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Doctoral Thesis

Essays on the economics of migration

Cansu Oymak

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Declaration of Authorship

I, Cansu Oymak, declare that this thesis titled, "Essays in the economics of migration" and the work presented in it are my own and has not been submitted in any other form for the award of a higher degree elsewhere.

Chapter 2 entitled "The political economy of refugees in Africa" is a joint authored piece of work with myself, Jean-François Maystadt and Anna-Maria Mayda. A signed declaration of joint authorship can be found in Appendix D.

Chapter 3 titled "Can refugees improve native children's health?: Evidence from Turkey" is a joint authored piece of work with myself, Jean-François Maystadt. This chapter has already been published in Journal of Demographic Economics, Volume 90, Issue 3, Pages 521-551, March 2024, doi:10.1017/dem.2024.1. The published version of the article can be found at Cambridge Core Article. A signed declaration of joint authorship can be found in Appendix D.

Chapter 4 titled "The Relationship Between Low Pay, High Pay and Physical and Mental Health for Migrants: Evidence from the United Kingdom" is a joint authored piece of work with Heather Brown. A signed declaration of joint authorship can be found in Appendix D.

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Data Availability

Chapter 2 utilizes data from the Constituency-Level Elections Archive (CLEA), a collaborative project that compiles and distributes election results from various sources. CLEA aims to provide detailed election results for lower chamber legislative elections across the globe. The archive includes data such as vote counts for political parties or candidates and seat allocation. Information on the project's data collection efforts and data access is available on the CLEA project website (`https://cps.isr.umich.edu/project/constituency-level-elections-archive-clea/`).

Chapter 3 uses data from the Turkish Demographic and Health Survey (TDHS). The TDHS provides comprehensive information on women of reproductive age (15-49) who gave birth in the five years preceding the survey year and their offsprings. The TDHS has been carried out by the Hacettepe University Institute of Population Studies (HIPS) every five years starting from 1968. Information on how to obtain data files is available on the HIPS website (`https://hips.hacettepe.edu.tr/en/menu/demographic_and_health_survey_serie-101`)

Chapter 4 uses data from the Understanding Society Survey (USS), which is an initiative funded by the Economic and Social Research Council and various Government Departments, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by NatCen Social Research and Kantar Public. Information on how to obtain data files is available on the USS website (`https://www.understandingsociety.ac.uk/`)

These data distributors bear no responsibility for the analysis or its interpretation throughout this thesis.

Abstract

This thesis provides a comprehensive analysis of migration's diverse impacts across low-income (16 African countries), upper-middle-income (Türkiye), and high-income (the United Kingdom) settings, focusing on health, political dynamics, and labor market outcomes. Recognizing the inherent endogeneity and reverse causality in migration studies, this research employs a range of econometric techniques, including instrumental variable (IV) methods and two-way fixed effect models, to establish causal relationships. Chapter 2 investigates the political consequences of refugee presence in 16 Sub-Saharan African countries, leveraging UNHCR refugee data and Constituency-Level Elections Archive (CLEA) data, and finds that inclusive refugee policies enhance incumbent support and reduce electoral competition by improving access to public services and stimulating local economies, as evidenced by Afrobarometer survey data. Chapter 3 examines the health implications of the Syrian refugee influx on Turkish children under five, utilizing the Turkish Demographic and Health Survey (TDHS) and an IV approach to address endogenous refugee settlement. Findings reveal a positive impact on children's anthropometric measures, driven by increased maternal time, particularly among low-educated mothers. Chapter 4 explores the pay-health nexus in the UK, using the Understanding Society Survey (USS) and a Two-Stage Least Squares (2SLS) approach to demonstrate that high pay significantly improves physical and mental health. This chapter also examines the heterogeneous effects of gig work and multiple job holding on health, using quantile regression, and analyzes the generational differences in health outcomes among migrant populations. The thesis highlights the importance of inclusive migration policies and strategic aid distribution in maximizing positive spillovers for host communities, while also addressing health inequalities through improved pay and job conditions. It underscores the need for context-specific policies that facilitate migrant integration and ensure equitable outcomes, contributing to a deeper understanding of migration's complex socio-economic impacts.

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Chapter 1

Introduction

Migration has long been a controversial area of inquiry in economics literature due to its multifaceted repercussions on economic, demographic, and social dynamics, impacting labour markets, resource distribution, welfare systems, and political landscape, with integration of migrants being a first-order policy concern (Card, 2001b, 2009; Zhou et al., 2025).[1] Migration can either be forced or voluntary, both of which have different consequences for both native populations and migrants themselves (Maystadt et al., 2019b). While the root causes of forced migration are known to be civil conflicts, (political) violence, wars, and environmental shocks such as earthquakes, voluntary migration is typically driven by cost-benefit considerations of the migrants, where they weigh potential gains against the costs involved (Becker, 1968; Becker and Ferrara, 2019). Just as the repercussions of migration vary, the policies governing it are shaped by distinct frameworks across different regions and countries. In the Global North, migrants have been perceived as threats to national identity, social cohesion, and demography, making host countries potentially adopt a clear anti-immigration agenda (Mudde, 1996; Davis and Deole, 2017; Brunner and Kuhn, 2018). In the Global South, however, the host countries have increasingly recognized the economic and social benefits of migrants, resulting in more liberal

[1] Fasani (2016) offers an excellent review of the literature on the consequences of hosting migrants in high-income countries, while Maystadt et al. (2019a) provide a comprehensive summary of the same topic for low-income countries.

policies aimed at integration (Blair et al., 2022a,b; Zhou et al., 2023, 2025).

The heterogeneous nature of migration's consequences and the variation in policy frameworks worldwide necessitate a deeper understanding of how migration flows impact societies in diverse contexts. This thesis aims to investigate the effects of migration in low-income (i.e., 16 African countries), upper-middle-income (i.e., Türkiye) , and high-income country (i.e., the United Kingdom) settings, with a particular focus on three themes: health, politics, and labour markets. By analyzing different groups of countries, this thesis contributes to providing a broad perspective on the effects of migration, emphasizing the importance of context-specific policies that maximize the benefits for both migrants and host communities.

Endogeneity and reverse causation are well-known identification threats in economic research (Wooldridge, 2010; Heckman and Vytlacil, 2007). Therefore, this thesis utilises multiple econometric approaches to deal with endogeneity, primarily stemming from the location choice of the migrants in destination countries, and with reverse causation when exploring the health and wage nexus. For example, instrumental variable (IV) methods to tackle endogenous settlement of immigrants are implemented. Two-way fixed effect models, as a generalisation of difference-in-differences techniques, are further employed to account for unobserved heterogeneity to support causal inference.

Chapter 2 investigates the effects of forced migration in low-income country setting, combining refugee and election data for 16 Sub-saharan African countries between 2000 and 2016. To capture the presence of refugees during elections, it exploits the United Nations High Commissioner for Refugees (UNHCR) Refugee dataset, which provides detailed information on refugee camps, including their location, size, and demographic composition. The electoral data for this chapter comes from the Constituency-Level Elections Archive (CLEA), which provides detailed election results for lower chamber legislative elections worldwide over the period of investigation. Matching the CLEA data with the UNHCR Refugee dataset at the GADM-1 level, resulting in 700 observations across 276 regions from 16

countries, and this chapter explores the impact of forcibly displaced populations on incumbent party vote share and political competitiveness. To do so, a two-way fixed effect model is employed, coupled with a series of sensitivity and robustness checks. Findings from this chapter indicate that the arrival of refugees translates into greater local support to the national incumbent and reduces electoral competition, but only when hosting countries implement more inclusive policies towards refugees. The complementary analysis using cross-sectional Afrobarometer surveys reveal that the underlying mechanisms are better economic activity and greater access to public services and infrastructure.

Chapter 3 focuses on the effects of one of the largest (forced) migration episode of 21^{st} century –triggered by the Syrian civil war sparked in March 2011– on the health outcomes of Turkish native children under five-years of age. Refugee flows, particularly those resulting from civil wars and natural disasters, can have immediate and lasting impacts on host countries. The Syrian civil war, for instance, led to an unprecedented wave of refugees into Türkiye, raising questions about the economic and social consequences for host communities. Using data from the Turkish Demographic and Health Survey (TDHS) between 2008 and 2018, it explores the effect of refugee inflows on the height-for-age z-scores (HAZ) and weight-for-age z-scores (WAZ) of native children in Turkish provinces with high refugee populations. Utilisation of instrumental variable approach ensures tackling endogenous location choice of Syrian refugees. The findings show that the arrival of Syrian refugees has a positive effect on the physical health of native children, as evidenced by improved anthropometric outcomes. This effect persists even after robustness checks and placebo tests confirm a causal relationship. The highlighted mechanism for the positive effect is the children's increased time with their mothers, particularly those with low education levels, which stems from job losses. This shows that the health benefits were most prominent in households with less-educated mothers.

Chapter 4 offers an insight from a high-income country, namely the United Kingdom (UK). It explores the impact of high pay on physical and mental health outcomes, specifically comparing individuals earning high pay (1.5 times the median wage) to those earning low pay (less than 2/3 of the median wage in a given fiscal year) in the UK. Using data from the Understanding Society Survey (USS) and using a Two-Stage Least Squares (2SLS) approach, it finds that high pay significantly improves both physical and mental health outcomes. It also examines job quality, focusing on gig work and multiple job holding, and their heterogeneous effects on health across income levels using quantile regression model. Additionally, the analysis explores the health outcomes of migrant populations in the UK, showing that high pay's impact on health differs by generational status. The findings highlight the importance of inclusive policies addressing pay and job quality, particularly for vulnerable populations, and provide new insights into the pay-health relationship.

Altogether, the findings from Chapter 2 and Chapter 3 confirm that migration waves, even those that are unprecedented and continuous, have positive spillovers for both host communities and migrants in low- and middle-income countries, provided that inclusive policies are implemented. This aligns with Esther Duflo's statement, Nobel Laureate in Economics Science in 2019: *"You have no reason to fear low-skilled migration"*.[2] Finally, Chapter 4 highlights the significant role of high pay in improving the health outcomes of both native and migrant populations in the UK, further reinforcing the importance of context-specific policies that address health inequalities and promote overall well-being.

[2]Quote from Esther Duflo in 2019 during her interview at Channel4 News. The full interview can be found at `https://www.channel4.com/news/series-3-episode-27-esther-duflo`

Chapter 2

The political economy of refugees in Africa

The political impact of refugees is largely unknown in low-income countries, although these destinations host the majority of forcibly displaced people, and more specifically refugees. We exploit yearly variations in the number of refugees in refugee camps and election data at the sub-national level in 16 African countries between 2000 and 2016. The estimates show that the arrival of refugees *increases* local support to the national incumbent and reduces political competition, but only when hosting countries implement more inclusive policies towards refugees. We find similar results using complementary Afrobarometer data on individual-level satisfaction with and trust towards the government, as well as attitudes towards migrants. Additional findings show that, with inclusive policies, the inflow of refugees improves satisfaction with respect to the provision of local public goods, as well as boosts economic activity. Inclusive policies are not only beneficial for refugees but also for the hosting population and the country incumbent.

Keywords: refugees, voting, elections, economic development, Africa

JEL-Classification: O15, I15

2.1 Introduction

Over the past two decades, the global number of forcibly displaced people has surged, increasing from 38 million in 2000 to 117 million in 2023 (United Nations High Commissioner for Refugees, 2024). Refugees, who comprise more than one-third of this population, are overwhelmingly hosted in low and middle-income nations, with 75% residing in these countries. The academic literature has found that, in high- and upper-middle-income countries, large numbers of migrants often provoke a public backlash, driven by concerns about the strain on welfare systems, labor-market competition, and cultural differences (Edo et al., 2019; Card and Peri, 2016). Little is known about the political consequences of hosting refugees in developing countries.

In this paper we analyze yearly variations in the number of refugees in refugee camps and link them to election data at the sub-national level in 16 African countries between 2000 and 2016. Our results indicate that the arrival of refugees increases local support to the national incumbent and reduces electoral competition, but only when hosting countries implement more inclusive policies towards refugees (what Blair et al. (2022a) refer as liberal asylum policies). We investigate the mechanisms behind these effects by examining the role of, respectively, economic development, satisfaction with local public goods, and national identity, using Afrobarometer data. We show that our findings are driven by (i) local economic development, as evidenced by increased night light intensity, and (ii) positive spillover effects for host communities, as reflected in greater satisfaction with local public goods – both of which are observed exclusively in countries implementing inclusive policies towards refugees. At the same time, these policies reduce the positive effect of refugee presence on national identity, likely by easing social tensions and encouraging integration.

Our contribution is threefold. First, while 75% of refugees are hosted in developing countries, academic research on the political impact of refugee arrivals has predominantly focused on high- and upper-middle-income countries. In these

destinations, inflows of refugees and immigrants, in particular low-skilled ones, have been associated with opposition to the newcomers as well as a shift in voters preferences towards anti-migration and far-right parties (Halla et al., 2017; Dustmann et al., 2022; Sekeris and Vasilakis, 2016; Dinas et al., 2019; Mayda et al., 2022). Similar results have been found in upper-middle-income countries like Colombia (Rozo and Vargas, 2021), Turkey (Fisunoğlu and Sert, 2019), and South Africa (Bedasso and Jaupart, 2020). These results may not extend to poor countries for the following reasons. In high- and upper-middle-income countries, some parties have capitalized on cultural, social, and economic concerns related to immigration, building their identity around the need for anti-migration policies. In contrast, in most low-income countries, migration does not seem to be a salient issue for political competition. For instance, ethnic identity certainly matters for politics in low-income countries (De Luca et al., 2018) but attitudes towards refugees in Africa have been found to be mostly driven by economic not sociotropic concerns (Bousquet et al., 2025). In addition recent evidence suggests that, in low-income countries, even large-scale refugee arrivals benefit local economies near refugee settlements, in part due to humanitarian assistance and new infrastructure (Maystadt and Duranton, 2019; Alix-Garcia et al., 2018; Maystadt et al., 2019a). Furthermore, fiscal concerns, while not entirely absent, are arguably less pronounced in low-income countries. This is largely due to the lack of large welfare systems and the fact that these countries often do not bear the full fiscal burden of hosting refugees, due to international assistance, as suggested by Zhou et al. (2025). Altogether, empirical evidence is scarce on the political consequences of hosting refugees in developing countries. A notable exception is Zhou et al. (2025), which analyze how refugee presence influences electoral outcomes in Uganda, where inclusive refugee-hosting policies have been implemented. The paper finds that increased refugee presence correlates with greater incumbent support, particularly after the 2014 refugee influx and a reform towards more inclusive refugee policy. Increased support for the incumbent is driven by substantial improvements in public service delivery and infrastructure,,

facilitated by aid targeting both refugees and host communities and elite rhetoric in parliament and partisan media. Our findings align with Zhou et al. (2025), while at the same time providing support for the external validity of their results. Unlike previous studies that have largely focused on single-country contexts (such as Zhou et al. (2025)), our paper carries out the analysis for 16 countries, providing a broader cross-country perspective. Extending the evidence from single-country settings is of great importance because there is emerging research highlighting the advocacy efforts in some of the refugee-hosting African countries to better integrate immigrants and to implement refugee-friendly policies. [1] To the best of our knowledge, we are the first to link the CLEA electoral dataset with the UNHCR refugee dataset at the GADM-1 level, which allows us to understand the interplay between refugee inflows and political outcomes across and within countries.

Second, existing studies in high- and upper-middle-income countries, highlight the following channels through which (forced) migrants may impact local politics: changes in access to public services (e.g., healthcare and education facilities) and economic development (Dadush, 2018; Sarzin, 2021; Chevalier et al., 2024).[2] Overall, anecdotal evidence suggests that such a dynamic will depend on the type of policies hosting countries implement. For instance, Uganda – the only country for which solid evidence has been provided (Zhou et al., 2025) – is often portrayed as one of the most refugee-inclusive countries in the world, currently hosting over 1.6 million refugees

[1] As suggested by Gronau and Ruesink (2021), Zambia is one of the examples. Following a mass immigration from the Democratic Republic of Congo (DRC), northern Zambia became a key destination for refugees as thousands of Congolese crossed the border. In response to the refugee crisis, the Zambian government established the "Mantapala settlement," launched the Comprehensive Refugee Response Framework (CRRF) in November 2017, and began developing a national strategy for a whole-of-society approach to address the situation. Another example is Kenya. In 2021, Kenya enacted the Refugee Act, which granted refugees rights to work, freedom of movement, and access to financial services detailed information can be found at `https://kituochasheria.or.ke/wp-content/uploads/2023/11/Refugees-Act-2021-plus-Cover-B_compressed.pdf`.

[2] There are other potential channels that can impact the political preferences of natives. These include, but are not limited to, fiscal burden on the state's budget, increased housing prices, and wage-related concerns, and human capital concerns as measured by school performance of pupils (Balkan et al., 2018; Edo et al., 2019; Bossavie, 2020; Aygün et al., 2021; Green and Iversen, 2022; Cavaille and Ferwerda, 2023). However, due to lack of data, we are not able to test such mechanisms.

primarily from South Sudan, the Democratic Republic of Congo, and Burundi (United Nations High Commissioner for Refugees, 2024). Our findings provide support for this, implying that inclusive hosting policies –such as allowing refugees freedom of movement, the right to work, and access to public services– significantly contribute to local economic development.[3] Our results showing the dominance of economic factors also echo the literature on the drivers of attitudes towards migrants. While the literature in high-income and upper-middle-income countries mostly highlight the importance of sociotropic factors in explaining prejudice against migrants (Card et al., 2012; Hainmueller and Hopkins, 2014; Facchini et al., 2013; Valentino et al., 2019), scholars have argued that it might be less the case in low-income countries given the weakness of the welfare state and high cultural heterogeneity (Becker et al. 2022). In refugee settings, economic concerns seem to matter more (Alrababa'h et al., 2021; Bousquet et al., 2025). We provide indirectly supportive evidence for the economic concerns hypothesis and the role of inclusive refugee policies. Practitioners have advocated for "sustainable hosting policies", including allowing refugees to move, to work and to access public services (World Bank, 2023). Such policies have been shown to be beneficial not only for the displaced population but also their hosts (Beine et al., 2021a; Kadigo and Maystadt, 2023; Ibáñez et al., 2024; Bahar et al., 2021). By showing that refugees have a positive impact on the support to the incumbent under inclusive refugee policies, we show that such policies can also be beneficial to the hosting government. Complementary analysis with the Afrobarometer also demonstrates that such policies should go along with a reduction in anti-migrant attitudes and stronger trust towards the institutions.

[3]Our results are also consistent with what Coniglio et al. (2023) find, although they do not account for countries' refugee policies. They explore the impact of hosting a camp on economic growth within 10 km from the camp in Africa. On average, camps are found to positively affect economic growth.

Third, previous research in development economics has largely focused on the socio-economic impacts of refugees. In regards to economic impact, Maystadt and Verwimp (2014a) examine the impact of Burundian and Rwandan refugees on Tanzania's Kagera region, using 1991 and 2004 data. They find that while refugees boosted average economic welfare, the gains were uneven: agricultural workers were relatively worst off, while self-employed farmers benefited the most. In the long term, the refugee inflow had a positive impact on local welfare, driven by infrastructure investments like roads to serve refugee camps (Maystadt and Duranton, 2019; Verme and Schuettler, 2021).[4] Moreover, unprecedented waves of immigration can raise public health concerns, often linked to international mobility (Kalipeni and Oppong, 1998), and lead to the spread of malaria, HIV, and other communicable diseases (Montalvo and Reynal-Querol, 2007). Ibáñez et al. (2021) find that higher refugee inflows from Venezuela to Colombia are associated with an increase in vaccine-preventable diseases, including chickenpox and tuberculosis. Similarly, Baez (2011a) documents a rise in cases of diarrhea, fever, and mortality in Northwestern Tanzania following the arrival of over 500,000 refugees from Burundi and Rwanda. These findings, along with other studies, attribute the surge in infectious diseases to direct transmission from the refugee population, who often bring high disease prevalence from their conflict-affected home countries. Another strand of research assesses the impacts on child health and growth outcomes. One example is a study by Dagnelie et al. (2023b). They estimate the effect of refugee inflows on around 400,000 children's anthropometrics based on data from 84 Demographic and Health Surveys (DHS) in 34 African countries. They document a robust negative impact of refugees' arrival on height-for-age and weight-for-age scores of the under-5-year-old children. Moreover, large-scale displacement often intensifies population pressure on already vulnerable environments, accelerating the depletion of natural resources in host regions (Berry, 2008). In Tanzania,

[4]Similar economic effects have been observed in other African contexts, including Kenya (Alix-Garcia et al., 2018), Rwanda (Taylor et al., 2016; Loschmann et al., 2019), and Uganda (Kreibaum, 2016; Kadigo and Maystadt, 2023; Marco d'Errico and Rosati, 2022).

the arrival of refugees significantly increased deforestation rates and depleted soil nutrients, exacerbating soil erosion and adversely affecting agricultural production and food security (Berry, 2008). Similarly, competition for land between internally displaced persons and local populations in Darfur has resulted in a marked decline in vegetation (Alix-Garcia et al., 2013). Yet, there has been limited exploration into how hosting refugees influences electoral outcomes in these contexts (one exception is Zhou et al. (2025)). Based on Allport (1954)'s contact hypothesis, recent research concentrates on contact between natives and refugees as a mechanism when rewarding or punishing the electoral bodies. Steinmayr (2016) shows that the far-right Freedom Party of Austria (FPOE) experienced a 4 percentage point reduction in its vote share in 2015 state elections in the refugee-hosting regions. Albeit small amount of exceptions, the unprecedented immigration flows have become a leading factor in explaining the rise of contemporary far-right parties. However, less is known when it comes to electoral consequences of immigration for the particular case of incumbent parties, especially for low- and middle-income countries. By investigating the channels behind our differential effect on the support to the incumbent depending on the implementation of inclusive refugee policies, we demonstrate the importance of an holistic view on the political impact of refugees. If inclusive refugee policies is a key mediating factor, it is likely to be the case because they benefit the hosting population. As demonstrated in our study, refugees under such inclusive policies are associated with higher economic development and satisfaction towards local public goods (education, health, infrastructure).

