

INTERMEDIARIES, ILLICIT MARKETS AND MARKET POWER: EVIDENCE FROM STRICT BORDER ENFORCEMENT

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Abstract

The legal requirement for migrants to obtain work permits constitutes a major source of frictions in international labor markets. In the wake of stringent border enforcement, more workers require valid permits, which favors the rise of intermediaries. Heightened security may also increase the intensity of search and information frictions, reduce labor mobility and thereby, increase employer monopsony power. This paper quantifies the causal impact of increased border enforcement on the redistribution of the migrant wage bill. We find that strict border regulations reduced undocumented employment but transferred 15% of worker (migrant) surplus to intermediaries and employers (natives).

JEL: D4; D60; H82; J08; J46; J61; K42; L11; L40; O17

Keywords: intermediaries; market power; illicit markets; border enforcement; work permits; labor mobility; migrant wage bill; undocumented workers; informality; monopsony; monopoly; price discrimination

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1 Introduction

A major source of friction in migrant labor markets is that workers need to acquire work permits to enter legal employment (Lokshin and Ravallion 2022; Naidu, Nyarko, and Wang 2016). Intermediaries frequently exploit this opportunity and illicitly trade government-issued documents required for employment (Adnan and Etkes 2019; International Labour Organization 2021; Migration Data Portal 2021–2023)¹. Depending on the supply and demand in a given market, migrant workers pay intermediaries a substantial share of their salaries to secure valid work permits. In fact, Figure I.(A) shows that along a number of origin-destination corridors, migrants pay the equivalent of at least one month’s salary in the destination country. Anecdotal evidence suggests that intermediaries use a number of tactics to extract greater rents: limiting sales, (varying prices) price discrimination and colluding with employers. Yet, there is little hard evidence on workers’ outcomes such as actual illicit payments, take-home pay and well-being.

[Insert Figure I (A) here]

There is even less evidence on how policy instruments that aim to formalize migrant labor markets can affect migrants’ outcomes. For example, security-motivated border enforcement is usually implemented to ensure that migrants are documented, which one might expect to lead to higher wages and greater well-being (Hotchkiss and Quispe-Agnoli 2009). However, heightened security may also increase search and information frictions, reduce mobility and thereby, increase employer monoposony power. Moreover, since more workers require permits, border enforcement favors the rise of intermediaries, who may demand higher payments and experience greater market power. Thus, the question of whether policies that aim to formalize migrant labor markets, have a positive effect on workers’ outcomes, is an empirical question.

This paper exploits a rare opportunity to study how policies that encourage labor market formalization redistribute the migrant wage bill between employers, intermediaries and workers. We study male Palestinian cross-border migrants who live in the West Bank and commute to Israel proper on a daily basis for work during a period of relative calm, 2018-2019. Approximately 100,000 workers—about 20% of all working men in the West Bank—earn wages in Israel. Israeli employers hire Palestinians to work in unskilled and semi-skilled occupations in construction, agriculture and manufacturing. To legally enter into Israel proper, workers need a work permit, which requires sponsorship by an Israeli employer. Palestinians spend several hours a day queuing at checkpoints and the main gates to enter Israel and to return to the West Bank, especially during times of conflict (Calı` and Miaari 2018). Nevertheless, there is a ready supply of migrant workers from the West Bank due to the large, albeit volatile, Israeli wage premium that has been well-documented since the 1980’s (Adnan 2015; Joshua David Angrist 1992; Joshua D Angrist 1996;

¹In a general sense, labor market intermediaries reduce search frictions and facilitate employer-employee matches by providing costly information, mitigating adverse selection and addressing coordination failures (Autor 2001, 2009). In most migrant labor market settings, the main role of an intermediary is to provide the worker with a valid work permit in return for a payment.

Miaari and Sauer 2011).

Officially, only Israeli employers who are allocated work permits in accordance with a government-set quota can hire Palestinian workers from the West Bank. However, in many instances, these employers have more permits than they require for the workers they formally employ. Consequently, such employers illicitly sell their spare permits, usually via Palestinian-Israeli intermediaries, also known in the region as permit brokers (or "samaasra"). Israeli employers, who are not issued (enough) permits according to the national quota, can either hire workers without a permit (i.e. undocumented workers) or hire workers who have purchased one. Likewise, workers can either acquire a valid work permit from an employer, illicitly purchase a work permit from a broker, or work without a work permit. Workers without a work permit typically cross into Israel proper through [breaches in the Israel's security fence](#) or other covert means. Working without a permit and purchasing permits are both illegal. However, the risks and sanctions faced are greater for workers (and potentially their employers) when entering Israel proper without a permit².

It is important to note that the nature of the permits and of the process by which they are issued is such that they are not transferable between workers and, nominally, restrict the holder to working for a particular employer. To secure a work permit for a prospective Palestinian employee, the employer must fill out a form that includes the workers' personal and biographical details. After running a background and security check, the Israeli civil administration issues the employee a work permit. When issued, the work permit includes the name of the worker, some of his personal information and the name of the employer. To remain valid, employers must regularly make social insurance payments and payroll taxes. Work permits must be renewed every six months. Moreover, employers have the power to revoke work permits and to terminate the contracts of any employee (nominal or actual). Additionally, they are not legally required to give workers advance notice of revocation or termination. We refer to employers and workers who undergo this official process as "formal employers" and "non-payers" respectively. In a similar vein, we refer to workers, who have illicitly purchased permits sold by and issued in the name of a formal employer as "payers". Israeli firms who hire payers and pay their wages are referred to as "semi-formal" employers, not to be confused with informal or underground employers that hire undocumented workers.

When border policy is lax, it is easier for workers and employers to operate in the underground sector. Heightened border security makes it much harder and riskier for undocumented workers to enter Israel proper. Thus, although the purchase of work permits is also illegal, the demand for these permits, and thereby the power of permit brokers, increases when border controls are tightened. In this paper, we examine the impact of security-motivated border policies that were implemented in 2018-2019. The policy increased enforcement of the law prohibiting undocumented workers from entering or working in Israel proper by

²Unlike undocumented workers, who may face scrutiny at the border or during labor inspections, payers who are employed by one firm but have the name of another employer on their permit, would, if challenged, claim to be working as subcontracted employees.

targeting enablers or assistants of undocumented workers—drivers, hosts, and employers. We show that the policy was effective in that it substantially reduced the share of undocumented workers without deterring overall migration. Indeed, the share of undocumented workers declined by 18 percentage points (from 32% to 14%), despite the uptick in the total number of migrant workers. Hence, the policy gave rise to increased efficiency in the market for legal migrants rather than migration deterrence or deadweight loss.

We develop a simple stylized dual economy model to provide a formal framework for how the policy is expected to impact permit prices, wages and the share of permit-holders. In the model, the formal sector (along with brokers) operates as a monopolist in the permit market and a monopsonist in the labor market. Formal employers offer non-payers the lowest possible wage, i.e. the outside option, which we model as the wage offered to undocumented workers. This wage is exogenously determined according to the economic conditions in the West Bank. The semi-formal sector consists of a number of individual, competitive firms, who set wages according to the marginal revenue product of labor of payers. Payers are willing to pay for the permit, purchased from the formal sector, as long as the price of the permit does not exceed the difference in wages between payers and non-payers. We also assume that prior to the policy change, there are idle permits such that the quota is not fully utilized³. After the policy change, the underground sector severely contracts and all permits in the quota are used, raising the price of permits and the number of permit-holders. The policy change also lowers wages by reducing permit-holders' outside option, the expected value of the undocumented wage. Thus in accordance with the predictions of the model, we hypothesize that as a result of strict border enforcement, workers are more likely to acquire documentation, but at the expense of transferring a considerable portion of worker surplus to intermediaries and employers by paying higher illicit payments and receiving lower wages.

We use five data sets to examine how strict border enforcement affects the economic incidence of the migration surplus. The main data set—the Entry Gates Survey (EGS)—is a unique survey instrument that we designed in order to collect novel data in June 2018 and June 2019 on Palestinian permit-holders queuing at the four main gates that provide access to Israel proper. The EGS distinguishes between two types of permit-holders—payers and non-payers—and includes a wide range of worker and employer characteristics. We collected data on 2337 Palestinian permit-holders employed in Israel proper and observed 1268 illicit monthly payments, made by payers to their permit brokers. We found that, on average, payers spent 20% and 28% of their monthly income purchasing work permits in 2018 and 2019, respectively. The second data set used is the Palestinian Labor Force Survey (PLFS), which allows the researcher to distinguish between permit-holders and undocumented workers. The rotational design of the PLFS can be used to construct

³Idle permits can be attributed to an active underground economy that pays a wage that is very similar to the permit-holder's wage. This is because when choosing between the sectors, workers face a trade-off between the greater protection afforded by legal migrant status and the monetary and search costs associated with acquiring a work permit or a formal job where a permit is provided by the employer. If wages are similar across sectors and there is minimal enforcement at the border, a high proportion of workers will choose the underground sector over the semi-formal and formal sectors. Hence, there will be idle or unused permits.

short panels. Unlike the EGS, the PLFS is nationally representative, and thus, we use its survey weights to calibrate weights for the EGS. Third, quarterly administrative data on issued and unused work permits are used as a benchmark for the number of documented migrants throughout the period. The fourth data set is constructed using Israeli legal databases to track the frequency and evolution of punitive measures against undocumented workers and Israeli (primarily Arab) citizens who assisted them in illegally crossing the border. Finally, we create the fifth data set to create residential clusters by using ArcGIS 11 software to geo-reference municipalities (self-reported in the EGS)⁴ where Palestinians live. These clusters potentially serve as an approximation for local permit and labor markets⁵. This allows us to test whether the local characteristics of a worker's residence can predict the permit price.

Using an event-study design, our identification strategy rests on the assumption that the policy was an exogenous shock and thus, uncorrelated with the unobserved determinants of the main outcome variables (wages, permit prices, share of permit-holders). When the outcome variable is wages, we are also able to use a difference in-difference design where we use two control groups, each of which are wage-earners employed in the West Bank economy. Our findings are as follows. First, the number of payers increased by over 70% and the average permit price rose by approximately 13% between 2018 and 2019, almost doubling black-market revenue from 609 million NIS [US \$169 million] to 1.17 billion NIS [US \$324 million]⁶. Second, real wages fell by 13%, but employers' labor costs declined by only 9% due to the overall increase in the number of migrant workers. The wage decline was more pronounced for workers in more competitive labor markets—payers and construction workers—which lends credence to the explanation that wages declined as a result of increased market power of employers. We compute that after the policy came into effect, the wage markdown increased from 20% to 31% for non-payers and from 0% to 18% for payers. We also rule out several alternative explanations for the observed decline in wages. Third, take-home pay plummeted by 16% but accounting for compositional effects, i.e. changes in worker and employer characteristics, reduces this figure to 13%. The redistribution of the migration surplus from workers to employers and intermediaries is substantial and amounts to 2.4% of the West Bank's 2018 GDP. Evidence for well-being measures is mixed; both payers and non-payers reported better treatment by employers but payers experienced lower overall life satisfaction.

In our second set of findings, we investigate the pricing strategies of permit brokers. The existence of idle permits and the variability of permit prices (Figure I.(B)) are already indicative that brokers have market power. Our first finding is that in 2018, brokers imposed an extremely regressive pricing structure

⁴We use the network analysis algorithm in ArcGIS to group municipalities such that the distance between them is no more than 15 km. The computation is based on geo-referenced data on the existing road network in the West Bank. The ruggedness of the terrain is also considered, allowing us to estimate more precise commute times—an alternative measure for defining local labor markets. Note that in the PLFS, the smallest geographic unit available is district. We show there are up to six local markets per district.

⁵If Palestinians who live in close proximity to each other are charged similar prices by intermediaries (and/or work in the same region/city in Israel), then residential clusters serve as an approximation for local permit and labor markets.

⁶Our 2019 estimate of black-market revenue closely resembles that of the ILO (International Labour Organization 2021), thereby confirming the accuracy of our method.

with respect to individual wages that limited entry into legal jobs. Moreover, by merging the EGS with our geo-referenced data, we tested whether brokers practiced third-degree price discrimination by using characteristics of a payer's residential cluster (in the West Bank) to estimate his alternative local labor market opportunities in Israel's underground and formal sectors. We found that in 2018, permit prices (for payers) are negatively associated with average local wages of non-payers, suggesting that payers living in close proximity to high-earning non-payers can negotiate a lower permit price. In 2019, permit prices were no longer associated with average local wages but became more strongly associated with the individual wage and other individual characteristics. Increased dispersion in permit prices is consistent with more collusion (Gerardi and Shapiro 2009) among permit brokers, which is, in turn, consistent with brokers pursuing a more individually-targeted pricing strategy.

[Insert Figure I (B) here]

We posit there are complementarities between employers' monopsony power in the labor market and brokers' market power in the permit market. Consider the following: Formal employers offer brokers an estimate of each payer's expected wage offer in the formal labor market. In return, brokers use this information to set the highest possible permit price and provide the formal employer with a share of the rent. Brokers may also provide formal employers with non-payers' outside option, i.e. information on wages and labor market conditions of payers and undocumented workers. Our findings suggest that brokers had sound estimates of alternative wage offers for payers in both years, but their estimates became more precise in the presence of strict border enforcement. A possible explanation is that heightened controls induce all or most workers to seek permits, which allows brokers to capitalize on their increased informational advantage—derived from personal and biographical information offered by the worker for the permit application—and to better calibrate individually-targeted prices rather than rely on local characteristics.

Admittedly, the Palestinian-Israeli context is a unique one that is riddled with political turmoil. However, employers and workers in many settings, face similar frictions and are also confronted with political and economic challenges related to border enforcement, undocumented employment, labor market formalization, illicit permit trading, and market power. Yet, due to data constraints and security concerns, little is understood about how these forces affect workers' outcomes. We believe our findings provide invaluable lessons for other (migrant or non-migrant) contexts where policymakers aim to formalize workers.

Our unique setting has several advantages for examining the consequences of labor market formalization. First, given the recent attention devoted to eliminating undocumented employment, there is a unique opportunity to directly address the question of whether border regulations and more legal coverage of migrants reduce or redistribute the returns to migration. Second, while data on undocumented migrant workers and/or illicit behavior by migrants in the host country is rarely accessible due to constraints related to data collection methods and (understandably) low response rates, the unusual circumstances of Palestinian mi-

grants as cross-border commuters allows for data collection where they are law-abiding legal residents, i.e. the West Bank. Third, the border policy induces a plausibly exogenous demand shock to the permit market, providing us with a rare opportunity to examine not only how illicit payments respond to border enforcement and market forces, but also how well-being and labor market outcomes are affected. Fourth, we observe outcomes for payers and non-payers, allowing us to distinguish between the market power of formal vs semi-formal employers. In particular, observing wages for similar workers in a competitive (payers) and non-competitive (non-payers) labor market provides a convenient setting to compute the wage markdown in a simple tractable manner that does not require access to a linked employer-employee data set. Lastly, since non-payers are hired formally and not directly affected by policies that are designed to curb illicit activity, their inclusion provides us with a sense of how far-reaching such policies are.

This paper contributes to a large literature that establishes that firms have some degree of wage-setting power (Azar, Berry, and Marinescu 2022; Berger, Herkenhoff, and Mongey 2022; Card 2022; Kroft et al. 2020; Lamadon, Mogstad, and Setzler 2022; Manning 2021). We go further by investigating sources of frictions that enhance monopsony power in migrant labor markets (Amior and Manning 2020; Hirsch and Jahn 2015; Naidu, Nyarko, and Wang 2016). By shedding light on the increased role of intermediaries in shaping workers' outcomes and reinforcing the market power of firms, we show how border enforcement can shift market power from workers to employers when existing institutional weaknesses are not addressed (Bivens, Mishel, and Schmitt 2018). Moreover, the decline in wages was more notable among payers, indicating that border enforcement was especially beneficial to seemingly atomistic semi-formal employers, who prior to the policy, fully absorbed the permit cost by offering competitive wages. Thus, our findings support studies that examine how market power can easily arise, even in relatively thick labor markets (Breza, Kaur, and Krishnaswamy 2019; Dube et al. 2020). We conclude by discussing the relative effectiveness of policies designed to reduce market power (Naidu and Posner 2022).

Second, our work also relates to studies that measure the economic cost of organized crime (Becker, Murphy, and Grossman 2006; Brown et al. 2021; Pinotti 2015) and those that examine the determinants of illicit payments by investigating the role of border policies, market forces and price discrimination (Bensassi and Jarreau 2019; Brown et al. 2021; Gathmann 2008; Olken and Barron 2009; Sequeira 2016). We examine all three factors and document the overall effect on workers' outcomes, which is almost completely absent from the literature on illicitly derived payments (Weaver 2021)⁷. We also expand the literature on the economic and social consequences of illicit markets where government property is traded. Most studies in this literature focus on corruption, where government property is either sold by public officials (Olken and Pande 2012; Shleifer and Vishny 1993) or where there is collusion between public officials and private

⁷In Gorodnichenko and Peter (2007), the authors conclude that public sector workers accumulate bribes to compensate them for the wage penalty incurred relative to private sector workers (24-32%). The authors neither gather nor observe data on bribes, but assume bribes are collected because both groups of workers enjoy similar consumption levels.

agents (Bertrand et al. 2007). This is a significant oversight in the literature since the illicit trading of government property (such as work permits) by private agents is a common practice. Moreover, such documents are the only way for migrants to secure legal employment, and thus, gaining an understanding of the economics behind these illicit markets is key to understanding how labor markets function.

Third, a subset of the migration literature uses theoretical and empirical evidence to study the market for human smuggling Friebel and Guriev (2006), Gathmann (2008), and Tamura (2010). While these studies usually find that following strict border or deportation policies, migrants pay higher fees and incur more debt, they do not observe labor outcomes and well-being measures. In contrast, our research design allows us to estimate the actual returns to migration following strict border enforcement because we observe participation in the illicit market for permit trading, permit price, wages, and well-being before and after the event. Thus, our findings complement studies that examine the returns to migration (Clemens 2011; McKenzie, Stillman, and Gibson 2010; Mobarak, Sharif, and Shrestha 2021), the welfare impact of changes in migration costs (Allen, Castro Dobbin, and Morten 2018; Bryan and Morten 2019; Tombe and Zhu 2019) and strict border policies (Adnan 2015; Feigenberg 2020). More broadly, our study examines how migrant workers' outcomes are shaped by major reforms in the destination country (Naidu, Nyarko, and Wang 2016). We also contribute to the theory-based debate on the functionality of work permit/visa markets (Auriol and Mesnard 2016; Lokshin and Ravallion 2022).

The remainder of the paper is organized as follows: Section 2 describes the data sources and presents the institutional setting. Section 3 outlines the stylized facts used to illustrate the validity of the basic assumptions made in the stylized model in Section 4. Section 5 lays out the permit broker's maximization problem, which is followed by the empirical strategy in Section 6. Section 7 presents the main results and section 8 concludes.

2 Data Sources and Institutional Setting

We use five data sources to quantify how border policies affected worker, intermediary and employer surplus in 2018 and 2019. The first subsection provides a brief overview of each data source and how it contributes to the research question. The second and third subsections describe the descriptive statistics and stylized facts throughout the period of interest.

2.1 Data Sources

The first two data sources provide context for Israel's border policy. The first data set is constructed using the most comprehensive legal database in Israel, the Nevot. The data set consists of all trial cases related to undocumented Palestinian workers in Israel between the years 2016 and 2021. Cases are categorized into

two main types, those where undocumented Palestinian workers are prosecuted for entering Israel illegally and those where Israeli citizens (who are ethnically Arab or Jewish) are charged for enabling or assisting undocumented workers by housing, transporting or employing them in Israel. Thus, for each case, we observe the year, month, nationality/ethnicity of the defendant (Palestinian, Arab-Israeli, Jewish-Israeli), the crime for which the person was held and the punishment given⁸. Since the policy was motivated by security considerations, we also take note of which cases involved other serious crimes (i.e. robbery, murder, etc) unrelated to being an undocumented worker. The final data set allows us to track the frequency and evolution of punitive measures by nationality/ethnicity and the nature of the crime.

Our data reveals that in 2017Q4, the number of convictions and arrests declined steeply and remained low until 2019Q4 (see Figure B.1 in Appendix B). The decline was primarily driven by the number of cases related to illegal entry. This coincides with a change in internal police procedures that took place in August 2017 (see translation of police document in Appendix B). The first half of the document states that the majority of cases against undocumented Palestinians should not proceed to trial unless they involve repeat offenders or there are other serious crimes associated with unlawful entry. The second half of the document emphasizes the importance of raising the penalty for Israeli citizens who assist undocumented workers. Indeed, the share of cases where assistants (drivers, employers and hosts) were convicted rose sharply (Figure B.2) and their punishment became more severe (Tables B.1 and B.2), but not until 2018Q4⁹. Since we later show that the rise in the number and share of migrant workers with valid work permits took place in 2018Q4, this implies that border enforcement was effective in reducing illegal entry of undocumented workers when the policy shifted from convicting undocumented migrants (Palestinians) to convicting natives who assisted them (Israeli citizens). That said, we make this inference with caution¹⁰.

The second data source used is the Palestinian Labor Force Survey (PLFS). The PLFS survey is a quarterly household survey conducted by the Palestinian Central Bureau of Statistics (PCBS) that includes standard questions on demographics, education, industry and place of employment. The PLFS contains several features that allow for a thorough analysis of Palestinian workers in Israel. First, it provides a nationally representative sample of workers and allows the econometrician to observe whether workers are employed in the West Bank or Israel, and if the latter is true, whether they are undocumented (i.e. work without a work permit) or not. For workers in both settings, we can also observe whether workers are employed

⁸Note that the crime and nationality/ethnicity are correlated. For example, the crime is "undocumented" only when the individual's nationality is Palestinian. However, if the crime is transporting, employing or housing an undocumented worker, then the defendant is either Arab-Israeli or Jewish-Israeli.

⁹This lag in implementation for policies that target Israeli citizens might be attributed to the fact that the policy did not become permanent until February 2018 as stated here: <https://main.knesset.gov.il/news/pressreleases/pages/press05.03.18hh.aspx>.

¹⁰There are several caveats here. First, it is difficult to make strong inferences from our data given the small sample sizes in 2018 and 2019, resulting from the large decline in cases in 2017Q4. Second, not all the cases related to the illegal entry of undocumented workers appear in the Nevot database; most cases focus on crimes involving Israeli citizens. Thus, some legal experts in Israel argue that the cases in Nevot that relate to illegal entry after 2017Q4 are simply the ones that are of high public interest. Third, it is possible that due to search or information frictions, it took undocumented workers until 2018Q4 to find a broker, purchase a permit or secure a match with an informal employer.

via contract (written/verbal or none). Second, the survey’s rotational design allows us to construct short panels and identify stylized facts on the dynamics of the labor market. Specifically, Palestinian household members, including those who commute to Israel for work, are interviewed for two consecutive quarters and are revisited six months later to be re-interviewed for two more consecutive quarters. One drawback of the PLFS is that payers cannot be distinguished from non-payers in any year except for 2019—after the consequences of the border policy are realized. Additionally, workers in Israel proper cannot be distinguished from those in the settlements, which are located inside the West Bank. This is a major drawback since border enforcement occurred on the green line, i.e. the border between the West Bank and Israel proper.

To address the shortcomings of the PLFS, we commission a survey of Palestinian permit-holders (see [Appendix C](#)), which was conducted at the four main entry gates into Israel in June 2018 and June 2019¹¹. Approximately 1200 workers were interviewed in each round. The Entry Gates Survey (EGS) was primarily designed to distinguish payers from non-payers among Palestinian migrant workers crossing the border into Israel proper. Our entire sample is employed in Israel proper and is in possession of a valid work permit. Furthermore, we included detailed questions about how the permit was procured: whether the worker paid for the permit, the value of monthly payments made, whether the worker was actually employed by the official employer or “sponsor” named on the permit, and questions on worker treatment by the employer and overall life satisfaction. The EGS also includes standard questions relating to marital status, level of education, recent employment history, work hours, and daily wages, which were copied from the Arabic questionnaire of the PLFS. Since the EGS is not a nationally representative sample of Palestinian migrant workers in Israel, we use the 2016-2019 waves of the micro-level data of the PLFS to calibrate the weights for the EGS (see [Appendix D](#) for details).

The fourth data set consists of quarterly administrative data on issued and unused work permits, which allows us to track the number of permit-holders throughout the period and observe the evolution of the share of unused permits. These data, along with the share of undocumented workers in each period from the PLFS, can inform us on whether the border policy led to migration deterrence (i.e. deadweight loss) and can also provide suggestive evidence as to whether brokers used their market power to limit entry. Finally, the fifth data set is constructed using ArcGIS 11 software to geo-reference municipalities (self-reported in the EGS) where Palestinians live to create clusters, i.e. an approximation for local labor markets. The data can be used to test whether local characteristics of a payer’s residence—such as the average payer’s wage and the average non-payer’s wage in his local labor market— can predict the permit price.

¹¹The gates are those at Eyal, Shaar Ephraim, Tarqumiya, and Meitar. The number of observations at a particular gate was determined by the share of Palestinians crossing at that gate in 2017.

2.2 Descriptive statistics

Table I provides basic summary statistics on key economic variables during the sample period 2016-2019 using the PLFS. Since almost all Palestinian migrant workers in Israel are men of prime working age, the sample is restricted to males between the ages of 25 and 59. The first three rows in Panel A present macro-economic indicators. The broad takeaway is that while the labor force participation rate was high, at approximately 88-89%, throughout the period of interest, the unemployment rate was 18-20% and wage earners made up approximately 70-71% of all employed individuals. The share of wage-earning individuals employed in Israel and the settlements has remained stable at 31-32%, suggesting that there is no deadweight loss associated with the policy. Note, however, that workers in Israel and the settlements belong to one category in the PLFS, while we are mainly interested in workers in Israel proper.

[Insert Table I here]

2.2.1 Undocumented Workers and Permit-holders

The remaining rows in Panel A refer to Palestinian workers in Israel. Note that while the share of wage-earners employed in Israel remained constant, the percentage who possessed a work permit increased dramatically from 68% in 2017 to 86% in 2019. This is reflected in Figure II, which plots the share of permit-holders in each quarter during the period of interest. It is clear that the impact of the policy became evident in 2018Q4, although the share of permit-holders continued to increase. Unlike the literature on human smuggling, which usually argues that tighter border security can raise undocumented employment by increasing the demand for smugglers' services (Friebel and Guriev 2006; Gathmann 2008), we find that border controls did in fact reduce the number and share of undocumented workers. This difference is perhaps due to the unique nature of the border policy in our context, which more closely targeted enablers providing different types of smugglers' services—drivers, hosts and employers of undocumented workers.

[Insert Figure II here]

Table I shows that construction workers made up the majority (63-65%) of workers in Israel and were over-represented among permit-holders (71-72%). That said, the share of construction workers among earners in Israel as well as of permit-holders are constant over time, lending credence to the notion that the policy did not alter the composition of permit-holders by industry type. The next few rows display average real wages in Table I (Panel A) by industry affiliation and permit-holder status. The takeaway is that among construction workers, permit-holders and undocumented workers earn similar wages while permit-holders in other industries earn a premium. In Table A.1, we show that this is also the case among switchers, such that non-construction workers who acquire a permit are positively selected while respective construction workers are neither positively nor negatively selected¹². These descriptive findings imply that construction

¹²See in cols(1) and (2) of Table A.1 that non-construction switchers, i.e. from undocumented to permit-holders (including payers and

workers experience (close to) full mobility between legal (formal/semi-formal) sectors and the underground sector, while workers in other industries face some degree of labor market segmentation.

2.2.2 Payers and Non-Payers

In Panel B, we replicate the exercise for payers and non-payers in Panel B using the June 2018 and June 2019 rounds of the EGS as well as the 2019Q2 wave of the PLFS¹³. There are several issues worth noting. First, the EGS rounds show that the share of payers among permit-holders increased after the policy and so did the permit price. Second, in 2018, the net wages of payers and non-payers in both industries are similar but in 2019, a non-payer premium emerges. Third, in construction, both payers and non-payers experienced a substantial decline in gross wages between 2018 and 2019 while non-payers in non-construction industries experienced a slight increase. These descriptive statistics indicate that permit-holders in both industries faced a non-payer-payer wage gap only after the policy change, and this led to further segmentation in non-construction industries, beyond what was observed between permit-holders and undocumented workers in Table I Panel A and Table A.1. We discuss this further in the stylized facts and results sections.

Fourth, as is shown in Panel A, the decline in wages observed in the EGS for permit-holders between 2018 and 2019 is not reflected in the PLFS for either industry type. Additionally, note that estimates of wages, permit prices and the non-payer premium differ quite considerably between the EGS June 2019 and the PLFS 2019Q2. The 2019 round of the EGS reports higher wages and lower permit prices than the 2019Q2 wave of the PLFS. One explanation might be that workers in the settlements pay higher permit prices and earn lower wages than their employed counterparts in Israel proper, biasing permit prices upward and wages downward in the PLFS¹⁴. Finally, it is worth noting that differences between estimates in the EGS 2019 and the PLFS 2019Q2 are especially stark for non-construction workers. Thus, to the extent that survey differences in estimated workers' outcomes are driven by the large portion of settlement workers in the PLFS, the fact that the survey gap is larger for non-construction workers corroborates earlier suggestive evidence that there is more labor market segmentation among non-construction workers (i.e. a larger penalty for being undocumented relative to having a work permit, a larger penalty for working in the settlements relative to Israel proper, or working as a payer relative to a non-payer after the policy).

non-payers), are positively selected while similar construction workers are neither positively nor negatively selected. Likewise, cols (3) and (4) show that non-construction permit-holders who switch to underground employment are negatively selected while their counterparts in the construction industry are neither negatively nor positively selected.

¹³Summary statistics using the PLFS are reported only for 2019Q2 (col 3 of Panel B) to account for seasonal differences in wages and the composition of workers across industry type.

¹⁴Workers might choose to work in the settlements due to lower transportation and commute costs or flexible work schedules.

2.2.3 Differences between Payers and Non-payers before and after the Border Policy

We will continue to use the PLFS to understand the mobility of workers and how various workers self-select into each sector. However, our main analysis primarily depends on the two major rounds of the EGS, which were specifically designed to collect detailed data about the unique circumstances of Palestinian permit-holders who entered Israel proper through the four main gates.

Table II provides descriptive statistics for the June 2018 and June 2019 samples of the EGS. Means for payers and non-payers along with differences in means by year are displayed to show absolute and relative changes between the two groups. Additionally, the last column reports the diff-in-diff estimate for each variable to highlight how differences between payers and non-payers changed after the policy. Tables A.2 and A.3 display the corresponding statistics separately for construction and non-construction workers.

[Insert Table II here]

Table II shows that in June 2018, non-payers were about 1.7 years older, less likely to speak English by 3 percentage points, had a tenure spell in Israel that was 13 months longer, and held a work permit for 1.2 years longer than payers. As expected, non-payers were also much more likely to work for one employer and almost all of them worked for an official employer, i.e. the employer named on the work permit. They had shorter commutes of about 18 minutes less than that of payers and worked about half a day less per week. At the same time, payers and non-payers were similar in terms of educational attainment, work hours, language proficiency, and average number of employers in the past three months. Moreover, the daily wage of a payer exceeded that of a non-payer by about 94 NIS and since the average daily permit price was about 91 NIS for payers, the difference in the net daily wage between payers and non-payers is statistically and economically insignificant. Given these similarities between payers and non-payers, it can be inferred that some payers prefer a semi-formal job to a formal one to gain scheduling flexibility, not work with a single/official employer, and avoid regulations (Levy 2010). These preliminary findings also support the evidence in Weaver (2021), who shows that among public sector workers, there is no difference in worker quality between workers who pay bribes and those who do not.

After the policy, several notable changes occurred. First, non-payers were three times more likely to be single in 2019. Second, approximately 20% spoke English fluently relative to 3% the previous year. Both types of workers were less likely to speak Hebrew. Payers were much more likely to work for multiple employers as is evidenced by the fact that their average number of employers rose from 1.8 to 2.5 while the corresponding figure for non-payers remained at 1.7. For both groups, work hours and commute times increased but the latter increased more sharply for payers. Likewise, real wages fell for both groups but the payer-non-payer wage gap fell from 94 NIS to 64 NIS, shrinking the premium paid to payers for purchasing the work permit. Meanwhile, daily permit prices rose by 13 NIS, which amounts to a statistically and

economically significant non-payer premium of 44 NIS per day.

