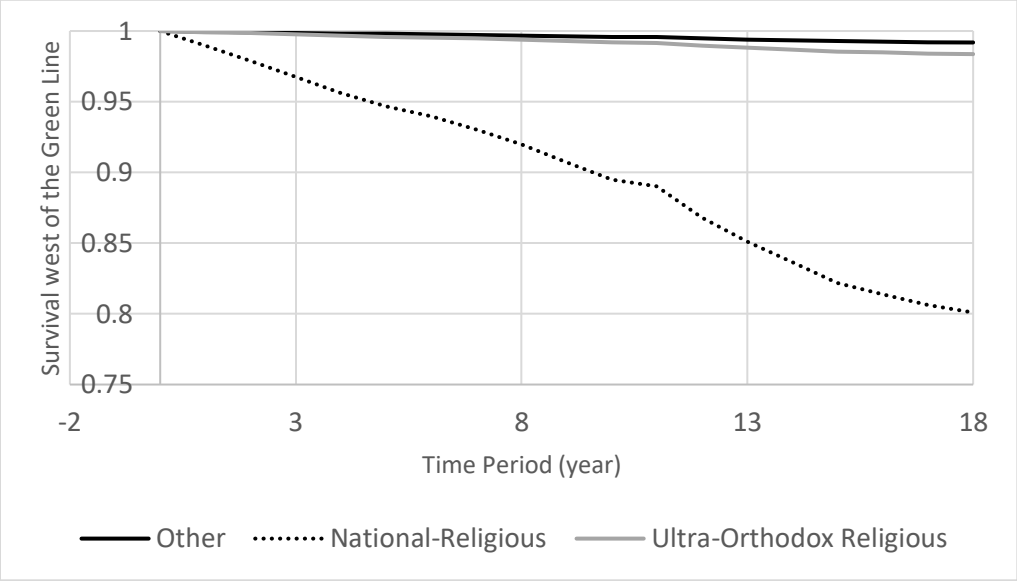
Figure 12: Projected Accumulated Population Moves to Settlements in the West Bank by 2014 for which *PriceRatio*<0, Simulated for Varying Levels of the Share of Votes in Origin Location to Ultra-Orthodox Political Parties (*Vote_Ultra-Orthodox*), Holding *Vote_National*=0 and Increasing the Price in Origin Location by 10%



Notes: Figure 12 presents simulated projected accumulated population moves to settlements in the West Bank by 2014 for the sample for which *PriceRatio*<0, substituting all observations with *Vote_Ultra-Orthodox* = [0, 0.5]; *Vote_National* = 0; and quality-adjusted price in origin location *i* is increased by 10%. A 10% increase in quality-adjusted price in origin location *i* when *Vote_Ultra-Orthodox* = 0.3 (*Vote_National*=0.5) is associated with increased

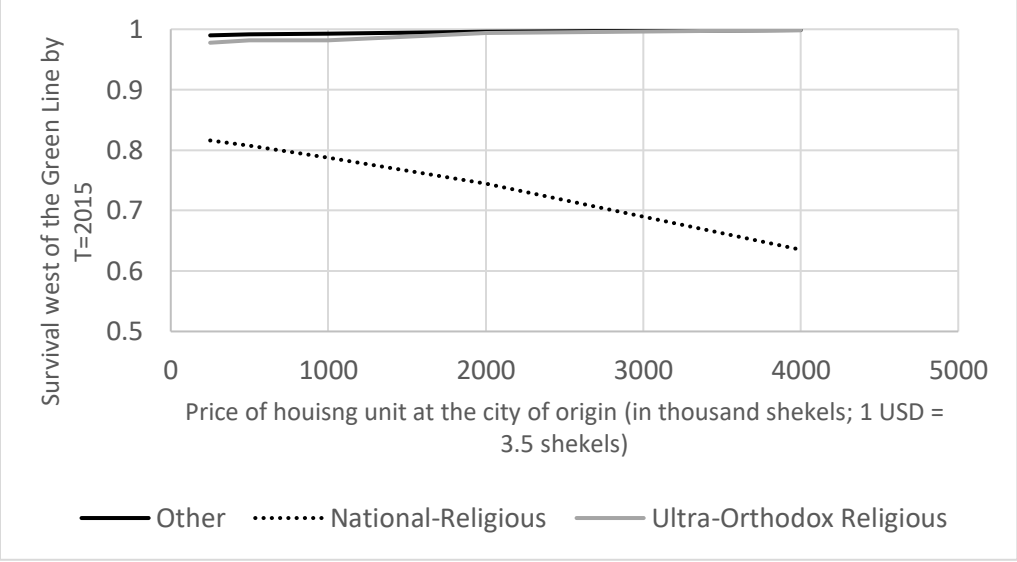
simulated accumulated moves to West Bank settlements from about 146,000 (284,000) to about 192,000 (529,000), about 15,000 (51,000) of which to ultra-orthodox settlements.