The rest of the paper is structured as follows. Section 2.2 discusses the importance of inclusive policies. Section 2.3 describes the data while Section 2.4 elaborates the identification strategy. We present our main results on electoral outcomes, discuss the identification threats, and conduct a series of robustness checks in Section 2.5. The complementary analysis to reveal the underlying mechanisms is then presented in Section 2.6. Finally, Section 2.7 offers concluding remarks.

2.2 Importance of Inclusive Refugee Policies

Cross-border migration is increasingly acknowledged by practitioners and policy-makers as a critical development challenge, particularly for low- and middle-income countries where the majority of migrants are hosted (World Bank, 2023). This reality underscores the importance of effective migration management to ensure that migration contributes positively to development while mitigating potential pressures on host communities. When effectively managed, migration can serve as a powerful driver of prosperity and contribute significantly to achieving the United Nations' Sustainable Development Goals (World Bank, 2023). A key element of effective management is the integration of immigrant populations to ensure mutual benefits for both destination and origin countries. In this context, it is crucial to emphasize the significance of refugee integration, for several interrelated reasons. First, voluntary return is rarely a viable option for most refugees, especially those escaping war and civil unrest, such as Syrian refugees. Empirical evidence indicates that the desire to return to one's home country remains exceptionally low among displaced populations, with the average duration of displacement now surpassing 26 years (Kayaoglu et al., 2022; Zhou et al., 2025). For example, in Turkey, only about 5% of Syrian refugees express an intention to return within the next year (UNHCR, 2019). On a global scale, fewer than 1% of refugees return to their country of origin annually (Blair and Wright, 2022), largely constrained by ongoing insecurity, limited access to livelihoods, fear of military conscription, and the absence of critical infrastructure and services (RPIS, 2019). Similarly, opportunities for resettlement in high-income countries remain extremely scarce, with less than 0.5% of the global refugee population resettled each year (Albu, 2023). Consequently, with voluntary return and resettlement available to less than 2% of refugees, the vast majority remain in protracted displacement, predominantly in developing countries, which host over 75% of the world's refugees (United Nations High Commissioner for Refugees, 2024). Against this backdrop, facilitating the integration of refugees into their host communities emerges not only as a policy priority but also as a necessary

strategy to ensure long-term social cohesion and economic resilience.

As mentioned by Zhou et al. (2025), one potential obstacle to successful integration lies in restrictive refugee-hosting policies that limit refugees' access to formal employment, entrepreneurship, property ownership, freedom of movement, and residence outside of designated camps. Evidence shows that more than half of the world's refugees are hosted in countries that impose significant restrictions on their right to work (Ginn et al., 2022). Such constraints not only impose material hardships but also generate adverse social and psychological consequences for refugees themselves (Hussam et al., 2022). Crucially, these restrictions stand in contrast to a growing body of evidence demonstrating that refugee labor can contribute positively to the economies of developing host countries (Bove and Elia, 2017), while also generating fiscal benefits for the state (Hernandez, 2024). Therefore, we contend that inclusive policies play a vital role in maximizing the potential benefits of migration for both refugees and host societies. When refugees' skills and attributes align with the labor market needs of destination countries, the economic gains are considerable — not only for the refugees themselves but also for their countries of origin and the host economy (World Bank, 2023). These benefits arise regardless of migrants' motives for moving or their legal status; however, formal access to the labor market significantly amplifies these positive outcomes. Refugees granted the right to work, change employers, and have their qualifications recognized are more likely to earn higher wages, access better services, and avoid exploitation. Moreover, inclusive policies facilitate their social and economic integration, enabling them to invest in human capital, learn the local language, and contribute more productively to the economy (World Bank, 2023). For host countries, policies that ensure legal access to employment, fair treatment, and social inclusion are therefore essential to unlocking the full benefits of migration. In the absence of such rights, refugees often remain confined to low-quality, informal employment, limiting their economic contribution and increasing their vulnerability. Importantly, refugee success abroad generates positive spillovers for their countries of origin through

remittances, knowledge transfer, and long-term development. Conversely, restrictive policies — such as exclusion from basic services — undermine both refugee well-being and the economic returns to host societies. Ultimately, in a global context where most refugees face protracted displacement with limited prospects for return or resettlement, the adoption of inclusive policies is not merely desirable but essential — making refugee integration a first-order policy priority for achieving sustainable development and social stability in host countries.

2.3 Data

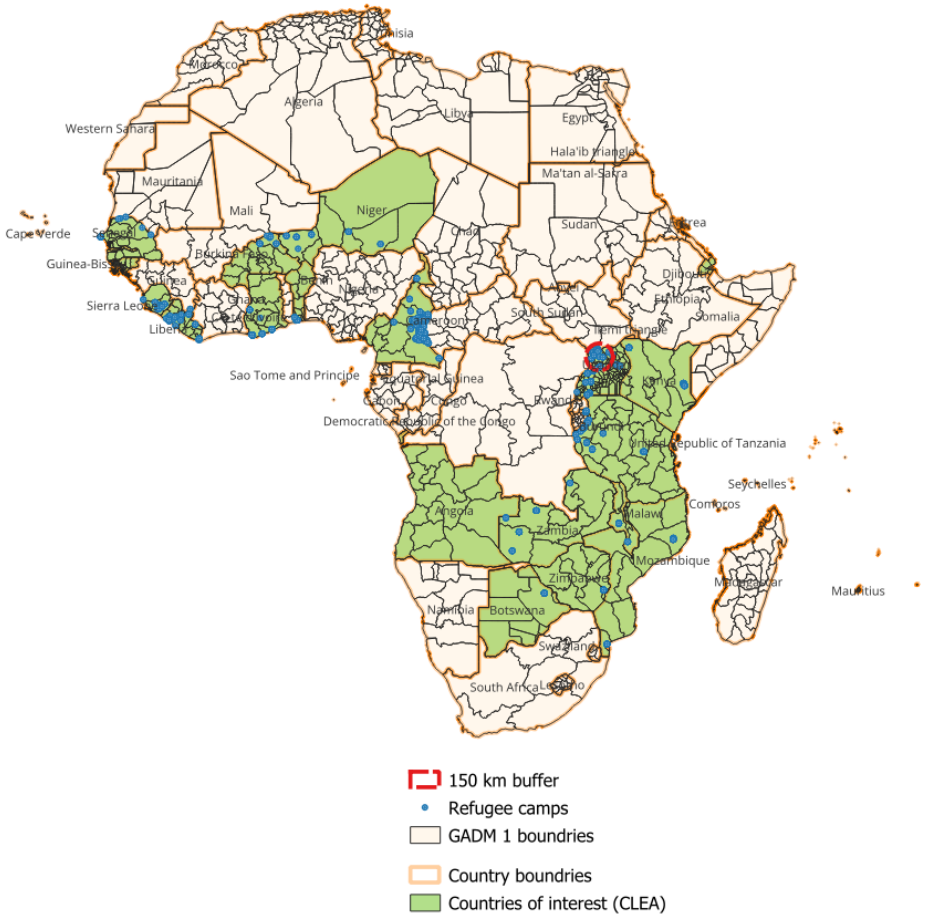
We first compiled detailed data about the size and location of refugee camps with information from local elections. We complement these data with recently released information about asylum policies. We then exploit data from the Afrobarometer surveys to shed light on the main mechanisms.

2.3.1 Refugee Data

In an effort to capture the presence of refugees at the time of elections, we hinge on information collected by the United Nations High Commissioner for Refugees (UNHCR) on refugee camps. The dataset presents time-series pattern of refugees in terms of their location (i.e., longitude and latitude of refugee camps), size, and demographic composition (i.e., age intervals and sex) with respect to country of origin. The UNHCR Refugee dataset spans from 2000 to 2016, and offers relevant information on 1,453 refugee camps across the world. A key feature of this dataset is that it contains the most comprehensive information on refugees at the local level, and has been utilized in previous research only to investigate the impact of refugees on environmental degradation (Maystadt et al., 2020) and on diversity and conflict (Bertinelli et al., 2022). The precise location of the refugee camps allows us to determine the regional information at the GADM-1 level. This makes it possible to aggregate the number of refugees at the GADM1 level and merge the Refugee

data with the election data (see below). For the countries of interests (see Appendix Table A.1), we end up with 202 refugee camps for 328 GADM-1 regions. As can be seen from Figure 2.1, the majority of refugee camps are located in peripheral areas, along the borders. It is not very surprising since refugee camps are often established in areas near conflict zones, where refugees are fleeing from violence (Bertinelli et al. (2024)).[5] These peripheral locations are often far from the political and economic centers of the country and likely to have specific dynamics in local politics.

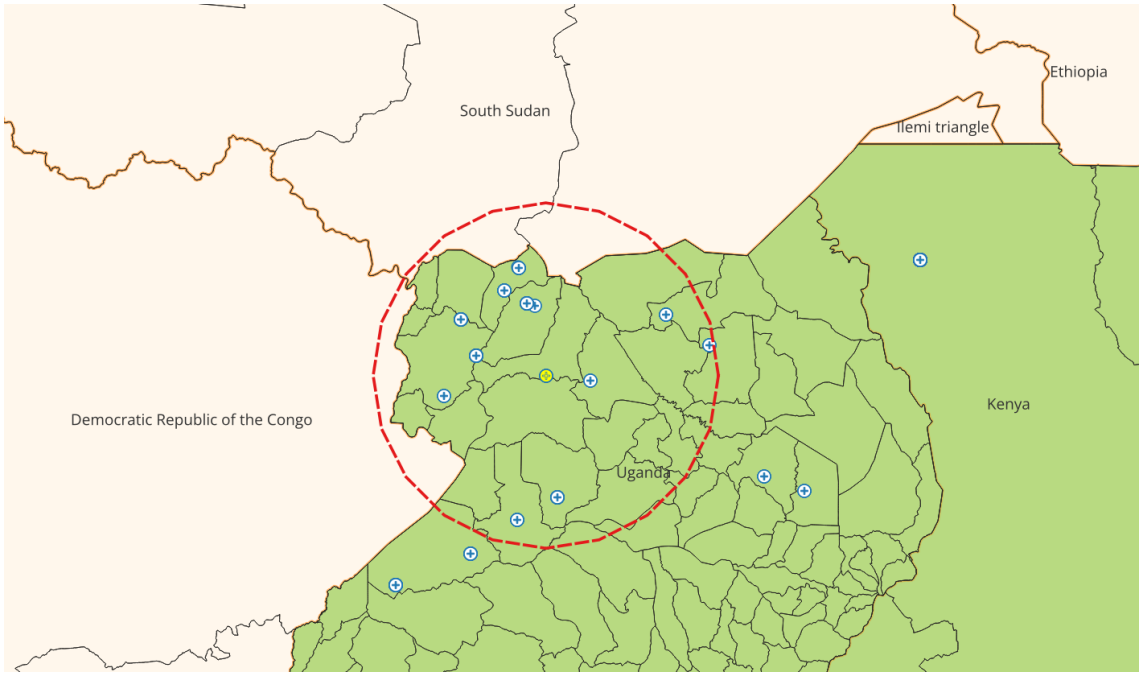
Figure 2.1: Refugee camps in 20 CLEA countries (GADM-1 divisions)



Note: Authors' own calculations.

[5]Figure 2.2 shows the spatial distribution of refugee camps using GADM-1 divisions.

Figure 2.2: Refugee camps in 20 CLEA countries detailed (GADM-1 divisions)



Note: Authors' own calculations. The red dash line shows a 150 km buffer around the specified refugee camp (i.e., highlighted in yellow).

2.3.2 Electoral Data

The main source of the electoral data is the Constituency-Level Elections Archive (CLEA). CLEA provides comprehensive information on election results at the constituency level for both upper and lower chamber legislative elections around the world. We solely focus on lower house legislative election outcomes (namely, parliamentary elections) in our research. It is a rich dataset for which the relevant electoral information spans from 1963 to 2021. Electoral outcomes – only for the first round of lower chamber elections – include month and year of elections, number of eligible voters, votes cast, valid and invalid votes, voter turnout, party names, and votes for the competing parties and their corresponding vote shares. Given refugee data availabilities, we concentrate on the elections held in 20 African countries between 2000 and 2016.

We first matched electoral data available at the constituency or subnational levels with the GADM1 level. After aggregating the CLEA data at the country, year, and GADM-1 levels, we then merge the information about vote shares by party with the UNHCR Refugee data. From the resulting 857 observations (GADM1-year pairs), we exclude 57 observations whose electoral data could not be matched at the GADM1 level. [6] We exclude Angola, Cameroon, Gambia, and Guinea-Bissau for which there is no refugees during the corresponding election years (and the year before). We end up with 700 GADM1-year observations across 276 regions from 16 countries and 44 elections (328 regions from 20 countries and 53 elections when Angola, Cameroon, Gambia, and Guinea-Bissau are included). We present descriptive statistics in Table 2.1 for CLEA variables and other covariates. The average incumbent party vote share is 0.385, which suggests that, on average, incumbents have a modest but not overwhelming share of the vote. However, the standard deviation is 0.224, indicating some variation in the vote share across observations. This can raise rightful concerns about electoral manipulation. In that sense, we show the percent distribution of the incumbent party vote share, for full sample, in Appendix Figure A.1. The relatively even distribution of vote shares is reinsuring with respect to the competitive nature of the African electoral environment. [7]

[6] 56 observations are excluded from Uganda since in 2006, 54 subnational regions could not be matched with the GADM1 level and 2 regions in 2016. The same is true for one region in Gambia in 2012.

[7] We can nonetheless not exclude that incumbent party's vote share is in some causes manipulated through fraudulent mean (Van Ham and Lindberg, 2015; do Rosário and Guambe, 2023). However, the normal distribution we observe in Appendix Figure A.1 suggests it is not distorting completely the data and that these data can be used to reveal preferences towards the incumbent. We further discuss heterogeneous results based on the democratic nature of the studied regimes in Section 2.4.2.

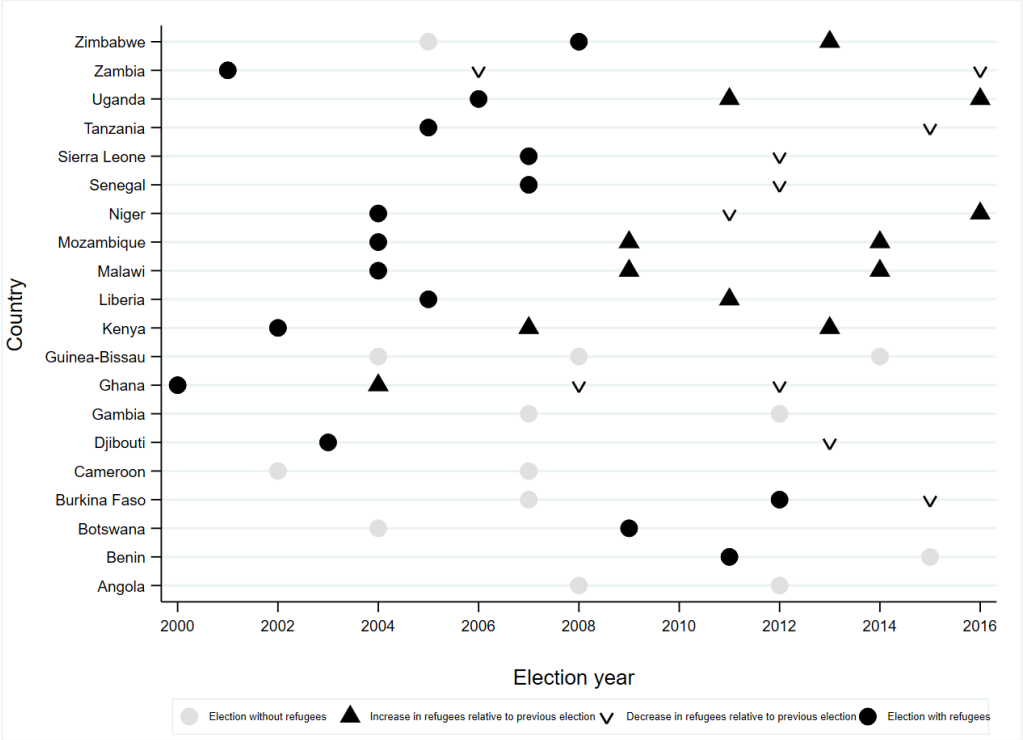
Table 2.1: Descriptive statistics

	Obs.	Mean	Std.Dev.	Min.	Max.
Dependent variables from CLEA					
Incumbent party vote share (IPVS)	700	0.385	0.224	0.002	0.968
Political competition (PC)	700	0.042	0.100	0.010	1.651
Refugees and Refugee Policy					
Refugees (non-IHS transformed, not adjusted with population)	700	3,135.975	21,790.49	0	405,183
Population (2000) in 100 meter	700	744,834.5	634,072	355.624	3,680,178
Refugees to 2000-population ratio (non-IHS transformed)	700	0.008	0.069	0	1.383
Refugees to 2000-population ratio (IHS transformed)	700	0.007	0.060	0	1.128
Refugee policy (t-5)	700	0.579	0.493	0	1
Refugees IHS x Policy (t-5)	700	0.002	0.032	0	0.821
Time-varying GADM-1 level covariates					
Conflict Intensity	700	0.314	0.464	0	1
Mean temperature over land area	700	0.021	0.117	0	1.474
Mean temperature over land area (sq)	700	0.014	0.146	0	2.175
Mean precipitation over land area	700	0.962	5.992	0	92.946
Mean precipitation over land area (sq)	700	35.955	503.907	0	8,639.084

Notes: Authors' own calculations.

Our research design exploits variations in the number of refugees prior to elections. Figure 2.3 illustrates the variation in the presence and number of refugees across election years, focusing on the changes in refugee numbers relative to the preceding election year. For example, in Ghana, refugees were present during the 2000 election year, with an increase observed by the subsequent election in 2004. However, the number of refugees declined in the 2008 election year compared to 2004. A similar trend is evident for the 2012 election, with a further decline relative to 2008. In contrast, for countries such as Angola, Cameroon, Gambia, and Guinea-Bissau, there were no refugees recorded during the observed election years. We proceed in a similar way by aggregating at the cluster level when working with the Afrobarometer data.

Figure 2.3: Refugee trends in CLEA countries by election years



Note: Authors' own calculations.

2.3.3 Refugee policy data

To gauge on the inclusive nature of the refugee policy, we rely on the Developing World Refugee and Asylum-Seeker Policy (DWRAP) dataset provided by Blair et al. (2022b). The data is available from 1952 to 2017 for 92 countries. However, we limit the dataset to our countries of interest (16 and 20 African countries) and the period of investigation (2000–2016). This dataset enables the identification of both temporal and spatial variations in countries' formal policies regarding forcibly displaced populations under specific conditions. In particular, they generate a comprehensive refugee and asylum policy *policy index*, ranging between 0 and 1 for each country-year pairs. It accounts for five key concepts when constructing the index: (i) access, which refers to the ease of entry and security of legal status; (ii) services, involving the availability of public services and welfare support; (iii)

livelihoods, including the right to work and own property; (iv) movement, related to policies on encampment; and (v) participation, encompassing citizenship and political rights.

2.3.4 Afrobarometer data

To explore the channels through which the refugees flows translate into a change in incumbent support and political competition, we exploit geo-referenced individual-level data from the Afrobarometer between 2000 and 2015.

Afrobarometer is a pan-African research project that conducts public attitude surveys on democracy, governance, economic conditions, and related issues across Africa. The Afrobarometer, as having nine rounds between 1999 and 2022, provides data at the individual level in a cross-sectional setting. The surveys cover a wide range of topics including political participation, trust in institutions, perceptions of corruption, and socio-economic conditions. They employ rigorous sampling methods to ensure nationally representative samples, capturing the views of diverse populations across various regions. Key variables in the Afrobarometer dataset include demographic characteristics (age, gender, education, urban/rural residence), socio-economic indicators (employment status, living conditions), and attitudinal measures (trust in political and social institutions, satisfaction with democracy, and perceptions of safety and security). Its rigorous methodology employs nationally representative samples and standardized questionnaires to ensure comparability across nations and over time.

We match Afrobarometer data with UNHCR data, exploiting georeferenced information from both datasets. We exploit data from Round 1 to Round 6, from 2000 to 2015. We cannot exploit Round 7 (2016) of the Afrobarometer surveys since no geographic coordinates are provided. Compared to our CLEA-based sample, we do not have information for Angola, Djibouti, Gambia and Guinea-Bissau in the Afrobarometer Rounds 1 to 6. In total, we are left with information on 112,044 individuals, coming from 7,346 clusters, 74 surveys, and 16 countries. The detailed

information on countries of interest and the corresponding data availability with respect to Afrobarometer rounds can be found in Appendix Table A.1. We also present the spatial distribution of Afrobarometer clusters and refugee camps in Appendix Figure A.2. Additionally, a detailed view showing a 150 km radius around a specified cluster is provided in Appendix Figure A.3.