Tables A.2 and A.3 suggest that the composition of workers in Israel changed dramatically after the policy. However, payers and non-payers were more similar in the construction industry. For example, the non-payer net daily premium was 32 NIS for construction workers and 59 NIS for non-construction workers. One interpretation is that the policy increased labor market segmentation for both industry types but since sectors in the construction industry were closely integrated before the policy, the removal of the underground sector was quite influential, thereby leading to lower wages for all workers and hence, smaller wage gaps. For non-construction workers, the border policy reinforced existing labor market segmentation, which led to a notable wage differential between non-payers and payers.

3 Stylized Facts

In this subsection, we provide descriptive evidence **for seven stylized facts**. The first two stylized facts refer to the institutional setting prior to the policy and motivate the assumptions of the stylized model. The remaining stylized facts display descriptively how the policy led to changes in outcomes.

Fact 1—Wages of Undocumented Workers and Permit-holders are similar in 2018 (PLFS)

In our model (next section), we assume that the outside option for permit-holders is simply the underground sector wage. In other words, formal and semi-formal employers in Israel proper must offer at least the underground wage in order to retain their employees; otherwise, workers have no incentive to procure a valid work permit either through official or illicit channels. If workers across sectors are relatively homogeneous, then there is almost no penalty to being undocumented but to the extent that workers sort into sectors by ability and qualifications, a sector premium emerges. Using the PLFS, a comparison of the average wages of permit-holders and undocumented workers on the eve of the policy (2018 Q1-Q3) reveals that if workers are separated by industry affiliation, there is almost no wage penalty to being undocumented (Figure III.(A)). This is line with studies on informality, which show that within industry and across (formal/informal) sectors, workers earn similar wages and firms produce comparable goods and services (Maloney 1999; Ulyssea 2018). Note that undocumented workers in non-construction industries earn about 8.5% less than permit-holders although the difference is only marginally significant. This indicates that, for the period prior to the policy, the assumption that formal and semi-formal employers pay workers an amount based on the underground sector wage is reasonable. Additionally, since wages for construction workers are higher and more homogeneous across sectors than is the case for those working in other industries, we continue to report results separately by industry affiliation.

[Insert Figure III.(A) here]

Fact 2—The Cost of Work Permits was fully passed on to Semi-formal Employers in Mid-2018 (EGS)

Another major assumption in our stylized model is that payers and non-payers earn the same net wage because the permit price, which is modeled as the difference between the gross wage of payers and the wage of non-payers, is a cost fully borne by semi-formal employers. The logic is that workers are fairly homogeneous such that if the permit price is too high, this will induce many to exit the semi-formal sector, and semi-formal employers would rather pay permit-holders' outside option, i.e. underground sector wage, plus the permit price rather than hire Israeli citizens. To test this assumption, we display the average net wages of payers, (the gross wage minus the permit price), and non-payers, separately by industry and year in Figure III.(B). Using the EGS, the figure shows that in June 2018, there is virtually no difference between the net wages of payers and non-payers. The fact that semi-formal employers fully absorb the cost of the permit indicates that prohibitive regulatory costs—such as the allocation of work permits to politically-connected firms—induce many entrepreneurs to resort to non-formal sectors (De Soto et al. 1989; La Porta and Shleifer 2008). Previously, we argued that the similarities between payers and non-payers in 2018 are plausibly consistent with a story where (at least) some payers prefer the semi-formal sector due to its flexibility. Thus, multiple frameworks can be simultaneously used to understand informality (Ulyssea 2018).

[Insert Figure III.(B) here]

Fact 3—A Large Share of Undocumented Workers became Permit-holders in 2018Q4 (PLFS)

We argue that due to an exogenous shock, a significant portion of undocumented workers became permit-holders by the end of 2018. By exploiting the short panel nature of the PLFS, we are able to show in Figure IV.(A), the percentages of migrant workers belonging to one of four categories: workers who did not possess a work permit during two consecutive visits (No permit, No permit), workers who did not have a work permit during their previous visit but owned one currently (No Permit, Permit), workers who had a work permit in the previous visit but no longer owned a work permit (Permit, No Permit) and workers who were in possession of a permit for two consecutive visits. Note that the share of workers in the second group (No Permit, Permit) increased from 4.5% to 17% between 2018 Q3 and 2018 Q4.¹⁵ Likewise, during the course of the same quarter, the share of workers in the first group (No Permit, No Permit) declined by over

¹⁵That said, throughout most of 2019, transition rates from the underground sector to more legal forms of employment continued at a strong rate (6-9%) relative to rates in 2016 and 2017 (3-5%).

10 percentage points from 32% to 22%, and then continued to fall such that workers without a permit for two consecutive visits made up only 16% of migrant workers. This means that the increase in the number of permit-holders was primarily driven by the acquisition of permits by previously undocumented workers, rather than by workers who had been unemployed, by those not in the labor force or by workers employed in the West Bank economy.

[Insert Figure IV.(A) here]

Fact 4—The Share of Unused Permits (Issued Permits < National Quota) Declined (Admin Data)

A key assumption of the model is that permit brokers and the formal sector wielded market power by creating barriers to entry, which allowed them to set monopoly prices. However, since the border policy induced more workers to acquire permits, we expect to observe a reduction in the share of idle or unused permits. Figure IV.(B) reports the total number of issued and unused permits as well as the share of unused permits per quarter. There are two aspects that warrant consideration. First, the total number of issued permits has been consistently lower than the number set by the national quota such that there were unused permits throughout our period of study. Secondly, despite the increase in the national quota during our sample period, the percentage of unused permits decreased from 20% in September 2018 to 12% in June 2019. Later in the results sections, we investigate how pricing strategies took advantage of the institutional setting before and after the policy.

[Insert Figure IV.(B) here]

Fact 5—Gross Wages fell, especially for Payers and Construction Workers (EGS+PLFS)

Assuming imperfect competition, if the border policy reduced permit-holders' outside option and (almost) removes the underground sector, then we expect employers to gain market power and reduce wages. The workers that are most likely to be adversely affected are those who had the most bargaining power and/or mobility visavis their employers, prior to the policy, i.e. payers and construction workers¹⁶. Indeed, this is what we find using the EGS data in Figure V.(A). Thus, the border policy in this paper resembles the event study by Naidu, Nyarko, and Wang (2016), who examine a labor reform that allows workers to switch employers without asking their incumbent employers for permission. They find that the reform increases wages by shifting market power from employers to workers.

¹⁶Here is why before the policy, we consider payers and construction workers to have more bargaining power visavis their employers than their counterparts, non-payers and non-construction workers. Payers' bargaining power allows them to fully shift the cost of the permit to semi-formal employers and work with multiple (non-official) employers. Meanwhile, non-payers are usually tied to one employer, who can revoke their permit at any time. Construction workers have more bargaining power because the industry's low wage variability across sectors suggests that workers are mobile and can easily switch employers.

[Insert Figure V.(A) here]

We also display average gross wages before and after the policy for permit-holders and undocumented workers using the PLFS. However, given the earlier discussion in the data section that the EGS and PLFS samples are not directly comparable, we restrict the PLFS sample to those who are employed under a contract (written or oral). Figure V.(B) corroborates Figure V.(A) by showing that among permit-holders, wages declined only for construction workers. In the main results, we present more evidence of a decrease in gross wages using a difference-in-difference design in the PLFS and an event study design using the EGS data.

[Insert Figure V.(B) here]

Fact 6—Share of Payers Increased, Permit Prices Rose and a Non-Payer Premium Emerges (EGS)

As the underground sector contracted, demand for work permits increased, leading to a rise in the share of payers and an increase in the permit price (Figure VI). The rise in black-market activity following the decline in undocumented employment is consistent with studies that highlight how one form of illicit activity is a substitute for another (Choi and Thum 2005; Dreher, Kotsogiannis, and McCorrison 2009). Note that in addition to lower gross and net wages, a non-payer (net wage) premium emerges, confirming that payers were more adversely affected by the policy. Moreover, while both payers and non-payers report better treatment by employers, both well-being measures relating to overall life satisfaction and employer treatment of workers point to a non-payer (non-pecuniary) welfare premium that did not exist prior to the policy (Figure VII). The penalty incurred by payers in a number of variables substantiates the argument that labor violations are found to deepen wage inequality (Marinescu, Qiu, and Sojourner 2020).

[Insert Figure VI here]

[Insert Figure VII here]

Fact 7—Permit Brokers and Employers Gained at the Expense of Workers (EGS)

A common aim of formalizing labor markets is to improve the working conditions of workers, which may have occurred through better treatment by Israeli employers (Figure VI). However, given the decline in gross wages and the increase in permit prices, it is clear that permit brokers and employers gained considerably at the expense of workers. This is depicted in Figure VIII (details provided in Table III), where the left bar represents the distribution of the total wage bill paid by Israeli employers to workers in June 2018. The wage bill is computed as the sum of the product of the number of workers in each sector (non-payers, payers, undocumented workers) and the average sector-level wage. Since payers purchase a

work permit, a portion of the wage bill is paid to brokers in the form of black market revenue, which equals the estimated number of payers multiplied by the average permit price. The right bar represents how the total wage bill in 2018 was distributed in 2019. Note that there is an extra category to account for the decline in employers' labor costs, i.e. the monetary gains accrued to employers after paying lower wages in 2019¹⁷.

[Insert Figure VIII here]

[Insert Table III here]

After the policy, labor costs fell by 9.2% of the total wage bill in 2018, although wages fell by 12%. This is because the total number of migrant workers increased implying that enforcement did not lead to deterrence but encouraged workers and employers to participate in the black-market instead¹⁸. In fact, black-market revenue nearly doubled from 6.4% to 12.4% of the 2018 wage bill and take-home pay was reduced substantially between 2018 and 2019, falling from 93.6% to 78.4% of the 2018 wage bill. These findings reveal that an analysis of wages alone, underestimates the losses incurred by workers. A further breakdown by industry affiliation (Figure A.1) shows that the gains captured by employers and brokers were disproportionately at the expense of construction and non-construction workers respectively.

4 Theory Section

We start with a basic model where wages, permit prices and employment of payers and non-payers are jointly determined using a simple frictionless supply-demand framework. Using this basic framework, we show who ultimately pays for the work permit and how the total migration surplus is allocated among formal employers, semi-formal employers, permit brokers and workers. Then we replicate this exercise after relaxing some of the strong assumptions of the basic model.

4.1 Basic Model

Suppose that the output produced by Palestinian workers in Israel's formal Sector A is $f(L_A)$ and the corresponding output produced by the semi-formal Sector B is $g(L_B)$. We assume a perfectly elastic labor supply of migrants whose outside option is equivalent to an exogenous underground sector wage W_{UG} . Sector B is a semi-formal sector such that payers earn wages according to their marginal revenue product of labor ($g'(L_B) = W_B$) while Sector A pays workers according to their outside option, W_{UG} .

¹⁷If 2018 is the reference point and employer savings were then zero, employer savings in 2019 are calculated as the difference between the total wage bill in June 2018 and in June 2019.

¹⁸According to the first row of Table III, the total number of migrant workers in Israel proper increased by about 4100 workers or 4.6% between 2018 and 2019. Since Table III only refers to migrant workers in Israel proper, the reported increase in migrant workers into Israel proper does not contradict the fact that the share of wage-earners employed in Israel/settlements has remained stable at 31-32% (see row 4 of Table I). In other words, it is possible that the policy induced workers in the settlements to enter Israel proper.

The MRPL for the formal and semi-formal sectors is depicted in Figure IX.(A), where the semi-formal sector moves left to right and the formal sector moves right to left. The main actor in the model is Sector A, which maximizes profits from two sources, hiring non-payers and selling permits in Sector B at price P . Payers are willing to pay for the permit as long as the price of the permit does not exceed the difference in wages between payers and non-payers ($P = W_B - W_{UG}$). We make two important assumptions here. First, the market for work permits—where the formal sector (and, in practice, permit brokers) sell permits to payers—is competitive. Second, there is full mobility across sectors and the total number of legal workers in this economy is determined by the quota for permit-holders and is set to \bar{L} . Each sector maximizes profits subject to the above-mentioned constraints such that:

$$\begin{aligned}
\max \pi_A &= \max f(L_A) - W_A L_A + P L_B \\
\max \pi_B &= \max g(L_B) - W_B L_B \\
L_A + L_B &= \bar{L} \\
P &= W_B - W_A \\
W_A &= W_{UG}
\end{aligned} \tag{1}$$

The following system of equations includes five equations for the five unknowns ($L_A^1, L_B^1, W_A^1, W_B^1, P^1$). The allocation of workers is given by $f'(L_A) = g'(L_B)$, which is depicted as point C in Figure IX.(A). Sector B pays L_B^1 workers according to their MRPL such that $g'(L_B^1) = W_B^1$ (point C) while $L_A^1 (= \bar{L} - L_B^1)$ non-payers earn the outside option such that $W_A^1 = W_{UG}$ (point D). Below Figure IX.(A), a chart shows how the surplus is distributed. Note that Sector A, along with permit brokers, collect the revenue $P^1 * L_B^1 = (W_B^1 - W_A^1) * L_B^1$ from payers, but also indirectly extracts $P^1 * L_A^1$ from non-payers by setting formal sector wages to the outside option. There are two important implications. First, the increase in profits collected by Sector A is highly sensitive to the outside option. In fact, if the outside option exceeds the competitive wage in Israel given by the intersection of $f'(L_A) = g'(L_B)$, then there are unused permits since $L_A^1 + L_B^1 < \bar{L}$. Second, Sector B bears the full burden of the cost of the permit, which we find support for in 2018 (see Figure III.(B)).

[Insert Figure IX.(A) here]

4.2 Main Model

In this section, we relax two main assumptions in the basic model and solve for the equilibrium before and after the change in border policy. This allows us to predict the welfare gains and losses to workers, employers and brokers. We relax the first assumption by allowing formal employers (along with brokers) to be the only seller in the permit market such that the permit price is a function of the number of payers, $P(L_B)$. Second, as shown in the stylized facts, we assume there are idle permits, such that $L_A + L_B < \bar{L}$.

Thus, sector A maximizes profits subject to the above-mentioned constraints:

$$\max \pi_A = \max f(L_A) - W_{UG}L_A + P(L_B)L_B \quad (2)$$

Hence, prior to the event, the equilibrium (M, Q) is given by the following equations and corresponding points in Figure IX.(B):

$$\begin{aligned} f'(L_A^1) &= W_{UG} && \text{(Point } M) \\ MR(L_B^1) &= g'(L_B^1) - W_{UG} + g''(L_B^1)L_B^1 = 0 \\ &\rightarrow g'(L_B^1) + g''(L_B^1)L_B^1 = W_{UG} && (L_B^1) \quad (3) \\ g'(L_B^1) &= W_B^1; && \text{(Point } Q) \\ P^1 &= W_B^1 - W_{UG} && \text{(Difference between } M \text{ and } Q) \end{aligned}$$

If an event raises the marginal cost of undocumented work, a decline in W_{UG} follows, which then leads to an increase in both types of permit-holders, lower gross wages and a higher permit price. These relationships are depicted in Figure IX.(B) and will be further discussed in the comparative statics below. Note that the rise in permit prices after the event stems from the increase in the payer-non-payer wage gap. Overall, this suggests that a reduction in the outside option leads to a considerable rise in black market revenue generated from both price and quantity increases. Becker, Murphy, and Grossman (2006) also argues that increased enforcement prohibiting the sale of illegal drugs generates more black-market revenue for this illicit market¹⁹.

[Insert Figure IX.(B) here]

Prior to the policy, permit-holders viewed undocumented wages offered by the underground sector as the outside option, such that $W_O^1 = W_{UG}$. However, after strict border enforcement took place, the outside option is reduced to the lowest possible wage an employee is willing to accept for working in Israel²⁰ such that $W_O^2 = W_I \ll W_O^1 = W_{UG}$. In the model, a decline in the outside option is synonymous with a positive demand shock, shifting the demand for work permits as well as the marginal revenue curve, $MR(L_B)$ to the right²¹. The notion that border enforcement led to more illicit payments through an increased demand for intermediaries is strongly supported by the theoretical Friebel and Guriev (2006) and empirical

¹⁹In Becker, Murphy, and Grossman (2006), the increase in black-market revenue is not a result of an increase in demand but because enforcement induces supply restrictions that increase price and lead to movement along an inelastic demand curve; thus, the consequences of enforcement in the illegal drug market are an increase in price and a relatively small decrease in quantity, raising black-market revenue.

²⁰The minimum wage one is willing to accept to work in Israel can be modeled as the wage offered in the West Bank plus transportation costs. Note that one can still work as an undocumented worker but the associated probability is low.

²¹This is not shown in Figure IX.(B) because of space constraints. Rather than identifying the equilibrium through a right shift of the $MR(L_B)$ curve (and setting it equal to 0), the graph depicts the post-event equilibrium by setting $g'(L_B) + g''(L_B)L_B$ to $f'(L_A)$ because the outside option is lower than the intersection of the two. If the outside option is high (as is given by the pre-event equilibrium (Q,M)), then the equilibrium is best depicted on the graph by setting $g'(L_B) + g''(L_B)L_B$ to the outside option, W_O^1 .

Gathmann (2008) literature on human smuggling. However, in our framework where formal employers are monopsonistic in the labor market and monopolistic in the permit market, border enforcement adversely affects workers' take-home pay by reducing the outside option for workers (reducing gross wages) and inducing a positive demand shock (increasing permit prices).

From Figure IX.(B), one can see that if the outside option is sufficiently low, specifically lower than the intersection of $f'(L_A)$ and $g'(L_B) + g''(L_B)L_B$, then there are no idle permits. Thus, sector A maximizes the profit function, $f(L_A) - W_I L_A + (g'(L_B) - W_I)(\bar{L} - L_A)$, with respect to L_A and labor is allocated according to $f'(L_A) = g'(L_B) + g''(L_B)L_B$. This means that if the decline in the outside option is sufficiently large, then all permits are used, the deadweight loss ($\bar{L} - (L_B^1 + L_A^1)$) is eliminated and legal jobs are easily accessible, although workers are paid lower wages. Thus, the post-event equilibrium is given by the following equations and the corresponding point (T, V) in Figure IX.(B):

$$\begin{aligned}
 f'(L_A^2) &= g'(L_B^2) + g''(L_B^2)L_B^2 && \text{Labor Allocation (Point U)} \\
 W_A^2 &= W_I && \text{(Point V)} \\
 g'(L_B^2) &= W_B^2 && \text{(Point T)} \\
 P^2 &= W_B^2 - W_I && \text{(Difference between T and V)}
 \end{aligned} \tag{4}$$

Note that since the outside option is sufficiently low, labor allocation and payers' wages are no longer dependent on marginal changes in the outside option²². More importantly, it is worth mentioning that the labor allocation identity (equation 4) highlights the arbitrage condition for Sector A, $f'(L_A) - W_I = g'(L_B) + g''(L_B)L_B - W_I = MR(L_B)$, where sector A continues to hire non-payers as long as the profit earned from hiring a non-payer exceeds the revenue incurred from selling a work permit to a payer employed in Sector B. The chart below Figure IX.(B) highlights how the border policy allowed employers and permit brokers to extract higher rents while workers incurred substantial losses. In particular, formal employers have the most to gain before and after the border policy because they are favored by the national quota system due to their connections. This provides them with substantial market power in the labor and permit markets.

Comparative Statics: By eliminating the underground sector and decreasing the outside option, the event leads to three main outcomes: 1.) an increase in black market activity through an increase in the number of permits sold, 2.) a decline in gross and net wages for all workers, and 3.) a rise in permit prices. We show these three trends in the comparative statics below given that $\frac{g''(L_B^1)}{MR'(L_B^1)} < 1$.

Differentiating equations in system (3) with respect to W_{UG} yields the following as long as $L_A + L_B < \bar{L}$

²²Wages of payers are not sensitive to changes in the outside option since W_B is a function of the number of payers, L_B , which is no longer determined by the outside option.

:

$$\begin{aligned}
f''(L_A^1) \frac{dL_A^1}{dW_{UG}} &= 1 \rightarrow \frac{dL_A^1}{dW_{UG}} = \frac{1}{f''(L_A^1)} < 0 \\
\frac{dL_B^1}{dW_{UG}} (2g''(L_B^1) + g'''(L_B^1)L_B^1) &= 1 \rightarrow \frac{dL_B^1}{dW_{UG}} = \frac{1}{(2g''(L_B^1) + g'''(L_B^1)L_B^1)} = \frac{1}{MR'(L_B^1)} < 0 \\
g''(L_B^1) \frac{dL_B^1}{dW_{UG}} &= \frac{dW_B^1}{dW_{UG}} \rightarrow \frac{dW_B^1}{dW_{UG}} = g''(L_B^1) \frac{dL_B^1}{dW_{UG}} > 0 \\
\frac{dW_A^1}{dW_{UG}} &= 1 \\
\frac{dP^1}{dW_{UG}} &= \frac{dW_B^1}{dW_{UG}} - 1 = \frac{g''(L_B^1)}{MR'(L_B^1)} - 1 < 0^{23}
\end{aligned} \tag{5}$$

Thus, if there are unused permits, the decline in the outside option increases the number of permit-holders, reduces wages and raises permit prices. However, once all permits are used, changes in the outside option neither alter the allocation of labor between payers and non-payers nor the gross wages of payers. In other words, if $L_A + L_B = \bar{L}$, then $\frac{dL_A^1}{dW_{UG}} = \frac{dL_B^1}{dW_{UG}} = \frac{dW_B^1}{dW_{UG}} = 0$. Gross wages for non-payers continue to decline ($\frac{dW_A^1}{dW_{UG}} = 1$), along with an increase in permit prices ($\frac{dP}{dW_{UG}} = -1$).

5 The Permit Broker's Revenue Maximization Problem

Our estimates in Table III reveal that black-market revenue nearly doubled between June 2018 and June 2019. We test the hypothesis that permit brokers made drastic changes to their pricing strategy by exploiting their increased informational advantage on payers, who experienced less mobility. This allowed them to shift from third-degree to first-degree price discrimination tactics. The key assumption here is that although brokers always had specific knowledge of the individual characteristics of payers, even prior to the policy, they did not charge maximum prices because they could not accurately predict when payers would switch from the semi-formal sector; note that the undocumented wage penalty was negligible (see stylized fact 1). After the policy, sectoral mobility was considerably reduced, allowing brokers to estimate the reservation prices for work permits more precisely. To formally test this hypothesis, we model the determinants of permit prices and then identify which factors gained or diminished in relevance after the policy.

We sketch a model where permit brokers maximize revenue in the spirit of Olken and Barron (2009). In the model, brokers have full information on the payer including his actual wage, and his observable and unobservable characteristics, the latter of which are unobservable to the econometrician. However, in order to set the maximum price, the broker also needs a strong measure for the transferability of the payer's skills

²³A decline in the outside option leads to higher permit prices under the condition that $\frac{g''(L_B^1)}{MR'(L_B^1)} < 1$, which is fulfilled for instance when there is linear demand where $\frac{g''(L_B^1)}{MR'(L_B^1)} = 0.5$.

across sectors. This will help determine the strength of the worker's outside option or his "refusal power" (Svensson 2003). To compute this, first the broker decomposes payer i 's actual wage in industry d , $W_{i,d}$, into the predicted wage ($\hat{W}_{i,d}$) and the residual wage ($\varepsilon_{i,d}$). Specifically, predicted wages by industry and year are estimated for payers using the parameters of an OLS regression where (ln) wages are regressed on a rich set of observable characteristics, X_i (see equation(7)). Then, he uses observable characteristics to estimate the predicted wage a payer is offered in the formal (F) or underground sector (U), denoted by $\hat{W}_{i,d,s}(s = F, U)$ ²⁴. Since formal employers are better equipped than brokers to estimate wage offers in alternative sectors, brokers may collude with formal employers at this stage.

Once they have knowledge of $\hat{W}_{i,d}$, $\varepsilon_{i,d}$, and $\hat{W}_{i,d,s}(s = F, U)$, permit brokers set the maximum price by using payers' information in two ways. First, knowing that some observable characteristics cannot be easily transferred to other sectors, they take a portion (α) of the expected gap in predicted wages between the semi-formal sector and an alternative sector s . Likewise, brokers charge workers a portion of their residual earnings (β) since some unobservable traits are not transferable or are more lucrative in the semi-formal sector. Brokers collude on α and β and choose them (plausibly with formal employers) such that the permit price is at least equal to the difference in the payer's predicted wage in the semi-formal sector and an alternative sector, and at most, the predicted wage in the semi-formal sector. Formally, the permit broker charges payer i in industry d the following:

$$P_{i,d} = \alpha(\hat{W}_{i,d} - \hat{W}_{i,d,s}) + \beta\varepsilon_{i,d} ; \alpha, \beta > 0; \hat{W}_{i,d} - \hat{W}_{i,d,s} < P_{i,d} < \hat{W}_{i,d} \quad (6)$$

In the empirical strategy we test how predicted and residual wages affect payers' permit prices before and after the policy. Theoretically however, what direction can we expect $\frac{dP_{i,d}}{d\hat{W}_{i,d}}$ and $\frac{dP_{i,d}}{d\varepsilon_{i,d}}$ to go in? We posit that three factors influence the relationship between permit prices and wages: 1.) the transferability of observable skills, 2.) the transferability of unobservable skills and 3.) the sectoral mobility rate, i.e. the likelihood of switching sectors. As we show below, the first two factors are prominent in shaping this relationship prior to the policy, while the third factor dominates the first two factors after the policy.

5.1 Before Event—Transferability of Observable Skills and direction of $\frac{dP_{i,d}}{d\hat{W}_{i,d}}$

According to equation (6), $\frac{dP_{i,d}}{d\hat{W}_{i,d}} = \alpha(1 - \frac{d\hat{W}_{i,d,s}}{d\hat{W}_{i,d}}) + \beta \frac{d\varepsilon_{i,d}}{d\hat{W}_{i,d}}$. Since $\frac{d\varepsilon_{i,d}}{d\hat{W}_{i,d}} < 0$ by design, if observable characteristics are highly transferable to other sectors and lead to more productivity than what can be observed in the semi-formal sector, then we can deduce that $\frac{d\hat{W}_{i,d,s}}{d\hat{W}_{i,d}} > 1$, thereby leading to unambiguously lower permit prices $\frac{dP_{i,d}}{d\hat{W}_{i,d}} < 0$. If observable skills are transferable but do not necessarily lead to more productivity in

²⁴Note that the broker does not know the exact wage a payer is offered in an alternative sector; otherwise, he would simply set the payer's permit price to $W_{i,d} - W_{i,d,s}$.

other sectors such that $0 < \frac{d\hat{W}_{i,d,s}}{d\hat{W}_{i,d}} < 1$, then the effect of predicted wages on permit prices is ambiguous. We observe that $\frac{d\hat{W}_{i,d,s}}{d\hat{W}_{i,d}} = 0.74$ for construction workers and $\frac{d\hat{W}_{i,d,s}}{d\hat{W}_{i,d}} = 1.13$ for workers in other industries (see Table A.4). Thus, we expect non-construction workers with higher predicted wages to be charged lower permit prices before the policy; the expected effect for construction workers is theoretically ambiguous.

5.2 Before Event—Transferability of Unobservable Skills and Direction of $\frac{dP_{i,d}}{d\varepsilon_{i,d}}$

As before, in order to predict how residual wages influence permit prices, we start with equation (6) and derive $\frac{dP_{i,d}}{d\varepsilon_{i,d}} = \alpha \left(\frac{d\hat{W}_{i,d}}{d\varepsilon_{i,d}} - \frac{d\hat{W}_{i,d,s}}{d\varepsilon_{i,d}} \right) + \beta$. Since $\frac{d\hat{W}_{i,d}}{d\varepsilon_{i,d}}$ and $\frac{d\hat{W}_{i,d,s}}{d\varepsilon_{i,d}}$ are both expected to be negative, the direction of $\frac{dP_{i,d}}{d\varepsilon_{i,d}}$ depends on the relative magnitude of the two effects. If predicted wages in the semi-formal sector are more negatively correlated with unobservable traits than is the case with predicted wages in alternative sectors, then the use of residual wages to charge workers higher permit prices is ambiguous since there is a trade-off between, being concerned workers will switch (when $\frac{d\hat{W}_{i,d}}{d\varepsilon_{i,d}} - \frac{d\hat{W}_{i,d,s}}{d\varepsilon_{i,d}} < 0$) and willingness to pay due to higher income (β). Likewise, if residual wages have a similar effect on predicted wages across sectors or are less negatively correlated with predicted wages of the semi-formal sector, then residual wages have an unambiguously positive effect on permit prices since $\frac{d\hat{W}_{i,d}}{d\varepsilon_{i,d}} - \frac{d\hat{W}_{i,d,s}}{d\varepsilon_{i,d}} \geq 0$; this is the case for construction workers (see col(3) and (4) of Table A.4). We find that non-construction workers have unobservable skills that are less negatively correlated with predicted wages in other sectors relative to the semi-formal sector, and thus, the effect of residual wages on permit prices is ambiguous before the policy ²⁵.

5.3 After Event—No Switching Across Sectors

After the policy, becoming gainfully employed in another sector became less likely, substantially reducing the maximum predicted wage earned outside the semi-formal sector s , $\hat{W}_{i,d,s}$ ($s = F, U$). In the most extreme case, where the likelihood of earning a positive wage in another sector is zero, equation(6) reduces to $P_{i,d} = \alpha\hat{W}_{i,d} + \beta\varepsilon_{i,d}$; $\alpha, \beta > 0$. In this case, we expect workers of both industry types to be charged according to their predicted wages—based on highly valued observable characteristics—as well as their residual wages. This is consistent with a story where changes in the institutional setting and market forces incentivize brokers to strategically shift their pricing strategy from third-degree to first-degree price discrimination.

5.4 Local Characteristics

Thus far, we only discussed how brokers used the individual characteristics of payers to estimate willingness to pay and set permit prices accordingly. However, it is likely that brokers also used local characteristics, such as the average local wages of payers and non-payers by industry, to gain insight into local wage offers

²⁵Specifically, we show that for non-construction workers that $\frac{d\hat{W}_{i,d}}{d\varepsilon_{i,d}} - \frac{d\hat{W}_{i,d,s}}{d\varepsilon_{i,d}} = -0.35 - (-0.27) = -0.08$ (see Table A.4).

for payers in other sectors. The logic is as follows. Palestinians living in close proximity to each other minimize commute, search and network costs, by working close to each other in Israel proper. If the costs of making alternative arrangements are sufficiently high and wages offered to payers and non-payers vary across locations in Israel, then permit prices are a function of local characteristics in the West Bank.

For example, consider two groups of workers who live in different West bank locations, A and B, (and work in locations A' and B' in Israel proper), but are otherwise identical; and assume that non-payers from A earn much less in Israel proper than non-payers from B (i.e. $W_{F,A'} < W_{F,B'}$). We expect brokers to charge higher permit prices to payers from A because their local networks can only secure an unattractive outside option in the formal sector. In contrast, the effect of average local wages of payers has an ambiguous effect on the permit price because brokers can raise prices for payers in high-wage areas due to their willingness to pay or charge them less if they think that such payers are more entrepreneurial and can find alternative employment more easily. Given the high likelihood of switching sectors prior to the policy, brokers are expected to use local and individual characteristics to estimate reservation prices for payers. After the policy, however, sector mobility is likely reduced, incentivizing brokers to estimate reservation prices more precisely through the use of only individual characteristics.

Ideally, to complete this exercise, one would need a geographic unit in the West Bank that is comparable to a neighborhood. In the EGS, we obtain three geographic markers from each worker: their municipality of residence in the West Bank (in many cases, this is a village), their corresponding district and the main gate (one of four) they used to enter Israel. The first marker is too refined to be considered a neighborhood, while the latter two are too large²⁶. For example, workers that reside in one district may be employed in a number of areas in Israel and may come from a variety of neighborhoods in the West Bank. Thus, when estimating average local wages for payers and non-payers, we use two geographic units, the district-gate unit and a local unit, which is constructed using ArcGIS technology in an attempt to define a more refined local unit (see [Appendix E](#))²⁷. For both payers and non-payers, average local wages are computed by geographic unit—industry type—year²⁸. For the district-gate (local cluster) unit, the cell size is restricted so that there are at least 10 (9) payers and 10 (9) non-payers in each district-gate-industry type-year²⁹.

²⁶In several cases, there are only a few observations per village.

²⁷Specifically, we use the network analysis algorithm in ArcGIS in order to group municipalities such that the maximum distance between two municipalities in a given group is no more than 15 km. The computation is based on geo-referenced data on the existing road network in the West Bank. The ruggedness of the terrain is also considered, allowing us to estimate more precise commute times—an alternative measure for defining local labor markets.