Figure 13: All Movers' Survival Probability West of the Green Line by Population Type, 2000-2015



Notes: Figure 13 presents results of simulation of the hazard model by household belief: for national-religious (i.e., substituting *Vote_National* = 1 and *Vote_Ultra-Orthodox* = 0 for all sample observations); ultra-orthodox (i.e., replacing *Vote_National* = 0 and *Vote_Ultra-Orthodox* = 1 for all sample observations); and non-ideological (i.e., *Vote_National* = 0 and *Vote_Ultra-Orthodox* = 0 for all sample observations).

Figure 14: Survival West of the Green Line by 2015 as a Function of Housing Prices by Population Type



Notes: Figure 14 depicts the simulated projected survival rate by 2015 by population belief type and as a function of housing prices in the origin location. We substitute *Vote_National* = 1 and *Vote_Ultra-Orthodox* = 0, *Vote_National* = 0 and *Vote_Ultra-Orthodox* = 1, and *Vote_National* = 0 and *Vote_Ultra-Orthodox* = 0 to focus on national-religious, ultra-orthodox, and other non-ideological-non-ultra-orthodox population groups, respectively. Households with national-religious ideological worldviews are substantially more likely to move to West Bank settlements in the wake of simulated declines in origin locality housing affordability.

Appendix

Derivation of Price and *Price*$_{Adj}$ (see further details in Ben-Shahar, Gabriel, and Golan, forthcoming a):

We stratify the sample of households from the Israel Income and Expenditure Surveys (Israel Central Bureau of Statistics) over the period 2000–2015 by year and by demographic and locational characteristics. Specifically, we generate mutually exclusive clusters of households, each denoted by *A, C, L,* and *Y* (henceforth *ACLY*), where *A* is the number of adults in a household, *A*=(1,2,…,5 and over); *C* is the number of children in a household, *C*=(1,2,…,8 and over); *L* is the score on the periphery index (indicating distance from Tel Aviv, Israel's single super-star city) of the city in which the household resides, *L*=(1,2,…,5, where 1 is the most peripheral and 5 is the least peripheral); and *Y* is the year in which the household is observed, *Y*=(2000,2001,…,2015). The Income and Expenditure Surveys specify the size of unit consumed by each household in total number of rooms.[33] For each cluster *ACLY*, we thus compute

(A1)

$$NR_{i\in ACLY}^{Adj} = \sum_i NR_{i\in ACLY}/N_{ACLY} \ ,$$

where $NR_{i\in ACLY}$ denotes the total number of rooms consumed by household *i* in cluster *ACLY*, and N_{ACLY} denotes the total number of households in that cluster. Hence, $NR_{i\in ACLY}^{Adj}$ is the average number of rooms consumed across all households in cluster *ACLY*. We refer to $NR_{i\in ACLY}^{Ajd}$ as the (endogenously derived) consumption-adjusted (CA) housing bundle of households in *ACLY*.[34]

Importantly, note that by grouping households by *ACLY* and accordingly deriving $NR_{i\in ACLY}^{Adj}$, we essentially eliminate the inherent positive correlation between *i*'s income and

[33] In Israel, the primary popular metric of housing consumption is total number of rooms in the dwelling unit. Unit size in square feet is not provided in the Income and Expenditure Surveys. However, data from the Israel Tax Authority on the universe of all housing transactions in Israel allow estimation of the Pearson correlation coefficient between unit size and number of rooms. The estimated coefficient is 0.84. This result supports the use of number of rooms as a proxy for housing consumption.

[34] In an attempt to produce a consumption-adjusted housing affordability measure along the lines of our suggested procedure, one could have alternatively proposed an estimation equation of the type $NR_{it} = \beta_1 + \beta_2 \times A_{it} + \beta_3 \times C_{it} + \beta_4 \times L_{it} + \varepsilon_{it}$, where *i* and *t* refer to households and time periods (years), respectively; $\beta_1 - \beta_4$ are estimated parameters; ε is a disturbance term; and all other variables are as described above. Note, however, that this equation potentially suffers from endogeneity, as the causality between a household's choice of *C* and *L* and the choice of *NR* may be bi-directional. Our clustering procedure thus avoids this potential endogeneity problem in the regression estimation.

housing consumption. Specifically, we endogenously derive current housing consumption that is typical of households of identical demographic structure (number of adults and number of children) and location (represented by the periphery index)—thus eliminating the idiosyncratic element of individual housing consumption that serves to bias the assessment of the individual housing affordability as measured by the traditional price-to-income approach.