2.4 Identification strategy

2.4.1 Main specifications

Our research design aims to compare the change in electoral outcomes of regions exposed to the refugees with regions that are not (or little) exposed. More specifically, our empirical specification can be presented as follows:

$$Y_{r,c,t} = \beta_0 + \beta_1(\frac{Refugees_{r,t}}{Pop_r, 2000}) + \beta_2(\frac{Refugees_{r,t}}{Pop_r, 2000} \times Policy_c) + \gamma' X'_{r,t} + \delta_t + \delta_r + t_{c,t} + \epsilon_{r,c,t} \quad (2.1)$$

Y_{rct} stands for the political outcome defined for each GADM-1 region r in country c in election taking place at year t. We borrow from Zhou et al. (2025) in focusing on our main outcome variable, namely the incumbent party vote share (IPVS). The Incumbent Party Vote Share (IPVS) –ranging between 0 and 1 – is defined as the share of votes received by the incumbent party. The share of votes is expressed in relative terms to the total of valid votes.[8] We define the incumbent party as the party running the parliament at the time of the election (winning the previous national election). In almost 95% of cases, the ruling party is directly associated with the incumbent president. Out of a total of 53 elections, only three cases cannot be linked to the ruling president, as these candidates ran as independents. Second, we complement our results by utilising Political Competition (PC) following Zhou et al. (2025). Policital competition (PC) is constructed by using the Laakso-Taagepera measure of effective number of parties (i.e., $N = \frac{1}{\sum_{i=1}^{n} p_i^2}$), where n is the number

[8]Given missing information for valid votes in 2008 and 2013 for Zimbabwe, we use regional population instead.

of parties with at least one vote and p is their vote share. The underlying idea is to proxy for electoral competitiveness by weighting the number of parties by their relative strength.[9] Following Zhou et al. (2025), electoral competitiveness is expected to be asymmetric to the incumbent party vote share.

The variable of interest $\frac{Refugees_{r,t}}{Pop_r,2000}$ represents the number of refugees in each GADM-1 region (r) divided by the 2000 population of the corresponding region r.[10] The interaction term, $\frac{Refugees_{r,t}}{Pop_r,2000} \times Policy_c$, captures the differential effect of refugee presence on the electoral outcomes, depending on whether the country of interest has implemented inclusive refugee policies. To classify countries as being *inclusive* or *restrictive*, we first take the values of the *policy index* variable observed five years preceding the election year. Latter, we calculate the median value of *policy index* at t-5, resulting in one observation per country. We then create an indicator variable, taking value of 1 for each country-year pair if policy index score at t-5 is above the median, and 0 otherwise.[11] Specifically, this interaction term allows us to measure whether and how the effect of refugee presence on incumbent vote share or political competition differs between countries with inclusive refugee policies versus those without such policies. In other words, it identifies the additional impact of refugee presence when inclusive policies are adopted, over and above the direct effect of refugees. We apply an inverse hyperbolic sine transformation (IHS) to

[9]We slightly differ from Zhou and Grossman (2023) who utilize the effective number of candidates rather than effective number of parties. Given the high frequency of missing observations in candidate votes in CLEA, we prefer to rely on effective number of parties rather than candidates.

[10]Using the 2000 population provides a fixed point of comparison across all GADM-1 regions. Population sizes fluctuate over time, and using a fixed population base from a particular year (in our case, it is 2000) ensures that refugee inflows are compared relative to a consistent population size. This makes the refugee data across different time periods more comparable. Also, if we use contemporaneous population, we might introduce an endogeneity risk into the analysis. For example, if refugees impact the population size by increasing or decreasing it (through migration or demographic shifts), using the population of the same year could create a misleading relationship between the refugee variable and other variables of interest. That is, we assume that the population in 2000 is exogenous to refugee flows in later years.

[11]By using the policy score from t-5 while calculating the median, we are effectively isolating the influence of policies that were already in place before the election, rather than capturing any policy changes that might occur in the lead-up to the election itself. This helps mitigate potential endogeneity concerns, where policy changes could be influenced by factors that are also correlated with electoral outcomes.

our treatment variable to effectively deal with zeroes and to ease the interpretation following Bellemare and Wichman (2020b).[12] We also show our main results using $\frac{Refugees_{r,t-1}}{Pop_r,2000}$ as our treatment variable because refugee numbers are provided on each year's December (i.e., they are stock numbers).

Political instability and economic misfortunes might be attributed to the incumbent (Fujiwara et al., 2016; Zelin and Smith, 2023) and be correlated with the refugee presence (Salehyan, 2006; Zhou and Shaver, 2021b). That is why, we augment our main specification with additional time-varying GADM-1 region attributes, namely (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. δ_t denotes (election) year fixed effects to account for any macroeconomic shocks at the country level. Furthermore, we utilize GADM-1 region fixed effects, δ_r, to control for any time-invariant heterogeneity across GADM-1 regions. We further augment our specifications with country-year fixed effects, $t_{c,t}$, to control for all unobserved factors that are specific to each country in a given election year. For instance, changes in migration or asylum policies that could be implemented in anticipation to elections prospect will be captured by such fixed effects. In other words, country-year fixed effects help address potential biases by eliminating influences that could differ across countries and change over time but are not explicitly included in the model. Finally, $\epsilon_{r,c,t}$ stands for the error terms. Standard errors are clustered at the GADM-1 region level.

Given the likely heterogeneity across countries with different asylum policies, we further interact the presence of refugees with an indicator capturing the dominance of inclusive or restrictive policies at the country level. More specifically, we calculate the median value of the DWRAP policy index five years preceding the election year, and then created a dummy variable (i.e., 1 indicating that a country of interest at

[12]In applied economics, it is a widespread practice to transform right-skewed variables (e.g., our treatment variable variable) that include zero and/or negative values. One limit of the IHS transformation is that it is scale variant (Chen and Roth, 2024). We show in Section 2.5.3 that our results do not depend on that transformation.

t-5 is above the median value, and 0 otherwise). In addition to the above-described addition of country-year fixed effects, using the policy index five years prior to the election year reduces the risk of endogeneity. There could be concerns that refugee policies change in response to anticipated political events, such as elections, or shifts in incumbent support. By using the policy index from five years prior, we reduce the risk of reverse causality—where policy changes are a result, rather than a cause, of changes in incumbent support. This temporal gap helps establish a more credible causal relationship, as the policy index is determined before the election dynamics come into play.[13] We discuss further the risk of endogeneity in Section 2.5.2.

2.4.2 Additional specifications

To investigate the underlying mechanisms, we utilize the Afrobarometer dataset. Appendix Table A.1 provides a comprehensive summary of the Afrobarometer countries included in our analysis, along with details on data availability for each. Our empirical strategy to explore the potential mechanisms using the Afrobarometer data is as follows:

$$Y_{icjt} = \beta_1 Refugees_{jt} + \beta_2 \big(Refugees_{jt} \times Policy_c\big) + \theta H'_{icj} + \gamma X'_{cjt} + \alpha_j + \alpha_t + \epsilon_{icjt} \qquad (2.2)$$

Y_{icjt} represents our outcome variables elaborated in the following paragraphs for individual i, living in cluster j of country c, in year t. Following Bertinelli et al. (2024), we define locations using information from the Afrobarometer Enumeration Areas. Hereinafter, we refer to the Afrobarometer Enumeration Areas as clusters, denoted by j.[14] In total, we have 7,346 clusters in Afrobarometer data. Since the Afrobarometer provides geo-referenced information at the cluster level, $Refugees_{jt}$ denotes the number of refugees located within a certain distance. We start with a

[13] Results are robust if we define this median value 3 years before election, instead of 5.

[14] Clusters represent categories defined by geographic locations, encompassing administrative divisions like states or provinces, populated areas such as cities or villages, and infrastructure elements like buildings, bridges, or roads. They also include natural features such as rivers, mountains, or national parks, with geographic coordinates that may be either precise or estimated.

buffer of 150 km.[15] We also test the robustness of our results by adopting lower (i.e., 80 km and 120 km) and higher (i.e., 200 km) buffers. The interaction term $\text{Refugees}_{jt} \times \text{Policy}_{c,t-5}$ captures the differential effect of refugees on the outcome variable Y_{icjt}, depending on whether the country c has an inclusive refugee policy or not. We control for observed and unobserved characteristics. H'_{icj} denotes the individual level characteristics notably age, age squared, sex, education status, and rural versus urban residence. X_{cjt} corresponds to cluster-level conflict indicator, mean temperature, and its square– each of which are defined at the cluster level. To control for unobserved heterogeneity and changes within a given cluster, we introduce cluster and year fixed effects (i.e., α_j and α_t, respectively). Individual sampling weights are used to render our estimates representative at the country level. Finally, standard errors are clustered at the cluster level.

2.5 Main Results

In Section 2.5.1, we present the baseline results for incumbent support (IPVS) and political competition (PC). To address any concerns regarding our identification strategy, we discuss potential threats to identification in Section 2.5.2. Finally, in Section 2.5.3, we conduct a series of robustness checks to validate our findings.

2.5.1 Incumbent Support and Political Competition

The baseline results of a linear model with the incumbent party vote share and political competition as the outcome variables are presented in Table 2.2. Panel A presents the estimates for the incumbent party vote share, while Panel B displays

[15]The choice of a 150 km buffer is subjective and adapted to the research context. Reducing the buffer size significantly lowers the proportion of treated observations, falling below 2% with a 20 km buffer, 6% with a 40 km buffer, 15% with an 80 km buffer, and 22% with a 120 km buffer. While higher spatial resolution is crucial for analyses like deforestation, it is less critical for conflict studies, where conventional methods often rely on 50, 100, and 150 km intervals (Salemi, 2021; Tapsoba, 2023; Bertinelli et al., 2025b). Being agnostic regarding the distance that matters for the Afrobarometer outcomes we are interested in, we will assess the robustness of our results to alternative buffers in Section 2.6.2.

the results for political competition. Both panels use the refugee-to-population (2000) ratio at time t (i.e., at the year of election).[16] In Columns (1) and (2), we do not introduce the interaction term to see the baseline effect of refugees. Then, we introduce the interaction term between refugees (at t) and refugee policy in Columns (3) and (4) to investigate how the effect of refugee presence depends on whether the country has an inclusive refugee policy. When it comes to the inclusion of fixed effects and controls, Columns (1) to (3) show estimates with year and region (i.e., GADM 1) fixed effects, while Columns (2) to (4) additionally control for unobserved, time-varying factors that are specific to each country and could influence the outcome of interest. Our preferred specification is Column (4), which provides the most complete estimates.

Starting with incumbent support, our estimates in Column (1) of Panel A suggest a positive but marginally significant effect (i.e., at 10% level) of refugees on incumbent support (Column (1)). To be more precise, Column (1) suggests that increasing the refugee-to-population ratio per capita by 10% leads to a 1.9 percentage point rise in incumbent party support, representing an increase of about 5% relative to the mean value of 0.38. When we introduce the controls and fixed effects, the effect seems to become insignificant (see Column (2)). However, introduction of interaction term in Column (3) reveals that inclusive policies increase the vote share of incumbent – although hosting refugees alone does not seem to be in favor of incumbent party. The size of the effect is slightly larger in our preferred specification, Column (4), indicating that a 10% increase in refugees per capita under such policies leads to an increase of approximately 2.5 percentage points in incumbent support. This corresponds to a 6.6% change relative to the mean. Our key finding here is that the refugee presence in inclusive policy settings translates into greater incumbent support. Such a finding confirms the previous research conducted by Zhou and Grossman (2023) for Uganda, as being one of the most liberal countries when implementing immigration policies.

[16]We also present our results using refugee-to-population (2000) ratio at time t-1 in Appendix Table A.2 as the refugee numbers at camps are end-of-year stock numbers.

The estimates shown in Panel B suggest no meaningful direct association between refugee hosting and effective number of parties in parliament. The only exception is Column (1), where the coefficient of refugee-to-population ratio is significant at 10% level. Similar to estimates for incumbent support, the introduction of interaction term shows the notable role of inclusive policies in shaping political competition. To be more precise, Column (4) implies that for each one standard deviation increase in the IHS-transformed refugee-to-population ratio, political competition is expected to decrease by approximately 0.0037 units. (i.e., -0.0377 $\times$ 0.069 = 0.0026 units). Intuitively, our results indicate that refugee-inclusive policies may strengthen incumbents' political control, thereby diminishing electoral competition (what Zhou and Grossman (2023) call mirroring effect). Overall, our results are in line with Zhou and Grossman (2023), who measure electoral competition using effective number of presidential and parliamentary candidates in Uganda.

Table 2.2: Effect of refugees on Incumbent support and Political competition (Excluding Angola, Cameroon, Gambia and Guinea-Bissau)

	(1)	(2)	(3)	(4)
Panel A	Incumbent Party Vote Share			
IHS Refugee Ratio (at t)	0.1914*	0.1179	0.0743	-0.0367
	(0.0995)	(0.1259)	(0.0983)	(0.0988)
IHS Refugee Ratio (at t) x Policy			0.2157**	0.2848***
			(0.1011)	(0.1028)
Panel B	Political Competition			
IHS Refugee Ratio (at t)	-0.0352*	-0.0170	-0.0095	0.0035
	(0.0200)	(0.0090)	(0.0053)	(0.0134)
IHS Refugee Ratio (at t) x Policy			-0.0473**	-0.0377***
			(0.0183)	(0.0084)
Observations	700	700	700	700
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	No	Yes	No	Yes
Time-varying controls	No	Yes	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level)

2.5.2 Identification Threats

Endogenous location of refugees. The UNHCR or national government may select places to locate refugee camps based on some particular characteristics (e.g., transport costs, sanitary water access, and land availability). If these characteristics are somehow correlated with the support to the incumbent, such a selection may render the location of refugees endogenous, potentially biasing our estimates. By regressing refugee camp openings on previous incumbent support, we aim to test whether there is a systematic political bias in refugee camp placement decisions. We present our results in Appendix Table A.3. The negative coefficient suggests that regions with higher incumbent support in the previous election are less likely to see refugee camps being opened. That is consistent with the stylized fact that camps are often located in peripheral areas, far from the centers of economic and political power. However, this result is not statistically significant, meaning that there is no strong evidence to confirm a systematic relationship. The same is true for political competition. Overall, this result can alleviate concerns that the relationship between refugee camps and political outcomes is biased by political considerations in camp placement.

Pre-existing trends. Ideally, one anticipates that before the event of interest (in this case, initial arrival of refugees in a given GADM-1 region), the treated and control groups (GADM-1 regions with and without refugee influx) should exhibit similar trends in the outcome variable (incumbent party vote share). In the spirit of an event study, we check of support to the incumbent in higher or lower if an election takes before or after the first year refugees were observed in each region. The key idea here is that, in the absence of the event (first year of refugee arrival in a given GADM-1 region), the treatment and control regions should have followed the same trend over time. If the coefficients on the pre-event dummies (e.g., any negative value) are statistically indistinguishable from zero, it would suggest that the pre-event trends are parallel, meaning the parallel trends assumption holds. As

can be seen from Appendix Figure A.4 it seems to be the case. Pre-event dummies are not statistically significant while post-event dummies confirm the positive effect.

Heterogeneous treatment effect. When a treatment of interest is applied across different locations and time periods, researchers commonly utilize two-way fixed effects to account for location-specific and period-specific shocks, estimating an average treatment effect across these dimensions. However, recent studies have shown that such estimates (or, two-way fixed effects estimator) can be significantly biased—and may even yield incorrect signs—if treatment effects vary over time within the treated units (see De Chaisemartin and d'Haultfoeuille (2020); Goodman-Bacon (2021); Sun and Abraham (2021); Butts and Gardner (2021) for detailed and theoretical explanation). Bias arises due to potential heterogeneous treatment effects. Essentially, there is a risk of comparing units treated later with those treated earlier. In the presence of heterogeneous treatment effects, negative weights can lead to biased estimates. Here, we first show the presence of the negative weights by following Jakiela (2021b)'s simple diagnostics for two-way fixed effects in Appendix Figure A.5. The weights shown in Appendix Figure A.5 come from the residuals from a regression of the treatment variable (i.e., Refugees IHS x Policy (t-5)) on a set of year, GADM-1 fixed effects, and country-year fixed effects. As anticipated, the weights sum to zero across both the treatment and control observations. However, some treated observations are assigned negative weights, while some untreated observations receive positive weights, meaning the weights for the treatment group do not necessarily sum to one. Around 24 percent of all treated observations are assigned negative weights in the estimation of the treatment effect. Therefore, we conduct a robustness check following Jakiela (2021b), suggesting the exclusion of years that receive the highest fraction of negative weights (i.e., for our case. they are 2003, 2004, and 2009). The underlying assumption is that the removal of certain treated years from the dataset should not influence the expected value of the estimated treatment effect (under the assumption of common trends). In that sense,

we drop 2003, 2004, and 2009 from the analysis as a robustness check to test whether the treatment effects are homogeneous. We present our results in Appendix Figure A.6 for incumbent support and in Appendix Figure A.7 for political competition. The coefficients remain almost the same as the main results, confirming the positive effect for incumbent support and the negative effect for political competition.

We also apply another estimator from Gardner (2022) that allows us to handle a continuous treatment variable switching on and off in GADM-1 region and year pairs across countries. While the coefficients for the interaction term are slightly larger in magnitude, Gardner (2022) method produces positive coefficient *(negative coefficient)* for incumbent support *(for political competition)*, both of which are statistically significant at reasonable levels (see Appendix Table A.4).

Electoral democracy. A key concern in analyzing the effect of refugees on incumbent party vote share in African countries is the quality of elections, particularly in non-democratic regimes where elections may not be fully free or meaningful. The literature also highlights that the quality of elections in Africa remains highly inconsistent, with some elections marred by violence and fraud, while others are conducted with a relatively higher degree of fairness and transparency (Van Ham and Lindberg, 2015). To address this, our analysis includes an interaction term between refugee-to-population ratio, refugee policy, and electoral democracy. To do so, we rely on electoral democracy variable from V-DEM dataset.The electoral democracy variable takes value between 0 (indicating the lowest score of democracy) and 1 (indicating the highest score of democracy). We first calculate the median value of electoral democracy for each country over the period of investigation (2000-2016). We then create an indicator variable to classify countries based on whether their electoral democracy score is above or below the median threshold (i.e., 0.4825). This interaction allows us to examine how the relationship between refugees and incumbent support and political competition vary depending on the nature of the electoral system and the government's refugee policy. For both outcomes, we reject

this possibility, indicating no differences between democratic and non-democratic countries (see Appendix Table A.5 and Appendix Table A.6).

Urban and non-bordering regions. Refugees are often hosted in peripheral regions, which are usually rural and close to borders, far from economic and political centers (Bertinelli et al. (2024)). Urban regions, however, tend to have different political dynamics compared to rural regions due to factors such as greater access to public services, abundant employment opportunities, higher levels of economic development, increased diversity (e.g., different ethnic backgrounds and/or socio-economic status), and higher levels of media influence and communication. Our data on refugees also do not include dispersed refugees (outside of camps) or internally displaced people, more likely to direct themselves towards large cities. Thereby, urban regions may not respond to refugee presence in the same way as rural regions. In line with this, we expect urban areas (and/or non-bordering regions) to have different baseline political conditions, making it challenging to isolate the effect of refugees. For example, refugees in urban centers might blend more easily into the urban population and may not have a clear or immediate effect on the incumbent's support, unlike refugees in rural areas who may face more visible, concentrated challenges. One possible solution to tackle this problem can be excluding the urban and non-bordering areas from the analysis. The exclusion of urban regions (and/or non-bordering regions) helps us focusing on political dynamics in refugee-affected regions, where the effects of refugees on incumbent support and political competition may be most pronounced. First, we utilise data from PRIO-GRID to classify GADM-1 regions as urban and rural. Based on the Globcover 2009 dataset the PROD-GRID provides the percentage area of the cell covered by urban area (resolution of 0.5 x 0.5 decimal degrees).[17] We aggregate the percentage area of cells covered by urban area at the GADM-1 region level. As a result, we could match 477 observation outs of 791, corresponding to 162 GADM-1 regions (and 413

[17]We extract `urban_gc` variable to determine urban areas. Detailed information on Globcover 2009 dataset can be found at `https://due.esrin.esa.int/page_globcover.php`

observations out of 700, corresponding to 152 GADM-1 regions when excluding Angola, Cameroon, Gambia, and Guinea-Bissau) due to missing values in the PRIO-GRID dataset. Given the left-skewed distribution of the `urban_gc` variable, which indicates that most regions are heavily rural (with low urban coverage), we classify regions into urban and rural categories using the 75th percentile of the `urban_gc` distribution. Second, we create a dummy variable taking value of 1 if a GADM-1 region of interest has a border to another country, and 0 otherwise given the high volume of missing data in determining urban regions. Out of a total of 328 GADM-1 regions, 165 are classified as bordering regions while 163 are classified as non-bordering regions (138 are bordering and 148 are non-bordering when excluding Angola, Cameroon, Gambia, and Guinea-Bissau). Third, we use the proximity to the capital because it often correlates with urbanization, political engagement, and government influence. We calculate the shortest travel distance between each GADM-1 region and each country's capital city (center). Then, we interact distance-to-capital with year.[18] We present our results, using the most complete specification, in Appendix Table A.7 for incumbent support, and Appendix Table A.8 for political competition. Column (1) displays the estimates when urban regions are excluded, while Column (2) shows the estimates when non-bordering areas are excluded. Despite the larger magnitudes, the results confirm the positive effect on incumbent support when urban-classified regions are excluded. As shown in Column (2), this positive effect remains robust even when non-bordering regions are excluded. Finally, controlling for distance-to-capital (interacted with year) in Column (3) does not seem to distort the estimates, ensuring the robustness of our results.