²⁸Technically, for the district-gate geographic unit, you can have a maximum of 176 cells: industry-type (construction/other) * year (2018/2019) * number of districts * number of gates = $2 * 2 * 11 * 4 = 176$, but in reality, the number of district-gate units with a positive number of observations is 43. This is primarily because individuals usually enter Israel from the gate that is closest to their district of residence. The number of cells with at least 10 payers and 10 non-payers per cell are 30.

²⁹Incidentally, several local clusters had only 9 observations, so we used it 9 a minimum threshold; see [Appendix 8](#) for more details.

6 Empirical Strategy

In this section, we show how the border policy affected worker outcomes using an event study and a difference-in-difference model. We then present an equation to estimate the determinants of permit prices before and after the policy. Our hypotheses are informed by the permit broker's maximization problem, outlined in the earlier section.

6.1 Event Study and Difference-in-Difference Model

To test whether the border policy had an impact on outcomes beyond differences in statistical means provided in the stylized facts, we estimate the parameters of the following OLS model for each industry type (construction, other) using the EGS:

$$Y_{i,t} = \delta_1 Event_t + \delta_2 X_{i,t} + \varepsilon_{i,t} \quad (7)$$

where $Y_{i,t}$ is one of the following: a binary variable for being a permit-holder, a binary variable for being a payer (conditional on having a permit), $\ln(\text{daily wages})$ or $\ln(\text{monthly permit price})$ ³⁰; $Event_t$ refers to the period after 2018Q3, after which the border policy is assumed to have been enforced; $X_{i,t}$ is a number of individual characteristics including: works for an official employer, worked for a single employer in the last three months, an interaction term between the latter two variables, one dummy variable each for fluency in Hebrew and in English, 6 marital dummies, number of children, June 2019 dummy variable, tenure in Israel and its square, number of years since first work permit, 11 district dummies, 6 educational attainment dummies, and 8 occupational dummies (see questionnaire in [Appendix B](#) for more details).

Our identification strategy rests on the assumption that unobserved determinants of the outcome variables are uncorrelated with the policy. The parameter of interest is δ_1 . According to the stylized model, $\delta_1 < 0$ if the outcome variable is wages, and $\delta_1 > 0$ for the remaining outcome variables. While the EGS includes a rich set of controls, we cannot account for unobserved individual heterogeneity in the form of individual fixed effects³¹. Another major shortcoming of the EGS is that due to the absence of a control group, we cannot conduct a difference-in-difference analysis. This is because all permit-holders, payers and non-payers, were affected by the policy. Using the PLFS, we can potentially address both shortcomings when the dependent variable is the $\ln(\text{daily})$ wage by estimating parameters of a difference-in-difference regression where wages of Palestinian permit-holders in Israel are compared to their counterparts in the West Bank before and after the policy.

There are two issues with this strategy. First, among wage-earning permit-holders sampled in the PLFS, those employed in Israel proper cannot be distinguished from those working in the settlements (who were

³⁰For the outcome variable, permit-holders, we need to use the PLFS since the EGS does not cover undocumented workers.

³¹It was not possible to collect personal information from respondents such as emails and phone numbers.

not affected by the border policy). Likewise, the PLFS sample includes a much more diverse set of workers than our sample of interest—wage-earners who work full-time and are experienced in their profession. As explained in Appendix 8, our sample of interest (targeted by the EGS) is much more likely to work more days, longer hours and have more tenure, implying that they might be more affected by the policy than migrant workers in the PLFS samples. To mitigate these differences, the sample of wage earners in the PLFS is restricted to those with a written or verbal contract. The second issue is that workers in the West Bank economy are employed in a myriad of occupations while migrant workers are concentrated in a few occupations in Israel. To make the two groups more comparable, we limit wage earners in the West Bank to those who are employed in elementary occupations or crafts/skilled work. Then, the parameter of interest γ_3 is estimated by:

$$W_{i,t} = \gamma_1 Event_t + \gamma_2 T_{i,t} + \gamma_3 Event_t * T_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (8)$$

where $W_{i,t}$ is the $\ln(\text{wage})$, $T_{i,t}$ is equal to 1 for wage-earning permit-holders in Israel and the settlements and 0 for wage-earners employed in the West Bank and α_i is a time-invariant individual fixed effect.

6.2 The Permit Broker's Pricing Strategy Towards Individual Payers

To determine the pricing strategy of brokers towards individual payers, wages of payers are decomposed into predicted wages and residual wages. Using the EGS, we estimate the parameters of the following specification for each industry type:

$$PermitPrice_{it} = \beta_1 Ref_t + \beta_2 PredWage_{it} + \beta_3 PredWage_{it} * Event_t + \beta_4 ResidWage_{it} + \beta_5 ResidWage_{it} * Event_t + \varepsilon_{it} \quad (9)$$

where $PermitPrice_{i,t}$ refers to the monthly permit price reported by individual payer i in year t (2018 or 2019); $Event_t$ refers to the post 2018Q3 dummy variable, after which the policy is assumed to have taken place; $PredWage_{it}$ and $ResidWage_{it}$ refer to individual payer i 's \ln predicted and \ln residual wage respectively in year t ; $\varepsilon_{i,t}$ is a well-behaved error term.

The permit broker's maximization problem suggests that β_3 and β_5 are weakly positive. This stems from the fact that after the border policy change, brokers primarily charged workers according to their wage (or willingness to pay) since workers experienced more difficulty switching sectors. Prior to the policy, however, we can only predict the direction of predicted wages for non-construction workers ($\beta_2 < 0$) and the

direction of residual wages for construction workers ($\beta_4 > 0$). The direction for the remaining parameters are theoretically ambiguous and are discussed in the results section.

6.3 The Permit Broker's Pricing Strategy at the Local Level

We expect worker mobility across sectors in both industry types to have been reduced as a result of the policy. Thus, we expect to find that in June 2018, brokers practiced third-degree price discrimination by setting prices according to both local and individual characteristics, but that in June 2019, as switching sectors became more difficult for workers, brokers relied heavily on individual characteristics, allowing them to charge higher prices and extract more profits. To test these predictions, we estimate the specification below for each industry type, (construction workers, other workers):

$$\begin{aligned} \text{PermitPrice}_{igt} = & \beta_1 * \text{Event}_t + \beta_2 * W_{ngt} + \beta_3 * W_{ngt} * \text{Event}_t + \beta_4 * W_{pgt} + \\ & \beta_5 * W_{pgt} * \text{Event}_t + \varepsilon_{igt} \end{aligned} \quad (10)$$

where PermitPrice_{igt} refers to the individual permit price reported by individual payer i living in geographic unit g in year t (2018 or 2019); W_{ngt} and W_{pgt} refer to average wages for non-payers and payers respectively residing in geographic unit g in year t ; ε_{igt} is a well-behaved error term. We expect $\beta_2 < 0$ because as average local wages for non-payers decrease (increase), the propensity of payers in their local area to switch to the formal or underground sector declines (rises), inducing permit brokers to charge high (low) prices; note that $\beta_2 = 0$ if brokers perceive switching as unlikely. Meanwhile, the effect of average local wages for payers, β_4 , is ambiguous. This is because brokers can set permit prices according to the estimated willingness to pay (as estimated by the average local wage of payers), implying that $\beta_4 > 0$. Alternatively, if brokers set higher (low) permit prices to payers residing in low (high)-wage areas because brokers anticipate the switching costs of low-earning payers are high (low), then $\beta_4 < 0$. Nevertheless, we expect the policy to dampen the effect of local characteristics such that $|\beta_2 + \beta_3| < |\beta_2|$ and $|\beta_4 + \beta_5| < |\beta_4|$.

7 Results

We present the results in the same order as the empirical strategy. First, we use the event study to quantify the effect of the border policy on outcomes after including a rich set of controls; then we proceed to the difference-in-difference analysis. Next, we examine brokers' pricing strategies using individual and local characteristics of payers before and after the policy. We report the results separately for workers in the construction industry and other industries.

7.1 Changes in Outcomes Before and After the Border Policy

Table IV presents estimates of the parameter of interest, δ_1 , in equation(7) to reveal how the policy led to changes in a number of prominent outcomes: 1.) the probability of becoming a permit holder, 2.) the probability of becoming a payer (among permit-holders), 3.) the (ln) of the monthly permit price, 4.) the (ln) wages of payers, and 5.) the (ln) wages of non-payers. Table IV reveals that within one year, from June 2018 to June 2019, several outcomes changed considerably. For example, Panel A shows that construction workers entered legal employment rapidly (col 1), although the legal jobs offered were disproportionately allocated to less formal work (col 2). Moreover, the raw increase in the permit price was about 0.11 log points while wages for payers and non-payers declined by 0.24 and 0.28 log points respectively.

[Insert Table IV here]

One explanation could be that the policy changed the composition of workers entering each sector (as shown in Table II), and this can also have an impact on prices and wages. For example, if the policy led to changes in sorting such that workers in 2019 were less proficient in Hebrew, this might explain the associated decline in wages. Likewise, if the policy allowed entry for a greater pool of workers, some of whom were inexperienced in negotiating with brokers (proxied for by variables like time since first work permit), an increase in the permit price would follow. To address these explanations, Panel B controls for a rich set of employer and worker characteristics. Parameter estimates suggest that about a quarter of the decline in wages for payers and non-payers is due to changes in observable characteristics before and after the border policy. At the same time, unadjusted permit prices understate the prices charged to payers.

In Panels C and D, we replicate the exercise for workers outside the construction industry. Two prominent issues stand out. First, a much larger share of permit-holders take jobs as payers than was previously seen in the construction industry. Second, non-payers' wages are left unchanged by the policy. These two trends may be related if formal jobs became more limited after the policy. In other words, for non-construction workers, the policy may have facilitated worker entry into legal semi-formal positions as payers but then complicated the possibility of securing or maintaining a formal position as a non-payer, allowing non-payers to earn a wage premium³². This can be seen in the descriptive statistics in Table III where the number of non-payers in non-construction industries declined by about 8% between June 2018 and June 2019, despite the 23% rise in permit-holders. Permit prices increased by 0.15 log points after the border policy but adjusting for skill level and employer characteristics suggests that this estimate is a lower bound. In contrast, the effect of border policy on non-construction wages is unchanged by including controls (Panel D). The fact that for both industry types, controlling for observable characteristics alters wages similarly for payers and non-payers, is consistent with the notion that there is no misallocation of

³²One possibility is that with a greater availability of payers—who are usually more flexible, work part-time and have multiple employers—employers could further limit the number of formal employees or non-payers.

labor (Weaver 2021).

Thus far, we can infer that the policy did not have a uniform effect on workers. Construction workers were more affected by the policy through a wage decline while non-construction workers were more likely to enter semi-formal employment and pay higher permit prices. Nevertheless, our overall estimates are closely aligned with various studies in the literature, which generally find that enforcement induces illicit payments while labor mobility raises wages. For example, we find that overall, monthly permit prices rise by 12.6% (without controls) to 18% (with controls); this is consistent with (Gathmann 2008) who finds that border enforcement increases prices of smugglers' services by 17%. Likewise, Sequeira (2016) shows that trade liberalization leads to a 20% decrease in bribe payments and Brown et al. (2021) find that a pact between gangs led to less competition and greater enforcement of collusive practices, which increased extortion payments by 20%³³. In terms of wages, we quantify the negative wage effect as ranging from 9% (with controls) to 13% (without controls), which is consistent with Naidu, Nyarko, and Wang (2016), who find that a reform allowing workers to switch employers more easily led to a 10% increase in wages. To corroborate our estimates, we conduct a difference-in-difference analysis using the PLFS.

A diff-in-diff analysis is reported in Figures X.(A) to X.(C) where γ_3 in equation (8) is estimated. The sample consists of male wage-earners between the ages of 25 and 59, who have employment contracts in elementary occupations or crafts/skilled work. In Figure X.(A), the treatment group consists of wage-earners in Israel who have a valid work permit while the control group are wage-earners in the West Bank economy. Figure X.(A) shows that wages decreased by a statistically significant 0.18 log points using an OLS specification and 0.08 points with fixed effects. Moreover, the decline in wages is driven by construction workers whose OLS and FE estimates are -0.23 and -0.12 log points respectively. For non-construction workers, the OLS effect is negative but when fixed effects are introduced, the parameter becomes positive. Experimenting with a different control group (i.e. Jerusalem ID card-holders employed in the West Bank) in Figure X.(B) and controlling for seasonal differences by running the regression only for quarter 2 samples (Figure X.(C)) does not change the qualitative nature of the results, except that changes in wages for non-construction workers are not statistically different from zero. Overall, these results are strongly consistent with our findings in Table IV Panels B and D. For completeness, we display other consequences of the policy in Table A.5.

[Insert Figure X.(A) here]

[Insert Figure X.(B) here]

[Insert Figure X.(C) here]

The Wage Markdown: To estimate the degree of employer market power before and after the border policy, an estimate of the wage markdown is useful. To do this, researchers are usually equipped with

³³Focused on informal traders, Bensassi and Jarreau (2019) show that traders pay bribes that are twice as high for banned goods.

employer-employee linked data, which is not available in contexts where illicit activity is rampant because workers are either not registered or wages are not accurately reported by the employer. However, using our model assumptions, we find a tractable way to compute a lower bound for the wage markdown. This is because we assume that prior to the border policy, payers are paid competitive wages, i.e. markdown is zero, and therefore comparing wages of any group to payers prior to the policy provides an estimate of the wage markdown. For example, the wage markdown for non-payers prior to the policy is 20%—one minus the ratio of non-payers’ wages to payers’ wages in 2018 ($374/468=80\%$ according to Table II). According to Lerner’s monopsony condition, the markdown implies a labor supply elasticity of (at most) 5, which is consistent with a number of estimates in the literature (Azar, Berry, and Marinescu 2022; Berger, Herkenhoff, and Mongey 2022; Lamadon, Mogstad, and Setzler 2022). Note that in 2018, the wage markdown of non-payers is equivalent to the share of payers’ wages allocated to the permit ($91/468=20\%$). This is expected, since net of the permit price, payers and non-payers had equal wages. The change in the markdown was drastic for workers employed in more competitive markets, increasing by almost 20 percentage points (Naidu, Nyarko, and Wang 2016) for payers and construction workers³⁴.

Alternative Explanations: Thus far, we have posited that the mechanism driving the decline in wages is the increased market power of employers who observe that workers’ outside option has decreased after the border policy. To ensure that this is the correct mechanism, we test whether alternative explanations can contribute to our findings. Since the observed decline in wages can be primarily ascribed to lower wages for construction workers, we consider whether there were other shocks that impacted Israel’s construction industry around the same time as the border policy; prices are seasonally adjusted using Findley et al. (1998). One possibility is that Israel’s construction industry experienced a shock that lowered real estate prices, which were then passed on to Palestinian construction workers in the form of lower wages. However, Figure A.2a shows that real estate prices have consistently increased since 2018Q4. Second, it is possible that there was a positive supply shock in the form of a large influx of foreign (non-Palestinian non-Israeli) guest workers in the construction industry. Since it is well-established that foreign guest workers serve as substitutes for Palestinian labor and particularly in construction (Aranki and Daoud 2010; Miaari and Sauer 2011), a rise in the availability of construction guest workers can lead to lower Palestinian wages³⁵. However, the number of guest workers in the construction industry, as evidenced by the number of wage slips, has barely changed between 2018 and 2019 (Figure A.2b). Additionally, we know from Tables A.2 and A.5

³⁴In Naidu, Nyarko, and Wang (2016), the markdown decreased from 49% to 28% when migrant workers became more mobile in an initially restrictive environment. In our case, the markdown for payers, who faced a relatively competitive environment in 2018, increased from 0% to 18%. Moreover, for construction workers the markdown rose from 18% to 36% for non-payers and 0% to 21% for payers. For non-construction workers, the markdown was unchanged for non-payers but increased from 0% to 10% for payers.

³⁵In a frictionless supply-demand framework, an increase in foreign guest workers in the construction industry can shift the supply curve to the right and lower wages for low-skilled and semi-skilled construction jobs through a movement along a downward sloping demand curve. Alternatively, assuming a model with frictions such that workers cannot capture market-clearing wages, a rise in foreign guest workers can make it more difficult for Palestinians to negotiate higher wages or secure more hours, leading to lower monthly wages/earnings.

that Palestinians in the construction industry worked approximately the same number of days in 2018 and 2019, but worked more hours in 2019, indicating that Palestinian labor was not replaced by construction guest workers. Third, it is possible that the construction industry experienced a negative labor demand shock, which implies lower wages between 2018 and 2019. As can be shown in Figures A.2c and A.2d, wages rose throughout 2019.

Worker Surplus and the Returns to Migration: Through higher permit prices and lower wages, we show in Table III that take-home pay fell by a resounding 1.43 billion NIS (\$398 million) or 2.4% of the West Bank's 2018 GDP³⁶. To account for compositional changes in the work force, we use our preferred estimates in Panels B and D of Table IV to compute adjusted estimates for black market revenue, take-home pay and the decline in the wage bill in 2019 (see last three rows of Table III). The estimates suggest that the decline in worker surplus was over-estimated at 16% $((8.85-7.42)/8.85)$ while the more accurate estimate is approximately 13% $((8.85-7.68)/8.85)$. Likewise, we can use the 2019 PLFS to estimate the returns to migration for payers. We find that excluding permit payments overstates the returns to migration by 44 to 61 percentage points³⁷. These estimates imply that not accounting for illicit payments can overstate the returns to migration by as much as relying on non-experimental estimates (McKenzie, Stillman, and Gibson 2010). In the next few sections, we characterize how brokers used information on market forces, institutional changes, and individual-level worker characteristics to extract maximum illicit payments.

7.2 Permit Broker's Pricing Strategy

The most natural way to test whether brokers practice price discrimination is to assess the degree in which wages are correlated with permit prices. We expect higher rates of price discrimination in 2019 because workers were less mobile across sectors, further incentivizing brokers to carefully target individuals based on their wages and other observable characteristics. Figure A.3(a-c) displays bin scatter plots such that monthly permit payments are regressed on monthly wages. The positive correlation between the two variables is stronger after the policy. Estimates reveal that for every 1000 NIS increase in monthly wages, monthly payments are expected to increase by 52 NIS in 2018 and 105 NIS in 2019.

Another indicator of market power is the extent in which brokers created barriers to legal employment by imposing a regressive pricing structure. Creating barriers to entry was particularly relevant in 2018 when workers and firms were not under pressure to join the legal sectors. We show in Figure A.4 that permit prices are extremely regressive in both years such that workers at the high end of the wage distribution

³⁶According to the World Bank, the West Bank's Nominal GDP in 2018 was \$16.28 billion, which means the West Bank lost 2.4% (\$398 million/\$16.28 billion) in spending/remittances after the policy.

³⁷To compute this, we first exclude all migrants who are not payers and estimate wage differences between payers and domestic workers. We find that payers earn wages that are 171% greater than those of stayers. Then we control for individual fixed effects, which identifies the returns to migration for switchers (from stayers to migrant workers who are payers) and find that the premium is reduced to 117%. Since illicit payments are 20% of monthly salaries in 2018 and 28% of monthly salaries in 2019, the gains from migration are reduced to 73% before the policy change and 56% after the policy change.

paid about 12-15% of their wage towards the permit price while low-earners paid over 25% of their wage. Using firm-level data, Balletta and Lavezzi (2023) find that extortion payments to the Sicilian Mafia are regressive, accounting for 40% of profits by small firms and 2% of profits by large firms. In our context, permit prices are particularly regressive towards non-construction workers in 2018, whose low-earners made higher payments than their high-earning counterparts *even in absolute terms* (see Figure A.3c).

7.2.1 Construction Workers

Now, we proceed by formally testing how the border policy plausibly affected the pricing strategy of brokers towards payers (equation 9). For construction workers, column (1) of Table V reveals that in June 2018, a 1% increase in the individual wage is associated with a 0.19% increase in the permit price. This result is economically and statistically significant and the corresponding estimate is 0.22% in June 2019. Surprisingly, our estimates closely resemble those of Brown et al. (2021), who find a strong and positive association between extortion payments made by firms to gangs and the value of items delivered by firms³⁸.

[Insert Table V here]

When decomposing the individual wage into its predicted and residual components in col (2), residual wages were strongly positively related to permit prices while predicted wages were negatively related. This implies that workers were negatively selected in terms of observable characteristics (lower likelihood of switching), but positively selected in terms of unobservable characteristics (higher willingness to pay). Thus, we can infer that even prior to the event, brokers used a combination of first- and third-degree price discrimination tactics. When substituting the predicted wage by individual observable characteristics, we do indeed find that prior to the event, workers with less valuable observable characteristics (e.g. not fluent in English) were charged higher permit prices³⁹. However, after the policy, permit brokers continued to charge workers based on their residual wage but were now also able to target workers with more valuable observable characteristics (section 5.3). The fact that first- and third-degree price discrimination tactics targeted mainly skilled workers implies that formal sector jobs became more scarce after the policy.

Further examination leads us to display quantile regression estimates (of Table V col (2)) to investigate which parts of the wage distribution were most impacted. Figure A.5 reveals that in 2018, permit brokers mostly targeted middle class (50-70 percentile of the predicted wage distribution) payers with low observable characteristics. Meanwhile, the positive relationship between residual wages and permit prices was primarily driven by the lowest deciles of the residual wage distribution. After the policy, although permit

³⁸Specifically, they find that a \$1000 increase in the value of deliveries increases extortion payments to gangs by about 0.13 log points. In our case, a 1000 NIS (\$250) increase in monthly wages increases permit prices by about 3-5 log points depending on the year. Thus, the estimates are about equal.

³⁹Specifically, prior to the policy, construction workers with the following observable characteristics had lower (higher) permit prices: those who had an official employer, spoke English (Hebrew) proficiently, worked more days (hours) and worked as laborers (building and related trades workers). After the policy, the only observable characteristic that had a statistically significant impact on permit prices for construction workers was the number of years worked in Israel, i.e. tenure.

prices across the entire distribution were positively correlated with predicted and residual wages, payers with lower observable and unobservable characteristics were the most adversely affected. This is consistent with the stylized fact that, after the policy, permit prices became more regressive only for construction workers (Figure A.4), with workers at the low end of the distribution being targeted more aggressively⁴⁰.

7.2.2 Non-Construction Workers

For other workers, individual wages had no effect on permit prices in June 2018, but this changed in 2019 when wages played a prominent role (Table V col (3)). Note that these three variables alone, (individual wages, year dummy and interaction term), account for 32% of the variation in permit prices—twice that for construction workers. Col (4) demonstrates that the absence of a correlation between individual wages and permit prices in 2018 is completely driven by residual wages since workers with less valuable observable characteristics were charged higher permit prices in 2018. This is in line with the regressive pricing structure imposed on agricultural, manufacturing and other workers prior to the policy (Figure A.4c). When the predicted wage is substituted by individual observable characteristics, we find that there is a high wage penalty associated with less valuable observable characteristics such as not having an official employer⁴¹.

In 2019, permit brokers used both predicted and residual wages to maximize profits, charging workers higher prices the higher the wage. We interpret the shift in brokers' strategy from using only third-degree to a combination of first- and third-degree price discrimination tactics, as a means of maximizing profits by exploiting a context where all groups—not only those with less valued observable characteristics—had a lower likelihood of switching to the formal sector. Quantile regressions based on col (4) show that the impact of predicted and residual wages on permit prices was both imprecisely estimated and fairly uniform prior to the policy (Figure A.6). However, after the policy, those from the middle to the high end of the wage distribution were strongly targeted. These results corroborate the stylized fact that for non-construction workers, permit prices were considerably more progressive (Figure A.3c) and individually-targeted.

7.2.3 Local Wages

In this section, we demonstrate the relationship between the permit price and local (wage) characteristics of a payer's region of residence. We use two units to measure local wages, the local cluster unit and the district-gate unit. For the local cluster analysis, there are three types of payers worth noting. The first group (414 observations) consists of those who belong to a local cluster that has at least 9 payers and 9 non-

⁴⁰These results are consistent with the notion that even though the policy reduced the likelihood of switching between sectors for everyone, permit brokers were aware that those at the low end of the wage distribution were least likely to succeed in switching.

⁴¹For workers outside the construction industry, prior to the policy, lower permit prices were associated with: having an official employer, being young, shorter commutes, and fewer hours worked. After the policy, lower permit prices continued to be associated with having an official employer, but were now also associated with tenure (rather than age). Additionally, working fewer days was also associated with lower permit prices after the policy, replacing lower commute times and fewer hours.

payers in each industry type-year-local cluster cell; to view all the clusters, see [Appendix E](#). The second group of payers (151 observations) reside in a local cluster that has at least 9 payers but has fewer than 9 non-payers in the cluster. The third group (131 observations) consists of payers that lack both, a sufficient number of payers and non-payers, but live in a district where there are at least 9 payers and 9 non-payers that do not belong to any cluster. [Table VI](#) reports our results for the local-cluster unit, which only includes construction workers due to the limited sample of non-construction workers. All three groups of payers are included in col(1)-(3) but only the first two groups are included in col(4)-(6).

[Insert Table VI here]

The first column reveals that for construction workers in June 2018, average local wages of non-payers are negatively associated with permit prices while average local wages of payers are positively associated with the permit price. Since construction workers were similar across sectors prior to the policy change ([Figures III.\(A\)](#) and [III.\(B\)](#)) and switching sectors was costless ([Table A.1](#)), brokers used third-degree price discrimination in the form of local wages to predict a worker's willingness to pay in June 2018. In contrast, local characteristics have almost no effect on permit prices in 2019. Col(2) shows that in the presence of controls, brokers charged higher permit prices in 2019 to payers who resided in neighborhoods where non-payers had higher wages. Unlike in 2018, where payers can negotiate lower permit prices for living in close proximity to high-earning non-payers, brokers in 2019 demanded higher payments because switching sectors was less likely for payers. Thus, brokers set permit prices in 2019 according to payers' willingness to pay (i.e. average wage) rather than their refusal power (i.e. the likelihood of switching sectors).

To capture whether the presence of non-payers is relevant for predicting permit prices, we include a dummy variable in col(3) for whether a payer's local cluster has at least 9 payers but has fewer than 9 non-payers (group 2 of payers). As expected, the parameter estimates show that payers who lack a critical mass of non-payers in their local area of residence, are charged higher permit prices in 2018 but after the policy, there is no effect. These results imply that local job opportunities and local networks play some role in allowing workers to negotiate lower permit prices. Possible mechanisms range from information diffusion to organizing informally ([Breza, Kaur, and Krishnaswamy 2019](#)).

We remove the third group of payers in col(4)-(6) and find that the results are similar, although a bit attenuated. Additionally, when changing the geographic unit from local cluster to district-gate ([Table A.6](#)), we see that the average local wage for non-payers continues to be negatively correlated with the permit price in 2018 but there is almost no effect on permit prices in 2019. However, the positive correlation between the average wages of payers and the permit price in [Table VI](#) no longer holds, suggesting that it is beneficial to measure local wage with a higher level of granularity.

[Table A.6](#) also highlights that for workers in other industries, average wages for both non-payers and payers are negatively correlated with permit prices prior to the policy but not afterwards. This suggests that

permit brokers targeted non-construction payers from all low-wage areas in 2018, where job opportunities are limited and mobility across sectors is lower than for construction workers. This is consistent with the fact that workers outside the construction industry had a lower propensity to switch sectors even prior to the policy. Nevertheless, we find that these strong negative correlations are dampened by the policy such that in 2019, there is almost no association between permit prices and local wages of payers and non-payers.

8 Conclusion and Discussion

The border policy in Israel that substantially raised the cost of undocumented employment offers a unique opportunity to examine the impact of border enforcement on the illicit market in permit trading and the increased market power of intermediaries and formal employers. First, we show the policy was effective in reducing undocumented employment without decreasing overall migration. However, undocumented workers mostly turned to semi-formal employment, where permits are purchased through the black market, rather than formal employment where permits are secured through official channels. Thus, border policy induces a plausibly exogenous demand shock to the permit market, doubling black-market revenue through quantity (70%) and price (13%) increases. The rise in permit prices was not uniform and took the form of a shift from third-degree to first-degree price discrimination tactics.

This natural experiment shows how illicit payments are affected by market forces (Bensassi and Jarreau 2019; Brown et al. 2021; Gathmann 2008; Olken and Barron 2009; Sequeira 2016). Unlike other studies, however, we observe how an exogenous shock to an illicit market influences labor market outcomes such as wages, hours worked, and treatment by employer. While payers were more adversely affected by the policy, we show that even formally hired non-payers experienced a decline in wages, likely due to the reduction in the outside option. Overall, the results are consistent with a story where worker bargaining power is reduced through an increase in intermediary and employer market power in the permit market.

In addition to highlighting the increased role of intermediaries in reinforcing the market power of firms, we provide evidence of heterogeneity in the relative market power of employers by formality status. In our context, the distinction between formal and semi-formal employers arises from a national quota that favors formal employers by allocating more permits to them. Prior to the policy, we show that semi-formal employers absorbed the full cost of the permit, while formal employers set wages according to the outside option. This implies that formal employers had more market power in the labor market than semi-formal employers. Furthermore, the monopsony power of formal employers in the labor market is strengthened by their monopoly in the illicit permit market. Additionally, formal employers are rarely apprehended when selling government-issued work permits. Thus, while the literature has found that politically-connected firms and candidates extract rents by exploiting policies and institutional weaknesses that encourage illicit

activities (e.g. corruption, state violence) (Burgess et al. 2012; Callen and Long 2015; Colonnelli and Prem 2022; Klor, Saiegh, and Satyanath 2021; Okunogbe and Pouliquen 2022), we show that such policies allow firms to accrue greater rents, specifically, through increased market power. Moreover, after the policy change, the cost of the permit is shared between semi-formal employers and payers, suggesting that less connected firms also gained market power.

Ironically, while border enforcement policies are usually security-motivated, they usually give rise to organized crime; thus far, the literature has focused on the role of intermediaries as smugglers (Friebel and Guriev 2006; Gathmann 2008). This is a limitation not only because there are several contexts in which intermediaries illicitly trade permits and visas, but also because intermediaries who sell permits are knowledgeable about the labor market. They may secure job matches and potentially collude with workers or employers, shifting bargaining power. While we do not observe collusion directly, our analysis implies that employers and intermediaries tacitly collude to set lower wages and higher permit prices.

Our findings highlight the unintended consequences of border enforcement policies. By increasing the cost of migration, border enforcement is expected to have a negative effect on "outsiders" (Gathmann 2008) and a limited effect on insiders (Clemens, Lewis, and Postel 2018). Instead, we show almost the exact opposite. We find that while incumbent workers receive better treatment by their employers, overall, they were adversely affected by strict border enforcement through higher permit prices, lower wages and potentially greater collusion between employers and intermediaries. Meanwhile, we find a limited positive effect for outsiders. Specifically, border enforcement does not lead to migration deterrence, but in fact, there is a slight uptick in overall migration. To the extent that search frictions in the permit market deterred some individuals from migrating prior to the policy, increased enforcement may have encouraged migration by reducing search frictions through an expansion of the permit market. These results imply that border enforcement is incomplete without regulation of the permit trade, and can thus, yield unintended consequences.

While the main aim of this paper is to examine how border enforcement and labor market formalization led to a redistribution of the wage bill, our multiple data sources allow us to adjust estimates for the returns to migration. We find that the returns to migration are considerably overstated if one does not account for one of the most substantial costs of migration—payments made to intermediaries. Specifically, although individuals who migrate as payers are expected to earn wages that are more than twice as high as domestic wages, accounting for monthly permit payments reduces the migration premium to a return of 73% prior to the policy change and 56% after the policy change. In other words, the returns to migration after accounting for illicit payments corresponds to 48% (before the policy change) and 62% (after the policy change) of the returns to migration without this adjustment. Although the literature has typically focused on the importance of using experimental methods to compute the gains from migration because non-experimental estimates overstate the returns to migration (Clemens 2013; McKenzie, Stillman, and Gibson 2010; McKenzie and

Yang 2012; Clemens 2011; Stillman et al. 2015), little work has been done to understand how the market structure of illicit payments (and perhaps other forms of worker exploitation) reduces the gains to migration for workers and their families (Migration Data Portal 2021–2023; Ruhs 2013; Weyl 2018).

We conclude by speaking to two policy debates. The first debate relates to which policies are most effective in reducing employer market power in labor markets. Several arguments have been proposed ranging from minimum wage hikes, better antitrust legislation (to reduce industry concentration), increases in collective bargaining agreements, and reforms that reduce mobility costs Bivens, Mishel, and Schmitt (2018), Deroncourt and Montialoux (2021), and Naidu and Posner (2022). Our results suggest that most of these policies are likely ineffective since they usually apply only to documented workers. For example, suppose Israel institutes a minimum wage hike. If the minimum wage hike makes work permits more valuable and increases the demand for permits, we can expect the minimum wage hike to be (partially) offset by a rise in the permit price. Moreover, it is likely that employers collude with permit brokers, leading to stagnant wages and individually-targeted permit prices, potentially leaving workers worse off and less mobile.