We then employ all housing transactions in Israel for the period 2000–2015 (Israel Tax Authority dataset) to estimate a hedonic price equation of the form

(A2)

$$\ln(P_{jl}) = \gamma_{1l} + \gamma_{2l} NR_{jl} + \vec{\gamma}_{3l} CHARACTERISTICS_{jl} + \vec{\gamma}_{4l} TFE_{jl} + \varepsilon_{1jl} \text{ for all } l$$

where the indices j and l represent transactions and cities, respectively; P denotes the housing transaction price; *NR* is the number of rooms in the unit; and *CHARACTERISTICS* is a vector of other housing unit characteristics, including, *Age*, the age of the structure in which the unit is located; *Floor*, the floor on which the unit is located in the building; and *DumNew*, a dummy variable that equals one for units whose age is up to 1 year and zero otherwise.[35] Also, *TFE* is a vector of time (year) fixed-effects; ln(·) is the log operator; γ_1 and γ_2 ($\vec{\gamma}_3$ and $\vec{\gamma}_4$) are estimated parameters (vectors of parameters); and ε_1 is a random disturbance term. Equation (2) is separately estimated for every city l (altogether 52 equations—one for each city).

Following the estimation of equation (A2), we compute

(A3)

$$\hat{P}_i^{Adj} = EXP\left[\hat{\gamma}_{1l} + \hat{\gamma}_{2l} NR_{i\in ACLY}^{Adj} + \hat{\vec{\gamma}}_{3l} \overline{CHARACTERISTICS}_{il} + \hat{\vec{\gamma}}_{4l} TFE_{i\in ACLY} + \hat{\sigma}_l^2/2\right] \text{ for all } i \text{ and } l,$$

where the indices i and l represent households and cities, respectively; $NR_{i\in ACLY}^{Adj}$ on the right-hand side of (A3) is the adjusted total room consumption of household i, $i \in ACLY$ (from equation [A1]); $\overline{CHARACTERISTICS}$ is a vector of other housing unit characteristics (including *Age* and

[35] We use both *Age* and *DumNew* in the price equation in (2) as the structure age effect on price is roughly linear with the exception of those structures whose age is up to 1 year.

Floor) at their sample average across all assets in city *l* (where *i* is located);[36] $\hat{\sigma}_l^2$ is estimated variance of ε_{1jl} from (A2); and $\hat{\gamma}_1$and $\hat{\gamma}_2$ ($\hat{\bar{\gamma}}_3$ and $\hat{\bar{\gamma}}_4$) are the estimated coefficients (vectors of coefficients) from equation (A2). That is, based on the estimated coefficients from equation (A2) and a household's adjusted room consumption in the respective cluster, in equation (A3) we compute for each household *i* in every *ACLY* (from steps one and two above) a hedonic price, $\hat{P}_{i\in ACLY}^{Adj}$, that corresponds to its consumption-adjusted housing bundle, $NR_{i\in ACLY}^{Adj}$.

In addition to the consumption-adjusted housing affordability measure, our dataset allows estimation of the projected transaction price as follows:

(A4)

$\hat{P}_i = EXP\left[\hat{\gamma}_{1l} + \hat{\gamma}_{2l} NR_{i\in ACLY} + \hat{\bar{\gamma}}_{3l}\overline{CHARACTERISTICS}_{il} + \hat{\bar{\gamma}}_{4l} TFE_{i\in ACLY} + \hat{\sigma}^2/2\right]$ for all *i* and *l*,

where $NR_{i\in ACLY}$ on the right-hand side of (A4) is the *actual* number of rooms consumed by household *i* in cluster *ACLY* and $\hat{P}_i$ is the price of *i*'s actual housing consumption.

[36] We use $\overline{CHARACTERISTICS}$ on the right-hand side of (A3) [(A4) below] rather than average characteristics for the respective *ACLY* cluster (actual household's asset characteristics) as, of all household characteristics, the Household Income and Expenditure dataset only provides the number of rooms consumed by each household. Also, while *DumNew* in (A2) refines the estimation of the correlation between the structure's age and the housing unit price, it does not appear in (A3) because the average structure's age across all assets in city *l* is greater than one year for all *l* (thus *DumNew*=0).