[18]GADM-1 regions near the capital city might experience different levels of impact from the refugee flows, with the dynamics changing over time. For example, refugees may initially be concentrated near major cities but then disperse over time, potentially changing the political or social landscape. The interaction between distance-to-capital and year help capturing these changing dynamics. In a similar fashion, national policies may affect areas differently depending on their location relative to the capital over time. For example, development initiatives or resource allocation may be more focused on regions that are closer to the capital, but the effects could change over time, especially if there are shifts in how resources are distributed in rural vs urban areas.

Other co-founders: determinants of refugee policy. Refugee policy can be influenced by a range of factors such as security concerns. Failing to account for these factors (or determinants) could result in biased results, where changes in incumbent party support are mistakenly attributed to shifts in refugee policy. By controlling for these key determinants, we ensure that the estimated effect of refugee policy on incumbent vote share is not confounded by these broader factors, allowing for a robust analysis of the relationship between refugee policy and incumbent support. In this regard, Blair et al. (2022a) hypothesize the following determinants of refugee policy. First, intense neighborhood armed conflicts can constitute a factor for countries to revise their refugee (and asylum) policies. Immigration flows can exacerbate civil spillovers by enabling the transnational movement of arms and fighters (Salehyan (2006)). Displacement also has the potential to regionalism civil wars by provoking clashes between the neighboring countries of origin and host nations (Salehyan (2008)).[19] The risk of conflict spillovers may incentivize hosting countries to change their asylum policies. Second, they contend that higher external aid dependency may influence developing economies to relax their immigration policies. Both of these potential confounders are testable in our context. Refugee hosting low-income countries are susceptible to pressure from developed nations eager to divert immigration flows, and by adopting a more open displacement policy, they have the potential to gain favor on the international stage, aligning with the preferences of Western actors (Blair et al. (2022a)). In line with this, we test the robustness of our results by controlling for neighboring conflict and external aid dependency. To account for intense armed conflict in neighboring countries, we use the ACLED dataset. We define intense armed conflict by aggregating the total number of the following sub-events in each of a country's border neighbors during the five years preceding the election year: armed clashes, non-state actors overtaking territory, and government regaining territory. All of these sub-events are categorized under the event type *battle*. We then interact total number of

[19]Note that these results have been qualified by Zhou and Shaver (2021a); Coniglio et al. (2023); Bertinelli et al. (2025a).

neighboring armed conflict (at t-5) in each country with refugee presence in each GADM-1 region. Furthermore, OECD (2025) provides annual statistics on official development assistance (ODA) (i.e., Aid I) and humanitarian aid (i.e., Aid II).[20] We divide these two types of external aids by each country's gross domestic product (GDP) per capita, and interact with refugee presence in each GADM-1 region of interest. We present our results, where we control for neighboring conflict and external aid dependency, in Appendix Table A.9 and Appendix Table A.10 for both outcomes separately. Column (1) controls for intense armed conflict in border neighbors of each country (at t-5) while Column (2) and Column (3) control for external aid dependency for OAD and humanitarian aid, respectively. The estimates are close to our baseline results, confirming the positive effect (negative effect) of refugees under inclusive policies for incumbent support (political competition).

2.5.3 Robustness checks

We conduct a series of robustness and sensitivity checks to ensure the accuracy of our baseline results presented in Table 2.2. To do so, we use (a) an alternative sample, (b) alternative transformations, and (c) a placebo test.

Alternative sample. There are four particular countries (i.e., Angola, Cameroon, Gambia, and Guinea-Bissau) that did not host any refugee population at the year of election. That is, the refugee numbers corresponding to the election years in these countries are all zeroes. In other words, there is no variation in our main treatment variable during the period of investigation in these countries. Thereby, we exclude Angola, Cameroon, Gambia, and Guinea-Bissau from the main analysis in our baseline results. However, our result might be sensitive to such an exclusion. In this respect, we re-estimate the main specifications by including them. We present the results for incumbent support in Panel A of Appendix Table A.11 and for political

[20]ODA is a government aid that promotes and specifically targets the economic development and welfare of developing countries. Detailed information on ODA can be found at `https://www.oecd.org/en/topics/official-development-assistance-oda.html`.

competition in Panel A of Appendix Table A.12. For both outcomes, the estimates remain fairly similar to those presented in Table 2.2.[21]

Alternative transformations. Another potential concern might be related to the utilization of IHS transformation in our main treatment variable. To rule out the possibility that IHS might distort our results, we re-estimate our main results shown in Table 2.2. We first show the results where the IHS transformation is not applied to the refugee-to-population ratio variable (see Panel B of Appendix Table A.11 for incumbent support, and Panel B of Appendix Table A.12 for political competition). For incumbent support, the results suggest that an increase in the refugee-to-population ratio by one standard deviation (about 7 refugees per 100 voters) corresponds to a 1.2 percentage point increase in support for the incumbent (about 3% change at the mean), assuming the government implements an inclusive refugee policy (see Column (3)). Inclusion of time-varying controls and country-year fixed effects amplifies the magnitude of interaction term in Column (4), corresponding a 1.5 percentage points increase in incumbent vote share (about 4% change at the mean). This suggests a meaningful effect on the incumbent party vote share, particularly when inclusive policies are in place. Later, we utilize logarithmic transformation (i.e., log (refugee ratio + 1)) as an alternative transformation in Panel C of Appendix Table A.11 and Appendix Table A.12. [22] The results are qualitatively similar to the baseline results.

Placebo exercise. In an effort to deal with confounding trends at the aggregate level that potentially affect voter behaviour, such as changes in macroeconomic trends, we add country-specific time trends in each specification. Yet, there is still a room for the possibility that the voters exposed to the presence of refugees would follow a similar trend in terms of casting a vote for incumbent, absent the

[21] In Appendix Table A.13 and Appendix Table A.14, we also present the results where treatment variable is defined at t-1.

[22] In Appendix Table A.13 and Appendix Table A.14, we also present the results where treatment variable is defined at t-1.

treatment, as those who are not. In addition, detecting whether the relationship between incumbent support and refugee presence is spurious and/or coincidental constitutes another legitimate concern that must be tested. To validate that the observed positive effect is mainly due to the treatment itself and not due to other confounding factors, we therefore conduct a placebo exercise by assigning the future value of the treatment to past outcomes. If the treatment effect is found to be statistically significant in a placebo test, it suggests that the baseline results might be driven by spurious correlations or unobserved confounding factors rather than an actual causal relationship. Therefore, one should expect to find insignificant results when using a placebo test. In Panel D of Appendix Table A.11, we present the results for incumbent party vote share. The negative sign on baseline refugees and the interaction term (albeit insignificant) seem to suggest that peripheral areas that are most likely to host refugees are, on average, less supportive to the incumbent prior to refugee inflow. Overall, since the null results for baseline and interaction are not significant at any conventional level, we rule out the possibility that the observed effect is due to co-founders. The same conclusion is valid for political competition as can be seen in Panel D of Appendix Table A.12.

2.6 Afrobarometer Analysis

2.6.1 Institutional performance, trust, and attitudes towards migrants

To complement our baseline results on increased national support to the incumbent under refugee-inclusive regimes, we turn to Afrobarometer dataset. The Afrobarometer surveys include questions assessing the performance of government bodies, such as the president and parliament, as well as questions gauging trust in these institutions. To proxy support for the incumbent government, we focus on two key sets of questions: (i) those related to the performance of government bodies

and (ii) those concerning trust in government institutions. Furthermore, we use an indicator variable, taking a value of 1 if the respondent dislikes immigrants and foreign workers, and 0 otherwise. This variable help us understanding the perception of native respondents towards immigrants in their countries. The questions and their availabilities across Afrobarometer rounds can be found in Appendix Table A.15.

The results presented in Table 2.3 examine the relationship between refugee presence and government performance, trust, and perception indicators within a two-year window from the previous election, using a 150 km buffer.[23] The coefficients and standard errors in Columns (1) and (2) represent the direct effects of refugee presence (measured as the IHS of refugee numbers), while Columns (3) and (4) capture the interaction between refugee presence and inclusive refugee policies. For the performance indicators, the results suggest that higher refugee presence is associated with a statistically significant decrease in the perceived performance of the president and parliament (Column (1)). However, when inclusive policies are accounted for in the interaction term (Column (3)), the results shift notably. The interaction term suggests that in countries with inclusive refugee policies, refugee presence is associated with a statistically significant increase in the perceived performance of the president and parliament. Regarding trust in government institutions, refugee presence alone does not have a statistically significant effect on trust in the president or parliament (Column (1)). However, when inclusive refugee policies are considered (Column (3)), the interaction term indicates a positive and significant association between refugee presence and trust in both the president and parliament. We additionally test different buffer sizes in Appendix Table A.16, and the results remain consistent with those obtained using the 150 km buffer.

Lastly, the results for perceptions of immigrants reveal a contrasting dynamic.

[23]The timing of elections can impact individuals' perceptions of government performance. Voters' assessments can be influenced by the election cycle, with clearer views following elections, but potential confusion as subsequent electoral events occur. To mitigate bias in measuring government performance, we limit the sample to observations within two years following an election, thus focusing on opinions formed during the post-election period (i.e., the two-year window). For further context, see literature on retrospective voting and economic voting, such as Markwat (2020), Fumarola (2020), Ecker et al. (2016), and Augenblick and Nicholson (2016).

Refugee presence alone is associated with a significant increase in dislike of immigrants (Column (1)), but this effect is mitigated in countries with inclusive policies, as evidenced by the negative and significant interaction term (see Column (3)). Here, we acknowledge that improved perceptions towards immigrants and foreign workers under inclusive policies cannot be a direct mechanism to explain the increased incumbent support. However, it signals that the the odds of refugee-induced public backlash diminishes. This can indirectly provide a support for our main finding of increased incumbent support. [24]

Overall, these findings highlight the role of inclusive refugee policies in shaping public perceptions. While refugee presence is often associated with negative perceptions of government performance and immigrants, these effects are reversed in countries with inclusive refugee policies, which foster greater trust in institutions and mitigate negative perceptions of immigrants. This underscores the importance of policy context in mediating the effects of refugee presence on political and social outcomes.

[24]Given the finding that native population in refugee-inclusive sample is less likely to dislike immigrants/foreign workers in their country, we believe that closer contact may help reducing any potential bias and increasing positive sentiments towards immigrants. Considering that refugee-inclusive countries attract more refugees, one can expect an increase in contact. To test the CH, we generate an interaction term between refugees within a 150 km buffer, policy variable, and the distance to the nearest refugees (ranging from 0 to 150 km). The three-way interaction term captures how the effect of refugee presence on the outcome variable varies depending on both the country's refugee policy and the distance from refugee camps. Specifically, it estimates whether the relationship between refugees and the outcome (e.g., trust, performance, or perception) differs in countries with inclusive policies compared to those without, and how this effect changes as one moves further from the camps. This aligns with the CH, which predicts that closer proximity to marginalized groups can reduce prejudice or increase positive interactions. We present our detailed results on contact hypothesis in Appendix Table A.17 for 150 km buffer. Yet, we do not find any evidence except for the fact that closer contact in refugee-inclusive settings reduces the odds of disliking immigrants. Nevertheless, we acknowledge that we cannot precisely measure the intensity and quality of interaction between refugees and natives.

Table 2.3: Government performance indicators, trust, perception

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
President performance	-0.2366***	(0.0544)	0.3425***	(0.0657)	43,095
Parliament performance	-0.1818**	(0.0755)	0.2330***	(0.0793)	38,340
President trust	-0.0402	(0.0486)	0.1055**	(0.0519)	43,356
Parliament trust	-0.0694	(0.0637)	0.1459**	(0.0655)	39,476
Dislike immigrants	0.0518***	(0.0040)	-0.0458***	(0.0039)	10,475

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). All specifications include control variables, year and cluster fixed effects. Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

2.6.2 Exploring Channels

Using Afrobarometer, we capitalize on three channels: (i) satisfaction towards local public goods, (ii) national identity, and (iii) economic development as measured by nightlight intensity. The summary results are presented in Table 2.4 for two-year window and 150 km buffer. It is worth noting that we show the estimations from most complete specification (i.e., controls and fixed effects added) in each column. We also present our results without controls in Appendix Table A.18 and using different buffers in Appendix Tables A.19, A.20, and A.21.

Table 2.4: Summary Table for Mechanisms with Controls and FEs

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
Educational needs	-0.1851***	(0.0711)	0.1806**	(0.0736)	39,960
Improving healthcare	-0.2190***	(0.0423)	0.2393***	(0.1449)	40,006
Infrastructural maintenance	-0.5528***	(0.1409)	0.5415***	(0.1449)	29,825
Reducing crime	-0.0499	(0.0391)	0.0857*	(0.0465)	39,464
National identity	0.0691**	(0.0277)	-0.1028**	(0.0414)	38,627
Nightlights	-0.1008***	(0.0351)	0.1165***	(0.0366)	26,669

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). All specifications include control variables, year and cluster fixed effects. Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

Satisfaction towards local public goods. Results from a handful of developing and developed countries suggest that immigration may put a strain on the government's spending (see Ratha et al. (2011) for a detailed literature review for developing nations, Preston (2014) for the UK, Bove et al. (2023) for Italy). Such a strain is likely to affect local public goods provision in the forms of healthcare, education, and security. In addition to public finance concerns, arrival of refugees is likely to cause congestion effect on the local public goods due to unprecedented demand shocks. For instance, Aygün et al. (2021) confirm that the Syrian refugee flow to Turkiye reduces the per capita availability of healthcare facilities and professionals. Therefore, sub-optimal utilization of local public goods or congestion effect can trigger natives to reduce the support for Justice and Development Party (AKP) (i.e., the party running the Turkish government). The results of Altındağ and Kaushal (2021) are in line with this argument, implying a slight but a significant drop in the AKP's vote share.

Nevertheless, hosting refugees does not necessarily cause a fiscal burden and/or a congestion impact in the context of low-income countries due to international financial aids, as suggested by Zhou et al. (2025). Potentially driven both by international burden-sharing norms and willingness to deter irregular immigrant flows from poor countries, entities such as the European Union and the World Bank have been elevating their aid contributions to nations hosting refugees (Clemens and Postel, 2018). However, a sizeable portion of the aid allocated for assisting refugees is being extended to benefit the host communities as well (Bermeo, 2017; Maystadt and Verwimp, 2014a). At this point, Zhou et al. (2025) argue that whether natives are able to benefit from foreign aid that originally targets refugee hosting areas can determine political preferences of local population. The underlying rationale relies on the following for low-income countries: (i) access to public goods -*even to clean water and sanitary conditions*-, is a primary problem and the provision is also at sub-sufficient levels (Grossman and Slough, 2022), (ii) external aids have been shown to alleviate the financial burden on local infrastructure which in turn

can boost local development (Zhou et al., 2025), and (iii) albeit limited control over the foreign aids, incumbent government can claim credit to improve public goods utilization for natives as well as refugees - *which in turn makes natives to reward the incumbent government*- (Dietrich et al., 2018). Thereby, aid-induced local development and corresponding increase in the provision of local public goods can constitute a plausible mechanism in explaining the increased support for the incumbent government. To that extent, Zhou et al. (2025) show that better access to local public goods plays a significant role in rewarding incumbent government in the Ugandan context. To be more precise, they content that such an increase in the vote share of the incumbent government stems from the spillover effect in which natives benefit from. To test this hypothesis, they utilize the following outcome variables: access to public primary and secondary schools, access to healthcare facilities, and road density. In line with the expectations, refugee presence is found to positively correlate with access to the aforementioned services. Third, natives' assessment regarding the incumbent government performance, as measured by presidential approval and trust in president, and assessment of educational services, are shown to be improved with refugee presence over time. The results align with their hypothesis, indicating that the incumbent's enhanced electoral support in regions with significant refugee populations could be attributed to the spillover effect of humanitarian and development assistance, leading to improved public services that resonate with the local population. Altogether, following Zhou et al. (2025), one can argue that conditional on the natives' reaping benefits from aid-induced improved access to local public goods, incumbent governments can gain electoral victory despite large immigration flows. Our results demonstrate that the Uganda case is a particular case of a general pattern observed in countries with inclusive refugee policies.

Extending Zhou et al. (2025), we incorporate the following questions to measure the level of satisfaction regarding the local public goods: the government's ability to (i) address educational needs, (ii) improve basic health services, (iii) improve

infrastructure, as measured by maintaining roads and bridges, and (iv) reduce crime. The results in Table 2.4 highlight several important patterns about the effect of refugees on local public goods. Refugee presence alone is associated with significant negative effects on perceptions of educational needs, healthcare provision, and infrastructural maintenance, indicating increased pressure on public services. However, the interaction terms for refugee presence and inclusive policies suggest that inclusive refugee policies play a mitigating role. For example, the interaction term for healthcare provision is positive and significant, indicating that inclusive policies help offset the strain on healthcare systems. Similarly, for infrastructure maintenance, the interaction term, almost fully reversing the negative effect of refugee presence. In terms of reducing crime, refugee presence alone does not have a significant effect, but in inclusive-policy contexts, the interaction term is positive and significant, suggesting improved perceptions of safety. Overall, these findings underscore the challenges refugee presence poses for local public services and infrastructure but highlight the critical role of inclusive policies in addressing these challenges and fostering positive outcomes in host communities.

National Identity. The presence of refugees can strengthen the salience of national identity by heightening the distinction between the in-group and the out-group, especially during moments that emphasize national unity, such national crises (e.g.,, a national crisis can be triggered by an unprecedented refugee flows).[25] For the particular case of low-income countries, Zhou (2019) examines how the presence of refugees influences national identity formation among host citizens in Tanzania. Focusing on one of the Tanzania's bordering regions, which has hosted over 230,000 Burundian refugees since 2015, Zhou (2019) theorizes that exposure to refugees leads host citizens to strengthen their national identity to distinguish themselves from the migrant out-group. Findings indicate that greater exposure to refugees

[25]Studies show that increased contact with refugee communities can promote solidarity among native citizens, reinforcing a more unified sense of national identity (e.g., see Dinas et al. (2019) who report that European regions exposed to higher numbers of refugees reported greater expressions of national pride among locals).

significantly increases national identification. Thereby, we test whether refugee-induced reinforced national identity may lead to greater support to the incumbent.[26]

The results in Table 2.4 for national identity suggest a complex relationship between refugee presence and inclusive refugee policies. Refugee presence alone is associated with a positive and statistically significant effect on national identity. This finding aligns with what Zhou (2019) documents for Tanzania, suggesting that refugee presence can heighten national identity as a unifying response to external influences. However, the interaction term between refugee presence and inclusive policies shows a negative and statistically significant effect. This indicates that inclusive policies dampen the effect of refugee presence on national identity. One possible interpretation is that inclusive policies reduce the social or cultural tensions that might otherwise prompt a stronger emphasis on national identity. By fostering integration and reducing perceived *otherness*, these policies may diminish the need for a heightened sense of national identity as a defensive response to refugee presence. In summary, while refugee presence initially strengthens national identity, the implementation of inclusive policies moderates this effect, likely by mitigating underlying tensions and fostering a more cohesive societal response. Altogether, we cannot attribute our results to the national identity in inclusive contexts.

Economic activity: nightlights. One possible mechanism that may explain the increased support for the incumbent party in refugee-inclusive contexts is the potential for economic development that benefits the local host population. There are a number of indicators to proxy economic development. These include, but are not limited to, GDP per capita, income distribution, unemployment rate, life expectancy, and poverty rates. However, one difficulty here is to find the aforementioned variables at the most possible granular level -*considering that our*

[26]We provide the question in Appendix Table A.15. This question gives respondents five choices: they can identify in (i) ethnic terms only, (ii) more ethnic than national, (iii) equally ethnic and national, (iv) more national than ethnic and (v) national only. We combine the last two response categories to measure the number of people who identify themselves primarily in national terms. This approach is consistent with previous works on national identity in Africa, which evaluate national attachment vis-a-vis ethnic attachment. See footnote 35 in Koter (2019).

treatment variable is defined at the cluster level. We turn to nightlight data by following (Henderson et al., 2011, 2012). Nightlight data, typically derived from satellite imagery that captures visible light emitted from the Earth's surface at night, is increasingly used as a proxy for economic development in the emerging literature. This is based on the assumption that areas with higher levels of economic activity tend to have more artificial lighting, which can be detected by satellites. Nightlight data is particularly useful in contexts where traditional economic indicators, such as GDP or income data, are either unavailable or unreliable, especially in low-income countries and rural settings (see Addison and Stewart (2015), Gibson et al. (2021), and Pérez-Sindín et al. (2021)). To do so, we extract nightlight data at a resolution of 0.5 x 0.5 decimal degrees from PRIO-GRID so that we could match the nightlight data with the Afrobarometer clusters. We specifically use calibrated nightlight data. It measures average nighttime light emission from the DMSP-OLS Nighttime Lights Time Series Version 4 (Average Visible, Stable Lights, and Cloud Free Coverages), calibrated to account for intersatellite differences and interannual sensor decay using calibration values from Elvidge et.al. (2013). Thus, they might be more suitable for time series analysis. Values are standardized to be between 0 and 1, where 1 is the highest observed value in the time-series, and 0 is the lowest. The times-series are available from 1992-2012. Therefore, our period of investigation for the nightlight data comprises between 2000 and 2012.[27]

The result displayed in Table 2.4 confirm our hypothesis on economic development in refugee-inclusive settings at 1% level of significance.[28] That is, refugee presence alone shows no significant impact on nightlights, but the interaction term

[27]More information can be found on `https://grid.prio.org/extensions/PRIO-GRID-Codebook.pdf`

[28]In addition, we conduct a complementary analysis by using two subjective wellbeing measures from Afrobarometer: (i) present living conditions as measured by better (=1) or worse (=0), and (ii) probability of being cashless over the past year. The underlying rationale of utilizing subjective wellbeing measures is that if the presence of refugees promotes economic development, the natives are likely to be better off perhaps via having better living standards and less financial struggle. Our results, presented in Appendix Table A.22, are in line with our expectations, indicating that while refugee presence alone negatively impacts perceptions of living conditions and increases financial hardship, inclusive policies appear to offset these effects, improving both living conditions and financial stability in host communities.

with inclusive policies is positive and significant. This suggests that inclusive policies foster economic activity and development in refugee-hosting regions. Our finding of improved economic activity for refugee-inclusive sample is consistent with what Zhou et al. (2025) find for Uganda. Their findings on increased incumbent support is attributed to the local development, which is proxied by access to healthcare facilities, schools, roads, and nightlights. Our findings follow a similar conjecture, implying that the increased incumbent support is due to (economic) development that benefits host population.