The second debate questions whether work permit markets are welfare-enhancing (Lokshin and Ravalion 2022). Ultimately, this question depends on the society's reference point. Relative to no immigration, work permit markets are clearly welfare-enhancing for both citizens and non-citizen migrants. However, if the reference point used is one of welfare-maximization, it is clear that current work permit markets are not welfare-enhancing. For example, it can be shown that a more progressive pricing structure in 2018 could have generated just as much revenue for permit brokers and formal employers but allowed more workers to enter legal employment, increasing efficiency and equity⁴². Overall, we identify a few factors that undermine the usefulness of work permit markets: 1.) policies that reduce worker mobility and employment opportunities; 2.) deregulation such that the market power of sellers is unchecked and; 3.) the involvement of intermediaries (permit brokers) in the selling process, who have worker-specific information that is usually private. We conclude that while it is possible for work permit markets to maximize social welfare, such markets are ripe for manipulation and require rigorous monitoring by governmental agencies and appropriate intervention to prop-up the bargaining power of workers and employers with less political clout.

⁴²Although semi-formal employers would still have had to bear the full cost of the permit price, at least they would have had more access to migrant workers than what actually took place in 2018.

Appendix A

Table A.1: Selection into Legal and Illegal Work

Probit Model (Marginal Effects)	From Underground to		From Permit-holder to	
	Permit-holder		Underground Worker	
	(1)	(2)	(3)	(4)
Construction Industry	0.29 (0.50)	0.29* (0.50)	-0.42*** (0.15)	-0.42*** (0.15)
Ln(Wage) in Last Visit	0.15*** (0.05)	0.15** (0.07)	-0.06*** (0.02)	-0.05** (0.02)
Ln(Wage) in Last Visit x Construction Industry	-0.06 (0.09)	-0.06 (0.09)	0.07** (0.03)	0.07** (0.03)
2018-2019	0.18*** (0.03)	0.20 (0.40)	-0.03*** (0.01)	-0.02 (0.13)
Ln(Wage) in Last Visit x (2018-2019)		-0.01 (0.07)		-0.00 (0.02)
Observations	769	769	1,994	1,994

Note: PLFS (2016-2019). Sample is restricted to wage-earning men between the ages of 25 and 59 who worked in Israel and/or settlements in current and previous visits for 18-27 days per month. The table displays marginal effects of a probit model where the dependent variable in cols (1) and (2) equals 1 if an individual works with a permit in Israel but worked without one in the previous visit, and 0 if they worked underground in both visits. In cols (3) and (4), the dependent variable equals 1 if the individual earned wages in Israel/settlements with a work permit in the previous visit but currently works underground and 0 if they worked with a work permit during both visits. Survey weights are used and heteroskedasticity-robust standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.2: Descriptive Statistics for Construction Workers in June 2018 and June 2019

Construction Workers Variable Name	2018			2019			2019-2018
	Payers	Non-Payers	Diff	Payers	Non-Payers	Diff	Diff-in-Diff
Average Age	36.5	39.2	2.7**	37.5	40	2.7*	-0.05
%Single	0.05	0.03	-0.02*	0.07	0.08	0.01	0.03
%Married	0.87	0.85	-0.02	0.91	0.84	-0.07	-0.05
Average Number of Kids	4.6	4.8	0.15	4.1	4.2	0.09	-0.06
%Illiterate	0.02	0.02	-0.00	0.01	0.00	-0.01	-0.01
%Can Read and Write	0.09	0.10	0.02	0.01	0.06	0.05**	0.04
%Primary Schooling	0.14	0.23	0.09*	0.14	0.12	-0.03	-0.12*
%Preparatory Schooling	0.39	0.36	-0.03	0.37	0.35	-0.03	0.00
%Secondary Schooling	0.24	0.16	-0.08***	0.26	0.27	0.00	0.09
%Post-Secondary Schooling	0.12	0.13	0.01	0.20	0.21	0.01	-0.00
% Speak Hebrew	0.59	0.63	0.03	0.44	0.42	-0.02	-0.05
% Speak English	0.07	0.03	-0.04**	0.07	0.21	0.14***	0.18***
Tenure in Months	87	111	23.9**	88.3	88	-0.77	-24.6*
Time since First Permit	8.1	10.1	2.0**	6.9	10.0	3.0**	1.0
% with a single employer	0.39	0.58	0.18***	0.29	0.69	0.40***	0.22***
% Avg number of employers	1.9	1.8	-0.15	2.7	1.7	-1.1***	-0.90***
% works for Official Employer	0.34	0.91	0.57***	0.24	0.85	0.61***	0.03
% Official and single Employer	0.10	0.56	0.46***	0.13	0.65	0.52***	0.06
Hours worked last week	36.3	37.3	0.99	41.3	44	3.1***	2.1
Commute time (minutes)	164	132	-31.7***	204	163	-42***	-9.9
Days worked last month	21.9	21.1	-0.71***	21.0	20.2	-0.84	-0.13
Real daily wage (NIS 2019)	496	406	-91***	394	319	-75***	15.4
Daily permit payment	97	0.00	-97***	113	0.00	-113.5***	-16.4***
Net daily wage	399	406	6.4	281	319	38.2**	31.8*
Number of Observations	342	356		362	291		

Notes: EGS(2018-2019). The table reports summary statistics by payer/non-payer status and year. T-tests are reported for differences in means between payers and non-payers for each year, and diff-in-diff estimates between 2019 and 2018. Survey weights are used and statistical significance is reported at the 10% (*), 5% (**) and 1%(***) level.

Table A.3: Descriptive Statistics for Non-Construction Workers in June 2018 and June 2019

Non-Construction Workers		2018			2019			2019-2018
Variable Name	Payers	Non-Payers	Diff	Payers	Non-Payers	Diff	Diff-in-Diff	
Average Age	37.4	37.3	-0.09	35.7	35.8	0.15	0.24	
%Single	0.07	0.04	-0.02	0.04	0.24	0.19**	0.21***	
%Married	0.73	0.75	0.02	0.91	0.74	-0.17**	-0.18**	
Average Number of Kids	4.2	3.8	-0.38	3.6	3.5	-0.11	0.27	
%Illiterate	0.05	0.03	-0.02	0.00	0.00	0.00	0.02	
%Can Read and Write	0.20	0.11	-0.10***	0.02	0.01	-0.01	0.09**	
%Primary Schooling	0.19	0.17	-0.02	0.15	0.07	-0.08	-0.06	
%Preparatory Schooling	0.27	0.30	0.03	0.37	0.39	0.03	0.00	
%Secondary Schooling	0.16	0.26	0.09**	0.30	0.32	0.01	-0.08	
%Post-Secondary Schooling	0.12	0.13	0.01	0.16	0.20	0.04	0.03	
% Speak Hebrew	0.52	0.48	-0.04	0.23	0.44	0.21**	0.25**	
% Speak English	0.05	0.04	-0.02	0.10	0.19	0.09	0.11	
Tenure in Months	83	79	-3.8	61	81	19.7	23.6*	
Time since First Permit	7.6	7.6	0.05	5.3	6.9	1.6*	1.5	
% with a single employer	0.60	0.57	-0.03	0.43	0.62	0.19***	0.22**	
Avg number of employers	1.6	1.6	0.03	2.1	1.8	-0.26	-0.29	
% works for Official Employer	0.16	0.90	0.74***	0.50	0.82	0.32***	-0.42***	
% Official and single Employer	0.10	0.54	0.44***	0.33	0.54	0.21***	-0.23***	
Hours worked last week	31.6	33.1	1.5	41	42	1.1	-0.39	
Commute time (minutes)	113	124	10.6**	217	180	-36.8**	-47***	
Days worked last month	21.2	21.0	-0.21	22	21	-1.1**	-0.86*	
Real daily wage (NIS 2019)	411	321	-90***	370	330	-41**	50**	
Daily permit payment	79	0.00	-79***	88	0.00	-88***	-9.3***	
Net daily wage	333	321	-11.9*	282	330	47***	59***	
Number of Observations	219	266		345	165			

Notes: EGS(2018-2019). The table reports summary statistics by payer/non-payer status and year. T-tests are reported for differences in means between payers and non-payers for each year, and diff-in-diff estimates between 2019 and 2018. Survey weights are used and statistical significance is reported at the 10% (*), 5% (**) and 1%(***) level.

Table A.4: Are Payers' Observable and Unobservable Skills transferable to Other Sectors

June 2018 EGS	$\hat{W}_{i,d,s}$	$\hat{W}_{i,d,s}$	$\hat{W}_{i,d,s}$	$\hat{W}_{i,d}$	$\hat{W}_{i,d,s}$	$\hat{W}_{i,d}$
	(1)	(2)	(3)	(4)	(5)	(6)
Predicted Wage ($\hat{W}_{i,d}$)	0.74*** (0.07)	1.13*** (0.07)				
Residual Wage ($\varepsilon_{i,d}$)			-0.00 (0.04)	-0.01 (0.03)	-0.27*** (0.07)	-0.35*** (0.05)
Constant	1.37*** (0.42)	-1.03** (0.42)	5.97*** (0.01)	6.17*** (0.01)	5.77*** (0.01)	6.00*** (0.01)
Sample	Construction	Other	Construction	Construction	Other	Other
Observations	330	208	330	330	208	208
R-squared	0.26	0.53	0.00	0.00	0.06	0.24

Note: The sample is limited to payers in the June 2018 round of the EGS. Estimates are produced separately for construction workers and those in other industries. The exercise is supposed to reveal the extent to which predicted wages—as measured by individual's observable characteristics— and residual wages shape the maximum predicted wage for a payer in an alternative sector ($\hat{W}_{i,d,s}; s = F, U$). Survey weights are used and heteroskedasticity-robust standard errors are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A.5: Other Effects of the Border Policy

	Commute Time		Hours Worked		Treatment by Employer	
	Payers (1)	Non-Payers (2)	Payers (3)	Non-Payers (4)	Payers (5)	Non-Payers (6)
Construction Workers (No Controls)						
Event	0.40*** (0.12)	0.31*** (0.11)	0.49*** (0.08)	0.71*** (0.10)	0.02 (0.09)	0.40*** (0.12)
Observations	704	643	704	643	704	643
R-squared	0.05	0.04	0.07	0.13	0.00	0.04
Construction Workers (W/ Controls)						
Event	0.47*** (0.09)	0.25*** (0.10)	0.66*** (0.08)	0.74*** (0.09)	0.10 (0.10)	0.34*** (0.10)
Observations	704	643	704	643	704	643
R-squared	0.38	0.34	0.41	0.42	0.13	0.17
Non-Construction (No Controls)						
Event	1.04*** (0.06)	0.57*** (0.17)	0.96*** (0.08)	0.93*** (0.13)	0.54*** (0.09)	0.49*** (0.15)
Observations	562	428	562	428	562	428
R-squared	0.46	0.12	0.25	0.22	0.08	0.06
Non-Construction (W/ Controls)						
Event	0.88*** (0.09)	0.42*** (0.13)	0.97*** (0.13)	1.01*** (0.15)	0.50*** (0.15)	0.45*** (0.14)
Observations	562	428	562	428	562	428
R-squared	0.58	0.32	0.45	0.48	0.20	0.25

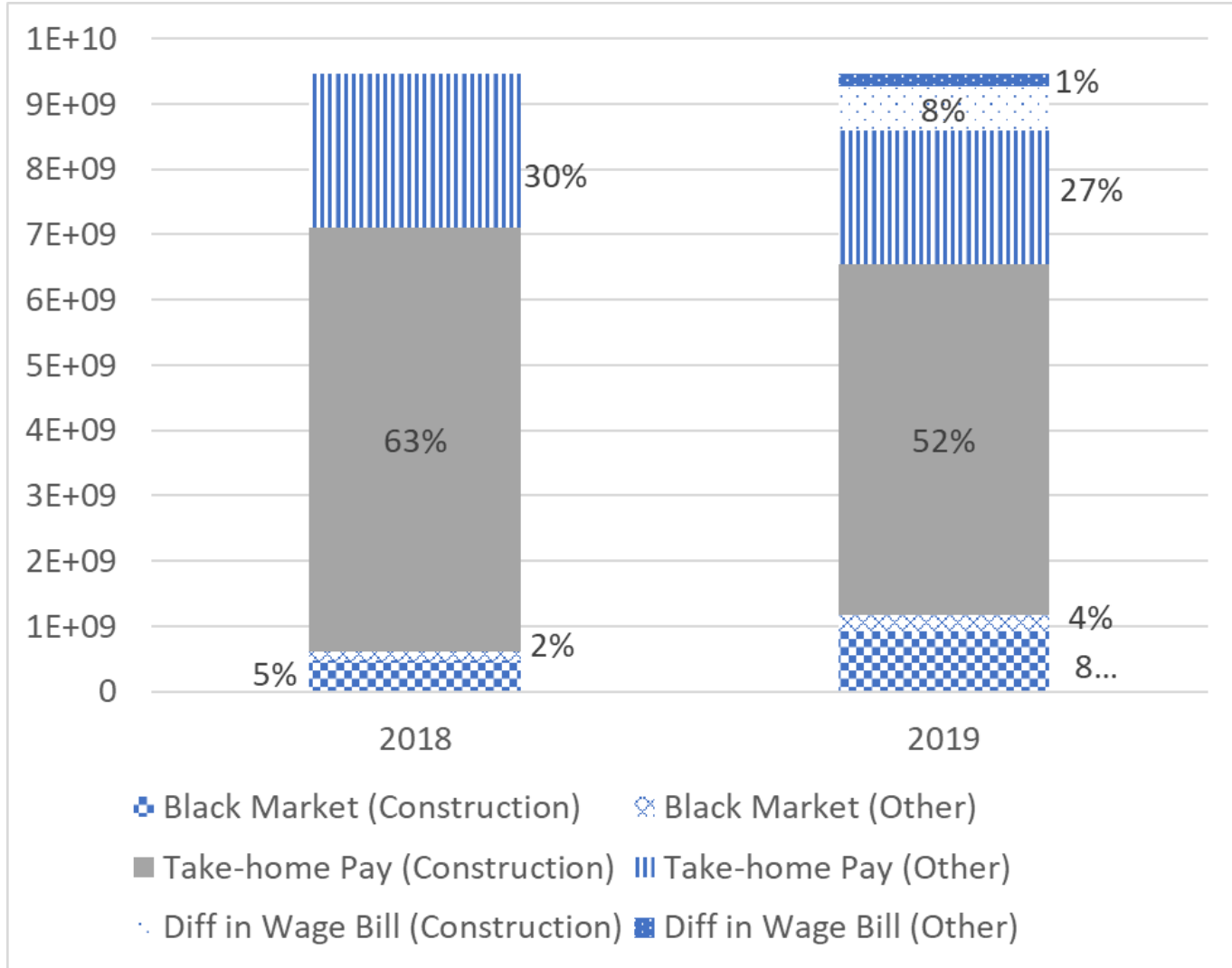
Note: (EGS and PLFS)— This table provides OLS estimates of the impact of the policy using the June 2018 and June 2019 rounds of the EGS. There are three dependent variables: commute time (in minutes) divided by 100, weekly hours worked divided by 10, and treatment by employer (0 to 5). The sample is limited to men between the ages of 25 and 59. In Panels A and C, there are no controls for the construction and non-construction industries respectively. Panels B and D include the same controls as those in Table 4. Survey weights are used and heteroskedasticity-robust standard errors are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A.6: Permit Prices and Average Gate-District Wages

Y=Ln(Monthly Permit Price)	Construction Workers			Other Workers		
District-Gate Wages	(1)	(2)	(3)	(4)	(5)	(6)
Average Wage (Non-Payers)	-0.38*** (0.07)	-0.38*** (0.07)	-0.47*** (0.10)	-1.21*** (0.16)	-1.25*** (0.17)	-1.31*** (0.23)
X June 2019	0.53*** (0.17)	0.52*** (0.18)	0.82*** (0.18)	0.73*** (0.24)	0.76*** (0.24)	0.81*** (0.25)
Average Wage (Payers)	0.07 (0.06)	0.07 (0.06)	0.19*** (0.06)	-1.20*** (0.15)	-1.19*** (0.15)	-1.16*** (0.26)
X June 2019	-0.23 (0.31)	-0.22 (0.31)	0.07 (0.40)	1.48*** (0.34)	1.34*** (0.36)	1.15*** (0.41)
June 2019	-1.64 (2.27)	-1.59 (2.29)	-5.09* (2.83)	-12.96*** (1.96)	-12.29*** (2.08)	-11.42*** (2.58)
Cell size ≥ 10		X	X		X	X
Controls			X			X
Constant	9.46*** (0.39)	9.50*** (0.40)	9.63*** (0.57)	21.58*** (1.20)	21.77*** (1.22)	22.15*** (2.16)
Observations	704	685	685	550	536	536
R-squared	0.14	0.14	0.34	0.25	0.26	0.48

Notes: EGS June 2018 and 2019 rounds. Parameters above are estimated using OLS where the dependent variable is the natural logarithm of the monthly permit price. All observations are payers either in June 2018 or June 2019. The sample in col (1)-(3) is limited to construction workers and in col (4)-(6), the sample is limited non-construction workers. In col(2),(3),(5) and (6), the sample is restricted to observations whose corresponding cell—non(payer)-industry type-districtgate-year— includes at least 10 observations. Survey weights are used and heteroskedasticity-robust standard errors are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Figure A.1: The Redistribution of the 2018 Wage Bill by Industry



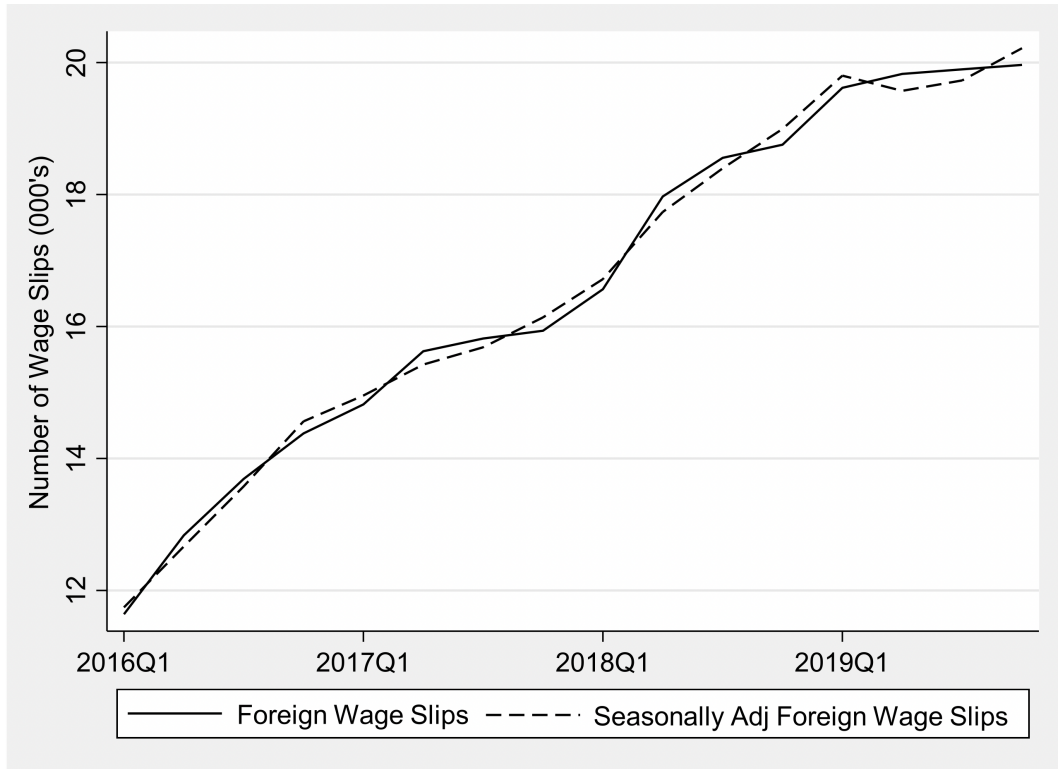
Note: Source: EGS. Refer to Table III for more details.

Figure A.2a: Housing Price Index in Israel (2016-2019)



The figure above displays the housing price index in Israel such that 1993 is the base year and equal to 100. The data is produced by Israel's Ministry of Finance but monthly indices are publicly available on the Israeli Central Bureau of Statistics website.

Figure A.2b: Number of Foreign Wage Slips (000's) in Construction (2016-2019)



The figure above displays the number of wage slips (in thousands) for foreign guest workers (non-Israelis and non-Palestinians) in the construction industry between 2016Q1 and 2019Q4. The data is publicly available on the Israeli Central Bureau of Statistics (CBS) website and is based on employer-reported administrative data from the National Insurance Institute (NII).

Figure A.2c: Monthly Wages for Foreign Guest Construction Workers (2016-2019)



The figure above displays average monthly wages for foreign guest workers (non-Israelis and non-Palestinians) in the construction industry between 2016Q1 and 2019Q4. The data is publicly available on the Israeli Central Bureau of Statistics (CBS) website and is based on employer-reported administrative data from the National Insurance Institute (NII).

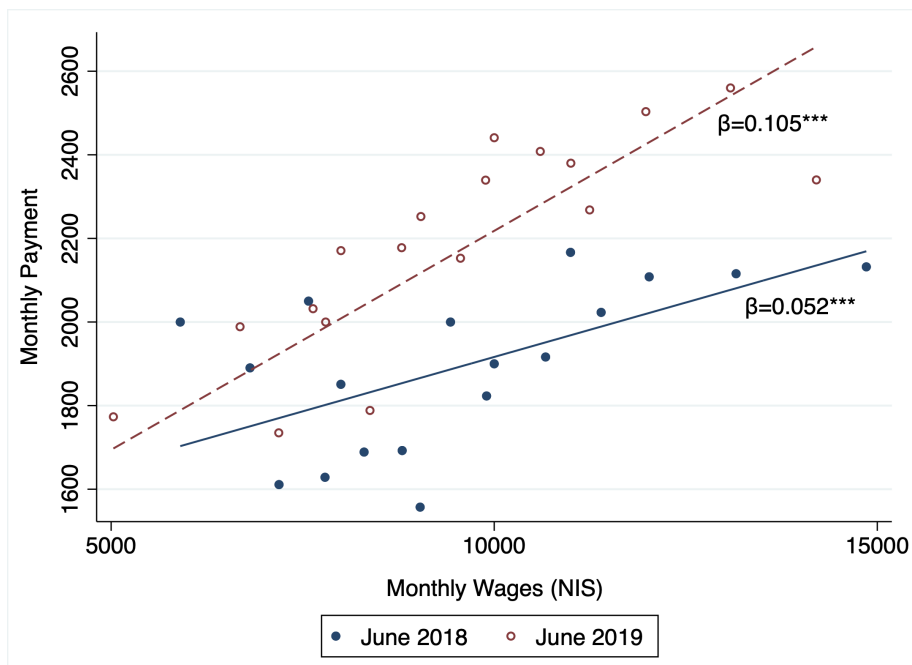
Figure A.2d: Monthly Wages for Israeli Citizens in the Construction Industry (2016-2019)



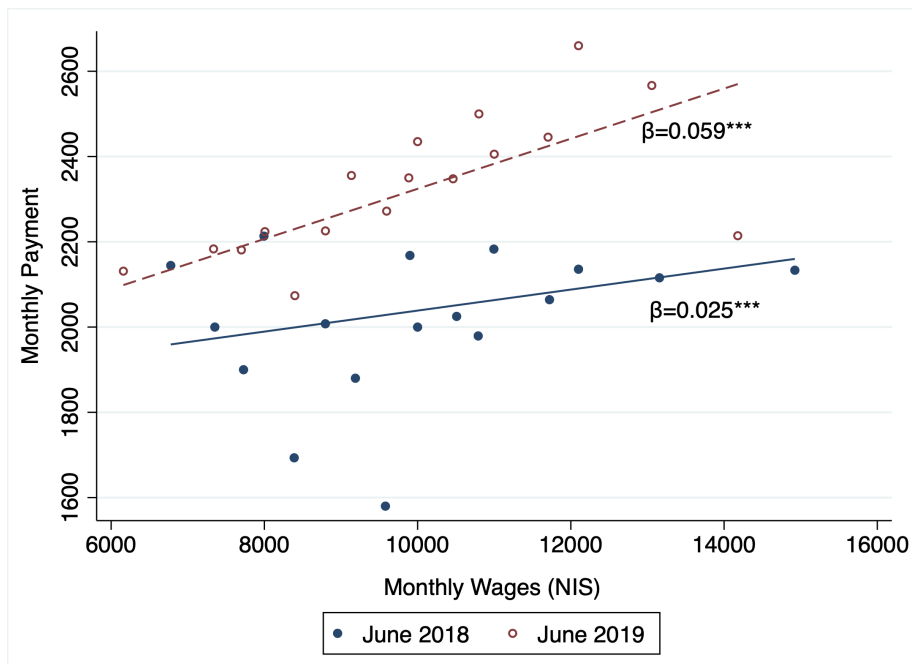
The figure above displays average monthly wages for construction workers who are Israeli citizens between 2016Q1 and 2019Q4. The data is publicly available on the Israeli Central Bureau of Statistics (CBS) website and is based on employer-reported administrative data from the National Insurance Institute (NII).

Figure A.3: Wages and Permit Prices by Year and Industry Type

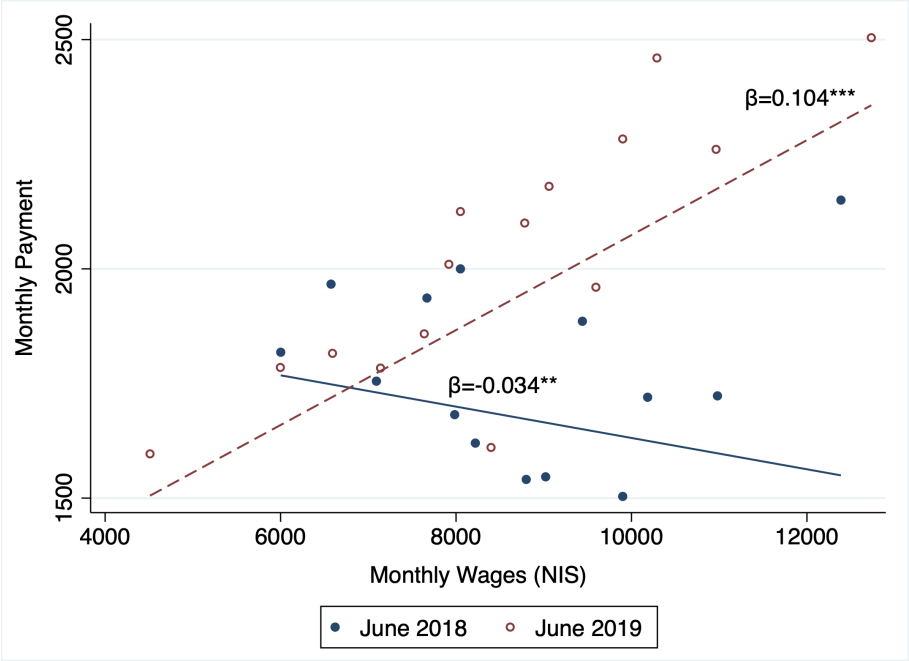
(a) All Payers



(b) Construction Payers



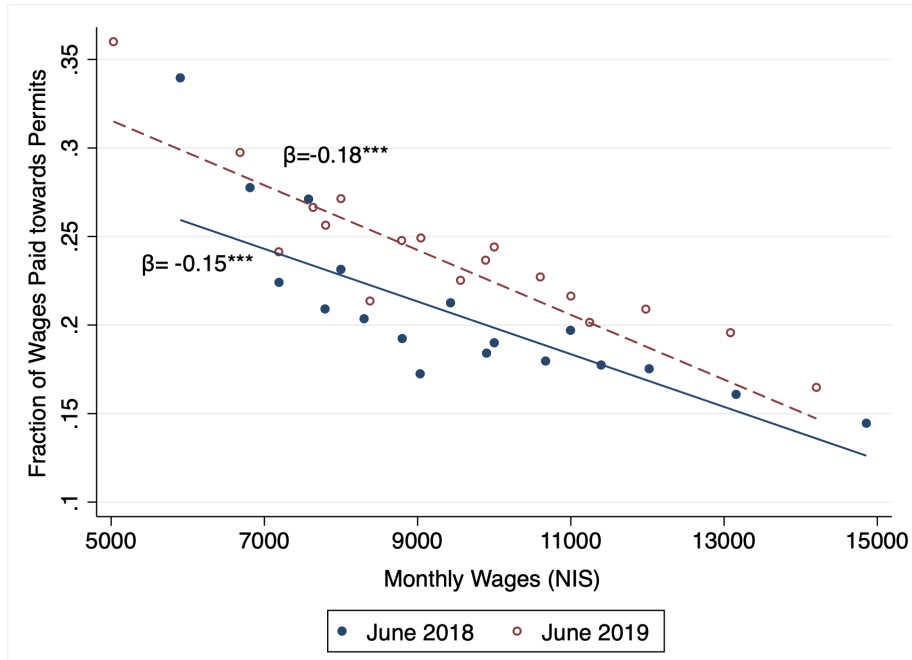
(c) Non-Construction Payers



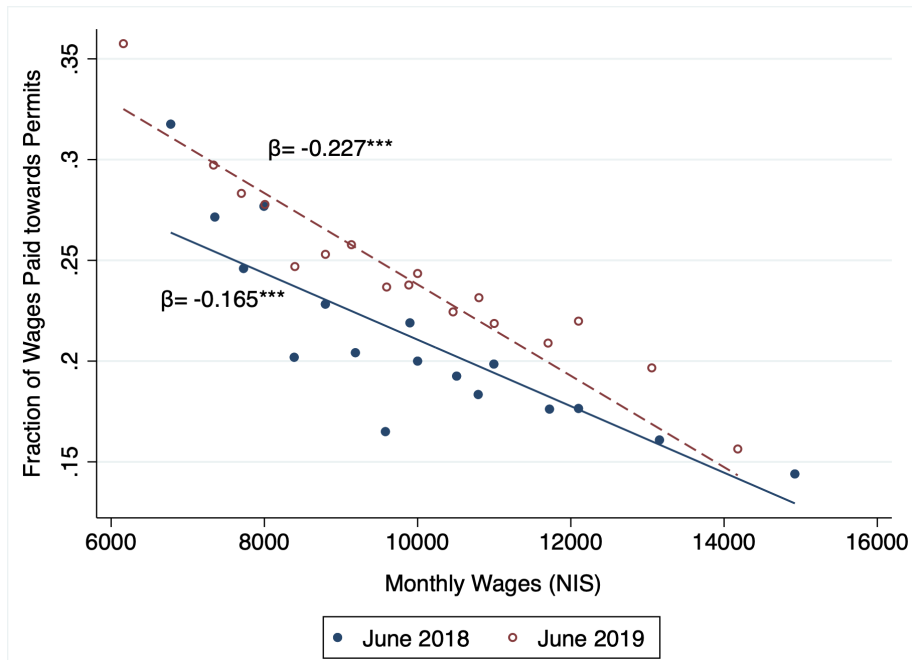
Note: Entry Gates Survey. Figures A.3(a-c) display bin scatter plots where monthly payment is regressed on monthly wages, separately by year. The plots are displayed first for all payers, then for each industry type. Parameter estimates reflect the change in the month permit payment given a 1 NIS increase in monthly wages.

Figure A.4: How Regressive are Permit Prices?

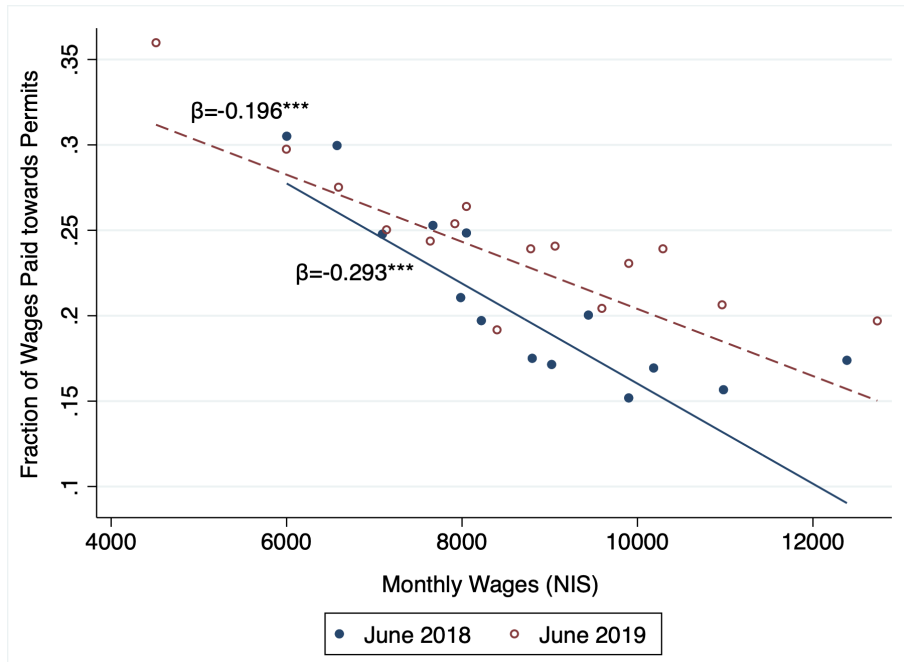
(a) All Payers



(b) Construction Payers

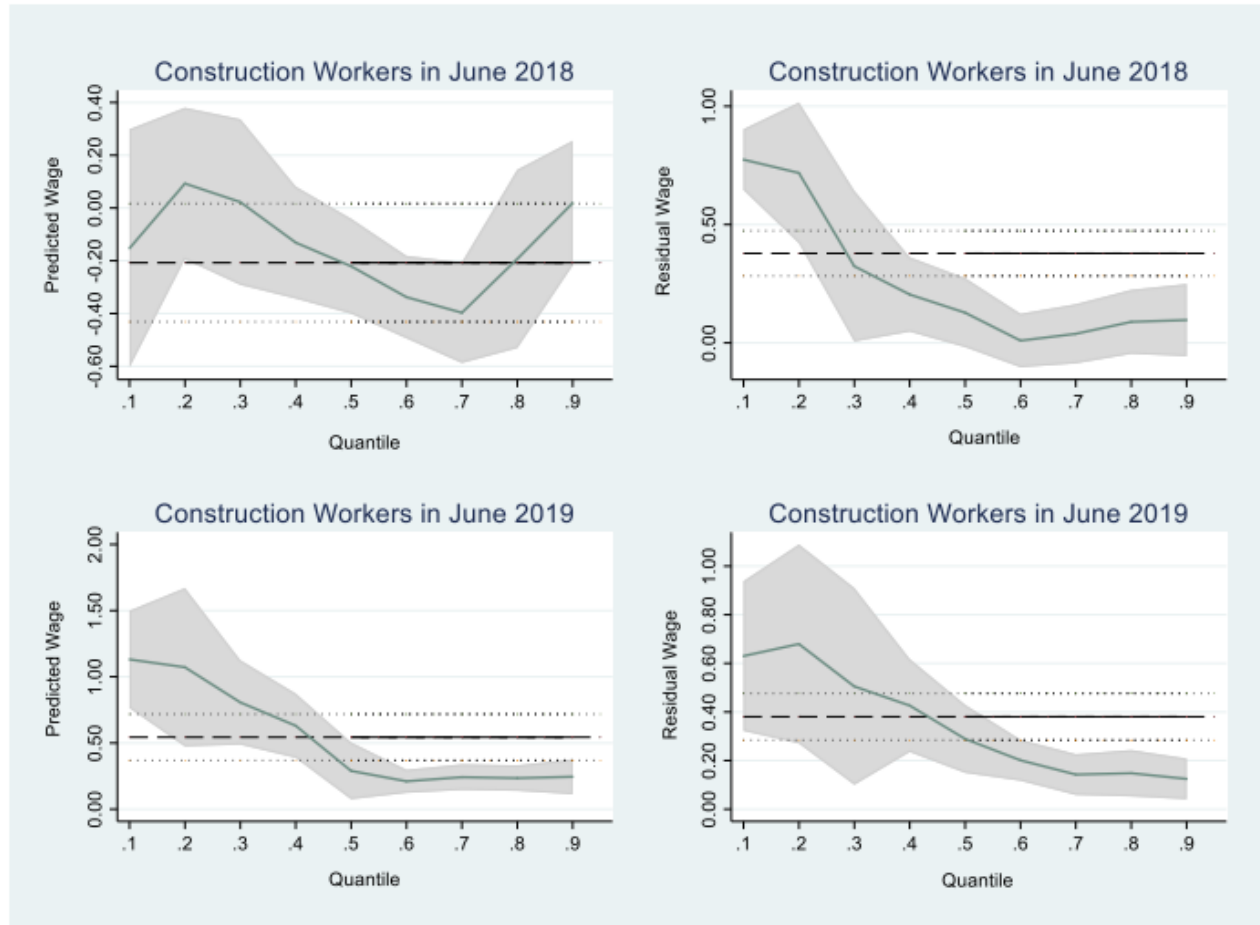


(c) Non-Construction Payers



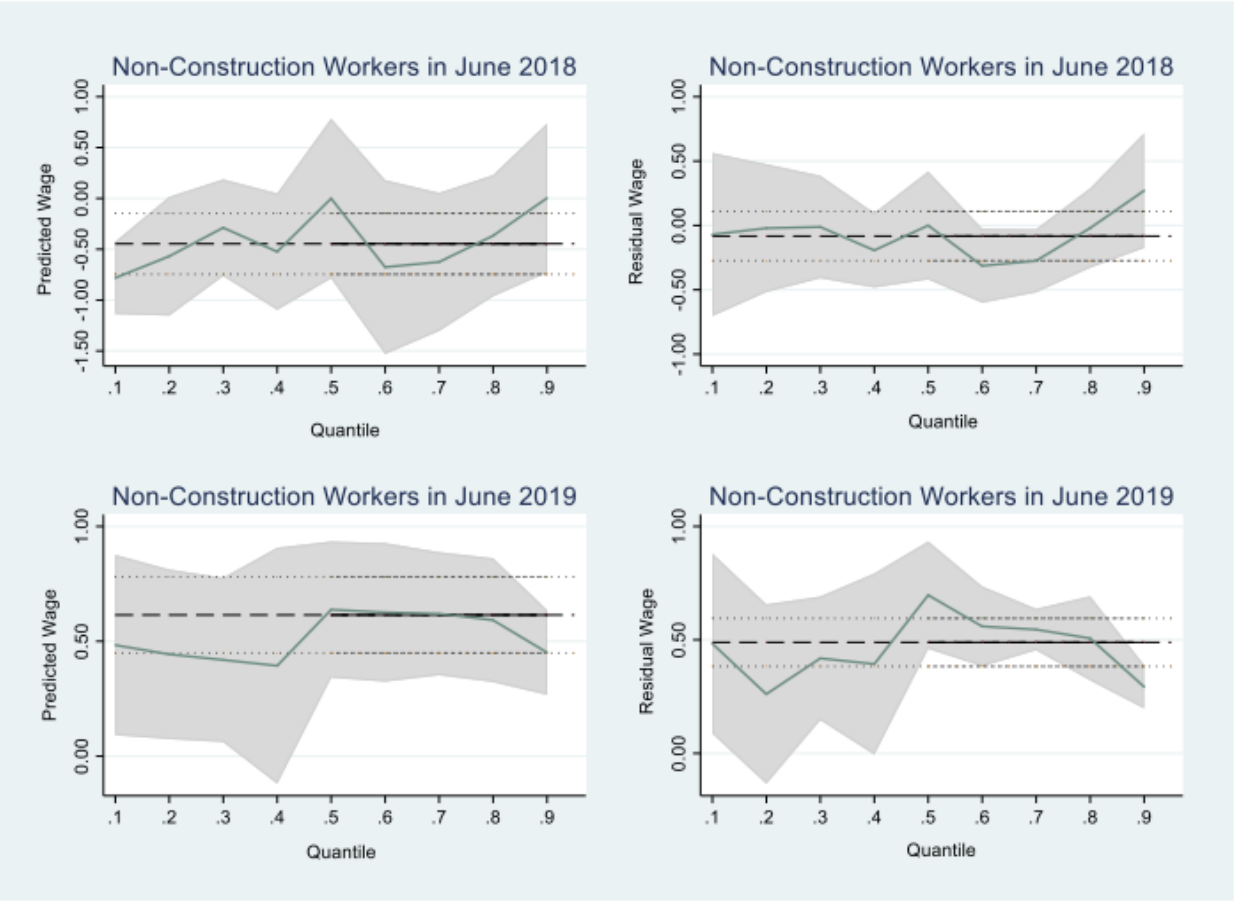
Note: Entry Gates Survey. Figures A.4 (a-c) display bin scatter plots where the fraction of wages paid towards the work permit (monthly payment/monthly wages) is regressed on monthly wages, separately by year. The plots are displayed first for all payers, then for each industry type. Parameter estimates reflect the decline in fraction of wages paid given a 10,000 NIS increase in wages.

Figure A.5: The Effect of Predicted and Residual Wages on Permit Prices by Year (Construction)



Note: Entry Gates Survey. The above graphs are quantile regressions where the specifications correspond to col(2) of Table 5. The dark solid line represents the OLS estimate and the dashed lines are 95% confidence bands. Standard errors are estimated using 100 bootstrap replications.

Figure A.6: The Effect of Predicted and Residual Wages on Permit Prices by Year (Non-Construction)



Note: Entry Gates Survey. The above graphs are quantile regressions where the specifications correspond to col(4) of Table 5. The dark solid line represents the OLS estimate and the dashed lines are 95% confidence bands. Standard errors are estimated using 100 bootstrap replications.

Appendix B

Internal Police Document & Analysis on Nevot Data

Entry and Residence Contrary to the Law for “Livelihood Purposes”:

Normative Framework:

1. Section 12 of the law states as follows: Any person who:
 - a) Enters or resides in Israel in violation of the law;
 - b) Provides false information in order to obtain, for themselves or others, entry to Israel or a residency permit;
 - c) Violates any condition set forth in their visa or residency permit under this law;
 - d) Contravenes any other provision of this law or regulations enacted thereunder shall be subject to imprisonment for one year.

Issues of legal action against illegal residents entering the territory of the State of Israel “for livelihood purposes” (hereinafter referred to as “SHCH”) and their employers pose significant challenges to enforcement agencies, including the courts and the units responsible for criminal prosecution. Regarding the protected values in the SHCH offense, the Supreme Court determined the following: “First-order considerations are that the entry into Israel unlawfully and without a personal permit undermines the security of the state, its right to control those who enter its gates, and may increase the risk of criminal activity by those residing unlawfully within it. Our concern is limited to those SHCH individuals who enter unlawfully for livelihood purposes and later seek to return to their homes. The extent of the harm caused by such behavior to the security of the state is relatively low. It is undeniable that the act of unlawful entry increases the potential security risk, particularly by opening the door to malicious and hostile activities (terrorism) within the territory of the State of Israel, thereby endangering the security of its residents. In cases where the purpose of unlawful entry is malicious activity that poses a severe threat to the protected value of state security, the severity is significant. However, merely amplifying

the potential risk is not sufficient to attribute the supposed severity to a specific defendant who does not intend to harm the security of the state.

Therefore, although it cannot be denied that state security and its prerogative to determine who enters its gates are important values, the impact on them within the framework of SHCH offenses for livelihood purposes is minor, both in relation to the specific acts in question and relatively compared to other offenses under the law, such as transportation and harboring offenses by unlawful residents, which are determined to carry a 'heavier burden' since the defendants in those cases are 'sinners and seducers.'"

The argument presented is that in the absence of supporting visual evidence, according to which the defendant "intends to harm the security of the state", the classification of his entry into the territory of the state and his stay therein "for livelihood purposes" is open to interpretation. Different considerations come into play, and the relevant facts and circumstances in the indictment will be included and weighed in determining the scope of the punishment that befits "circumstances related to the commission of the offense."

Regarding the scope of punishment for the offense of illegal entry "for work purposes", the Supreme Court, in the Elharush ruling, established the following principles: On the other hand, it should be clarified that the extent of harm to the protected values in the offense of illegal entry can vary according to the prevailing security situation in the country at the time of the offense. The change in the extent of harm may necessitate the establishment of a more severe punitive measure.

The Supreme Court addressed this in the Elharush ruling: "The severity of the offense of illegal entry derives from the security situation. It may change with the changing times and may even vary from region to region. It is necessary to examine and adjust the punitive measure and the appropriate punishment within the range for this offense based on the conditions of time and place, so that our conclusion in this judgment should be examined in light of specific circumstances and the prevailing security situation."

The Policy Declaration:

Policy of compliance with the law:

2. An indictment for an offense of engaging in non-lawful employment “for livelihood purposes”, without accompanying offenses, shall be filed in the following cases:

- a) A foreign worker whose entry into the country is the third time unlawfully.
- b) A foreign worker who has a previous conviction for an offense related to employment.
- c) A foreign worker who has been convicted of a security offense, or has been detained in administrative detention, or for whom there is intelligence information indicating a security risk.
- d) A foreign worker who has a prior conviction for a criminal offense in the areas of property, drugs, violence, etc.
- e) A foreign worker who has committed an accompanying offense to the offense of employment.
- f) A foreign worker who is apprehended within the country under circumstances that indicate their purpose of presence was to commit an offense.
- g) A foreign worker who is apprehended residing within the country after an extended period of stay.

3. The indictment will include all previously concealed investigation files due to a lack of public interest, subject to the provisions of Section 4 regarding statute of limitations and limitations of local jurisdiction.

Punishment Policy:

4. In the absence of circumstances related to the commission of the offense that would warrant an aggravation of the prescribed punishment, the prosecution will appeal for the determination of a penalty within the range established by the El-Harush Doctrine: conditional imprisonment up to five months, a fine ranging from 0 to 2,000 NIS, and a financial obligation.

5. In cases of a first and isolated offense (meaning that, for various reasons, the prosecution unit did not include previous cases that were concealed due to a lack of public interest) the prosecution will seek to impose the appropriate components of punishment available within the lower range of the applicable sentencing framework.
6. Whenever a criminal indictment includes multiple offenses of illegal residency, the prosecution will seek to include an actual imprisonment component in the sentencing, taking into account the number of days the accused has already spent in custody, as well as a financial component, such as a fine or financial obligation.
7. Generally, whenever possible, the prosecution units will make an effort to conclude the criminal proceedings regarding offenses related to illegal residency during the course of the trial process.

Driving, housing and employing:

The normative basis:

8. The violations of driving, housing and employing illegal residents constitute the “breeding ground” for the crime of illegal residency. Without the perpetrators of these offenses, the motivation of the illegal residents will wane.
9. The prevailing security situation in Israel requires a heavy hand against those commit these offenses in order to deter their operations in practice and by force.

The Supreme Court acknowledged these matters in its ruling in the 2006 case of Abu Salah vs. The State of Israel (04/3674):

“Firstly, we’ll say that the time has not yet come to change the punishment policy. Acts of terror are still hitting this country and the risk that lies in driving, housing and employing those who entered the country unlawfully has yet to dissolve. It seems violations of the law continue, and we are required to exhaust punitive measures in the appropriate cases, in the hope that we will be able to deter those who are destined to commit offenses that may seem easy and simple, but there is a risk in them to human life. Many Israelis break the law and endanger the lives of others and even their own lives and thus, we are required to continue the strict policy designed to deter them from

committing offenses.”

10. As part of the 26th amendment to the Entrance to Israel law, made in 2016, the legislator made an amendment to deal with the enablers of illegal residents and that was achieved by creating disincentives for the enablers.

11. In the framework of this amendment, it was established, among other things:

- a) The definition of “employer” and / or “host” was expanded so that it includes also indirect hosts and employers.
- b) Creating the offense of housing and employing under aggravated circumstances, in which there is a penalty for up to 4 years in prison. Scenarios of aggravated circumstances include:
 - i. Housing or employing two or more illegal residents.
 - ii. Housing or employing illegal residents for two days or longer.
 - iii. Housing an illegal resident with the intent of hiring them.
- c) Setting a minimum amount for the fines with and without aggravated circumstances (The court is entitled to reduce the amount of the fine for special cases):

Felony	Max punishment (Individual)	Max punishment (Corporation)	Min punishment (Individual)	Min punishment (Corporation)
Housing/ employing	75,300	301,200	5,000	20,000
.....under aggravated circumstances	226,000	452,000	10,000	40,000

- d) Authority to close or limit the use of the place where a crime was committed (section 12b4).

- e) Violation of an order restricting the use of a place, administrative or judicial, was established as an independent offense punishable by imprisonment for two years (Section 12b12).
- f) Giving the court authority to order the suspension of a license or business permit of a suspected accused of committing the offense of employment or embezzlement (Section 12b9).
- g) Giving the court authority to determine as part of the sentence in the case of a defendant (including a corporation) who was convicted of committing a transaction or embezzlement offense, in addition to any penalty, the suspension of a license or an occupation permit related to the offense, for a period of up to six months (Section 12b10).
- h) Giving the court authority to order the forfeiture of the consideration received by a carrier or an employer, the mode of transportation, storage or transaction or its monetary value [Section 12b15].

Prosecution policy:

12. Subject to the existence of evidentiary support and interest to the public, an indictment will be filed against the the suspect committing an offense of transportation, employment or embezzlement.

13. If the suspect committed said crimes within his work for a corporation, the criminal responsibility of the corporation will be examined in accordance with the provisions of the law. As much as an evidentiary infrastructure is formed that establishes a reasonable chance of the corporation's conviction in the law, and in the presence of public interest, an indictment will also be filed against the corporation.

14. If the circumstances that lead to indictment exist, the prosecution will ask for the defendant to be arrested until the end of the procedures. The list of cases that will require an arrest till the end of procedures includes but is not limited to:

- a) Transporting multiple illegal residents into Israel.

b) Transporting many illegal residents while switching the body of the vehicle [or committing any other clever way to try and hide the felony].

c) Serious criminal record of offenses against the Law of Entry into Israel.

15. The prosecution has judgment to peruse other limiting actions including (but not limited to) imposing restrictions on the defendant's license or their business activity.

Punishment policy:

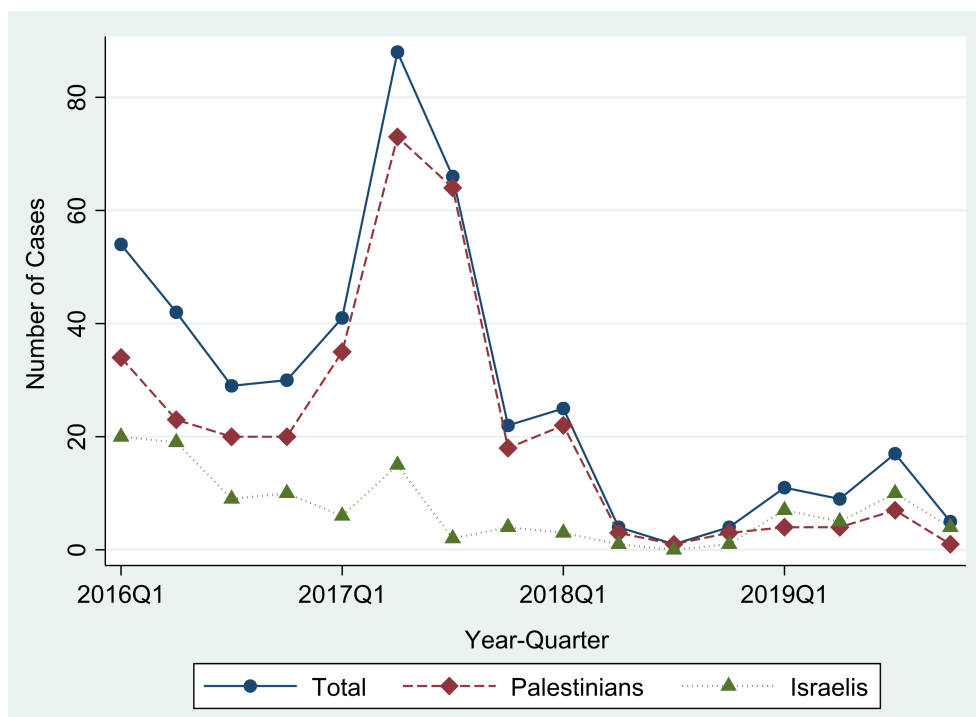
16. As a general rule, the appropriate range of punishment for which the prosecution pleads will start from a prison sentence (even by way of community service).

17. The prosecution, in its petition for punishment, will request that the defendant be fined, the amount of which will not be less than the minimum fine established by law except for special reasons.

18. The prosecution has judgment to ask for suspension of the defendant's license and the defendant's business' license.

19. The prosecution has judgment to ask for the confiscation of the compensation the defendant received for committing said felonies.

Figure B.1: Number of Cases Related to Undocumented Workers (2016-2019)



Note: Data constructed from Nevot Database. The figure reports the number of cases related to the unlawful entry of undocumented workers into Israel proper for each quarter between 2016 and 2019.

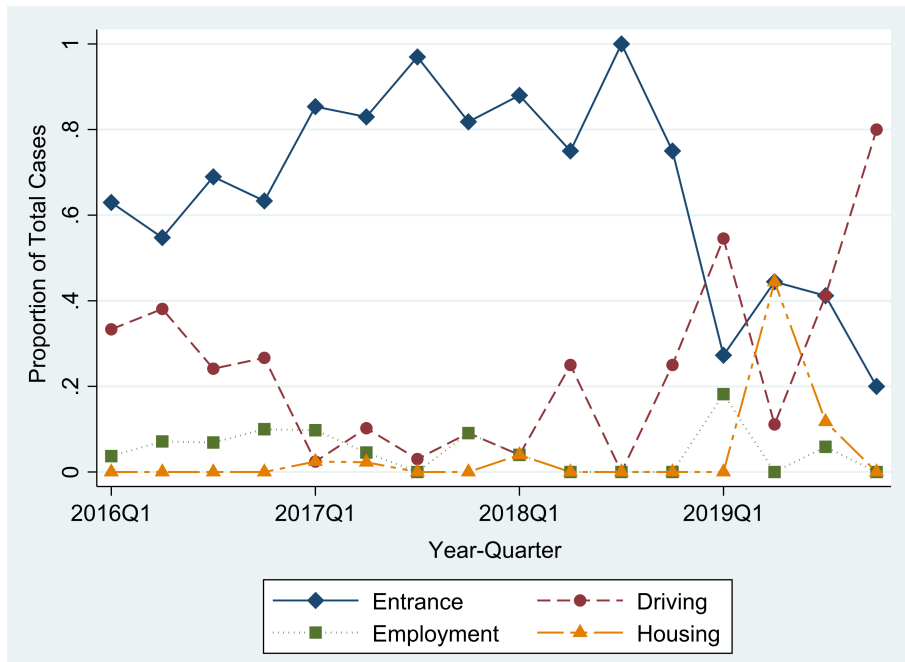
Figure B.1 denotes the total number of cases (i.e. convictions and arrests) related to undocumented workers crossing the border from the West Bank into Israel proper unlawfully for each quarter between 2016 and 2019. The data source used is the Nevot, which is known for being the most comprehensive legal database in Israel. The data reveals that in 2017Q4, the number of convictions and arrests declined steeply and remained low until 2019Q4. This decline was primarily driven by the number of undocumented Palestinians entering Israel illegally.

This is aligned with the second item above in the police document—dated August 20, 2017—that states that undocumented workers, who were caught crossing unlawfully into Israel proper—shall not proceed to trial unless they: are repeated offenders, had a previous conviction of an offense related to employment, national security or other felony (i.e. drugs, violence), were caught committing (or planning to commit) another offense in addition to the offense of employment and/or were captured for staying illegally for a

long period of time. It is likely that in an effort to use resources efficiently, the aim of this policy was to identify and target a small subset of "dangerous" undocumented workers.

The second half of the document emphasizes the importance of raising the penalty for Israeli citizens who assist undocumented workers. This is particularly salient in [item 11](#), which includes expanding the definition of employers and hosts as well as setting minimum fines. To broadly assess which crimes, related to unlawful entry of Palestinians, were more likely to go to trial, [Figure B.2](#) displays the proportion of total cases by quarter attributed to each of the four types of crimes: unlawful entry into Israel proper (committed by Palestinians), driving, housing, and employing an undocumented worker (the latter three are committed by Israeli citizens—Arab or Jewish). [Figure B.2](#) shows that after 2018Q3, the share of cases involving enablers has increased dramatically. Together with [Figure B.1](#), we can infer that between 2017Q3 and 2018Q3, the number of cases declined but the proportion of cases such that Palestinians are convicted of illegal entry was similar to previous quarters—approximately 80%. It was only after 2018Q3 that Israeli enablers were more likely to be convicted than Palestinian workers, who represent about one-third of all convicts during this period. Thus, we believe that the policy implementation of shifting emphasis from convicting Palestinians to convicting Israelis (after 2018Q3) at the border substantially raised the risk and cost of being an enabler such that Israelis were significantly less likely to aid undocumented workers, which contributed to the large decline in undocumented workers. That said, we interpret these summary statistics with caution since the sample sizes dropped sharply after 2017Q3.

Figure B.2: Proportion of Cases Attributable to each Type of Crime (2016-2019)



Note: Data constructed from Nevot Database. For each quarter between 2016 and 2019, the figure reports the proportion of total cases attributable to four types of crime: unlawful entry into Israel, driving undocumented workers, employing undocumented workers and housing undocumented workers.

Tables B.1 and B.2 present the number of cases by year for Palestinians as well as Israelis respectively. Both tables show that for both undocumented workers convicted of illegal entry as well as Israeli citizens convicted of assisting and enabling undocumented workers, there is a sharp rise in the average fine charged between 2017 and 2018. For Israelis, the average fine continued to increase between 2018 and 2019, which is consistent with our interpretation that after 2018Q3, border enforcement shifted from convicting and punishing Palestinians to convicting and punishing Israelis. As with earlier summary statistics, we interpret this inference with caution especially since not all the cases related to undocumented workers appear in the Nevot database; most cases focus on crimes involving Israeli citizens. According to some legal experts in Israel, the cases we observe

here exist simply because they are of high public interest.

Table B.1: Summary Statistics for Cases where the Defendant is a Palestinian Undocumented Worker Convicted of Illegal Entry

Year of Verdict	Number of Cases	% Fined	Average Fine	% Imprisoned	Avg Sentence (yrs)
2016	97	28%	1926	79%	1.6
2017	190	32%	1052	76%	1
2018	29	17%	4600	66%	1.2
2019	16	37%	1583	75%	3.9

Note: Data constructed from Nevot Database. The table reports the summary statistics of all recorded cases where individuals are convicted of unlawful entry into Israel proper for each year between 2016 and 2019. The table also reports the percentage of cases where the defendant is fined and imprisoned as well as the average fine and the average sentence.

Table B.2: Summary Statistics for Cases where the Defendant is an Israeli Arab/Jewish Citizen Convicted of Transporting, Employing or Housing Undocumented Workers

Year of Verdict	Number of Cases	% Fined	Average Fine	% Imprisoned	Avg Sentence (yrs)
2016	58	79%	5337	50%	8
2017	27	89%	3620	15%	12
2018	5	60%	5667	20%	2
2019	26	81%	7333	4%	8

Note: Data constructed from Nevot Database. The table reports the summary statistics of all recorded cases where individuals are convicted of enabling entry into Israel proper for each year between 2016 and 2019. The table also reports the percentage of cases where the defendant is fined and imprisoned as well as the average fine and the average prison sentence.

Appendix C

Entry Gates Survey (EGS) Questionnaire

Good morning / afternoon / evening. My name is _____ from the Palestinian Center for Public Opinion, an independent market research company run by Dr. Nabil Kukali. We are currently collecting data for academic research about the employment of Palestinian workers in Israel and Occupied Jerusalem. We believe this research will provide insights into how to improve working conditions in the region. If you have any questions or insights about the research or would like to report any potential negative effects, please feel free to contact irbnyuad@nyu.edu. We have randomly selected you to participate in this survey as the inclusion of your opinion is important. You will have to answer a few questions about your current employment situation, some of which are sensitive. However, the survey is anonymous and all your information and answers remain fully confidential. The interview would take about 10-15 minutes. Given the nature of the research, only completed questionnaires are valid. We would really appreciate your participation but we also emphasize that participation is voluntary and you may withdraw at any time and abort the survey. Do you wish to participate?

1. Interviewer Code: _____ Individual Code: _____ Birth month _____
year _____
2. Locality: _____ District: _____.
3. Gate Interviewed: _____ Time of Interview: _____ Date of
Interview: _____.
4. Check language(s) spoke fluently: _____ Hebrew _____ English
_____. None
5. Educational Attainment: 1.) Illiterate 2.) Can Read/Write 3.) Elementary 4.)
Preparatory 5.) Secondary 6.) More than Secondary
6. a.) What is your marital status: 1.) Never Married 2.) Engaged 3.) Married 4.)

Divorced 5.) Widowed 6.) Separated. b.) How many children do you have _____.?

7. Industry: 1.) Construction 2.) Agriculture 3.) Manufacturing 4.) Other
8. Check the occupation that most closely fits your current job description. If none of the occupations listed below are suitable, state your occupation here: _____.
- a. Cleaners and Helpers
 - b. Agricultural, Forestry and Fishery Labourers
 - c. Laborers in Mining, Construction, Manufacturing and Transport
 - d. Building and Related Trades Workers (excluding Electricians)
 - e. Metal, Machinery and Related Trades Workers
 - f. Market-oriented Skilled Agricultural Workers
 - g. Market-oriented Skilled Forestry, Fishery and Hunting Workers
 - h. Subsistence Farmers, Fishers, Hunters and Gatherers.
9. How many hours did you work in total last week (excluding commute time)? _____ usual days worked per month? _____
10. How long do you usually spend commuting to and from Israel? _____ minutes.
11. How many employers did you have in Israel in the past three months? _____
12. How would you rate the way in which your current employer in Israel treats you? 1. very fairly; 2. somewhat fairly; 3. ok; 4. somewhat unfairly; 5. very unfairly
13. How long have you worked in Israel? _____ years _____ months
14. Do you have a valid work permit? _____
15. When (year) did you procure your first valid work permit? _____
16. Do you work for the (same) employer named on your work permit ? (Is the employer you work for the same as the one named on your work permit?) _____

17. Did you spend any money to acquire your current work permit? _____ (write Yes/No) How much money (in NIS) did you spend to acquire your current work permit? _____ every month / one time lump sum (circle the relevant option)
18. What are your daily wages (in NIS)? _____ (NIS) per day / month (circle the relevant option)
19. Do you know the minimum wage in your industry? _____ (write Yes/No). If so, please state it below _____ daily/monthly (circle the relevant option).
20. Overall, on a scale of 1 to 10, how satisfied are you with your life nowadays? _____ (1 is Very Unsatisfied and 10 is Very Satisfied)

Appendix D

Constructing Weights for the EGS from the PLFS

This paper is concerned with evaluating the effect of border enforcement on a range of outcomes (i.e. illicit payments, wages, well-being) for full-time workers. Thus, our sample of interest consists of full-time Palestinian cross-border commuters to Israel proper—as defined by the green line. To examine this population, we collect data at the four main entry gates using the Entry Gates Survey (EGS). To increase our sample, we used a snowball sampling technique, which is convenient but does not allow our sample to be nationally representative of full-time Palestinian workers in Israel proper. As a result, we turn to the PLFS to calibrate the weights. However, given that the PLFS samples a broader pool of Palestinian workers in Israel, we first discuss restricting the sample of the PLFS before moving on to discuss the weights.

It is important to note that the EGS samples workers on their way to work in Israel, while the PLFS samples households in their residence. These two methods yield very different samples. For example, full-time workers are oversampled in the EGS. In fact, the EGS contains only a handful of workers who report working less than 18 days per month, while the corresponding figure in the PLFS was 22%. To make the sample of the PLFS respondents more comparable to our sample of interest, we drop permit holders (in the PLFS) who worked less than 18 days from our empirical analysis.

Additionally, the PLFS combines together employment in ‘Israel and the settlements’—including Israeli municipalities in the West Bank)—while our survey samples only workers in Israel proper; this is necessary to study border enforcement as well as the quotas on work permits. To address this discrepancy, we first limit the sample of workers in the PLFS to those who both had a valid work permit and were employed in the Israeli economy or the settlements during the week prior to the interview. Then we drop workers who are younger than 25 years old, since until 2015, they could not secure a work permit in Israel but were allowed to secure permits for employment in the settlements. As a result, we reduce the population of permit-holders represented in the PLFS microdata by

approximately 10%.⁴³

We use this restricted sample of the PLFS to calibrate weights for the EGS. Note that the sampling of the EGS survey is based on the distribution of observations by district corresponding to the geographic distribution of permit holders according to the PLFS. The snowball sampling technique was used within district.