2.7 Conclusion

This study sheds light on the nuanced political implications of hosting refugees in Africa, particularly in low-income countries. By leveraging data from 16 African nations between 2000 and 2016, our analysis highlights a complex interplay between refugee presence, inclusive policy frameworks, and political outcomes. We document that refugee presence translates into increased support for the incumbent government and reduced political competition, but only in countries that implement inclusive policies toward refugees. These policies, which facilitate refugees' access to rights, services, and economic opportunities, appear to play a pivotal role in mediating the political consequences of refugee hosting.

Through complementary Afrobarometer data, we also find the same mediating pattern with respect to attitudes towards migrants, satisfaction and trust towards the President and the parliament. Such a boost in institutional trust and satisfaction under inclusive policies is not explained by more salient national identity, but by improved satisfaction with local public goods and heightened economic activity. In refugee-inclusive contexts, humanitarian and development aid targeting refugees also benefits host communities, leading to positive spillover effects on public service provision. Natives in these settings report greater satisfaction with education, healthcare, infrastructure, and crime reduction. Furthermore, the significant

increase in nightlight intensity—a proxy for local economic development—supports the hypothesis that inclusive policies foster economic growth, which bolsters incumbent support. While refugee presence strengthens national identity in restrictive contexts, inclusive policies mitigate this effect, likely by reducing social tensions and fostering integration. This attenuation suggests that inclusive policies shift the narrative from one of perceived competition or threat to one of coexistence and mutual benefit.

Our research makes three key contributions. First, we extend the literature on the political economy of refugees by focusing on developing nations, which host the majority of the world's refugee population. Second, we provide cross-country evidence, moving beyond the single-country focus predominant in previous studies, thereby enhancing the external validity of our findings. Third, we underscore the critical role of inclusive policies in shaping not only the socio-economic but also the political outcomes of refugee hosting. These findings carry important implications for policymakers. They emphasize the potential of inclusive policies to transform refugee presence into an opportunity for host countries, fostering political stability and economic development. As global forced displacement continues to rise, understanding these dynamics is crucial for designing policies that not only address humanitarian concerns but also promote sustainable development and political cohesion in host nations.

From a policy standpoint, our study demonstrates that countries with inclusive refugee policies benefit from increased local support for incumbent governments and economic development. This highlights the importance of designing and implementing refugee policies that foster inclusion rather than exclusion. Policymakers should recognize that refugees are not merely a fiscal burden but can positively impact local economies provided they receive the rights to do so. The positive trend in inclusive policies in the Global South seems to suggest it is the case in many low-income countries, much less in the Global North. Our estimates underscore that humanitarian and development aid, which often accompany refugee influxes,

can improve living conditions and economic activity in host communities under an inclusive refugee policy. This suggests that leveraging aid effectively can lead to political stability by maintaining or increasing support for incumbent governments. It provides a clear direction for governments and international organizations to focus on strengthening the distribution of aid and ensuring it benefits both refugees and local populations. More research is still needed to understand how the lower support to forcibly displacement people in high-income countries may limit the ability of low-income countries to deal with new massive displacements. In such a context, there is also a need to better understand the remaining institutional and organizational barriers to such inclusive policies.

Chapter 3

Can refugees improve native children's health?: Evidence from Turkey

Following the most dramatic migration episode of the 21^{st} century, Turkey hosted the largest number of Syrian refugees in the world. This paper assesses the impact of the arrival of Syrian refugees on the Turkish children's health, with a focus on height – a standard nutritional outcome. Accounting for the endogenous choice of immigrant location, our results show that Turkish children residing in provinces with a large share of refugees exhibit a significant improvement in their height as compared to those living in provinces with less refugees. Against other potential channels, a refugee-induced increase in maternal unemployment and the associated increase in maternal care seem to explain the observed positive effect on children's health.

Keywords: refugees, child health, anthropometric measures, labor market outcomes

JEL-Classification: O15, I15

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3.1 Introduction

Civil wars and natural disasters constitute immediate sources of forced migration, leading millions of people to leave their home country. The total number of refugees who have been displaced from their country of birth reached almost 89.3 million at the end of 2021, half of whom are reported to be children (United Nations High Commissioner for Refugees, 2021). Unprecedented immigration waves, such as those ignited by the Syrian civil war, can affect the well-being of local inhabitants through various channels, including their health conditions. On the one hand, threats include disease transmission due to refugee mobility, depletion of natural resources, reduced per capita availability of healthcare facilities and healthcare professionals, and environmental degradation (Maystadt et al., 2019b). Particularly, in the case of children, the combined impact of such factors is likely to induce a deterioration in health outcomes during early stages of life. On the other hand, the refugee inflow may boost the welfare of the host population and accelerate local economies through increased demand, the flow of financial/humanitarian aid from intergovernmental organizations, and infrastructural improvements (Aygün et al., 2021; Erten et al., 2022). Delving into whether the benefits outweigh the costs is ultimately an empirical question, as these channels work in unique directions and the magnitude of their effects is largely unknown.

We aim to explore the effect of Syrian refugee inflow on Turkish native children's anthropometrics, focusing on the z-score of height-for-age (HAZ), using 2008, 2013, and 2018 rounds of the Turkish Demographic and Health Survey (TDHS). Using an Instrumental Variable approach, we show that the Turkish children residing in provinces with large refugee share improve their HAZ: the estimated quasi-elasticity ranges between 0.02 and 0.03 (in terms of z-score standard deviations). The positive effect persists even after a series of robustness and sensitivity checks. Placebo checks confirm the causal interpretation to be given to our results. The observed positive impact contrasts with previous findings in the related literature. For example, Baez (2011b) and Dagnelie et al. (2023a) report an adverse effect of the immigration shock

on the native children's anthropometrics in Tanzania and in 29 African countries, respectively. This contradiction is fairly puzzling. We therefore examine several alternative channels to elucidate the observed positive effect.

The hypothesised mechanisms consist of changes in the supply of healthcare resources, mother's labor market outcomes, income, time allocation, quality-quantity trade-off, and investment in children's human capital through vaccination. The labor market and associated mothers' time for child care channels are found to be the most plausible explanation. We show that Turkish mothers who reside in provinces with a large share of refugees are less likely to be in the labor force at the time of the survey. Similarly to Tumen (2018), we find that refugees reduce the odds of low-educated Turkish mothers being on the labor market. That is explained by strong labor substitution since refugees are -*on average*- low-skilled and are willing to take low-pay jobs. Paradoxically, improvements in anthropometric indicators are concentrated in households where low-educated mothers seem to have been replaced by Syrian immigrants in the workplace. Such a mechanism may seem surprising. However, it has been documented in other contexts that maternal unemployment –*in particular among low-skilled mothers*- may boost the quality of maternal time to spend with their offspring and have positive repercussions on their children's health (Mosca et al., 2017; Danzer and Lavy, 2018; Anderson et al., 2019). For example, maternal unemployment can result in more frequent utilization of healthcare resources, better maternal supervision through the provision of rich-nutrition diets or through the longer duration or exclusivity of breastfeeding, each of which can positively contribute to the physical growth of children. Taken together, we attribute the positive health effect of the refugee inflow to migration-induced maternal unemployment among the least skilled mothers.

Our contribution is twofold. First, we provide evidence of the health effects of the largest migration movement of the 21^{st} century. The existing evidence mainly focuses on refugee camps in Africa (Baez, 2011b; Dagnelie et al., 2023a). In the Middle East, most refugees are dispersed in their hosting countries (UNHCR, 2022). It is

unclear how such a dispersion matters. On the one hand, the dispersion of refugees may reduce the risk of disease transmission and potential competition in accessing resources such as clean water, sanitation, or basic health services (Maystadt et al., 2019b; Clemens and Ginn, 2020). On the other hand, the concentration of refugees in camps may facilitate the provision of basic health services and facilitate the control of communicable diseases. In Turkey, two papers touch upon the health consequences of hosting refugees. Aygün et al. (2021) investigate the impact of refugees on healthcare system and mortality outcomes (i.e., infant, child, and elderly mortality). Their results suggest that Syrian refugees placed a considerable burden on healthcare system, despite the central government's investments in the physical and human capital indicators of healthcare resources in response to refugee shock. However, their estimates report no evidence of an impact on the Turkish natives' mortality outcomes. Erten et al. (2022), in turn, mainly concentrate on the vaccination outcomes of native children in addition to the prevalence of infectious/non-infectious diseases among native children. Their benchmark results document a drastic reduction in the probability of being fully immunized against Hepatitis B, tuberculosis, and measles. They attribute their findings to the refugee-induced supply constraints in the healthcare resources. Although we will discuss potential effects on the supply of healthcare services and mortality, our article focuses on the anthropometrics of children, that is, the height-for-age (HAZ) z score, a standard outcome in health economics. [1] Improved early life health outcomes and sufficient nutritional intake are key to explain later life outcomes such as better cognitive abilities, higher wages in the labor markets and reduced health risks (Case and Paxson, 2010; Currie and Vogl, 2013). A change in mortality and health care resources is difficult to interpret without knowing the impact on children's nutritional status, and inversely. Our paper also sheds light on the mechanisms that drive possible health impacts of refugees. Existing studies emphasize the transmission of diseases such as malaria in Africa (Dagnelie et al., 2023a), or

[1] There is a long tradition in economics to utilize anthropometric data as an ultimate measure of children's health status (Alderman et al., 2006; Bundervoet, 2009; Akresh et al., 2011)

other vaccine-preventable diseases (e.g., chickenpox and tuberculosis) and sexually transmitted diseases (e.g., syphilis) in Latin America (Ibáñez et al., 2021), and/or overburdened healthcare resources (Tatah et al., 2016; Aygün et al., 2021; Erten et al., 2022). Against these channels, we highlight the role of another mechanism through which immigration can affect health outcomes: the labor market channel and the associated mother's time allocation.

The remainder of this paper is structured as follows. Section 3.2 provides information on the arrival of Syrian refugees in Turkey and their integration into the Turkish healthcare system. Section 3.3 provides a description of the data. Section 3.4 elaborates on the identification strategy. Empirical results are presented in Section 3.5 while potential mechanisms are explored in Section 3.6. Finally, the last section discusses the findings and the need for extended child care in Turkey.

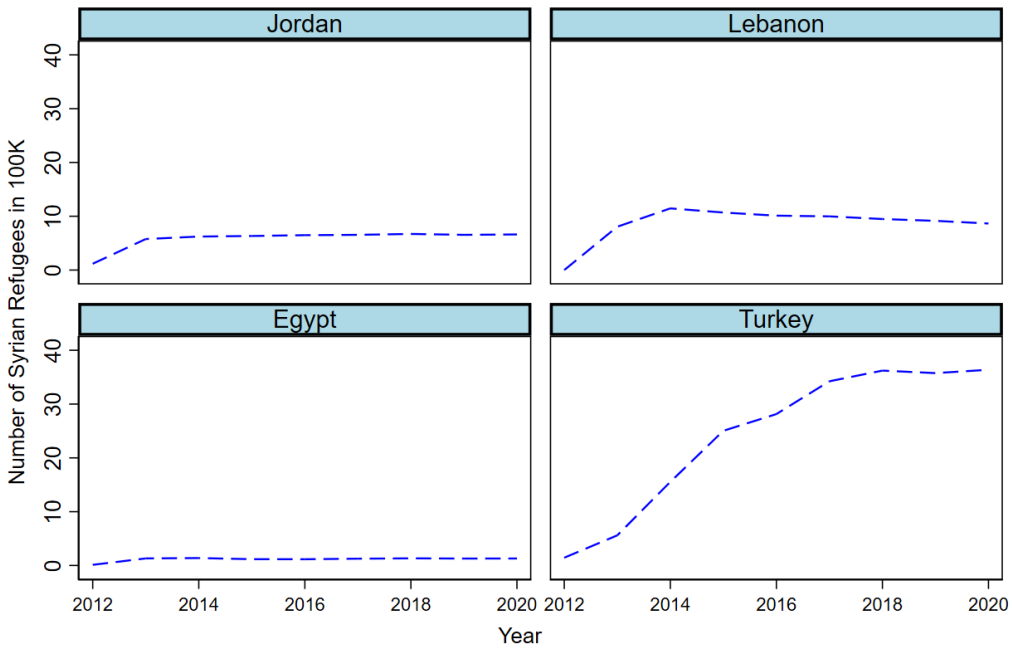
3.2 Background

3.2.1 Syrian refugees

The Syrian civil war sparked in March 2011, resulting in a forced displacement of 7.5 million Syrian individuals. Due to the geographical proximity and the open-door policy of the Turkish government, Turkey has become the main destination for Syrians (Ferris and Kirisci, 2016). The open-door policy is of paramount importance, as it eliminates any attempt to enter the country illegally. In the early wave of the refugee influx, Syrian refugees, under temporary protection, were placed in refugee camps. Although the Turkish government has established 26 refugee camps in 10 provinces that provided housing to more than 270,000 Syrians by the end of 2013 (Benner et al., 2015), the uninterrupted nature of refugee inflow put a heavy burden on the capacity of camps in 2014. The number of refugees reached 2.5 million in 2015, and 3.5 million in 2018 (Erdoğan, 2014; Akbulut-Yuksel et al., 2022). The massive increase resulted in the spread of refugees in 81 provinces of Turkey. As of 2019, the share of refugees residing in camps was 2.4%. In 2019, Istanbul, the most

populous province in Turkey, hosted the largest number of refugees, amounting to 548,000 individuals. Istanbul was followed by provinces close to the Syrian border (e.g., 443,000 in Gaziantep and 431,000 in Sanliurfa, and 430,000 in Hatay) (Ministry of Interior, 2022). Unlike other countries that have a border with Syria (e.g., Jordan and Lebanon), Turkey has experienced a significant increase in the number of refugees overtime. Figure 3.1 depicts time series pattern of the number of officially registered Syrian refugees in Jordan, Lebanon, Egypt, and Turkey. It is obvious from Figure 3.1 that Turkey continues to host the largest number of immigrant populations among the other host countries.

Figure 3.1: Total Number of Refugees (in 100K) by Country



Notes: The data on the registered number of refugees comes from the UNHCR.

3.2.2 Syrian Refugees in Turkish Health System

Refugees came to Turkey in need of healthcare. In addition to forced displacement, property damages, and economic destruction, the civil conflict in Syria resulted in a dramatic deterioration of healthcare services. Kherallah et al. (2012) report that both civilians and healthcare professionals have experienced severe physical injuries and mental health deteriorations including post-traumatic stress disorder. Furthermore, the war prevented healthcare facilities from operating effectively. According to WHO (2012), in the second year of the war, almost 40% of the hospitals were out of service and nearly 65% of the healthcare providers left their home country. Thereby, victims that were in urgent need of medical intervention were barely treated. WHO (2012) also state that the war left Syrians in an insanitary environment due to limited access to medical services, food, and drinking water. Resource constraints and unhygienic living conditions are known to increase the risk of epidemic diseases. WHO (2012) therefore warms that Syrians constitute a significant threat to the public health of host communities when considering the risk of spreading epidemic diseases such as measles and tuberculosis. The prevalence of measles, tuberculosis, and malaria have been reported to increase among countries providing temporary protection to Syrian refugees (WHO, 2012). For the Turkish case, the number of chickenpox, measles, tuberculosis, and Hepatitis A cases increased both inside and outside of the camps. However, the incidence rate of these diseases among Syrian immigrants was found to be considerably larger as compared to the Turkish natives (Leblebicioglu, 2016; Ekmekci, 2017).

The Turkish government has adopted an ambitious response to the provision of healthcare services to forcibly displaced Syrian people who were in immediate need of medical treatment (Aygün et al., 2021). According to the existing policy, Syrians can benefit from any type of healthcare facility (e.g., preventive healthcare facilities, emergency departments, first-, second-, and third-step healthcare centers) in their province of registration with full coverage of medical and treatment costs. Syrian immigrants under temporary protections are recognized as the beneficiaries

of universal health coverage just as the Turkish native population. In addition, the Turkish government began to set up Health Centers for Refugees (HCR) in 2017. In the 29 provinces of Turkey, the government recruited native Syrian healthcare professionals (i.e., more than 700 doctors and 900 nurses) and bilingual healthcare professionals (Aygün et al., 2021; Commission, 2006). Nevertheless, the majority of HCRs were established after the implementation of the Supporting Immigrant Health Services Project (SIHSP), which was fully funded by the European Union (EU). Prior to the SIHSP, the number of HCRs located in provinces with a larger share of immigrants was limited to six.

Risks of health congestion were reported. For example, Savas et al. (2016) conducted a survey to investigate the effect of Syrian individuals on the workload of healthcare professionals in one of the provinces with a large share of refugees, Hatay. Their results indicate that waiting time at hospitals and healthcare providers' hours worked significantly increased because of the Syrian patients. This study also highlights two crucial issues. First, intensive care units became insufficient in capacity, again due to Syrian patients. Second, the prevalence of infectious diseases, hospitalization rates, and intensive care receipts are found to be much higher among Syrian patients compared to Turkish patients. Nevertheless, Aygün et al. (2021) take this survey-design study one step further by combining several administrative data sources. They provide suggestive evidence indicating that adult intensive care beds decline in per-capita terms. Similarly, WHO (2019) reports that almost 40% of patients in hospitals in (Turkish) provinces that have a border with Syria are Syrian individuals. Therefore, provinces with higher refugee shares are more likely to encounter capacity problems, and the native population should be at higher risk of having infectious diseases. The breadth of the European Union (EU) financial assistance was nonetheless not negligible when considering the scope of the EU Facility for Refugees in Turkey (FRIT). The FRIT aims to ensure the socioeconomic well-being of Turkish natives as well as Syrian refugees. Knowing whether increased household income induced by external financial aid can compensate for potential

negative effects on children's nutrition remains an empirical question.

3.3 Data and Descriptive statistics

This paper combines two types of data for the empirical analysis: (1) individual level data on the Turkish native children's health outcomes as measured by anthropometric information, (2) 81-province level data on the Syrian refugee inflows as well as other province-level information such as the number of physical capacity indicators of healthcare (i.e., number of hospital beds and number of hospitals), public expenditure, GDP per capita, and a terrorism index as a measure for local violence intensity.

3.3.1 Data on Children's Anthropometric Indicators

The primary source of data is the 2008, 2013, and 2018 waves of the Turkish Demographic and Health Survey (TDHS), each of which is a nationally representative cross-sectional survey. The TDHS provides comprehensive information on women of reproductive age (15-49) who gave birth in the five years preceding the survey year and their offsprings. Collected information includes, but is not limited to, household characteristics (e.g., information on household head and wealth index), demographics of mothers and their children (e.g., sex, age, birth year/month, and education), mothers' marriage history (e.g., marital status and age at first marriage), fertility outcomes (e.g., current fertility, children ever born and living, and age at first birth), and utilization of healthcare services (e.g., antenatal/postnatal care visits, vaccination) and child health and nutrition (e.g., height and weight).

A vital dimension of early childhood welfare, proximate predictor of human capital formation, is investigated in our paper: nutrition. According to international standards (WHO, 2006), height-for-age z scores (HAZ) can be calculated for 5,892 children, due to either rejection of height measurement and the absence of the child (ren) at the time of the survey. However, our operating sample consists of 5,341

children under the age of five, as we exclude those who were born in year 2012. The reason why we exclude the year 2012 from our empirical analyses is the lack of refugee data (see Section 3.3.2). It is also of great importance to indicate that anthropometric information is only available for the last-born children, who are below the age of 5. The HAZ, given sex, is a widely used indicator of child health in the long term. A low HAZ reflects the cumulative impacts of chronic malnutrition, stunting, and infections before and after birth. Being stunted, more prominent under five years of age, is considered to originate from food intake at sub-sufficient levels over a prolonged period, vitamin and/or protein deficiencies, co-existence of multiple diseases, and the poor health status of mothers during gestation. Table 3.1 shows the descriptive statistics on the Turkish children's HAZ z-scores. On average, a child in Turkey is 0.334 standard deviation shorter during the sample period in refugee-dense provinces. Interestingly, the HAZ z-scores, on average, have improved after the immigration shock. The magnitude of this improvement is higher in refugee-dense provinces.

3.3.2 Data on Refugees and Time Varying province Attributes

Data on the number of refugees in Turkish provinces come from the Directorate General of Migration Management (DGGM). Before 2012, there were almost no Syrian refugees in Turkey, although there were officially registered refugees and asylum seekers from different countries. For example, UNHCR (2011) reports that there were 14,465 refugees in Turkey in 2011 whom of 6,600 were from Iraq. For the particular case of Syrian war victims, their arrival in Turkey began in July 2012 (Akbulut-Yuksel et al., 2022). However, refugees have been placed in refugee camps in Turkish provinces having a border to Syria in 2012. As a result, data on the number of refugees at the province level, and therefore treatment, start in 2013.[2] We

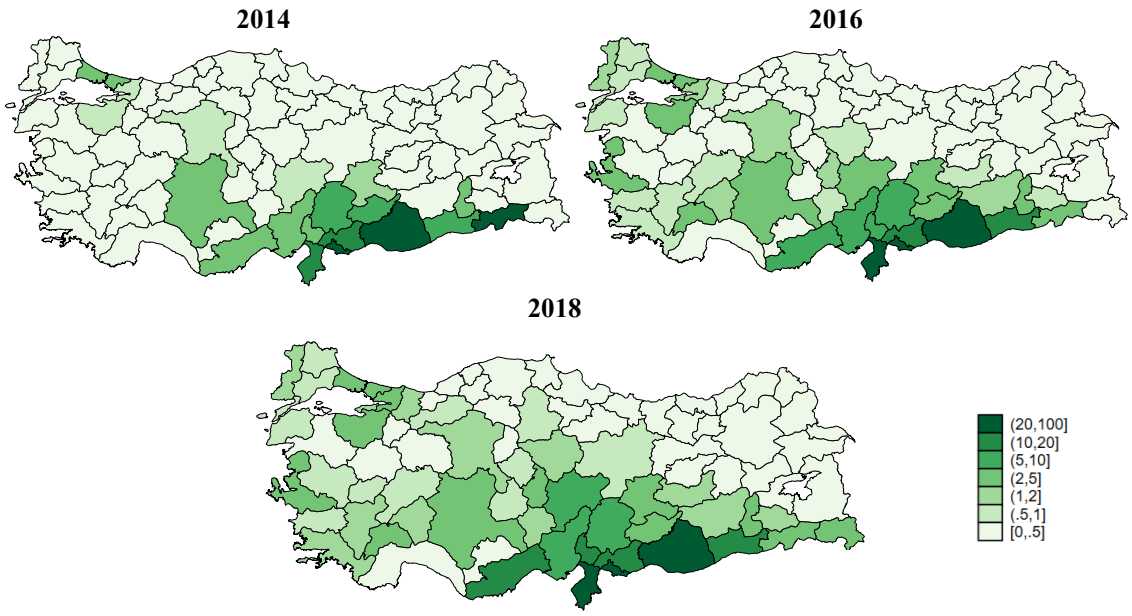
[2]That is why the year 2012 is excluded from the main analysis. Although there were refugees in Turkey from July 2012, their number at the province level is not available in 2012. Therefore,

also divide the number of refugees by the province-level 2010 population. Population data, at the 81 province-level, is obtained from the Turkish Statistical Institute (TSI). Figure 3.2 shows the spatial distribution of Syrian refugees per inhabitants across 81 provinces of Turkey in the years 2014, 2016, and 2018, respectively. As discussed in Beine et al. (2021b), refugees progressively move to other regions, especially to industrialized and western provinces such as Istanbul. Besides, in 2018, a substantial portion of the dark-green shades still appear in provinces having either a border or close to Syria. This highlights the importance of distance as a significant factor in determining the location of Syrian refugees in Turkey (Beine et al., 2021b).

As indicated in Figure 3.2 and already documented by Aygün et al. (2021) and Aksu et al. (2022), refugees tend to locate in provinces that either have a border to Syria or are close to Syrian border (i.e., Southeastern provinces). With a few exceptions (i.e., Adana, Gaziantep, and Mersin, which are important epicenters of industrial economy), refugees tend to locate in provinces that are relatively less developed such as Kilis, Hatay, Şanlıurfa, Osmaniye, and Kahramanmaraş (i.e., mainly east part of Gaziantep province). Such a negative selection is common in refugee studies (Maystadt and Verwimp, 2014b; Wahba, 2014; Kadigo and Maystadt, 2023). Therefore, we can anticipate that native children should have worse HAZ z-scores in refugee-dense provinces, at least before the refugees arrive. The descriptive statistics in Table 3.1 confirm that prior to 2012, HAZ z-scores are lower in provinces with larger share of refugees.

the corresponding number cannot be calculated and remains missing for the native children born in 2012. In other words, each empirical specification excludes the children whose year of birth is 2012. We assess the importance of this sample restriction in Section 3.5.2.

Figure 3.2: Spatial Distribution of Syrian Refugees (in Percent)



Notes: Data on native population come from the Turkish Statistical Institute while the data on refugees come from Presidency of Migration Management. This figure shows the ratio of the Syrian refugee population to the province native population in Turkey for 2014, 2016, and 2018, respectively.

Table 3.1: Children's Anthropometric Indicators by Native-to-Refugee Ratio Density in Provinces (Excluding 2012)

	(1)	(2)	(3)
	Entire Period (2003-2018)	Before Syrian Crisis (2003-2011)	After Syrian Crisis (2013-2018)
High-Density	-0.371	-0.437	0.048
	(1.709)	(1.669)	(1.664)
Observation	1,264	787	477
Low-Density	-0.277	-0.449	0.004
	(1.602)	(1.653)	(1.518)
Observation	4,077	2,530	1,547

Notes: The data come from Turkish Demographic and Health Survey (TDHS) 2008, 2013, and 2018. The entries are at means. Standard deviations are in parentheses. High intensity provinces are as follows: Kilis, Hatay, Şanlıurfa, Gaziantep, Mardin, Şırnak, Osmaniye, Kahramanmaraş, Mersin, Adana, and Adıyaman.

There exist several factors at the local level that could affect health status and be correlated with the presence of refugees. We use the following time-varying province controls: (1) the number of hospitals per 1,000 inhabitant, (2) public expenditure per 1,000 inhabitant, and (3) an index for terrorism. The first two variables are included to take into account public capacities in the provision of healthcare services and other local public goods. Given the high risk of terrorism in Turkey, the last index aims at capturing the later-life health consequences of early-life shocks related to terrorism. Terrorism threats have indeed been found to impair later life outcomes, including children's anthropometry (Camacho, 2008; Grossman et al., 2019; Ekhator-Mobayode and Abebe Asfaw, 2019). Since these variables can also act as bad controls (Angrist and Pischke, 2009), these variables will be added parsimoniously in our main specifications.

Data on the number of hospitals come from the Turkish Statistical Institute

(TSI). Public expenditure data are obtained from the Turkish Republic Presidential Strategy and Budget department.[3] Overall, the supply of health services or the level of public expenditures have improved over the period of investigation (see Appendix Table B.1). The observed improvement –irrespective of the arrival of refugees– can be attributed to the Health Transformation Program (HTP) implemented by the Turkish Ministry of Health (MoH) between 2003 and 2013, and the Health System Strengthening and Support Project supported by the World Bank since 2015.[4] A terrorism index is constructed using data from the Global Terrorism Database (GTD). The GTD provides comprehensive information on the terror events that took place in each province: (1) the number of incidents, (2) the number of fatalities, (3) the number of injuries, and (4) the number of property damage. These four measures and the formulation provided by Vorsina et al. (2017) are utilized to construct the terrorism index.[5] According to the Appendix Table B.1, the inflow of refugees has coincided with a rise in terrorist risk.[6]

[3]Other data on the number of doctors, nurses, midwives and hospital beds are used in Section **??**. The data can be found in `https://www.sbb.gov.tr/yatirimlarin-illere-gore-dagilimi/`. The expenditures are at current prices.

[4]Even though the HTP has been implemented between 2003 and 2013, it has positive and long-lasting effects on the healthcare system. Detailed information can be obtained through `https://csep.org/wp-content/uploads/2022/09/Health-Systems-in-Transition-TURKEY-1.pdf`. Relevant information on the scope of the Health System Strengthening and Support Project can be accessed via `https://documents.worldbank.org/en/publication/documents-reports/documentdetail/534641468190775240/turkey-health-system-strengthening-and-support-project`

[5]Following Vorsina et al. (2017), the terrorism index is calculated based on the following formula. Terrorism Index=(1 x Incidents) + (3 x Fatalities) + (0.5 x Injuries)+(2 x Property Damage). The terrorism index has a minimum of 0 and a maximum of 754.5 (mean=21.34 and SD=87.28). To minimize the variation, the terrorism index is rescaled between 1 and 10 (mean=0.15 and SD=0.82).

[6]To alleviate the ethniprovince-led terror incidents in Turkey, the ruling party (i.e., Justice and Development Party (JDP)) has started a "peace" process with the Kurdistan Workers' Party (PKK) in 2009. Despite significant declines in the number of PKK-induced terror events in Turkey between 2012 and 2013, Turkish government's military operations to destory PKK camps, warehouses, and shelters dissolved this the peace process (Köse et al., 2019). Since then, terrorist attacks have followed an increasing trend.

3.4 Identification strategy

Our research design seeks to compare the average health outcomes of children exposed to the presence of refugees with children who are not (or less) exposed. More specifically, a naïve empirical specification can be presented as follows:

$$Health_{icrt} = \beta Refugee\ Share_{ct} + \theta H'_{ict} + \gamma X'_{ct} + \alpha_c + \alpha_t + t_r + \epsilon_{icrt} \tag{3.1}$$

$Health_{icrt}$ is the health outcome of the child i, residing in province c (and region r) in year t. $Refugee\ Share_{ct}$ denotes a continuous treatment variable capturing the exposure to the presence of refugees for the child i leaving in province c. Exposure to refugee shock is determined by the number of refugees in the province of residence of the children at the time of birth, divided by the 2010 population of the province c. Since our main variable of interest has an abundant number of zeroes, in particular prior to 2013, we apply an Inverse Hyperbolic Sine (IHS) transformation.[7] We control for individual and household observed characteristics (H_{ict}) including child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother resides in a rural area, the total number of older siblings, being a female headed household, and the wealth index. The vector of coefficients γ will capture the impact of time varying province attributes, namely (log) hospitals per 1,000 inhabitant, (log) public expenditure per 1,000 inhabitant, and the terrorism index. α_c stands for province fixed effects to control for any time-invariant heterogeneity across 81 provinces. α_t denotes survey year fixed effects to account for any macroeconomic shocks at the national level. The specification will be further augmented with region-specific time trends, t_r, (and alternatively

[7] We mainly hinge on the IHS transformation to ease the interpretation of our results. In applied economics, it is a widespread practice to transform right-skewed variables (e.g., the refugee-share variable) that include zero and/or negative values. One popular transformation practice is to take the logarithm of such a variable. Nevertheless, one potential problem of taking the logarithm of a variable is that it does not allow retaining zero-valued observations as ln(0) is undefined (Bellemare and Wichman, 2020a). We show that our main results do not change, without such a transformation in Section 3.5.2.

with region-year fixed effects).[8] ϵ_{icrt} stands for the error terms. Standard errors are clustered at the 81-province level. Individual sampling weights are also used to render our results nationally representative.

Despite controlling for observed and unobserved characteristics, a challenge in comparing children with different levels of exposure to the presence of refugees at birth is that the location of refugees is not random. Refugees have indeed been found to move within Turkey, even if they appear to be particularly sensitive to variations of income at origin and distance (Beine et al., 2021b). Refugees may therefore prefer to move to provinces with employment opportunities and better healthcare. The opposite is also possible. We cannot exclude that refugees are forced to settle in peripheral areas in which local hosts feature worst health conditions compared to the rest of the country.[9] Syrian refugees might also prefer to locate in less populous and small-sized provinces to minimize their living costs. If labor market opportunities and government services are relatively limited in such provinces, then the coefficients obtained through the OLS model would be downward biased.

The endogenous choice of the refuge location makes it essential to instrument the exposure of Turkish children to the immigration shock. To account for the potential endogeneity of immigrant location decisions, we use a distance-based instrument following Del Carpio and Wagner (2015). The instrumental variable approach is based on the rationale that the travel distance from the Syrian governorate from

[8]Turkey counts 5 regions (i.e., North, South, East, West, and Central). Due to multicollinearity (Variance Inflation Factor (VIF)=70, well above the rule-of-thumb of 10, it leads to severe serial correlation), survey years are used instead of year of birth for time indicators. We therefore introduce 5 region-specific time trends and alternatively, 5 region-year fixed effects following Erten et al. (2022). We also assess the sensitivity of our results to the use of more disaggregated subnational divisions in Section 3.5.2.

[9]Based on observed characteristics, it is not obvious to quantify the direction of such an endogeneity bias. We indeed explore whether there exists a systematic association between the presence of refugees and the characteristics of Turkish provinces (Akbulut-Yuksel et al., 2022). We follow Akbulut-Yuksel et al. (2022) in regressing the (log) number of refugees on the following province-level characteristics: native population, number of hospitals per 1,000 inhabitant, public expenditure per 1,000 inhabitant, and terrorism index. The results are reported in Appendix Table B.2. Results suggest that refugees are attracted by larger provinces, but there is no clear pattern with the (log) number of hospitals, public expenditure per 1,000 or the threat of terrorist attacks. Although not precisely estimated, the correlations rather suggest that refugees move to places with deteriorating healthcare.

which Syrian immigrants take the road to each province in Turkey is central in predicting their settlement decisions. The gravity models of migration posit that the farther the two locations are from each other, the lower the spatial interaction, or namely migration, between them (Anderson, 2011; Beine et al., 2021b).

The TDHS provides data on the province of residence of the respondents at the time of survey. It allows us to calculate the cross-border variation in travel distance between 81 provinces in Turkey and 13 governorates in Syria.[10] Following Del Carpio and Wagner (2015), the distance-based instrument for the Turkish children's exposure to Syrian refugees for each province in Turkey can be represented as follows:

$$Distance\ Instrument_{ct} = \sum_{i=s} \frac{1}{\eta_{sc}} \phi_s S_t \tag{3.2}$$

where η_{sc} denotes the shortest travel distance (measured in kilometers using Google Maps) from each origin Syrian governorate s to a Turkish province c. As noted by Erten et al. (2022), there are six border crossing points from Syria to Turkey, two in Hatay and the other four in Gaziantep, Kilis, Şanlıurfa, and Mardin provinces. Therefore, choosing between these border crossing points are contingent upon the Syrian individuals' governorate of residence and the intended province of arrival in Turkey. Due to the Turkish government's open-door policy towards Syrian refugees, there was no incentive for them to target one particular border crossing point while entering Turkey. Hence, the distance measure between 81 Turkish provinces and 13 Syrian origin governorates considers the shortest travel pathway. ϕ_s shows the share of Syrian population in each origin governorate s in the pre-immigration period (i.e., 2010), and S_t is the total number of officially registered Syrian refugees in Turkey in year t (measured in thousands).[11] There

[10] There are 13 origin governorates in Syria: Aleppo, Al-Hasakah, As-Suwayda, Damascus, Daraa, Deirez-zor, Hama, Homs, Idlib, Latakia, Quneitra, Rakka, and Tartus.

[11] Pre-war populations of the Syrian governorates in 2010 are obtained from the Syrian Arab Republic Central Bureau of Statistics.

are 1,053 origin-arrival pairs to construct the Instrumental Variable (IV). [12] The instrument is also standardized in order to ease the interpretation of the first-stage results.

The IV method relies on the identifying assumption that the instrument has no correlation with the unobserved trends in the outcome variables. For instance, such assumption may be threatened when the instrument is correlated with the latent trends in macroeconomic indicators (e.g., (un)employment). Such trends could also affect the Turkish children's anthropometrics. Furthermore, Western region of Turkey is considerably more developed as compared to Eastern region, which is close to border crossing points. If the time trends in children's health outcomes in Western region of Turkey differs from that of Eastern region, then the identifying assumption will no longer holds. To minimize that threat, we follow Aygün et al. (2021) in using time-region interactions to weaken the independence assumption. We further discuss the validity of our instrumental variable approach in Section 3.5.3.

3.5 Empirical Analysis

3.5.1 Main Results

Table 3.2 presents the effect of refugees on children's nutritional status, as measured by the Height-for-Age z-scores (HAZ). Columns (1)-(3) show the OLS estimates. Columns (4)-(6) display the 2SLS results. In Panel A, we only include survey year and province fixed effects. In Panels B and C, we gradually add different sets of control variables. The first stage F-statistics (or, Kleibergen-Paap rk Wald F) are reported in Columns (4)-(6), each of which is sufficiently large. This confirms that the distance-based instrument is strong enough for proper identification.

[12] There are 81 provinces in Turkey and 13 origin governorates in Syria, amounting to 1,053 origin-arrival pairs (i.e., 81 x 13 =1,053).

Unlike previous findings in the African context (Baez, 2011b; Dagnelie et al., 2023a), the 2SLS estimates suggest a positive effect of refugee inflow at 1% significance level in each panel, regardless of the specification.[13] Turkish children residing in provinces with larger refugee share are on average taller than others.[14] The estimated quasi-elasticity stands at 0.0296 in our preferred specification with individual/household-level controls (see Column (6) in Panel B of Table 3.2). Increasing the presence of refugees by 10 percent (equivalent to an increase by about 2,900 refugees from the mean) boosts children's height by one third of a standard deviation (0.0296 x 10 = 0.296). Although with the reverse sign, the magnitude is slightly higher than the quasi-elasticity of -0.02 found by Dagnelie et al. (2023a). Although the magnitudes and the corresponding quasi-elasticities become slightly smaller in Panels B and C, we still observe a notable improvement in HAZ when gradually adding (i) individual/household-level and (ii) province-, individual/household-level control variables. For presentation purposes, we relegate the estimated coefficients for the full set of control variables (i.e., Panel C of Table 3.2) in Appendix Table B.4. Results are mostly as expected with positive and significant coefficients for proxies for healthcare supply, education and wealth. The number of older siblings has a negative and significant effect on HAZ.

[13]Our results also contrast with these existing studies if we replace our dependent variable with an alternative nutritional outcome: the weight-for-age. The WAZ, given sex, is a measure of child health in the short run. Low levels of WAZ imply wasting and thereby the presence of current protein-energy malnutrition. We prefer HAZ over WAZ to proxy the Turkish children's health based on two reasons. First, HAZ is more appropriate for our research design (WAZ being a short-term indicator and much more volatile). Accumulated (or long-run) effect of chronic malnutrition *-due to either mentally or physically low levels of growth-* is captured by HAZ, while WAZ shows the acute malnutrition induced by current undernutritional patterns. Second, being underweight childhood is easier to overcome in later stages of life than shortness in height-for-age. However, we replicate our results with that alternative indicator (WAZ) in Table B.3 The evidence still confirms the positive effect of refugees on children's health, as proxied with the WAZ z-score.

[14]The difference between the OLS and the 2SLS confirms the negative selection observed descriptively in Section 4.2.

Table 3.2: Effect of Refugees on Children's HAZ (Excluding 2012)

Dep. Var.	Height-for-Age z-scores (HAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share (IHS)	0.0991***	0.0555*	0.0662**	0.6404***	0.7864***	0.8257***
	(0.0325)	(0.0295)	(0.0329)	(0.1970)	(0.2141)	(0.2195)
Elasticity	0.0036	0.0021	0.0024	0.0238	0.0293	0.0307
Kleibergen-Paap rk Wald F				19.07	25.18	26.53
Panel B	With individual and household controls					
Refugee Share (IHS)	0.0959**	0.0533	0.0600	0.6198***	0.7623***	0.7961***
	(0.0387)	(0.0354)	(0.0382)	(0.1845)	(0.2040)	(0.2085)
Elasticity	0.00357	0.00198	0.00224	0.0231	0.0284	0.0296
Kleibergen-Paap rk Wald F				19.41	25.96	27.24
Panel C	With province-level, individual, and household controls					
Refugee Share (IHS)	0.0454	0.0243	0.0193	0.5133***	0.6515***	0.6669***
	(0.0286)	(0.0333)	(0.0322)	(0.1675)	(0.1873)	(0.1852)
Elasticity	0.0016	0.0009	0.0007	0.0191	0.0243	0.0248
Kleibergen-Paap rk Wald F				18.08	24.25	24.15
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Year FE	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

3.5.2 Robustness Checks

The results of our estimation may be sensitive to the model's specification. Therefore, we check the robustness of our results to (a) alternative transformations of our dependent variable and our variable of interest, (b) the use of more requiring region-time trends and fixed effects; and (c) alternative samples.

Alternative transformations. We may be concerned by extreme values in our dependent variable. The literature defines biologically plausible values of height-for-age z-scores, which lie between -6 and +6 (Mei and Grummer-Strawn, 2007). We show that our main results are robust to the exclusion of biologically implausible values of the HAZ z-scores (see Appendix Table B.5). Another potential concern might be related to the utilization of IHS transformation in refugee share variable. To rule out the possibility that IHS might distort our results, we re-estimate our main results shown in Table 3.2 where IHS transformation is not applied to the refugee share variable. As can be seen from Appendix Table B.6, the positive effect on the HAZ remains the same without IHS transformation.

Alternative time trends. Having data at the 81-province level allows us to utilize more flexible trends than Region trends, such as trends at the NUTS-1 (i.e., 12 regions) or even NUTS-2 level (i.e., 26 regions). We include these requiring time trends to make sure that our findings are not driven by differential pre-existing time trends across regions. The results are presented in Appendix Table B.7 and Appendix Table B.8, confirming the improvement on the HAZ.

Alternative samples. The definition of our sample of interest may be questioned. Due to a lack of refugee data, we decided to exclude the year 2012. We re-estimate the main specifications including the year 2012, replacing missing information on refugees by zeroes. Results remain similar (Appendix Table B.9).