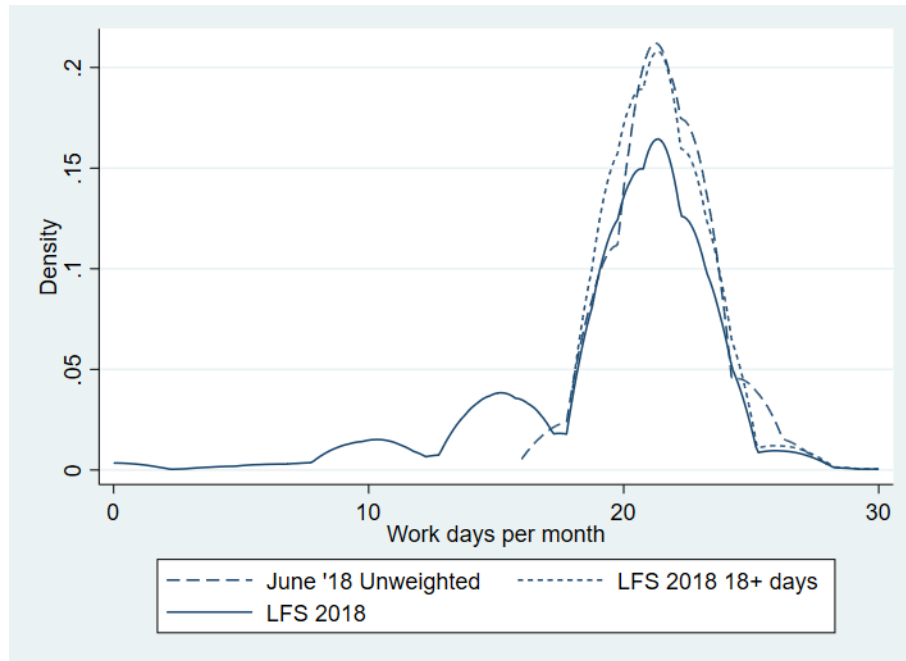
To calibrate the weights for the EGS survey, we estimate a logit model that captures the likelihood of appearing in the EGS survey relative to the likelihood of appearing as a worker with a valid permit in the Palestinian LFS. We use the 2018 LFS for calibration of the June 2018 wave of the EGS and the 2019 LFS for calibration of the June 2019 wave. The weights are the inverse of this likelihood, but to avoid biases due to the estimation method, we limited the maximum weight represented by each observation to 50 (average weight is 1.4).

To get an idea of how restricting the PLFS sample and calibrating the weights affects the distribution of relevant variables, we plot the distribution of the number of days worked per month using both surveys in Figures D.1 and D.2. In Figure D.1a, it is clear that restricting the PLFS sample to those who worked at least 18 days per month makes the PLFS sample much more comparable to the EGS sample. However, Figure D.1b shows that in 2018, the weights did not significantly affect the EGS distribution. That said, although the restricted PLFS sample in 2019 is not as comparable to the 2019 EGS sample (see Figure D.2a) as in 2018 (see Figure D.1a), Figure D.2b demonstrates that the initial upwards bias in working days caused by interviewing workers on their way to work relative to household surveys is corrected with weights.

⁴³According to the published LFS report, the share of workers in the settlements as a proportion of workers with or without permits in 2018 was 17% (PCBS, 2019).

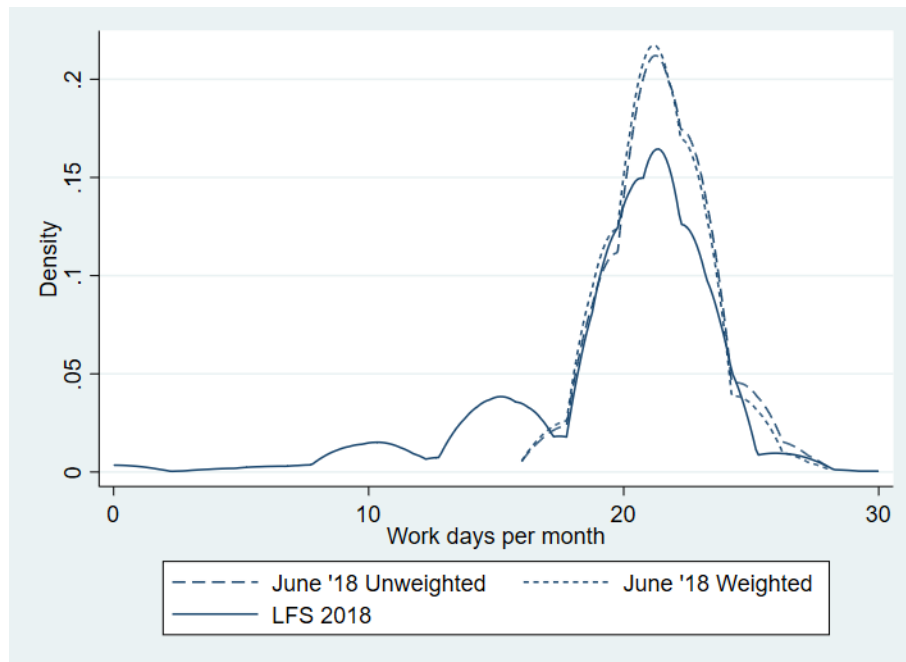
Figure D.1: Distribution of Working Days per Month in 2018

(a) With and Without restricting the PLFS sample



Note: The figure above displays three sample distributions of working days per month for Palestinian workers in Israel: the unrestricted sample of workers in the 2018 wave of the Palestinian Labor Force Survey (solid), the restricted sample of workers who have worked at least 18 days according to the 2018 Palestinian Labor Force Survey (short dash) and the unweighted sample of the Entry Gates Survey collected in June 2018 (long dash).

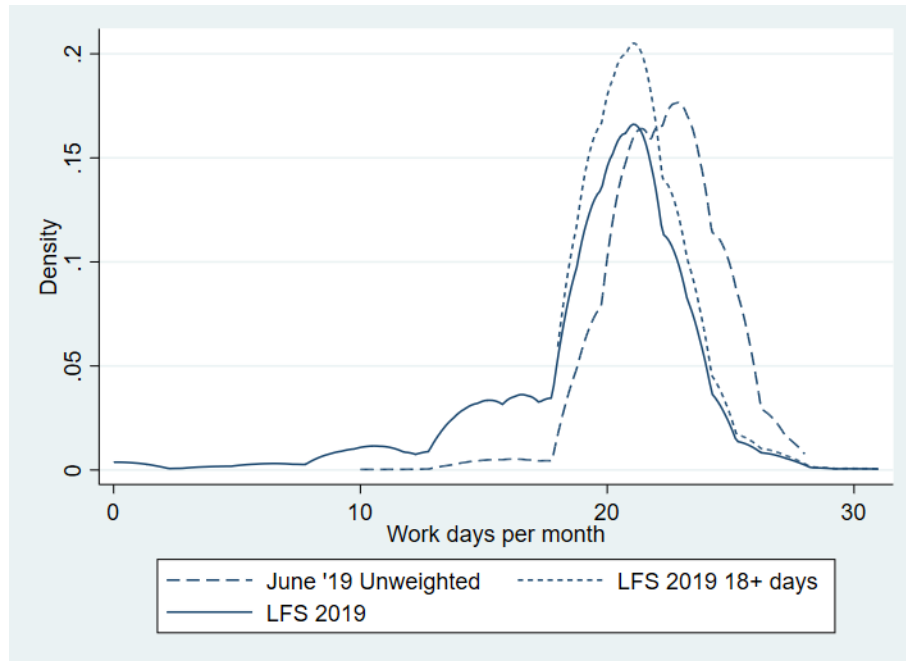
(b) With and Without Weights for the EGS



Note: The figure above displays three sample distributions of working days per month for Palestinian workers in Israel: the unrestricted sample of workers in the 2018 wave of the Palestinian Labor Force Survey (solid), the unweighted sample of the Entry Gates Survey collected in June 2018 (long dash), and the weighted sample of the EGS in June 2018 (short dash).

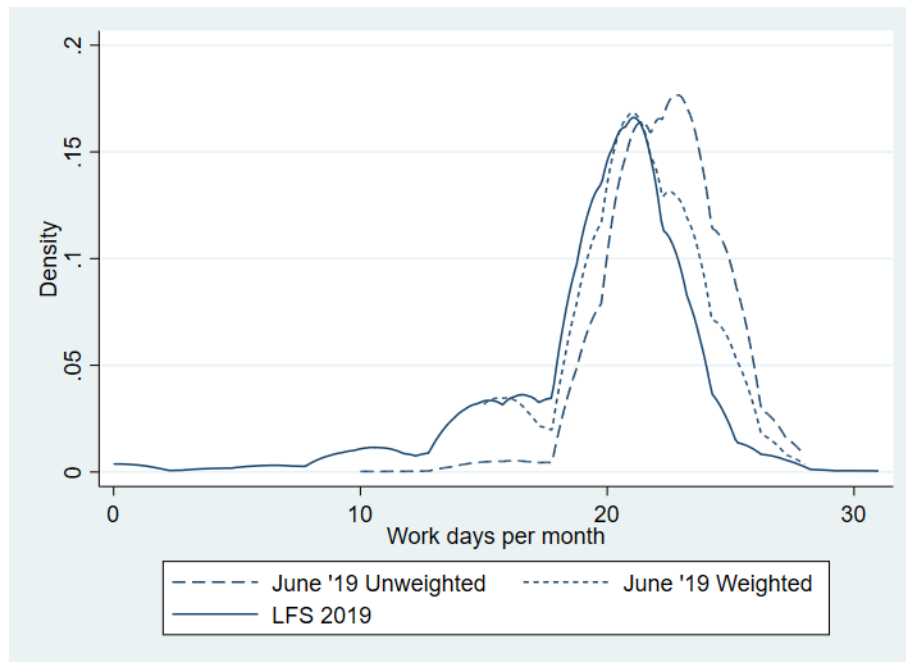
Figure D.2: Distribution of Working Days per Month in 2019

(a) With and Without restricting the PLFS sample



Note: The figure above displays three sample distributions of working days per month for Palestinian workers in Israel: the unrestricted sample of workers in the 2019 wave of the Palestinian Labor Force Survey (solid), the restricted sample of workers who have worked at least 18 days according to the 2019 Palestinian Labor Force Survey (short dash) and the unweighted sample of the Entry Gates Survey collected in June 2019 (long dash).

(b) With and Without Weights for the EGS



Note: The figure above displays three sample distributions of working days per month for Palestinian workers in Israel: the unrestricted sample of workers in the 2019 wave of the Palestinian Labor Force Survey (solid), the unweighted sample of the Entry Gates Survey collected in June 2019 (long dash), and the weighted sample of the EGS in June 2019 (short dash).

Appendix E

This section provides a detailed explanation of how municipalities of residence for Palestinian workers in the EGS are clustered into a geographic unit that we refer to as a residential local cluster. This local cluster is a geographic unit that is broader than a municipality–self-reported in the EGS– but more refined than a district–usually used in national surveys.

Our motivation for doing this procedure is that if 1.) Palestinians who live in close proximity to each other–but not necessarily in the same municipality or village– also work in similar areas in Israel, and 2.) the wage differential between payers and non-payers differs across locations in Israel, then one’s location of residence in the West Bank will play a role in their propensity to switch sectors. In turn, the propensity to switch sectors is directly linked to the permit price according to the permit broker’s maximization problem, and hence, we have reason to believe that the location of residence and the permit price are correlated when brokers practice third-degree price discrimination.

To determine the association of local residence and permit price, we also use district-gate as a geographic unit (Table A.6). However, we are concerned that the district-gate unit might be too broad for this analysis if workers who live in the same district and enter through the same gate still commute to different areas of Israel. Thus, we create reasonably sized local clusters that consists of a small group of municipalities. As you will see below, we show that there exists up to six local clusters within a district.

Local clusters are created only for construction workers due to challenges relate to small sample sizes. This leaves us with four groups of construction workers that we create clusters for: June 2019 payers, June 2019 non-payers, June 2018 payers, and June 2018 non-payers. To group municipalities, we use the online geographic information system in ArcGIS. This software allows us to calculate the distances between municipalities using the Palestinian road-network and create clusters depending on these distances.

To start, we assign a unique cluster number to a group of municipalities if: a.) the municipalities belong to the same district; b.) the distance between any two municipalities is no more than 15 kilometers, or 9.3 miles; and c.) there are at least 9 observations

belonging to the cluster. This is done separately for the four group of workers as shown in Tables E.1-E.4. Note that "Vendor" indicates that data on distances were provided by our survey vendor in the region and not collected via ArcGIS.

We can immediately see the benefit of this exercise, as there are several local clusters within a district, especially Hebron, Tulkarm and Qalqilya. However, unlike the use of district-gate as a local measure, this exercise considerably reduces the number of observations we can use to compute average wages. For example, in 2019, 340 (out of 362) payers and 241 (out of 291) non-payers were located in a cluster. In 2018, the share of workers used is even smaller since only 225 (out of 342) payers and 244 (out of 356) non-payers can be placed in a local cluster. This leaves us with 565 payers out of the original 704 payers (col 1 of Table A.6). Since the aim is to examine the association between permit prices and both, average local wages of payers and non-payers in 2018 and 2019, we identify joint clusters where both payers and non-payers live.

This exercise is done in Table E.5 where payers belong to a joint cluster if at least 9 payers and 9 non-payers live in the cluster in the same year; 414 payers in the construction industry met this criteria, 191 in 2018 and 223 in 2019. At this point, we have two groups of payers in the construction industry. The first group (414 observations) lives in a joint cluster where there are at least 9 payers and non-payers in his local region of residence. The second group (151) lives in a cluster where there are at least 9 payers, but the number of non-payers is less than 9. To include as many observations as possible, we also include a third group of workers (131). These workers reside in municipalities whose cluster had fewer than 9 observations (see examples in Tables E.1-E.4) but when grouped with other low-observation clusters in the same district, the number of observations included at least 9 payers and 9 non-payers per district. Only 8 observations did not meet this criteria, leaving us with 696 out of 704 construction payers when all three groups are used (col 1 of Table VI).

Table E.1: Construction Workers/Payers/June 2019

District	Localities Combined	Distance (km)	Obs	Cluster
Tulkarm	Anabta-Beit Lid - Kafr Rumman	12 (Vendor)	14	1
Tulkarm	Attil-Saida- A'lar	< 10 (Vendor)	33	2
Tulkarm	Kafr al-Labad - Shufa - Kafr Jammal	12 (Vendor)	13	3
Tulkarm	Shuweika- Far'un -Irtah -Tulkarem - Al Ras - Nur Shams Camp - Tulkarem Camp	10 (Vendor)	21	4
Tulkarm	Qaffin - Alnazla Alsharqiya	5.2	4	drop
Jenin	Ajjah - Fahma- Kafr Rai - Alrama	5 (Vendor)	36	5
Jenin	A'raba	NA	11	6
Jenin	Fandaqumiya - Jaba' - Sanur - Anzah	5-6 (Vendor)	6	drop
Qalqilya	Jayyous-Kafr Thulth	9.3	27	7
Qalqilya	Kafr Zibad -Kafr Abbush - Kafr Sur	6	20	8
Qalqilya	Kafr laqif - Kafr Qaddum	11	20	9
Qalqilya	Jinsafut - Baqa	5.1	12	10
Qalqilya	Qalqilya-Azzun	9.6	46	11
Hebron	Hebron - Taffuh	11	15	12
Hebron	Tarqumiyah - Beit Kahil - Idhna	12	13	13
Hebron	Yatta -Alsamo'a'	11	23	14
Hebron	ad-Dhahiriya	NA	14	15
Hebron	Fawwar-Dura-Deir Sammit	12.2	11	16
Hebron	Si'ir - Halhul - Nuba	15	11	17
Nablus	Nablus - Huawara	10.7	3	drop

Note: In 2019, there are 340 (out of 362) payers in the construction industry that can be placed in a local cluster such that there are at least 9 observations per cell. The remaining observations were dropped either because the cluster had less than 9 observations per cell or it was too far away from other municipalities to form a cluster or could not be located.

Table E.2: Construction Workers/Non-Payers/June 2019

District	Localities Combined	Distance (km)	Obs	Cluster
Tulkarm	Attil-Saida - A'lar	< 10 (Vendor)	16	20
Tulkarm	Al Ras - Shuweika - Far'un -Irtah - Tulkarm - Nur Shams Camp	10 (Vendor)	8	drop
Tulkarm	Kafr Rumman - Anabta - Bal'a	9	6	drop
Jenin	Ajjah -Fahma- Kafr Ra'i - Alrama	5	15	21
Jenin	Anzah-Sanur	10.3	2	drop
Hebron	Beit Ula- Kharas- Nuba	4.5	31	22
Hebron	Si'ir - Halhul - Ashyukh	11	19	23
Hebron	Hebron - Taffuh	11	14	24
Hebron	Fawwar -Dura - Deir Sammit	12	16	25
Hebron	Tarqumiyah - Beit Kahil - Idhna	12	80	26
Hebron	Yatta -Alsamo'a	11	15	27
Hebron	ad-Dhahiriya	NA	16	28
Hebron	Surif- Beit Ummar	6.5	8	drop
Qalqilya	Qalqilya-Azzun	9.6	14	29
Qalqilya	Jayyous-Kafr Thulth	9.3	5	drop
Qalqilya	Kafr Laqif - Kafr Qaddum	11	6	drop

Note: In 2019, there are 241 (out of 291) non-payers in the construction industry that can be placed in a local cluster such that there are at least 9 observations per cell. The remaining observations were dropped either because the cluster had less than 9 observations per cell or it was too far away from other municipalities to form a cluster or could not be located.

Table E.3: Construction Workers/Payers/June 2018

District	Localities Combined	Distance (km)	Obs	Cluster
Hebron	Beit Ula - Nuba - Kharas	5.3	28	58
Hebron	Fawwar-Dura-Kharsa	10-12	15	59
Hebron	Si'ir - Halhul	7.56	9	60
Hebron	Hebron - Taffuh	11	20	61
Hebron	Tarqumiyah - Beit Kahil - Idhna	12	27	62
Hebron	Yatta -Alsamo'a	11	17	63
Jenin	Ajjah - Kafr Ra'i -Fahma - Alrama	5	20	64
Jenin	Arraba-Qabatiya	8	14	65
Jenin	Fandaqumiya-Jaba-Anzah-Silat ad-Dhahr	11.7	8	drop
Jenin	Jenin-Bir al Basha	9.1	6	drop
Jenin	Kafr Dan-Kafr Qud-Kufeirit - Lmon	10	5	drop
Jenin	Aqqaba-Siris - Aljadeeda	8-10 (Vendor)	4	drop
Qalqilya	Qalqilya-Azzun - Kafr Thulth	13.7	13	67
Tulkarm	Attil- Deir al Ghusun- Illar	10.2	29	68
Tulkarm	Shuweika-Irtah-Tulkarm - Nur Shams Camp	10	17	69
Tulkarm	Alnazla Alsharqiya - Qaffin	5.2	3	drop
Tulkarm	Anabta - Bal'a	6.9	4	drop
Nablus	Asira ash Shamaliya- Nablus-Rafidia	8.4	16	70
Nablus	A'zmout-Balata Camp-Burin	11.9	6	drop
Bayt Lahim	Alkhader-Bethlehem-Doha(al Dawha)-Husan	14.3	6	drop
Qalqilya	Kafr Qaddum-Hajjah-Baqat al-Hatab-Jit	12.6	8	drop
Salfit	Bruqin-Kafr ad-Dik - Farda - Sakakah	15	4	drop

Note: In 2018, there are 225 (out of 342) payers in the construction industry that can be placed in a local cluster such that there are at least 9 observations per cell. The remaining observations were dropped either because the cluster had less than 9 observations per cell or it was too far away from other municipalities to form a cluster or could not be located.

Table E.4: Construction Workers/Non-Payers/June 2018

District	Localities Combined	Distance (km)	Obs	Cluster
Jenin	Aqqaba -Tubas	4.9	5	drop
Jenin	Arabbuna-Faqua	10	3	drop
Jenin	Arraba - Qabatiya - Shuhada	9.6	8	drop
Jenin	Aqqaba-Siris	10	3	drop
Jenin	Ajjah - Kafr Ra'i	6.6	7	drop
Jenin	Jaba'-Sanur	4.8	8	drop
Jenin	Jenin - Ash-Shuhada - Jenin Camp	5.9	6	drop
Jenin	Kufeirit - Ya'bad - Alyamun	10 (Vendor)	7	drop
Hebron	Beit Ula - Nuba - Kharas	5.3	49	72
Hebron	Fawwar-Dura - Kharsa	10-12 (Vendor)	19	73
Hebron	Si'ir - Halhul	7.6	11	74
Hebron	Hebron - Taffuh	11	32	75
Hebron	Tarqumiyah - Beit Kahil - Idhna	12	52	76
Hebron	Yatta -Alsamo'a	11	12	77
Hebron	Beit Ummar - Surif - Idhna	6.5	3	drop
Qalqilya	Qalqilya-Azzun-Kafr Thulth	13.7	22	78
Tulkarm	Attil- Deir al Ghusun- Illar	10.2	9	79
Tulkarm	Shuweika - Irtah - Tulkarm - Nur Shams Camp - Dhanaba	10 (Vendor)	10	80
Tulkarm	Alnazla Alsharqiya - Qaffin	5.2	2	drop
Tulkarm	Anabta - Bal'a	6.9	5	drop
Nablus	Asira ash-Shamaliya - Nablus - Rafidia	8.4	28	81
Nablus	Beit Furik - Balata Camp - Askar Camp	9.5	8	drop
Nablus	Sebastia-Zawata	8.9	2	drop
Salfit	Bruqin - Kafr ad-Dik - Farda - Sakakah	15 (Vendor)	6	drop
Bayt Lahim	Alkhader-Bethlehem-Doha -Nahalin	10	8	drop

Note: In 2018, there are 244 (out of 356) non-payers in the construction industry that can be placed in a local cluster such that there are at least 9 observations per cell. The remaining observations were dropped either because the cluster had less than 9 observations per cell or it was too far away from other municipalities to form a cluster or could not be located.

Table E.5: Creating Joint Local Clusters with both Payers and Non-Payers

Name of Localities	District	Cluster Numbers	Joint	Year	Payers and Non-Payers	Payers
Beit Ula - Nuba - Kharas	Hebron	58,72	1	2018	77	28
Fawwar-Dura-Kharsa	Hebron	59,73	2	2018	34	15
Si'ir - Halhul	Hebron	60,74	3	2018	20	9
Hebron - Taffuh	Hebron	61,75	4	2018	52	20
Tarqumiyah - Beit Kahil - Idhna	Hebron	62,76	5	2018	79	27
Yatta -Alsamoá'	Hebron	63,77	6	2018	29	17
Qalqilya-Azzun - Kafr Thulth	Qalqilya	67,78	7	2018	35	13
Attil- Deir al Ghusun- Illar	Tulkarm	68,79	8	2018	3	29
Shuweika - Irtah - Tulkarm - Nur Shams Camp - Dhanaba	Tulkarm	69,80	9	2018	27	17
Asira ash-Shamaliya - Nablus - Rafidia	Nablus	70,81	10	2018	44	16
Beit Ula- Kharas- Nuba	Hebron	22,23,17	12	2019	61	11
Shuweika- Far'un -Irtah -Tulkarem - Al Ras - NurShams Camp - Tulkarem Camp	Tulkarm	19,4	13	2019	26	21
Attil-Saida - A'lar	Tulkarm	20,2	14	2019	49	33
Ajjah -Fahma- Kafr Ra'i - Alrama	Jenin	21,5	15	2019	51	36
Hebron - Taffuh	Hebron	24,12	16	2019	29	15
Fawwar -Dura - Deir Sammit	Hebron	25,16	17	2019	27	11
Tarqumiyah - Beit Kahil - Idhna	Hebron	26,13	18	2019	93	13
Yatta -Alsamoá'	Hebron	27,14	19	2019	38	23
ad-Dhahiriya	Hebron	28,15	20	2019	30	14
Qalqilya-Azzun	Qalqilya	29,11	21	2019	60	46

Source: The sample consists of construction workers who were interviewed for the June 2018 and June 2019 waves of the EGS. We combine cluster numbers to form a joint cluster such that there are at least 9 payers and 9 non-payers. There are a total of 10 joint local clusters in 2018 and 11 joint local clusters in 2019. There are no non-payers in clusters 64 and 65 in 2018, and no non-payers in clusters 1,3,6,7,8,9,10 in 2019. Thus, when associating the permit price with the average local wages of payer and the average local wages of non-payers at the local cluster level (col 4-6 of Table 6), only 414 observations could be used for construction workers—191 from 2018 and 223 from 2019. The number of observations in the last column above sum up to 414 observations.

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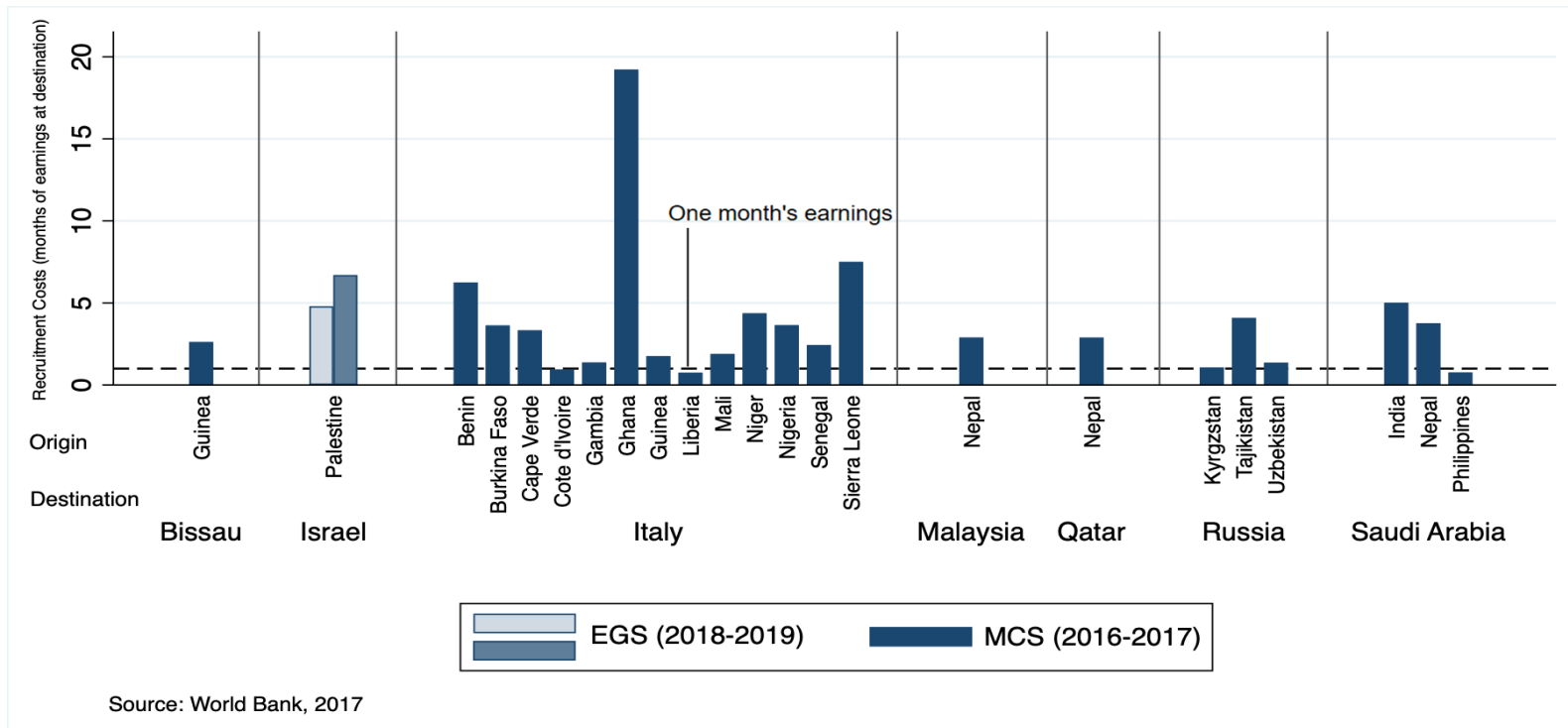
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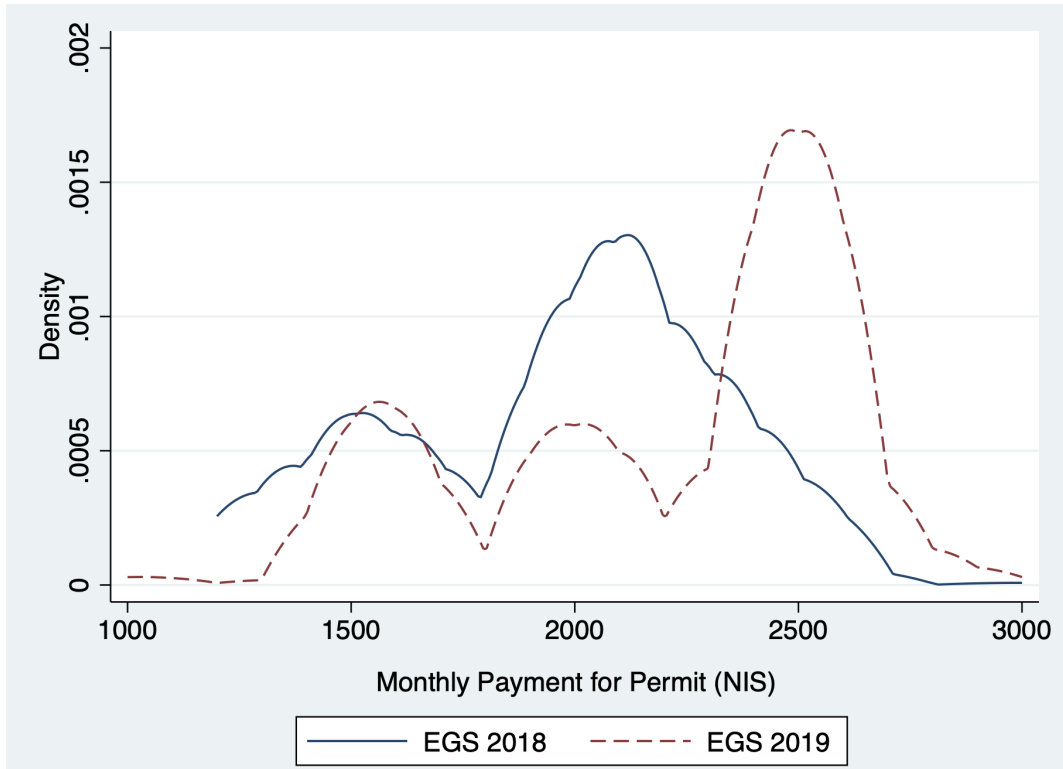
Figures

Figure I.(A): Recruitment Costs by Origin-Destination Corridor



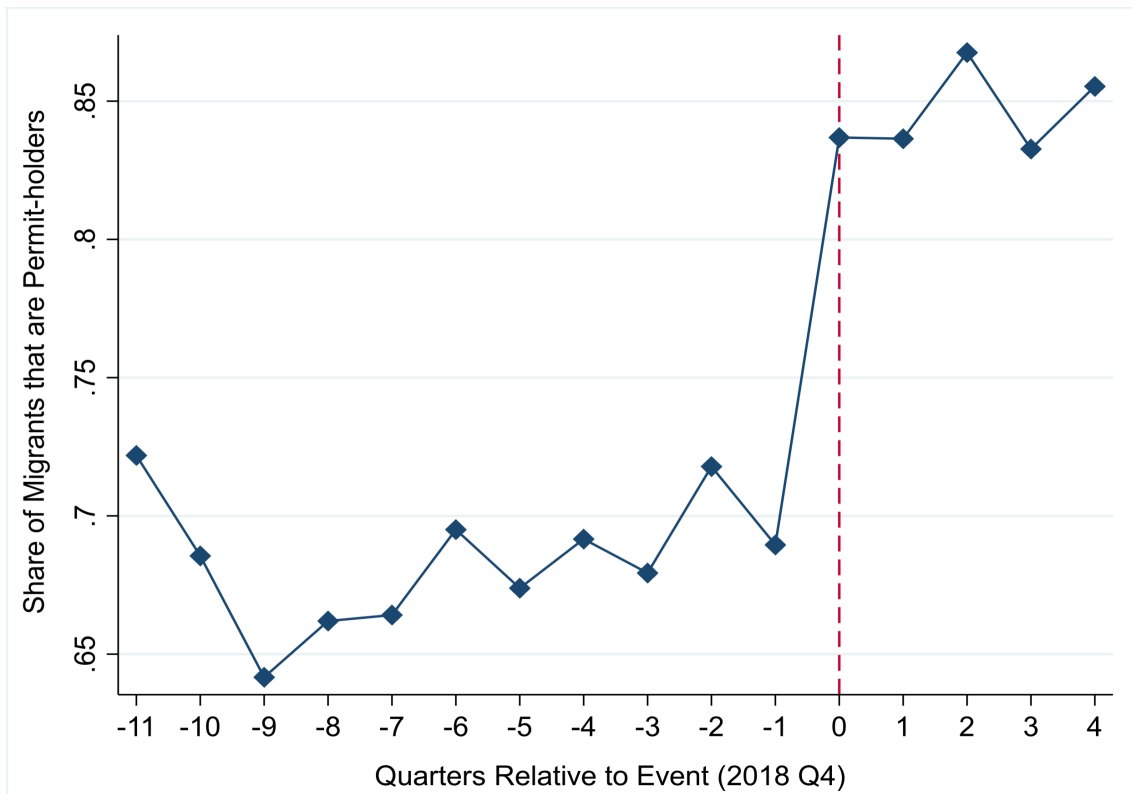
Note: The figure displays the average number of monthly salaries it would take to cover two years of recruitment costs, including the standard two-year visa . For all origin-destination corridors except Palestine-Israel, the 2016 and 2017 waves of the Migration Cost Survey (MCS) are used. Since work permits are valid for only six months, we compute the corresponding figure by multiplying the ratio of the average permit price to the average monthly salary (of 0.2 in 2018 and 0.28 in 2019) by 24.