3.5.3 Plausibility of identification assumptions

Our identification strategy rests on key identification assumptions. First, we assume that there is no confounding trends in health outcomes between provinces with high and low values of refugee shares or the instrument, conditional on the use of fixed effects and control variables. Second, we assume that the composition of the treated and control provinces remains constant overtime. The stability of our 2SLS coefficients when controlling sequentially for province-level, individual and household characteristics is reassuring but only deals with *observed* changes. The stability of our sample composition may be threatened by several selection issues. We discuss the plausibility of both assumptions below, distinguishing between selective migration, selective marriage, selective fertility and selective mortality as threats to the second assumption.[15]

Confounding trends. Adding region-specific time trends may not be sufficient to assume that Turkish children residing in provinces with large (predicted) share of refugees follow a similar trend in their HAZ z-scores compared to children in provinces with lower share of refugees. Therefore, we assess the presence of pre-existing trends using two different exercises (i) quantifying the effect of the future exposure to refugee shock on the current HAZ z-score of Turkish children (i.e., using the forward values of the refugee share and the instrument) and (ii) following Aksu et al. (2022)'s Placebo exercises. First, we restrict the sample to children born before 2008 and assign the 10 lagged values of the refugee share and the distance-based instrument for each province. In Appendix Table B.10, we find a positive correlation with the OLS estimates but the estimated 2SLS coefficients are all statistically

[15]Scholars have recently demonstrated the limits of two-way fixed effects estimations in the presence of heterogeneous treatment effects (Athey and Imbens, 2021; de Chaisemartin and D'Haultfœuille, 2020; Goodman-Bacon, 2021). Heterogeneity in our treatment over time is unlikely given that our refugee share only varies between 2013 and 2015. We confirm that intuition by implementing the approach proposed by Jakiela (2021a). Building on the Frisch-Waugh-Lovell theorem, the homogeneity assumption requires the relationship between residualized outcome and treatment variable to be linear and to be constant across comparison groups. While confirming a positive coefficient for our average treatment effect, we do not find evidence that the treatment effect changes across comparison groups.

insignificant. Overall, such a placebo exercise rejects the possibility that the positive effect found in our main results may be explained by pre-existing trends in HAZ z-scores. Second, we follow Aksu et al. (2022) in estimating the slope coefficient from a regression of residual trends of the dependent variable (i.e., HAZ) on the value of the time-constant instrument (i.e., 2016). As suggested by Jaeger et al. (2020), the aim of this Placebo approach is to assess whether pre-shock trends in the outcome variable are independent of the instrument, after accounting for fixed effects, time trends and/or control variables. The results are presented in Appendix Table B.11. In Panel A, region-trends in Columns (2) and (4) and region-year Fixed effects in Columns (3) and (5) are introduced using 5 regions of Turkey. In Panel B and Panel C, we introduce region-trends in Columns (2) and (4) and region-year fixed effects in Columns (3) and (5) using 12- and 26-regions of Turkey, respectively. Accros specifications, there is no correlation between the residual trends and the IV defined in 2016.[16] In the rest of the paper, we focus on specifications with individual and household covariates, with or without region-specific trends and region-year fixed effects.[17]

Selective Migration. Native displacement is a major concern in migration studies (Borjas, 2006; Card and DiNardo, 2000; Card, 2001a; Andersson et al., 2021). A massive outflows of natives may explain our results, in particular if those with a low socio-economic background (likely with poor health conditions) are leaving. To explore such a selective migration, we first note that Akgunduz et al. (2015) find lower in-migration rates and unchanged out-migrations in regions that hosted a large number of Syrian refugees in Turkey. Aksu et al. (2022) also find no impact on

[16]Similar results are found when the reference year of the instrument is changed to the year 2015 or 2014.

[17]We decide not to include the province-level controls systematically since they may act as bad controls. For instance, when investigating the importance of investment in healthcare resources, it does not make sense to control for likely endogeneous province-level controls such as the number of hospitals or public expenditure. Our results are nonetheless robust to the addition of province-level controls and available upon request. Similarly, individual controls are not included when estimating the impact of refugees on the age at first birth and the age at first marriage since the estimations are implemented at the mother level.

in-migration, with the exception of a positive impact for more-educated natives.[18] With our data, we investigate whether the migration influx affects migration inflows and outflows based on the TSI's migration statistics at the 81-province level over the period of 2008-2018.[19] Based on the results presented in Appendix Table B.12, we do not find evidence of native displacement as a result of the refugee inflows. Similarly, we do not report any evidence of outflows as a response to the inflows of refugees. However, we do find that low-educated natives are more likely to move in areas with a large share of refugees (see Panel B, Columns (2) and (3) of Appendix Table B.12).[20] If anything, the fact refugee-hosting areas act as an attraction force for the low-educated suggests that our main results would have been even more positive, if – as expected – low-educated natives are also associated with lower health outcomes for their children.

Selective Marriage and Selective Fertility. Unprecedented population shocks, such as those triggered by the Syrian civil war, are known to potentially alter marriage market dynamics and fertility decisions of native women.[21] The presence of refugees has the potential to impact patterns of family formation and fertility decision by modifying the employment opportunities and occupational status of native men and women (Carlana and Tabellini, 2018). We cannot exclude the possibility of a selective change in our population of interest, since marriages and births at early ages have been linked with a number of adverse outcomes such as poorer maternal and child health, especially in developing countries (see Alam (2000)

[18]Those results contrast with Elmallakh and Wahba (2023) who found a considerable increase in native outflows in Jordan.

[19]The relevant information is available at `https://nip.tuik.gov.tr/?value=IllerArasiGoc`.

[20]Our results contrast with Aksu et al. (2022). One possible reason is that our analysis uses different time periods.

[21]In the US context, the marriage markets and fertility can be explained by a change in sex ratios, for example, by making it easier for native women to find a spouse and to have child(ren) (Angrist, 2002). In our context, it is not a plausible mechanism even though the prevalence of poverty/unemployment among the Syrian refugees can be an encouraging factor for them to marry a Turkish citizen. Syrian refugees who are under Temporary Protection do not have the right to marry a Turkish citizen to gain citizenship (and hence an employment chance) by marriage. Relevant information can be found at `https://multeciler.org.tr/eng/common-misconceptions-about-syrians/`.

for India and Raj et al. (2010) for Bangladesh). To test these possibilities, we explore the effect of refugee influx on Turkish women's age at marriage and age at first birth. In Appendix Table B.13, we report no evidence of a change in age at first marriage and age at first birth, indicating that our results are not driven by a change in family formation patterns.[22] No evidence is also found when the sample is stratified between low- and high-educated mothers.

Selective Mortality. The Fetal Origins hypothesis posits that in utero shocks (e.g., sub-optimal nutrition, wars, and weather shocks) impairs fetal growth which in turn leads to a predisposition to have poorer health outcomes in later life (Barker (1990) and Almond and Currie (2011)). Shocks in utero may also alter the composition of the population of interest (Dagnelie et al. (2018)). In response to a detrimental shock during gestational age, a portion of fetuses lying at the bottom of the health distribution cannot survive since their initial health endowment does not exceed the survival cutoff (Dagnelie et al. (2018)). We can therefore not exclude that in case of disproportionate mortality in refugee-hosting provinces, our positive effect would reflect the better health conditions of the surviving kids. We first note that such a selection is highly implausible since most of evidence has been found for large-scale shocks such as famine, conflict or natural disasters (Almond and Currie, 2011; Dagnelie et al., 2018; Leon, 2012; Lavy et al., 2016). We nonetheless test whether Syrian refugee shock affects the survival patterns during pregnancy, and thus the population composition. In Table B.14, we assess the likelihood of experiencing miscarriage and stillbirth among Turkish women. Our results do not yield a statistically significant effect on the probability of experiencing miscarriage and stillbirth (see Columns (1) to (6) in Appendix Table B.14). Although not obvious in the studied context, induced abortion might also constitute another mechanism through which immigration can affect the composition of our sample and hence, native children's health. In Appendix Table B.14, we assess this possibility

[22]Note that we also assess the impact of refugees on the number of births in Section 3.6.3.

and report null results.[23]

3.6 Investigating Possible Channels

Our findings contradict the existing research documenting either an adverse or a null impact of migration shocks on health outcomes (Montalvo and Reynal-Querol, 2007; Baez, 2011b; Ibáñez et al., 2021; Dagnelie et al., 2023a). In the Turkish context, there exist two relevant studies exploring the health effects of forced migration. First, Aygün et al. (2021) examine the health effects of Syrian refugee shock in Turkey, as proxied by Turkish natives' infant, child, and elderly mortality. Their OLS results provide suggestive evidence indicating that mortality outcomes exhibit an increasing pattern. Yet, once the endogenous location choice of Syrian refugees is accounted for, their IV estimates yield no evidence that forced migration affects mortality. The study indicates that Syrian individuals are more prone to locate in provinces for which, in the absence of the migration flow, mortality outcomes would follow a more negative trend over time. That being said, Erten et al. (2022) show that native children residing in provinces with larger refugee flows are less likely to be fully vaccinated against measles, hepatitis B, DTP, and tuberculosis. They also document that the native children living in refugee-intense regions are at higher risk of catching an infectious disease and upper/lower respiratory diseases. Taken together, the results displayed in this paper are sufficiently puzzling to require further investigation.

We explore a number of channels through which an unprecedented immigration crisis can affect health outcomes. These channels include (1) investment in healthcare resources, (2) Turkish mothers' labor market outcomes and their time allocation at home, (3) income channel, (4) and the quality-quantity trade-off channel as measured by the total number of births (either still or live birth) and investment in children's human capital through vaccination. To explore these

[23]No evidence is found when the sample is stratified according to education level (see Appendix Table B.15).

channels, we keep similar OLS and 2SLS specifications and samples, than the ones explained in Section 4.4. The only differences are that some outcomes (healthcare) require to aggregate our data at the province level. Time-varying province attributes are omitted since they are likely to be endogeneous to the outcome of interest related to healthcare resources, labor markets, income, the number of births, and investment in children's human capital.[24]

3.6.1 Investment in Healthcare Resources

The most obvious explanation relates to changes in healthcare resources. We therefore explore the response of the central government to the refugee wave in terms of investment in human and physical healthcare resources in the refugee-hosting provinces. Using data from the TSI, we quantify the effect of refugees on the supply of healthcare resources at the 81-province level. The province-level healthcare indicators cover: (1) the number of doctors, (2) the number of nurses, (3) the number of midwives, and (4) the number of hospital beds. Descriptive statistics are shown in Appendix Table B.1.

We present our detailed results in Appendix Tables B.16 but a summary of the 2SLS results are provided in Table 3.3. The 2SLS estimates indicate that there is a significant increase in the number of doctors, nurses, midviwes, and hospital beds. Overall, the results confirm that the central government responded to this migration shock by increasing the supply of healthcare professionals and hospital beds (see Panel A of Table 3.3). However, one should be cautious when interpreting these results as the outcome variables are not in per capita terms. To proxy for the capacity to maintain sufficient healthcare services per inhabitant, we divide the healthcare outcomes by the total population, including both Turkish natives and Syrian refugees, in each province. When transformed in per capita terms, the effect is reversed for the supply of healthcare professionals and not significant for the

[24]Our results can nonetheless be shown to be qualitatively unaffected by the addition of these controls.

number of hospital beds (see Panel B of Table 3.3).[25] Similar to Aygün et al. (2021), we do report a negative effect for doctors and no effect for hospital beds, both are in per capita terms. Overall, our results suggest that the central government has made significant investments in healthcare resources in refugee-receiving provinces. Yet, the magnitude of this investment did not sufficiently compensate for the reduction in per capita availability of healthcare professionals in provinces with more refugees. Provinces that experience a disproportionate amount of refugee inflows encounter a significant shortage of medical professionals relative to provinces with less refugees. The supply of healthcare services does not seem to explain our positive effect on children's health. We should nonetheless acknowledge that we cannot exclude the possibility that the overall health system has been affected by the refugee inflows. Although it does not jeopardize our main results, our identification strategy cannot deal with general equilibrium effects. Furthermore, our proxies for healthcare services only account for the number of healthcare staff or hospital beds, but not for the quality of services.

[25]Detailed results are provided in Appendix Tables B.16, with or without region-specific time trends and region-year fixed effects.

Table 3.3: Summary Table I: Investment in Healthcare Resources (2SLS Results , With region-year FEs)

Dep. Var.	Healthcare Resources			
Model	Doctor	Nurse	Midewife	Hospital Beds
	(1)	(2)	(3)	(4)
Panel A	(Log) Number			
Refugee Share (IHS)	0.9578***	1.5942***	0.9028***	1.6573**
	(0.2288)	(0.2882)	(0.2420)	(0.7046)
Elasticity	0.00081	0.00188	0.00111	0.00155
Kleibergen-Paap rk Wald F	16.81	16.81	16.81	16.81
Panel B	Per 1,000 inhabitant			
Refugee Share (IHS)	-0.9078***	-1.1355**	-0.2826	-0.0286
	(0.2540)	(0.4927)	0.(2283)	(1.0534)
Elasticity	-0.00535	-0.00539	-0.00245	-0.00131
Kleibergen-Paap rk Wald F	15.65	15.65	15.65	15.65
Observations	1,215	1,215	1,215	1,215

Notes: Information on the healthcare resources variables is obtained from Turkish Statistical Institute (TSI). The full sample is for the 2003–18 period, excluding 2012, at the 81-province level. Each cell shows the estimates for the ratio of migrants to natives, with year, province fixed effects and region-year fixed effects. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Standard errors, given in parentheses, are clustered at the province level *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

3.6.2 Labor Market, Income, and Time Allocation

Labor Market competition. Two potential pathways through which migration flows can deteriorate children's health outcomes are fiercer competition in the labor market and related income shocks (Baez, 2011b; Maystadt et al., 2019b). In Turkey, recent research reports a notable job loss for natives in informal sector due to Turkish workers' being replaced with Syrian workers (Ceritoglu et al., 2017; Aksu et al., 2022).[26] The adverse employment effect is found to be more pronounced among disadvantaged groups, namely those who are less-educated, temporary-waged, and women in self-employment, and young workers in agricultural sector (Aksu et al., 2022). The job losses induced by migrant influx are likely to produce two opposite effects. The first effect is a reduction of income following possible job losses. Limited access to healthy nutrients, stemming from the households' reduced purchasing power, may prevent children from receiving an appropriate diet and thereby cause them to experience growth retardation. The second effect is less obvious. Unemployment, in particular among women, may translate into more time spent with offsprings. Women might allocate more time to invest in their children's health capital through more frequent healthcare visits and/or provision of healthier nutrition. That second mechanism is likely to be particularly binding in countries where child care is poorly developed.

To test these possibilities, we first explore the effect of refugees on Turkish mother's labor market outcomes. Based on the sample of Turkish women's being in the labor force at the time of survey, the 2SLS model indicates a negative and a statistically significant coefficient (Panel A, Column (1) of Table 3.4).[27] Mothers

[26]Turkish government introduced a work permit system allowing registered Syrian refugees to access formal employment in 2016. In other words, Syrian individuals were employed in the informal sector with considerably lower wages as compared to Turkish natives before 2016. Erten and Keskin (2021) provide evidence that Turkish native women are more likely to be displaced from the informal employment sector than native men due to the presence of Syrian workers.

[27]Detailed results are provided in Panel A, Column (6) of Appendix Table B.17. The TDHS first asks "Have you ever worked?". The answer is based on "Yes" or "No" answer scheme. It then asks "Are you currently working?" to those who replied "Yes" to the first question. It is worth noting that we consider women who replied "No" to the first question as unemployed at the time of survey.

living in provinces that received a large number of refugees are less likely to be employed as compared to mothers residing in less affected provinces. The effect is quite sizable. A 10% increase in refugees correspond to a fall by 5 percentage points (pp) in the probability to be employed. Given the mean value of employment (0.15), that is equivalent to a one-third reduction in employment. The negative employment effect differs between better-educated and less-educated women. Syrian refugees, being on average less skilled, might not be plausible substitutes for better-educated natives in the labor market (Tumen, 2018). If this is the case, then one can expect to find null or even positive employment effects on better-educated mothers and to find negative employment effects on less-educated mothers. We divide our sample based on the completion of compulsory years of schooling.[28] Our results support this conjecture (Panel A, Columns (2) and (3) of Table 3.4).[29] Mothers with less than 12 years of education are more likely to be out of the labor market, while mothers with 12 or more years of education are not affected by the presence of refugees. The negative employment effect is found to be more prevalent for the native mothers with less education, who can be assumed to work in low-pay jobs. It is therefore natural to revisit our main results for children with low-educated mothers. We re-estimate Equation 3.1 by stratifying our sample by mother's education. Children, whose mother did not complete compulsory years of education, experience an increase in their HAZ: the estimated quasi-elasticity is 0.021 (see Panel A, Column (5) of Table 3.4).[30] Taken together, job loss experienced by less-educated mothers is associated with a puzzling improvement in their children's health. A plausible explanation is that the likely negative income effect is compensated by time reallocation towards their offsprings.

[28]In Turkey, compulsory years of schooling has been raised from 8 years to 12 years in 1997.

[29]Detailed results are provided in Panel A, Column (6) of Appendix Table B.18 for probability of working at the time of survey.

[30]Detailed results are provided in Panel D of Appendix Table B.18. As expected, we do not find any improvement in the HAZ z-score for those who have mothers with 12 or more years of education see Columns (4) to (6).

Table 3.4: Summary Table II: Labor markets, Income and Time Allocation (2SLS Results, With region-year FEs)

Dep. Var.	Selected Maternal Outcomes					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Working	Working|$Edu \geq 12$	Working|$Edu<12$	HAZ	HAZ|$Edu \geq 12$	HAZ|$Edu<12$
Refugee Share (IHS)	-0.0505**	0.1156	-0.0677**	0.7961***	0.5421	0.6911***
	(0.0220)	(0.1056)	(0.0283)	(0.0.2085)	(0.4859)	(0.2010)
Elasticity				0.0296	0.0604	0.0212
Kleibergen-Paap rk Wald F	27.24	12.74	29.83	27.24	11.51	27.80
Observation	5,341	636	4,705	5,341	636	4,705
Panel B	Wealth	Wealth|$Edu \geq 12$	Wealth|$Edu<12$	Time with Offspring	Time|$Edu \geq 12$	Time|$Edu<12$
Refugee Share (IHS)	-0.0084	0.4600*	-0.0460	0.0506*	0.2535	0.0427*
	(0.0767)	(0.2727)	0.0729)	(0.0297)	(0.1967)	(0.0247)
Elasticity	-3.51e-05	0.0012	-0.0002			
Kleibergen-Paap rk Wald F	27.14	11.27	29.59	27.24	12.74	29.83
Observation	5,341	636	4,705	5,341	636	4,705
Panel C	Antenatal Visits[1]	Antenatal|$Edu \geq 12$	Antenatal|$Edu<12$	Postnatal Care	Postnatal|$Edu \geq 12$	Postnatal|$Edu<12$
Refugee Share (IHS)	0.0990**	0.1377	0.1069**	0.0070	-0.0007	0.0090
	(0.0447)	(0.1340)	(0.0466)	(0.0111)	(0.0157)	(0.0124)
Elasticity	0.0005	0.0006	0.0006			
Kleibergen-Paap rk Wald F	27.16	11.04	29.88	28.29	12.74	29.90
Observation	5,323	634	4,689	5,336	636	4,700

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index (not in wealth index regression). Year, province and region-year fixed effects are included. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Income effect. Health improvements are compatible with positive income induced by the presence of refugees. In other contexts, the presence of refugees has boosted the local economies (Maystadt et al., 2019b; Maystadt and Duranton, 2019; Taylor et al., 2016). For Turkey, it is less obvious (Aksu et al., 2022). To assess that possible explanation, we run Equation 3.1 using the household wealth index. The estimated coefficients are far from being statistically significant (Panel B, Column (1) of Table 3.4).[31] We cannot exclude the possibility that the null effect is driven by the importance of financial aid –either provided by central government or international organization. In any case, it does not seem sufficient to explain the observed health improvements.

Maternal Time Allocation. The crowding-out effect of refugees that left Turkish native women unemployed can increase the amount of time to be spent between mother and their offspring. This can have positive repercussions on children's health outcomes because mothers would be able to invest more in their children's health capital through several channels. Examples include, but are not limited to, increasing the frequency of received pre- or postnatal care and exerting more effort to provide a healthier diet, both of which are crucial for children's nutrition. To test this hypothesis, we explore the impact of refugees on the following outcomes: (1) mothers' time spent with their children, (2) the number of antenatal care visits, and (3) receipt of postnatal care within two months. [32] Overall, our findings suggest that the presence of refugees increases (i) the time spent by mothers with their offsprings, (ii) the number of antenatal care visits, and (iii) the likelihood of receiving postnatal care two months after birth. The effects summarized in

[31]Detailed results are provided in Panel B of Appendix Table B.17. We also present the results by the completion of compulsory education in Appendix Table B.18.

[32]In TDHS, women are asked how many times they attended antenatal care checks for their last birth during pregnancy. For postnatal check; however, women are asked whether their babies were examined by a health professional within two months after the birth. When it comes to the mothers' time allocation, the TDHS asks the following question "Who does spend time with child(ren) in your house primarily?" The answers are in a categorical form, ranging from "herself" to "no one". Using this question, a binary variable, taking value of 1 if the mother responded "herself" and 0 otherwise, is constructed. It should be noted that the TDHS does not provide information on the specific daily time allocation of Turkish mothers with their offspring.