Figure I.(B): Distribution of Permit Prices by Year



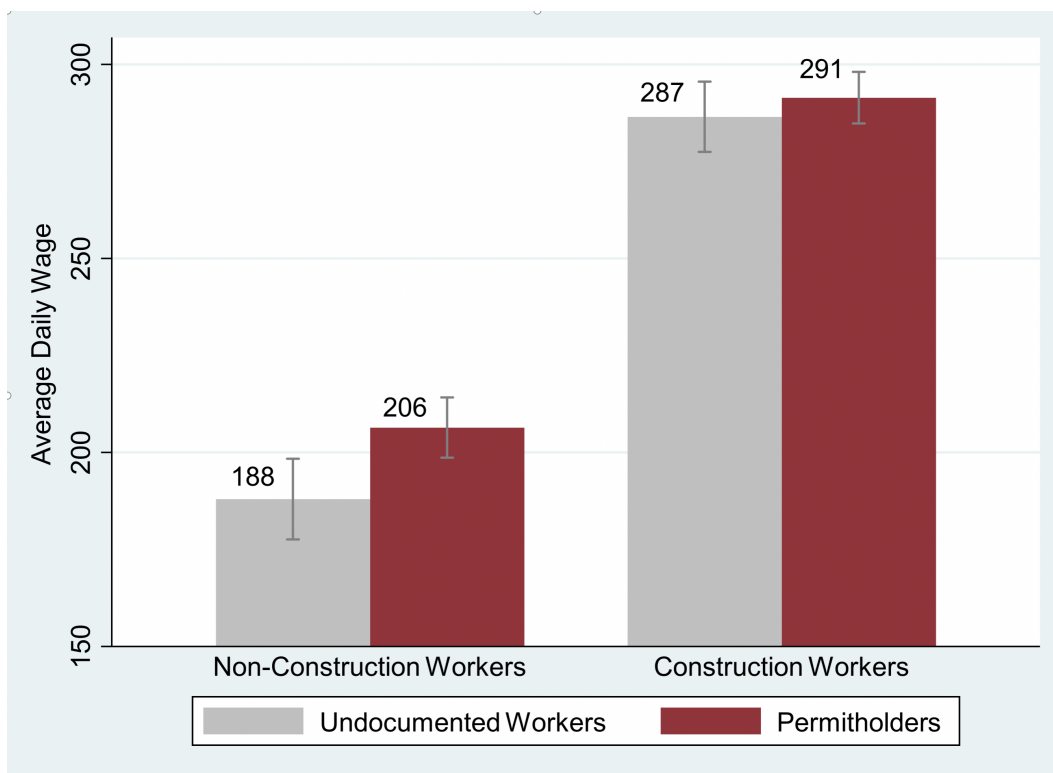
Note: Entry Gates Survey (2018 and 2019)–The distributions here are reproduced from 1268 illicit payments, 561 in 2018 and 707 in 2019. These payments were made by workers in order to purchase a work permit from the black market.

Figure II: Share of Palestinian Migrant Workers with a Work Permit



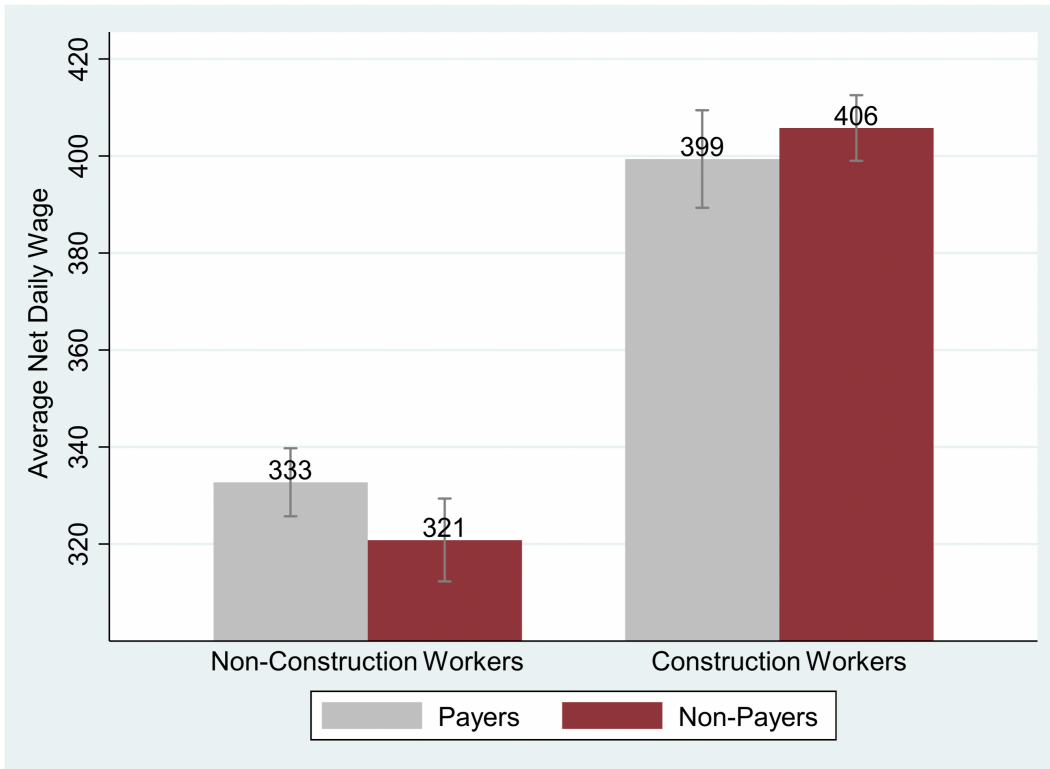
Note: Source: PLFS. This figure documents the share of Palestinian migrant workers who have a valid work permit between 2016Q1 and 2019Q4. Sample is restricted to wage-earning males who reside in the West Bank and are between the ages of 25 and 59.

Figure III.(A): Wages of Undocumented Workers and Permitholders in 2018 Q1-Q3



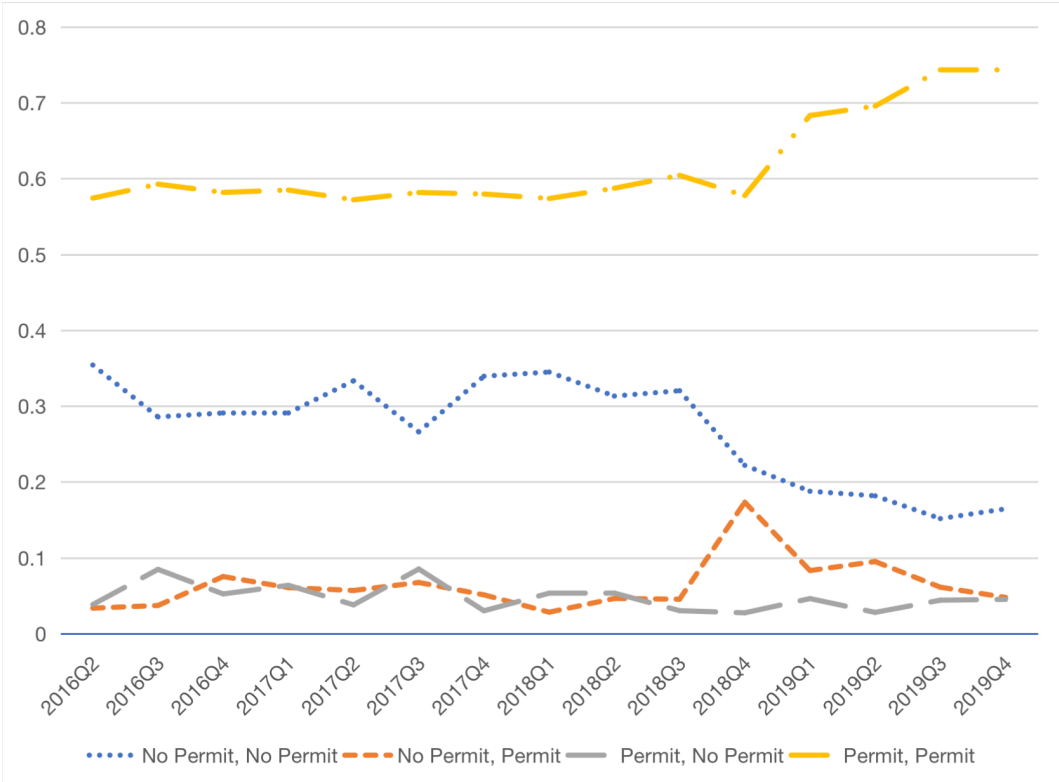
Note: (PLFS) The bar graph displays the mean of real daily wages in 2018 Q1-Q3 for undocumented workers and permit-holders by industry affiliation. 95% confidence intervals are displayed and wages are deflated to NIS 2019.

Figure III.(B): Net Wages of Payers and Non-Payers before the Event (June 2018)



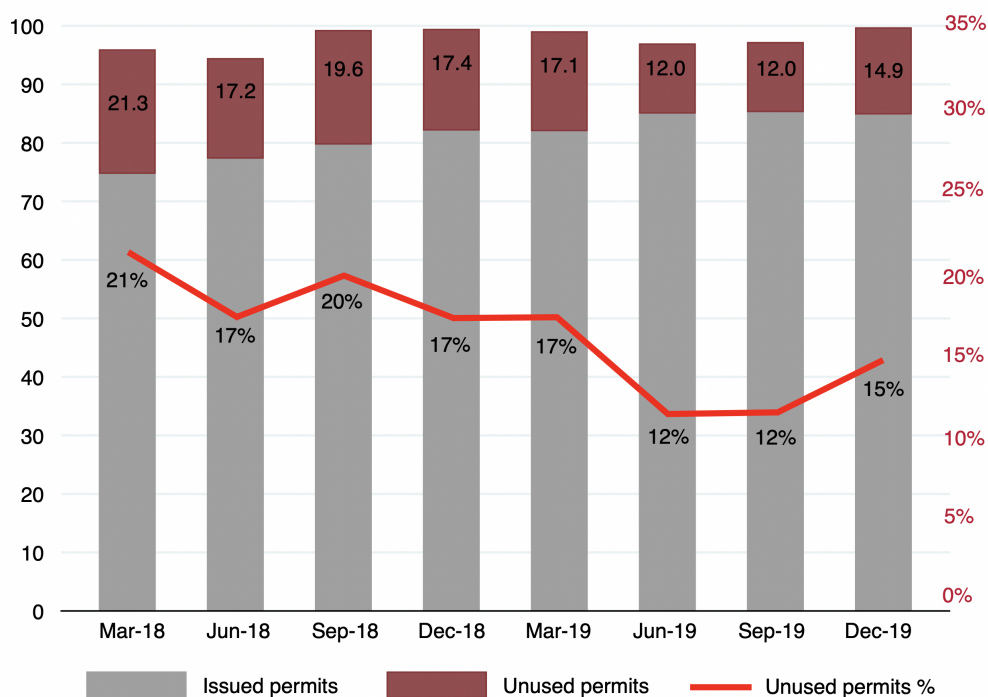
Note: EGS (2018-2019). The bar graph displays the mean of real net (gross daily wage- daily permit price) daily wages, before (June 2018) and after (June 2019) the event, for payers and non-payers by industry affiliation. 95% confidence intervals are displayed and wages are deflated to NIS 2019.

Figure IV.(A): Transitions between Permit-holders and Non-Permit Holders



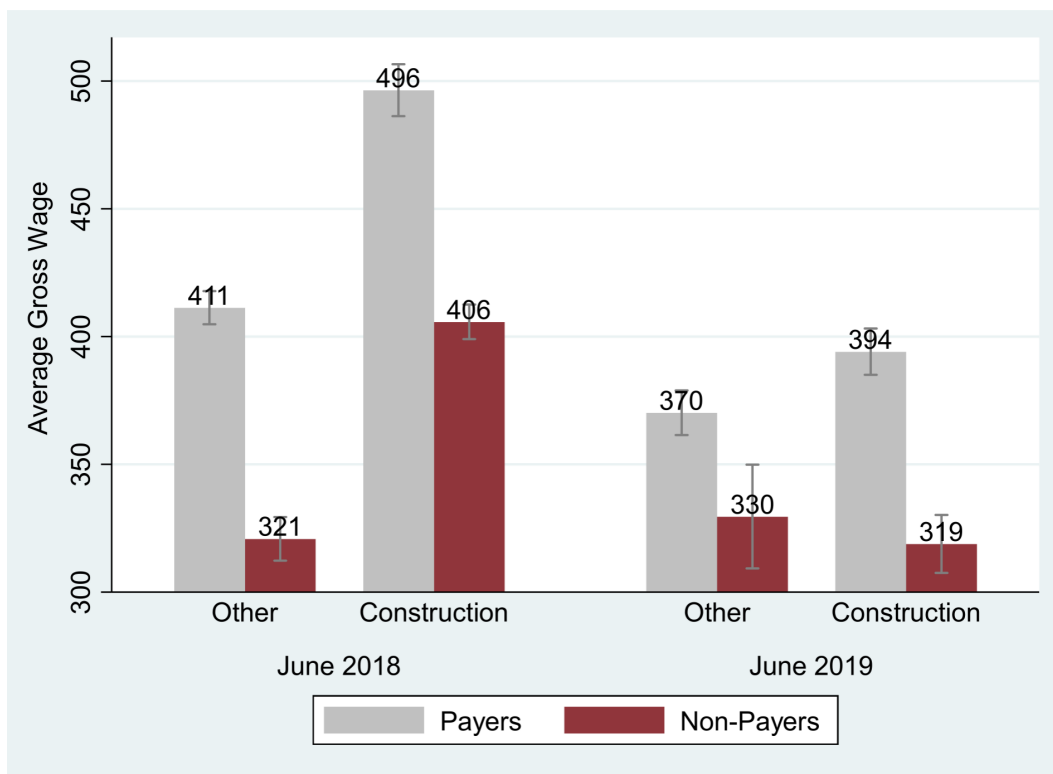
Note: PLFS(2016-2019). The figure above displays the shares associated with 4 types of workers during the period of interest: workers who did not possess a work permit during two consecutive visits (No permit, No permit), workers who did not have a work permit during their previous visit but then acquired a permit (No Permit, Permit), workers who had a work permit in the previous visit but no longer owned a work permit (Permit, No Permit) and workers who were in possession of a permit for two consecutive visits.

Figure IV.(B): Issued permits and Unused Permits (000's) according to National Quota.



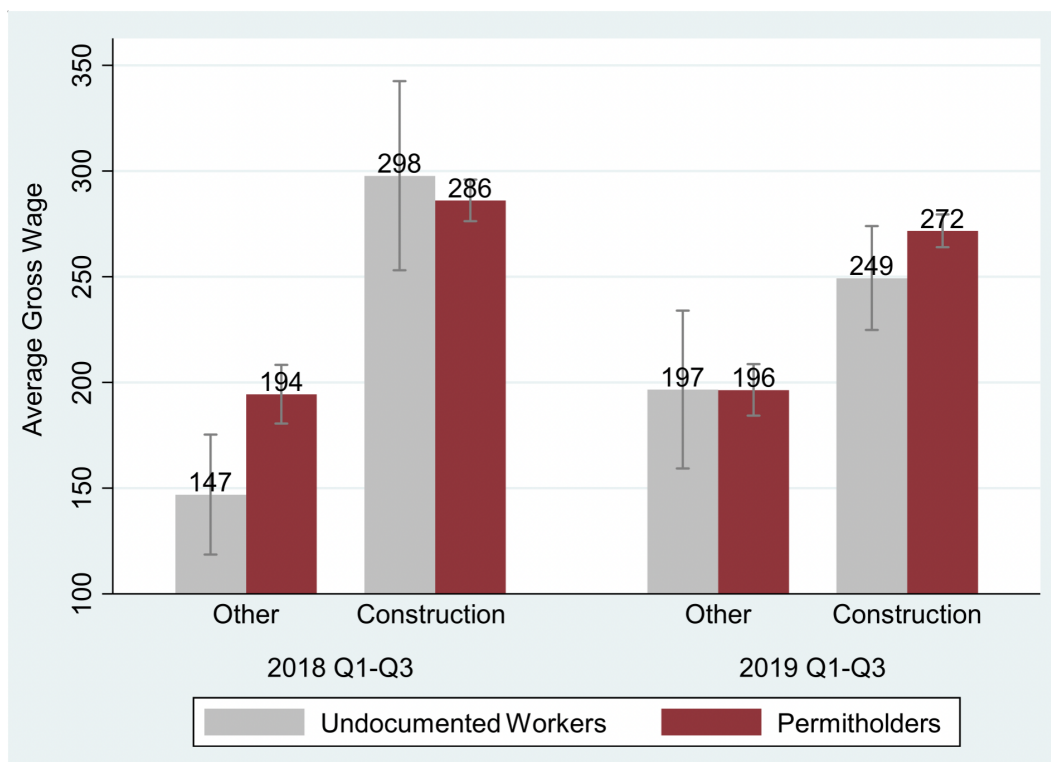
Note:
 The source of the data is from Nathan 2020. The left axis is the number of permits (in thousands) according to the national quota. The right axis represents the share of permits that are unused.

Figure V.(A): Gross Wages of Payers and Non-Payers in 2018 and 2019 (EGS)



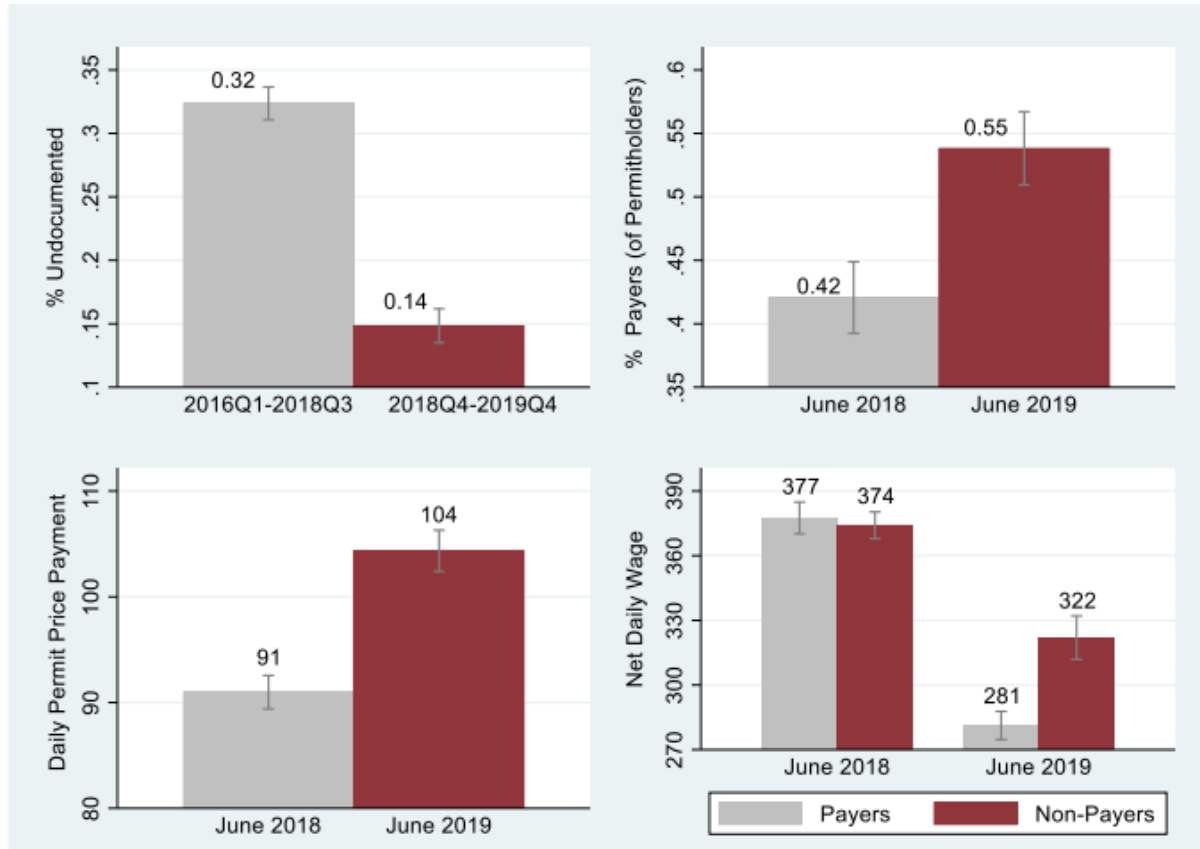
Note: EGS(2018-2019). The bar graph displays the mean of real daily wages, before (June 2018) and after (June 2019) the event, for payers and non-payers by industry affiliation. 95% confidence intervals are displayed and wages are deflated to NIS 2019.

Figure V.(B): Wages of Documented and Undocumented Workers in 2018 and 2019 (PLFS)



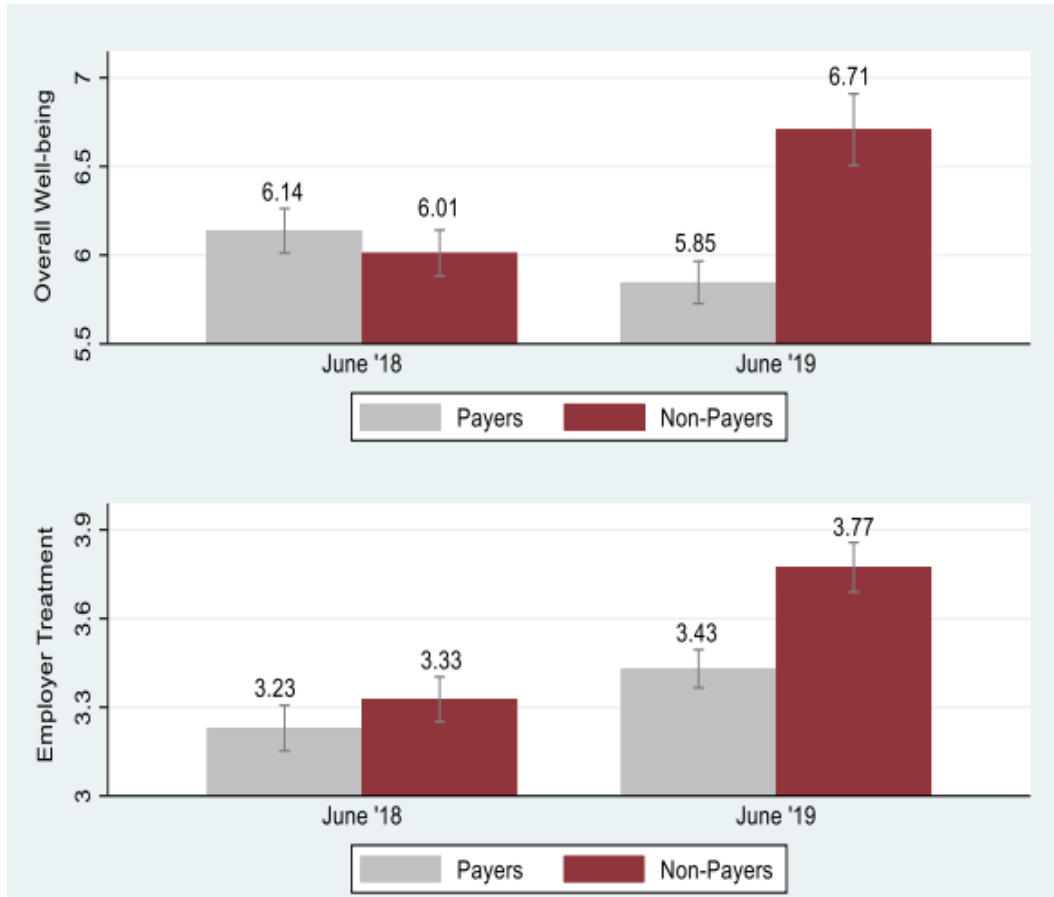
Note: PLFS(2018-2019). The bar graph displays the mean of real daily wages before (2018 Q1-Q3) and after (2019Q1-Q3) the event, for permit-holders and undocumented workers by industry affiliation. The sample is limited to 25-59-year-old men who have employment contracts. 95% confidence intervals are displayed and wages are deflated to NIS 2019.

Figure VI: Differences in Labor Shares and Prices Before and After the Event



Note: The first graph (top left) displays the percentage of migrant workers that are undocumented using the PLFS waves of 2016-2019. The remaining figures use the EGS dataset to report (by round): the % of permit-holders that are payers; the average daily permit price for payers and the net daily wage—gross daily wage minus daily permit price—for payers and non-payers (note that the daily permit price for non-payers=0). Prices are deflated to NIS 2019.

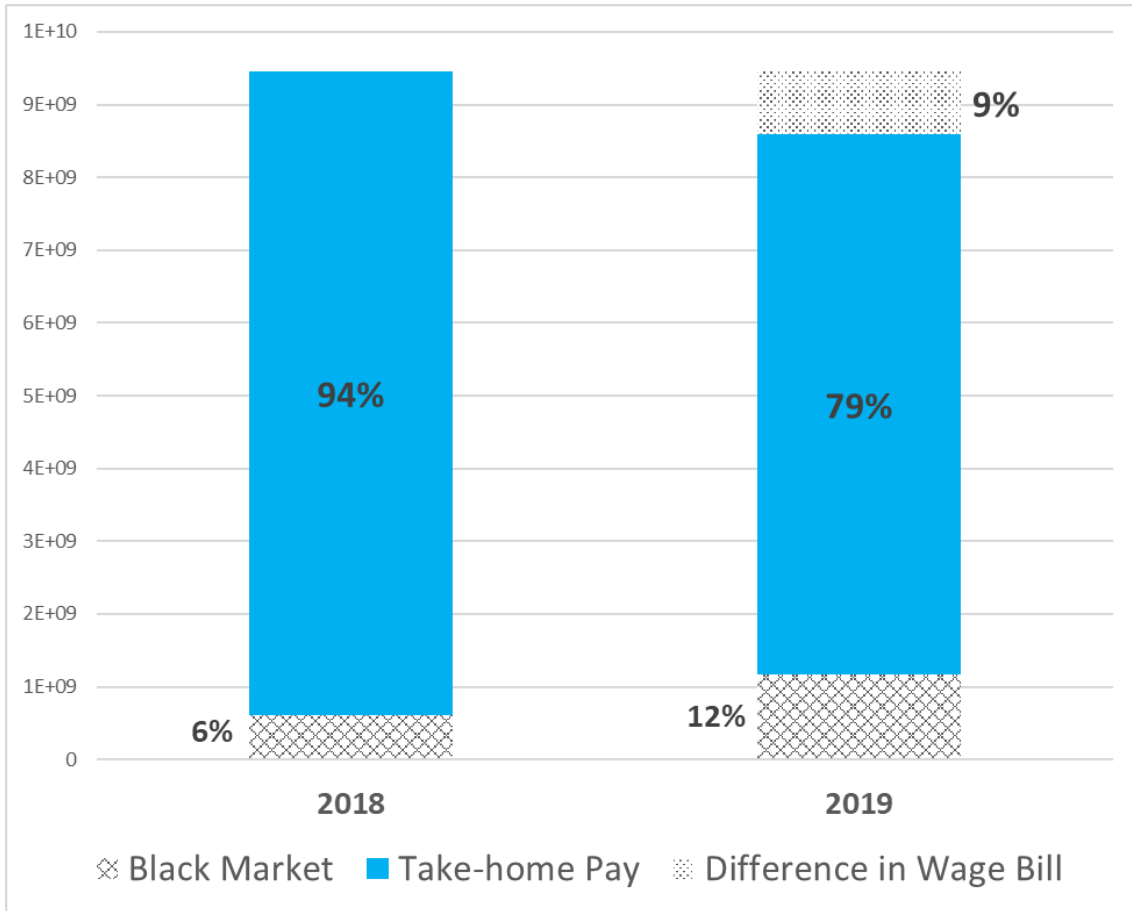
Figure VII: Well-being Measures of Payers and Non-Payers Before and After Event



Note:

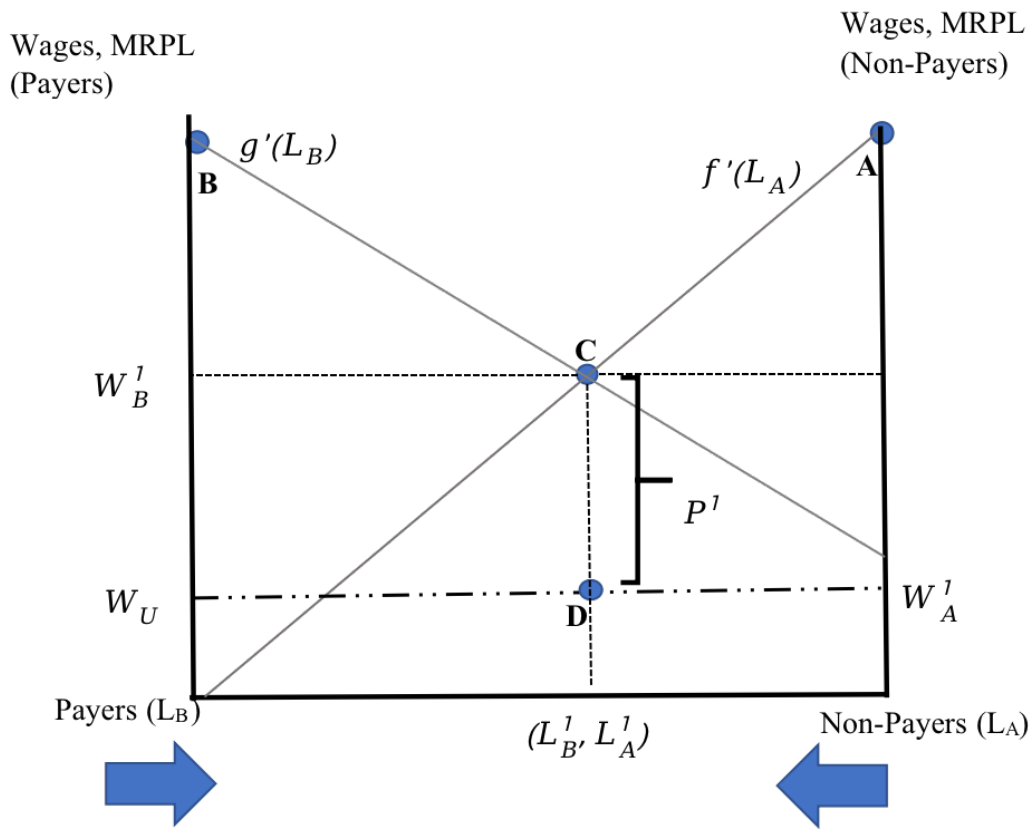
EGS 2018 and 2019. The top graph displays the average well-being measure (by round and sector affiliation) to the question: Overall, on a scale of 1 to 10, how satisfied are you with your life nowadays? The bottom graph displays average responses to the question: How would you rate the way in which your current employer in Israel treats you (scale of 1 to 5)? Higher responses correspond to better well-being measures.

Figure VIII: Redistribution of Total Wage Bill



Note: (EGS) The left bar graph above displays the distribution of the annual wage bill (9.45 bil NIS) using estimates from the June 2018 wave of the EGS (Refer to Table III for more details.) The right bar graph displays how the 2018 wage bill was redistributed in 2019 using estimates from the June 2019 wave of the EGS. The annual wage bill is the sum of the product of each type of worker multiplied by the average wage for his group multiplied by 22 days/month times 12 months/year. Employer savings is the difference between the actual wage bill in 2018 and in 2019; we also refer to this as the decline in employers' labor costs. Black market revenue is computed as the estimated number of payers multiplied by the average permit price times 12 months.

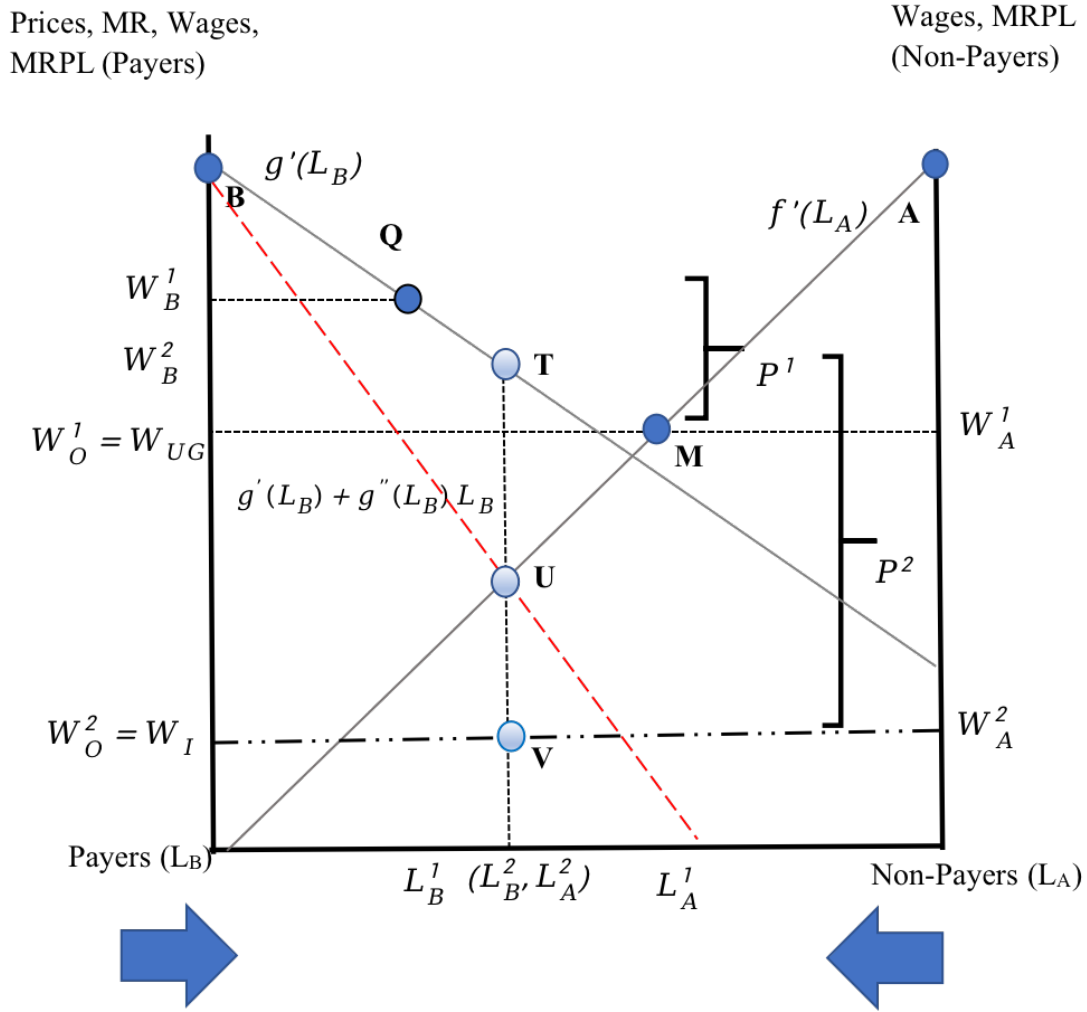
Figure IX.(A): Equilibrium in Basic Model



Note: In Figure IX.(A), Sector B (Semi-formal) moves left to right and the Sector A (Formal) moves right to left. All permits are used such that $L_A + L_B = \bar{L}$, where \bar{L} is the industry quota. $f'(L_A)$ is the MRPL for non-payers and $g'(L_B)$ is the MRPL for payers. There is full mobility across sectors, such that $f'(\bar{L} - L_B) = g'(L_B)$. Equilibrium is displayed for the basic model. Using these equilibrium values, we show employer surplus, worker surplus and black-market revenue, which is shared between formal employers and brokers.

Sector	Type of Employer	Employer Surplus	Worker Surplus
Sector A	Formal	$ACDW_A^1$	Non-payers $[W_A^1 L_A^1]$
Sector B	Semi-formal	BCW_B^1	Payers $[(W_B^1 - P)L_B^1 = W_A^1 L_B^1]$
Black -Market	Formal + Brokers	$P^1 L_B^1$	

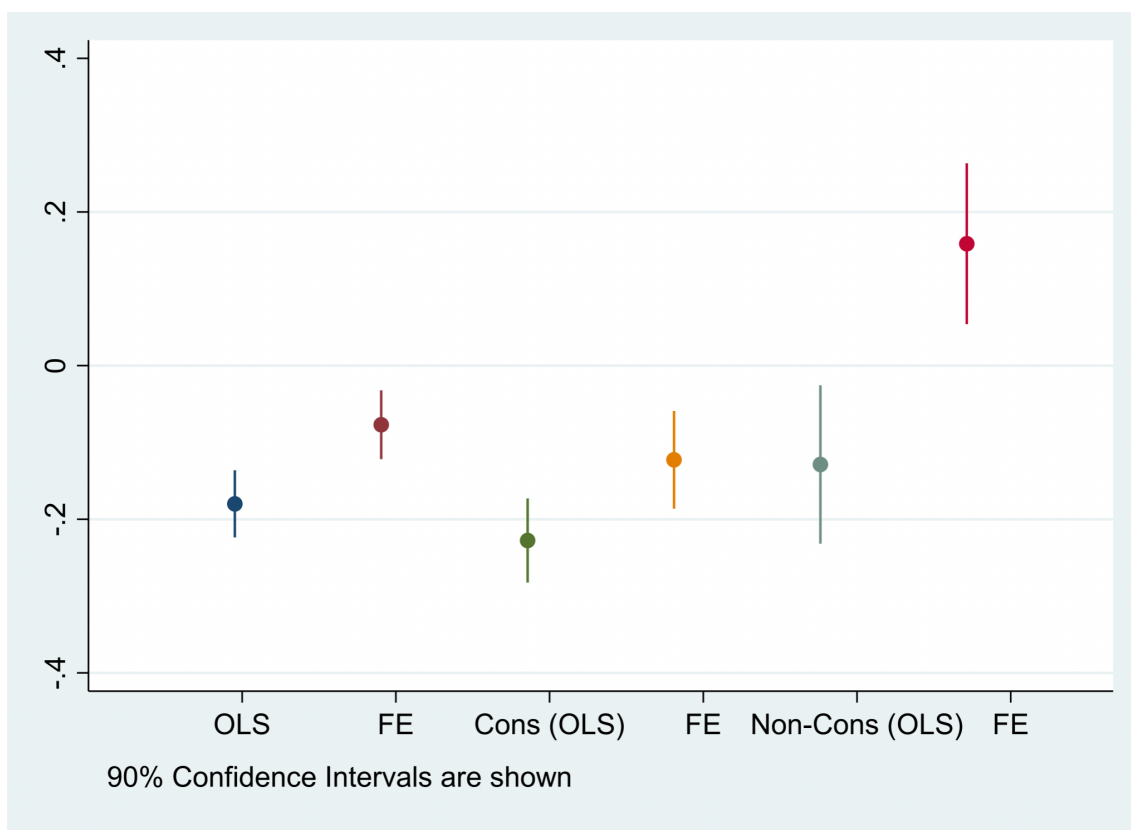
Figure IX.(B): Equilibrium in the Event of a Decline in the Outside Option



Note: In Figure IX.(B), Sector B (Semi-formal) moves left to right and the Sector A (Formal) moves right to left. Permit sellers have market power such that some permits are unused, i.e. $L_A + L_B < \bar{L}$, where \bar{L} is the industry quota. $f'(L_A)$ is the MRPL for non-payers and $g'(L_B)$ is the MRPL for payers. The dashed line represents the marginal cost of labor for semi-formal employers, whose labor costs are $W_B L_B = g'(L_B)L_B$. The marginal cost of labor ($g'(L_B) + g''(L_B)L_B$) is equivalent to the marginal revenue accrued by sector A plus the initial underground wage sector $MR(L_B) + W_{UG}$ (see equation 3). Thus, the equilibrium solution prior to the event is given by a dark point (Q,M) where labor and wages are allocated as (L_A^1, L_B^1) and (W_A^1, W_B^1) respectively, and the permit price is denoted by P^1 . Due to the policy, the outside option decreases from W_{UG} to W_I . Here, the solution is depicted by a light shade (T,V) where labor and wages are allocated as (L_A^2, L_B^2) and (W_A^2, W_B^2) , and the permit price is P^2 . Employers and brokers gain while workers experience losses as shown below:

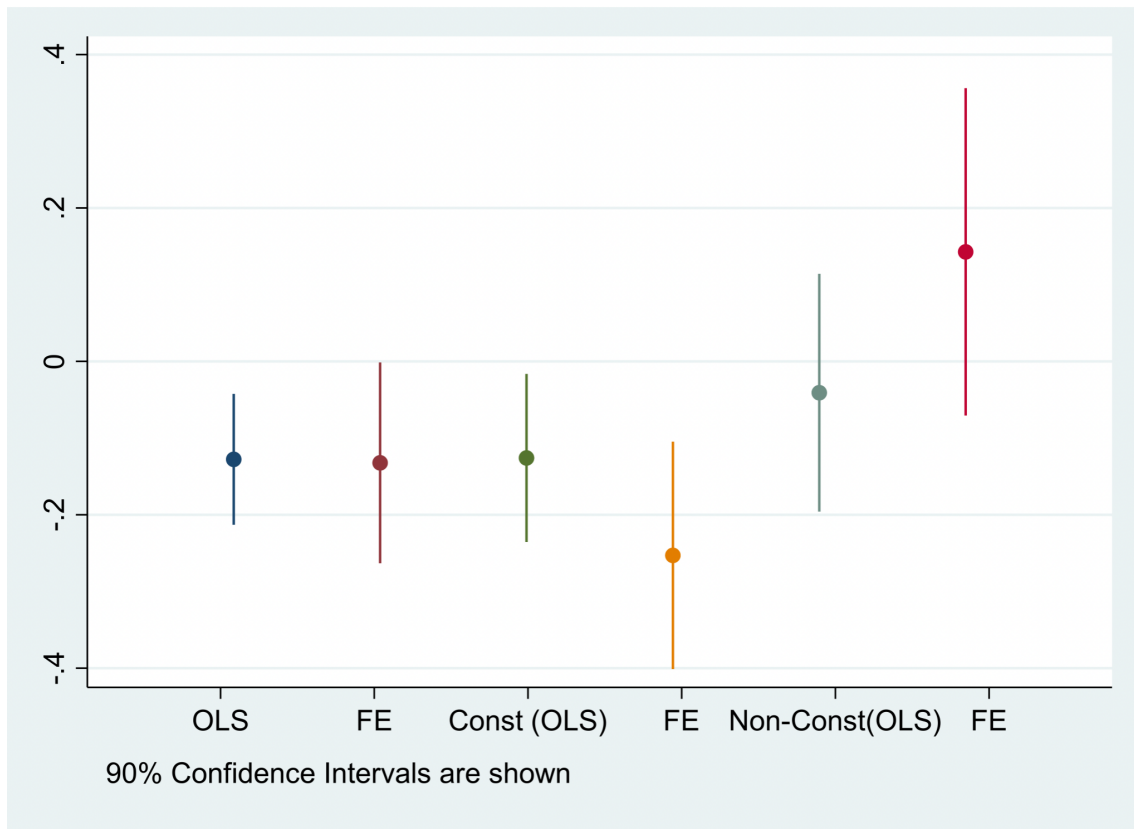
Sector	Employer	Gain in Employer Surplus	Loss in Worker Surplus
Sector A	Formal	$AUVW_A^2 - AMW_A^1$	$-(W_A^2 L_A^2 - W_A^1 L_A^1)$
Sector B	Semi-formal	$BTW_B^2 - BQW_B^1$	$-(W_B^2 L_B^2 - W_B^1 L_B^1)$
Black -Market	Formal + Brokers	$P^2 L_B^2 - P^1 L_B^1$	

Figure X.(A): Difference in Difference OLS and FE Estimates of Wages (Control Group 1)



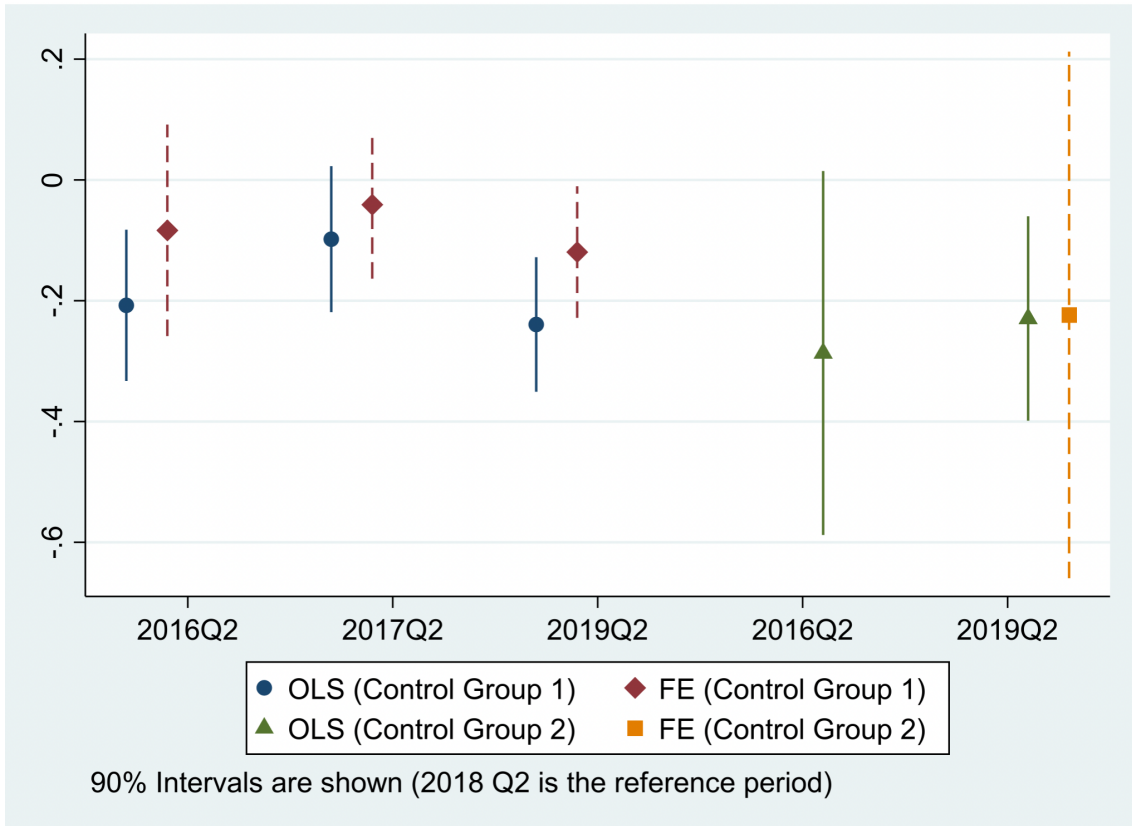
Note: Source: PLFS. This figure displays six difference in difference estimates where the treatment group consists of wage-earners in Israel who have a valid work permit and the control group are wage-earners in the domestic economy. The sample is limited to 25-59-year-old men who have employment contracts and are occupied in elementary occupations or crafts/skilled work. The OLS parameter is uncovered by regressing ln (real) daily wage on the treatment group, an event dummy (on or after 2018Q4), the interaction term (variable of interest), and a construction industry dummy. In the FE specification, we include individual fixed effects. We repeat these two regressions separately for workers employed in the construction and non-construction industries.

Figure X.(B): Difference in Difference OLS and FE Estimates of Wages (Control Group 2)



Note: Source: PLFS. This figure displays six difference in difference estimates where the treatment group consists of wage-earners in Israel who have a valid work permit and the control group are wage-earners in the domestic economy who have a Jerusalem ID card. The sample is limited to 25-59-year-old men who have employment contracts and are occupied in elementary occupations or crafts/skilled work. The OLS parameter is uncovered by regressing \ln (real) daily wage on the treatment group, an event dummy (on or after 2018Q4), the interaction term (variable of interest), and a construction industry dummy. In the FE specification, we include individual fixed effects. We repeat these two regressions separately for workers employed in the construction and non-construction industries.

Figure X.(C): Difference in Difference Panel Estimates (Quarter 2 only)



Note: Source: PLFS. This figure displays parameters estimates of four regressions, an OLS and FE specification for each control group. In all specifications, the treatment group consists of wage-earners in Israel who have a valid work permit. The first control group are wage-earners in the domestic economy, while the second group consists of wage-earners in the domestic economy who have a Jerusalem ID card. Samples are limited to 25-59-year-old men who have employment contracts and are occupied in elementary occupations or crafts/skilled work. To control for seasonal changes, we limit the sample to those whose wages are observed in quarter 2. The OLS parameter for each control group is uncovered by regressing ln (real) daily wage on the treatment group dummy, four year dummies (2016Q2, 2017Q2, 2018Q2, and 2019Q2), the interaction terms (variables of interest), and a construction industry dummy. In the FE specification, we include individual fixed effects.

Table I: Descriptive Statistics of Migrant Workers in Israel and the Settlements

Panel A: PLFS (2016-2019)	2016	2017	2018	2019
Labor Force Participation Rate	0.89	0.89	0.88	0.88
Unemployment Rate	0.18	0.18	0.20	0.18
Wage Sector Rate	0.70	0.71	0.70	0.71
% Wage-Earners Employed in Israel	0.31	0.32	0.32	0.32
% Employed With a Work Permit	0.63	0.66	0.69	0.81
% Wage-Earners with a Work Permit	0.67	0.68	0.73	0.86
% Construction Workers of Employed in Israel	0.65	0.63	0.64	0.65
% Construction of Permit-holders	0.72	0.71	0.72	0.72
Real Daily Wage (NIS 2019) in Construction	263	272	285	292
Real Wage in Construction w/Permit	265	274	286	293
Real Wage in Construction w/o Permit	258	268	282	286
Real Wage in Other Industries	180	189	199	215
Real Wage in Other Industries with Permit	188	196	207	222
Real Wage in Other Industries w/o Permit	168	178	184	189
Panel B: EGS June 2018-19/PLFS 2019Q2	EGS	EGS	PLFS	
Israel Proper (only)	June '18	June '19	2019Q2	
% Payers among Permit-holders	0.42	0.54	0.47	
% Construction Workers among Payers	0.67	0.64	0.75	
Real Daily Wages for Payers in Construction	496	394	330	
Daily Payment for Payers in Construction	97	113	138	
Real Daily Wages for Non-Payers in Construction	406	319	261	
Real Daily Wages for Payers in Other Ind.'s	411	370	256	
Daily Payment for Payers in Other Industries	79	88	108	
Real Daily Wages for Non-Payers in Other Ind	321	330	195	

Notes: PLFS (2016-2019) & EGS (2018-2019). Sample size is limited to male migrant workers between ages 25 and 59. Survey weights are used to compute means. Daily payment for payers is computed by dividing the monthly payment made by the number of days worked last month.

Table II: Descriptive Statistics for Payers and Non-payers in June 2018 and June 2019

All Workers	2018			2019			2019-2018
Variable Name	Payers	Non-Payers	Diff	Payers	Non-Payers	Diff	Diff-in-Diff
Average Age	36.8	38.5	1.7**	36.8	38.9	2.0*	0.34
%Single	0.06	0.04	-0.02*	0.06	0.13	0.07*	0.09**
%Married	0.82	0.81	-0.01	0.91	0.81	-0.10**	-0.09*
Average Number of Kids	4.5	4.4	-0.07	3.9	4.0	0.06	0.13
%Illiterate	0.03	0.02	-0.01	0.01	0.00	-0.01	-0.00
%Can Read and Write	0.13	0.11	-0.02	0.01	0.05	0.04**	0.06**
%Primary Schooling	0.16	0.21	0.05	0.15	0.10	-0.04	-0.09*
%Preparatory Schooling	0.35	0.34	-0.01	0.37	0.36	-0.01	0.00
%Secondary Schooling	0.22	0.20	-0.02	0.28	0.28	0.00	0.02
%Post-Secondary Schooling	0.12	0.13	0.01	0.18	0.20	0.02	0.01
% Speak Hebrew	0.57	0.57	-0.00	0.37	0.43	0.06	0.06
% Speak English	0.06	0.03	-0.03**	0.08	0.20	0.13***	0.15***
Tenure in Months	86	99	13.3**	78	85	7.0	-6.3
Time since First Permit	7.9	9.2	1.2*	6.3	9.1	2.7***	1.5
% with a single employer	0.46	0.58	0.11***	0.34	0.67	0.33***	0.21***
Avg number of employers	1.8	1.7	-0.10	2.5	1.7	-0.78***	-0.68***
% works for Official Employer	0.28	0.91	0.63***	0.34	0.84	0.51***	-0.12**
% Official and single Employer	0.10	0.55	0.45***	0.20	0.62	0.42***	-0.04
Hours worked last week	34.8	35.8	0.97	41	44	2.6***	1.6
Commute time (minutes)	147	129	-18.2***	209	168	-41***	-22.8*
Days worked last month	21.7	21.1	-0.55***	21.5	20.6	-1.0**	-0.44
Real daily wage (NIS 2019)	468	374	-94***	386	322	-64***	30.8**
Daily permit payment	91	0.00	-91***	104	0.00	-104***	-13.4***
Net daily wage	377	374	-3.4	281	322	41***	44.2***
Number of Observations	561	622		707	456		

Notes: EGS(2018-2019). The table reports summary statistics by payer/non-payer status and year. T-tests are reported for differences in means between payers and non-payers for each year, and diff-in-diff estimates between 2019 and 2018. Survey weights are used and statistical significance is reported at the 10% (*), 5% (**) and 1%(***) level.

Table III: Redistribution of Migrant Wage Bill (in Israel Proper) Between 2018 and 2019

	2018	Construction	Non-Construction	2019	Construction	Non-Construction
Number of Workers Total ¹	89,376	60,891	28,485	93,524	67,244	26,280
Permits Issued in Israel ²	60,776	44,589	16,187	80,431	60,567	19,864
% Permitholders (PLFS)	0.68	0.73	0.61	0.86	0.89	0.78
% Payers (EGS)	0.42	0.44	0.39	0.54	0.51	0.59
Number Undocumented ³	28600	16302	12298	13093	6677	6416
Number of Payers ⁴	25526	19144	6382	43433	32575	10858
Number of Non-Payers	35250	25445	9805	36998	27992	9006
Monthly Permit Price(EGS)	1955	2102	1652	2201	2343	1945
Wages Undocumented (EGS+PLFS) ⁵	358	406	294	288	309	267
Wages Payers (EGS)	468	496	411	385	394	370
Wages Non-Payers (EGS)	374	406	321	322	319	330
Average Wages	396	434	330	346	354	331
Annual Black Market Rev ⁶	609 Mil	483 Mil	126 Mil	1.17 Bil	916 Mil	253 Mil
Annual Wage Bill ⁷	9.45 Bil	6.98 Bil	2.47 Bil	8.59 Bil	6.29 Bil	2.30 Bil
Take-home Pay ⁸	8.85 Bil	6.50 Bil	2.35 Bil	7.42 Bil	5.37 Bil	2.05 Bil
Decline in Labor Costs ⁹	0	0	0	871 Mil	691 Mil	180 Mil
Annual Black Market Rev (Adj)*	609 Mil	483 Mil	126 Mil	1.20 Bil	935 Mil	265 Mil
Take-home Pay (Adj)	8.85 Bil	6.50 Bil	2.35 Bil	7.68 Bil	5.65 Bil	2.03 Bil
Decline in Labor Costs (Adj)	0	0	0	573 Mil	393 Mil	180 Mil

All prices are deflated at NIS 2019.¹ Computed as Permits Issued in Israel divided by % Permitholders. Here, we are required to make the assumption that the share of workers who are permit-holders does not differ for those employed in Israel proper vs the settlements.² Taken from annual PLFS publication, which is administered by the PBCS.³ Computed as number of total workers times (1-%Permit-holders).⁴ Payers and Non-payers are computed as %Payers or (1-%Payers) times %Permit-holders times number of workers total. To ensure the numbers add up, we assume construction workers are 72-76% of payers as well as non-payers.⁵ For each industry type, undocumented wages are computed as average wages of Non-payers adjusted by the undocumented penalty (as in Figure III.(A)).⁶ By industry, computed as Monthly Permit Price times Number of Payers *12 months.⁷ By industry, computed as sum of product of number of each worker type (payers, non-payers, undocumented) and corresponding average wage times 22 days times 12 months. ⁸ Computed as Annual Wage Bill minus Black Market Revenue. ⁹ Equivalent to 0 because 2018 is the reference point and for 2019, computed as difference between wage bill in 2019 and wage bill in 2018. * For the last three rows, 2018 estimates are the same as before and 2019 estimates are produced from adjusted wages and permit prices, according to estimates in Panels B and D of Table IV.

Table IV: What is the Impact of the Border Policy on Workers' Outcomes?

	Permit-holders (1)	Payers (2)	Permit Price (3)	Payers' Wages (4)	Non-Payers' Wages (5)
Panel A: Construction Workers (No Controls)					
Event	0.11*** (0.02)	0.08* (0.04)	0.11*** (0.01)	-0.24*** (0.03)	-0.28*** (0.03)
Constant			7.64*** (0.01)	6.19*** (0.01)	5.99*** (0.01)
Observations	2,126	1,347	704	704	643
R-squared			0.11	0.22	0.23
Panel B: Construction Workers (W/ Controls)					
Event	0.12*** (0.02)	0.03 (0.03)	0.13*** (0.02)	-0.17*** (0.02)	-0.21*** (0.03)
Constant			7.84*** (0.23)	5.36*** (0.30)	5.06*** (0.31)
Observations	2,126	1,347	704	704	643
R-squared			0.22	0.55	0.45
Panel C: Non-Construction (No Controls)					
Event	0.16*** (0.03)	0.19*** (0.05)	0.15*** (0.02)	-0.12*** (0.02)	-0.01 (0.05)
Constant			7.39*** (0.01)	6.01*** (0.01)	5.75*** (0.02)
Observations	1,209	990	562	562	428
R-squared			0.11	0.09	0.00
Panel D: Non-Construction (W/ Controls)					
Event	0.15*** (0.03)	0.24*** (0.03)	0.21*** (0.03)	-0.12*** (0.02)	0.01 (0.08)
Constant			7.27*** (0.27)	5.42*** (0.26)	5.16*** (0.42)
Observations	1,209	990	562	562	428
R-squared			0.41	0.45	0.25

Note: (EGS and PLFS)— This table provides point estimates of the policy (post 2018Q3). Col (1) displays marginal effects of a probit model where the dependent variable equals 1 if the worker is a permit holder and 0 if undocumented using the 2018Q1-2019Q4 waves of the PLFS. The remaining columns use the June 2018 and June 2019 rounds of the EGS. In col (2), the dependent variable equals 1 if the worker is a payer and 0 if he is a non-payer. The dependent variable in the remaining columns is the natural log of the monthly permit payment (col 3), the natural log of real daily wages deflated to 2019 NIS for payers (col 4) and non-payers (col 5). The sample is limited to men between the ages of 25 and 59, who have no missing information on the controls included in Panels B and Panel C. In Panels A and C, there are no controls for the construction and non-construction industries respectively. Panels B and D include the following controls: whether or not a worker has an official employer, worked for a single employer in the last three months, an interaction term between the latter two variables, one dummy variable for fluency in Hebrew, one dummy variable for fluency in English, 6 marital dummies, number of children, 6 educational attainment dummies, 4 industry dummies, 8 occupational dummies, tenure in Israel and its square and number of years since first work permit. For col (1) specifications, the following variables are not included in the regression (since they are not asked in the questionnaire administered by the PLFS): official employer, worked for a single employer in the last three months, an interaction term between the latter two variables, one dummy variable for fluency in Hebrew, one dummy variable for fluency in English, number of years since first work permit, and total commute time. Survey weights are used and heteroskedasticity-robust standard errors are in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table V: Permit Prices and Individual Wages

Y=Ln(Permit Price)	Construction		Non-Construction	
	(1)	(2)	(3)	(4)
June 2019	-0.07	-3.14***	-3.62***	-6.10***
	(0.80)	(1.13)	(0.86)	(1.44)
Individual Wage	0.19***		-0.06	
	(0.05)		(0.14)	
June 2019 X Indiv Wage	0.03		0.64***	
	(0.13)		(0.14)	
Predicted Wage		-0.29***		-0.39*
		(0.10)		(0.22)
June 2019 X Pred Wage		0.53***		1.06***
		(0.19)		(0.24)
Residual Wage		0.25***		-0.01
		(0.05)		(0.13)
June 2019 X Resid Wage		-0.02		0.56***
		(0.13)		(0.15)
Constant	6.44***	9.42***	7.77***	9.72***
	(0.33)	(0.64)	(0.81)	(1.34)
Observations	687	687	545	545
R-squared	0.15	0.18	0.32	0.33

Notes: EGS June 2018 and 2019 rounds. Parameters above are estimated using OLS where the dependent variable is the natural logarithm of the monthly permit price. In col (1)-(2), the sample size is limited to construction workers who were payers in June 2018 or June 2019, and for col(3)-(4), the sample consist of workers outside of construction. Survey weights are used and heteroskedasticity-robust standard errors are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table VI: Permit Prices and Average Local Cluster Wages for Construction Workers

Construction Workers	Full Sample			Sample in Local Cluster		
Y=Ln(Monthly Permit Prices)	(1)	(2)	(3)	(4)	(5)	(6)
Average Wage (Non-Payers)	-0.23*** (0.08)	-0.26** (0.11)	-0.17 (0.11)	-0.17 (0.10)	-0.29** (0.13)	-0.16 (0.15)
X June 2019	0.45*** (0.16)	0.64*** (0.17)	0.67*** (0.18)	0.41** (0.18)	0.66*** (0.19)	0.65*** (0.22)
Average Wage (Payers)	0.16** (0.07)	0.17*** (0.06)	0.14** (0.06)	0.12 (0.08)	0.21*** (0.07)	0.15* (0.08)
X June 2019	-0.43* (0.25)	-0.17 (0.30)	-0.03 (0.33)	-0.39 (0.25)	-0.21 (0.31)	-0.03 (0.33)
No Non-Payers in Cluster			0.06** (0.03)			0.06* (0.03)
X June 2019			-0.09*** (0.04)			-0.10** (0.04)
June 2019	0.05 (2.01)	-2.62 (2.37)	-3.59 (2.63)	0.08 (2.07)	-2.51 (2.46)	-3.42 (2.74)
Controls		X	X		X	X
Constant	8.00*** (0.46)	8.35*** (0.56)	8.03*** (0.57)	7.93*** (0.63)	8.31*** (0.72)	7.92*** (0.76)
Observations	696	696	696	565	565	565
R-squared	0.12	0.33	0.33	0.11	0.32	0.33

Notes: EGS June 2018 and 2019 rounds. Parameters above are estimated using OLS where the dependent variable is the natural logarithm of the monthly permit price. All observations are construction payers that were surveyed either in June 2018 or June 2019. The sample in col (1)-(3) consists of all workers. The sample in col (4)-(6) is limited to 1.) payers who have at least 9 construction payers and 9 construction non-payers residing in their local cluster during the year of the interview (414) or 2.) those who have at least 9 construction payers residing in their local cluster during the year of the interview but have fewer than 9 non-payers residing in their local cluster (151). In col(2),(3),(5) and (6), the following controls are included: works for an official employer, worked for a single employer in the last three months, an interaction term between the latter two variables, one dummy variable each for fluency in Hebrew and in English, 6 marital dummies, number of children, June 2019 dummy variable, tenure in Israel and its square, number of years since first work permit, 11 district dummies, 6 educational attainment dummies, and 8 occupational dummies, days worked last month, and weekly hours worked. Survey weights are used and heteroskedasticity-robust standard errors are in parentheses *** p<0.01, ** p<0.05, * p<0.1.