Table 3.4 are sizeable (see Panel B, Column (4); Panel C, Columns (1) and (4)).[33] A 10% increase in the share of refugees leads to a 5 pp rise in the likelihood that the mother is spending time with her offspring, and a 9 pp increase in the number of antenatal care visits. These effects represent (i) a 6% increase in the maternal time spent with offspring and (ii) a 4% rise in the antenatal care visits at the mean values (0.75 for time spent and 2.02 for antenatal checks). For the probability of receiving postnatal care, our baseline specification, which allows for region-year FEs, reports a positive but statistically insignificant effect while the specification without region-specific trends shows a positive effect at 1% significance level (see Panel B, Column (4) of Appendix Table B.19). Therefore, we argue that antenatal and postnatal care increase because women have more free time due to maternal unemployment. Furthermore, we expect our results to be sensitive across educational level for these variables. We present our results in Appendix Table B.18 for maternal time spent with offspring at home (see Panel C, Column (12)), Appendix Table B.20 for antenatal care visits and receipt of postnatal care. Our findings on maternal time spent suggest that less educated women are more likely to spend time with their children at home (see Panel C, Column (12) of Appendix Table B.18). Nevertheless, we find no evidence of the refugee influx increases better educated mothers' time spent with their offspring. Such an increase in mothers' time allocation is likely to induce a rise in healthcare utilization which in turn can positively contribute to their children's growth patterns. As can be seen from Panel A, Column (12) of Appendix Table B.20, the effect is stronger for less educated mothers for antenatal care visits, while we report null results for better educated mothers. Regarding the likelihood of receiving postnatal care two months within birth, the positive effect is captured for less educated mother in the specification where we do not introduce region-trends and region-year fixed effects (see Panel B, Column (10) of Appendix Table B.20). The positive effect; however, disappears once we add region-year FEs (see Panel B,

[33]Detailed results are provided in Appendix Table B.17 for maternal time allocation and Appendix Table B.19 for the number of antenatal care visits and the receipt of postnatal care two months within birth

Column (12)).

3.6.3 The quantity-quality trade-off

Conventional theories on family economics, especially on the intra-household resource allocation, suggest that parental decisions regarding the number of children and investments in children's human capital are interdependent. The theory posits that there exists a negative association between the number of children (i.e., quantity) and children-specific outcomes such as health and schooling (i.e., quality) (Becker and Lewis, 1973; Becker and Tomes, 1986).[34] Therefore, it is theoretically possible that the favorable effect of migration on children's growth indicators can be attributed to the quality-quantity trade-off: a decrease in the total number of children in the household can bring about an increase in the investment in health capital per child. To test whether such a trade-off exists, we run Equation 3.1 where the dependent variable is the number of children per woman. Our investigation rejects that possible explanation (Panel A, Column (1) of Table 3.5).[35] Furthermore, Aygün et al. (2021) find no evidence of a significant effect on child mortality. Second, possible changes in household size or fertility decisions do not seem to have been followed by an improvement in early childhood investment. We indeed explore children's probability of being fully vaccinated against Hepatitis B, Measles, and Tuberculosis[36]. The 2SLS estimates are all negative and statistically significant at any conventional level (see Table 3.5, Panel A, Column (3) and Panel B, Columns (1) and (4)). That is, the likelihood of being fully immunized decreases in the provinces receiving a greater share of Syrian refugees as compared to provinces with a lower share of refugees. The results confirm the findings of Erten et al. (2022) who show a notable decline in the vaccination outcomes induced by the immigration

[34]Empirical investigation of the quality-quantity trade-off reports mixed results (Rosenzweig and Wolpin, 1980; Black et al., 2005; Qian, 2006).

[35]Detailed results are provided in Panel A of Appendix Table B.21. We further show the births per woman by their education level in Appendix Table B.22.

[36]Detailed results on the probability of vaccine completion are provided in Appendix Table B.21 (see Panel B for Hepatitis, Panel C for Tuberculosis (BCG), and Panel D for Measles).

shock. Nevertheless, the relationship between vaccination and child height is a complex one.[37] In our analysis, we consider vaccination as a way to measure early child investment in health. It is possible the reduction in vaccination mitigates the positive effect of refugees on the height of natives' chidlren but at least, it cannot be a valid explanation for this positive effect on height. Our results might reflect a lower-bound estimate. If there was no detrimental effect on vaccination, our results may have been even stronger.

[37] One the one hand, childhood vaccination can positively contribute to the children's nutritional status by disease protection and thus lead to better physical growth patterns in developing countries. Substantial portion of existing research associates vaccination intake with reductions in stunting and wasting in children under five years of age (Adair and Guilkey, 1997; Frongillo Jr et al., 1997; Anekwe and Kumar, 2012; Ignis and Tomini, 2022). Others report that there is no statistically significant link between vaccination take up and children's height and weight (Bloom et al., 2012). On the other hand, vaccination may create a selective mechanism through its effects on mortality and morbidity. That is, the effect of vaccination might be heterogenous on children having better health outcomes versus children at the bottom of the health distribution.

Table 3.5: Summary Table III: Quantity-Quality Trade-off (2SLS Results , with region-year FEs)

Dep. Var.	Selected Child and Maternal Outcomes					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Total Births	Births|$Edu \geq 12$	Births|$Edu<12$	Hepatitus B	Hepatitus|$Edu \geq 12$	Hepatitus|$Edu<12$
Refugee Share (IHS)	0.3842***	0.4361**	0.4285***	-0.1283***	-0.3241	-0.1321***
	(0.1050)	(0.1944)	(0.1176)	(0.0347)	(0.2422)	(0.0388)
Elasticity	0.00163	0.00303	0.00173			
Kleibergen-Paap rk Wald F	27.29	12.84	29.80	29.17	6.24	28.72
Observation	5,341	636	4,705	2,689	342	2,347
Panel B	Tuberculosis	Tuberculosis|$Edu \geq 12$	Tuberculosis|$Edu<12$	Measles	Measles|$Edu \geq 12$	Measles|$Edu<12$
Refugee Share (IHS)	-0.1309***	-0.1284*	-0.1512***	-0.2439***	-0.4707**	-0.2634**
	(0.0334)	(0.0706)	(0.0377)	(0.0945)	(0.2329)	(0.1054)
Elasticity						
Kleibergen-Paap rk Wald F	27.75	8.33	26.76	29.06	11.86	24.58
Observation	3,217	405	2,812	2,352	287	2,065

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older (not in total births per woman regressions), being a female headed household, and wealth index. Individual survey weights are used in each specification. Year, province and region-year fixed effects are included. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

3.7 Conclusions

We investigate the effect of massive immigration shock induced by the Syrian Civil War on Turkish children's anthropometric indicators. Dealing with the endogeneous settlement of Syrian refugees across 81 Turkish provinces, we find that the Turkish children's height-for-age z-score is significantly higher in the provinces with a large share of refugees. This finding contradicts existing evidence which report a substantial decline in native children's growth indicators in the African contexts. Our additional results suggest that a plausible explanation is the increase in mothers' time spent with their offsprings, paradoxically as a result of job losses mostly experienced by low-skilled women. We indeed confirm that children's health improvement is concentrated among households with low-educated mothers. We do not find evidence for alternative explanations related to the investment in healthcare resources, an income shock, or the quality-quantity trade-off in children's human capital investment. On the contrary, we confirm previous results such as a decrease in the per capita availability of healthcare resources (Aygün et al., 2021) and a lower probability of being fully vaccinated among children (Erten et al., 2022) in Turkey. These confirmed results do not explain the observed positive impact on child growth. If anything, it suggests some lower-bound estimates. If healthcare system and vaccination outcomes had not been negatively affected, the magnitude of the positive effect could have been even stronger.

It is important to be careful when interpreting the health improvements associated with the job loss experienced by mothers with low levels of education. While the loss of job among low-educated mothers is a source of concern, our paper sheds light on a crucial trade-off associated with parental participation into the labor markets in absence of strong child care services. From a policy perspective, maternal unemployment is certainly not a desirable channel to improve child health. However, it highlights the importance of child care provision, especially in a middle-income country like Turkey. When the provision of child care remains at sub-optimal levels, women are likely to encounter a trade-off between engaging in their career via formal

employment and staying at home. Accessible and affordable child care is a potent tool to boost the equality of opportunity by promoting women's participation to labor market and child development in later stages of life (Blau and Currie, 2006; Currie and Almond, 2011; Ruhm and Waldfogel, 2012). Despite a notable progress in the availability of preschool and child care facilities, enrollment rates remained at low levels (WorldBank, 2015).[38] One possible reason for low enrollment can be the fact that public preschools target children aged 4-5. Population shock induced by the continuous arrival of refugees, on the other hand, is likely to reduce the enrollment rate when considering the negative relationship observed between childcare supply and population density in Turkish provinces (WorldBank, 2015). Altogether, our research indirectly sheds light on the importance of extending child care at younger age. It is critical because extending child care can foster women's employment (by freeing up women's time) and hence economic development (Duflo, 2012).

Finally, this paper is not without limitations. Our analysis consists in assessing the change in health outcomes in refugee-hosting provinces compared to other provinces. We are therefore not able to estimate general equilibrium effects. For instance, we are not able to capture the consequences of a general decrease (due to budget re-allocations) or increase (due to international aid) of the central government budget dedicated to healthcare.There also exist a number of unexplored channels due to lack of data. First, improvements in the anthropometrics are parallel to the supply of satisfactory nutrition intake. Unfortunately, the TDHS does not ask sufficiently detailed nutritional intakes from the time of birth. Instead, it asks whether the child(ren) has been given some particular foods/beverages (e.g., milk, juice, eggs, bread, meat, and fish) within the last 24 hours. One alternative outcome could be breastfeeding duration or exclusivity of breastfeeding to measure nutrition. However, there are a number of contributors to duration and exclusivity of nursing (e.g., mother's fertility preferences, sibling sex composition and

[38]From 2006 to 2015, Turkey experienced a sizable increase in the number of preschool and child care providers, i.e., the total number of providers has risen by almost 31%, while 73% of this increase was provided by the public sector (WorldBank, 2015)

size) (Jayachandran and Kuziemko, 2011; Chakravarty, 2015). Therefore, it is not straightforward to distinguish such effects from refugees' arrival and it is beyond our paper's scope. Second, we do not investigate possible changes in healthcare provider. The information is available in the TDHS but cannot be exploited. Beyond the endogeneous nature of the provider choice, there is only a limited number of mothers with a private healthcare insurance. For instance, in 2013, less than 2 percent of mothers reported to have access to a private health insurance. Third, the time allocation (at home) question in the TDHS is far from providing an ideal measure when quantifying the changes in the time spent between mother and children.

Chapter 4

The Relationship Between Low Pay, High Pay and Physical and Mental Health: Evidence from the United Kingdom and Migrants

This study examines the impact of high pay—defined as earning 1.5 times the median hourly wage—on SF-12 physical and mental health scores in the UK. Results from an instrumental variable approach confirm a positive effect of high pay on both health outcomes. We further explore job quality as a potential mechanism, finding that gig work negatively affects mental health, while multiple job holding improves physical health but worsens mental well-being. Expanding our analysis to migrants, we find that the positive relationship between high pay and health remains robust, with slightly stronger effects for mental health. However, the impact of high pay is found to vary by migrants' generational status. Comparing first- and second-generation migrants, we find no significant difference in physical health, but first-generation migrants report better mental health outcomes. Higher-order generation migrants —2^{nd}, 3^{rd}, and 4^{th} generation — benefit in terms of physical health, whereas first-generation migrants experience stronger mental health gains. These findings

highlight the role of income and job quality in shaping health outcomes and reveal important generational differences among migrant workers.

Keywords: wages, gig economy, multiple jobs, self-assessed health, migrants, instrumental variable, United Kingdom

JEL-Classification: J31, I14, C36

4.1 Introduction

Economic inactivity is a major policy concern in the United Kingdom (UK), contributing significantly to health inequalities (Crawshaw et al., 2024). As of June 2024, 9.4 million people in the UK were economically inactive, making up over a fifth of the working-age population (Bangpan et al., 2024). Although the root causes of economic inactivity are multifaceted, poor health is shown to trigger economic inactivity, particularly among older adults in the UK. This is contributing to higher social security costs and reduced productivity (Finch and Tinson, 2022). Earning low pay is increasingly acknowledged as a critical public health concern as it has long been found to be associated with an increased risk of mortality and morbidity (Wilkinson, 2022; Kezios et al., 2023).[1] Therefore, low pay can be a major factor by which poor health causes economic inactivity.

The literature highlights four channels through which low pay affects health outcomes: (i) *the material channel* where higher incomes allow for better investments in health, such as housing, nutrition, and social engagement (Grossman, 1972; Brown et al., 2024), (ii) *the psychosocial channel* where low-income individuals experience chronic stress from financial instability, leading to poor health behaviors such as alcohol consumption and smoking (Siahpush et al., 2003; Anderloni et al., 2012; French and McKillop, 2017), (iii) *stress-related physical health channel*, where individuals often cope with stress through unhealthy behaviors, such as smoking, alcohol use, and physical inactivity, which in turn can exacerbate the negative effects of stress on health (Krueger and Chang, 2008), and (iv) *the reverse causation channel*, where poor health in childhood limits opportunities for education and higher-paying jobs, perpetuating health and income inequalities (Corna, 2013).

In 2023, approximately 9% of jobs in the UK have been classified as low-paid (the Office for National Statistics, 2023). Workers in these jobs often struggle to meet basic household needs (Gundersen and Ziliak, 2018; Tiehen et al., 2020), with

[1] In addition to individual health and future earning potential, there are societal and economic costs associated with low pay. In 2016, it was estimated that poverty costs the health care sector £29 billion per year and £4 billion in lost tax revenue (Marmot, 2020)

low pay being a significant risk factor for poor health. While much research has focused on the effects of wage floors and minimum wages on health, there is limited evidence in the economics literature on the impact of low pay itself. Recent studies in medical literature have examined the effects of low pay on adult mortality and cognitive skills (Kezios et al., 2022, 2023). There have been substantial policy efforts to combat adverse effects of low wages in the UK such as raising the minimum wage in 1999.[2] The literature has mainly two strands while investigating the wage and health nexus. The first strand focuses on labour market effects of minimum wage adjustments. A recent study by Cribb et al. (2021) examine the effect of the UK's National Living Wage introduction in 2016 on employment and wages. Their findings suggest that the minimum wage had minimal impact on employment but led to an average wage increase of approximately £1.50 per hour for those at the lower end of the wage distribution. The second strand explores the health effects of differential wages. For example, Reeves et al. (2017) use data from the British Household Panel Survey (BHPS) to investigate the impact of the 1999 minimum wage increase in the UK. The study finds that the introduction of the national minimum wage resulted in a statistically significant improvement in mental health, as measured by the General Health Questionnaire (GHQ), for those earning the minimum wage compared to those earning between 100-110% of the minimum wage. Among those earning the minimum wage, there was a lower likelihood of experiencing unhappiness or depression, constant strain, and anxiety or depression compared to individuals earning between 100-110% of the minimum wage. Similarly, Kronenberg et al. (2017) exploit the policy experiment provided by the introduction of the 1999 National Minimum Wage (NMW) and employ quasi-experimental methods on data from the BHPS to identify the impact of wage increases on mental health. Their analysis focuses on low-wage workers, who are more vulnerable to mental health issues. Yet, they report no evidence that wage increases lead to improvements in mental health. Another example is Lenhart (2017), who uses difference-in-difference on data from

[2]Appendix Table C.1 briefly outlines the three different types of wage floors in the UK.

the BHPS from 1994-2003, with the control group defined as those earning between 100%-160% of the minimum wage. Lenhart (2017) finds an improvement in self-reported health and a reduction in the number of doctor's visits. The impact on health was greater for men than women. Moreover, Maxwell et al. (2022) investigate the introduction of the national living wage (increase to the national minimum wage in 2017) on health. They use data from the Understanding Society Survey (USS), which is the successor survey to the BHPS. They employ a difference-in-difference approach where the treatment group is defined as those earning below the new wage floor of £7.50 per hour in April 2017 and earning equal to or above this amount from April 2017, and the control group is defined as those who were between £7.50 and £9.00 (or 120% of the new wage floor) before the introduction of the new wage floor. Health is measured by the SF-12 for physical and mental health. Results show no significant change in health as measured by SF-12. While much research has focused on the effects of wage floors and minimum wages on health, there is limited evidence in economics literature on the impact of low pay itself.

What may be driving these mixed findings? One factor that can potentially drive these findings might be differential *exposure* to the wage floor, which had not been considered in any of the studies. We distinguish from existing studies by utilizing another proxy for "wage" which has not yet been explored in the economics literature: high pay versus low pay. The definitions of low and high pay used by the ONS align with those set by the Organisation for Economic Co-operation and Development (OECD), where low pay is considered to be less than two-thirds of the median hourly earnings, and high pay is defined as more than 1.5 times the median hourly earnings. Despite a decreasing trend over the years, the ONS states that nearly 9% of jobs in the UK were classified as low paid in 2023. There is a lack of evidence in economics literature regarding the impact of low pay on health. There are two exceptions, Kezios et al. (2022, 2023), both of which are from medical literature, showing the effects of low pay on adult mortality and cognitive skills, respectively. However, their identification strategy does not eliminate endogeneity

concerns and tackle reverse causality.

In this paper, we explore the effect of high pay on standardized measures of health, namely SF-12 physical and mental health scores, based on three aspects. First, we begin by estimating the relationship between health and high pay, comparing the physical and mental health outcomes of individuals earning high pay (defined as 1.5 times the median hourly wage) with those earning low pay (less than two-thirds of the median hourly wage), using data from the nationally representative Understanding Society Survey (USS) Waves 1 to 13.[3] To address potential endogeneity in wage assignment, we instrument high pay with regional Gross Value Added (GVA), which reflects regional economic conditions and is less likely to be directly influenced by individual health outcomes. Second, we aim to investigate what mechanisms may be explaining the observed difference in health between these groups. One hypothesis is that job quality could be contributing to these differences. Job quality is typically assessed through dimensions such as job security, earnings stability, work conditions, autonomy, benefits, and career progression. At this point, gig work and multiple job holding can serve as indirect measures of job quality because they often reflect precarious employment conditions or economic necessity rather than choice (Dunn, 2020; Piasna et al., 2021; Johan et al., 2022). One advantage of the USS is that it provides data on gig economy participation and multiple job holding, despite only being available at Wave 13. Relying on this data, we measure job quality through (i) participating in the gig economy and (ii) multiple job holding (also known as moonlighting) which are only available in USS Wave 13.[4] Key motivation to take up multiple jobs and gig work

[3]It is of great importance to examine physical and mental health outcomes separately because they might respond differently to some factors (e.g., wage and job quality). While physical health is often related to factors like access to healthcare facilities, diet, mental health can be more heavily impacted by psychological factors such as stress (Allen et al., 2014; Horn et al., 2017). High pay may improve physical health through better access to resources and reduced financial stress, but its impact on mental health could be more complex, particularly for individuals in precarious employment situations or those experiencing discrimination. By separately analysing both physical and mental health, we can better understand the distinct pathways through which income and employment conditions affect overall well-being and design more targeted interventions to address the specific needs of workers.

[4]In 2018, approximately 9.1 million individuals in the European Union (EU) had a second

can be ensuring higher net income and financial stability, which might be more prevalent among low paid workers. This can exacerbate disparities in their health outcomes as compared to high paid workers - who presumably are not motivated by extra income unless they are concerned about expanding their occupational skills and aiming to engage in entrepreneurship. Third, we test whether our findings on the positive impact of high pay on health outcomes are generalizable for migrant population in the UK. The proportion of migrant workers in the UK has consistently grown over the last 20 years, increasing from 9% of the employed workforce in the first quarter of 2004 (2.6 million) to 19% in the fourth quarter of 2022 (6.2 million). (The Migration Observatory, 2025). [5] Migrant health outcomes are often compared to those of the native population, as migrants face distinct challenges that may affect their health. These challenges include discrimination, social integration issues, and different occupational experiences (Morgan et al., 2017; Martynowska et al., 2020). These factors may affect their overall well-being, potentially altering the relationship between high pay and health outcomes. The occupation mix of migrant workers is often skewed toward low-paying, less secure jobs, which can exacerbate health disparities. Understanding the relationship between pay and health within this sub-group is crucial because migrant workers may experience unique stressors related to their job conditions and immigration status, which could influence how high pay impacts their health. Furthermore, we examine differences across migrants' generational status, as first-generation migrants may face distinct socioeconomic and health-related barriers compared to higher-order generations, potentially shaping

job, an increase of nearly 1.5 million compared to 2005, making up about 4% of the European workforce. Similarly, around 5% of workers in the United State (US) held multiple jobs in 2018 (Pouliakas and Wieteke, 2023). Emerging evidence also confirms that gig economy participation and multiple job holding can proxy job quality. Myhill et al. (2023) discuss gig workers' perceptions of job quality, highlighting fairness, security, and work conditions as key factors. Henseke (2018) includes employment contract type as a measure of job quality, noting that temporary jobs, such as those in the gig economy, may indicate lower job quality.Emerging evidence confirms that gig economy participation and multiple job holding can proxy job quality. Myhill et al. (2023) discuss gig workers' perceptions of job quality, highlighting fairness, security, and work conditions as key factors. Henseke (2018) includes employment contract type as a measure of job quality, noting that temporary jobs, such as those in the gig economy, may indicate lower job quality.

[5]Detailed information can be found at Migration Observatory - Migrants in the UK labour market: an overview

the observed relationship between high pay and health outcomes. This sub-group analysis is important for informing targeted policies aimed at improving the health of migrant populations, who may not benefit equally from general wage increases or public health interventions.

Our findings suggest the following. First, the Two-Stage Least Squares (2SLS) estimates, supported by extensive robustness and sensitivity checks, confirm that earning 1.5 times the median wage significantly improves both physical and mental health. Specifically, individuals in the high-pay group report a 0.336 standard deviation increase in SF-12 physical health scores and a 0.321 standard deviation increase in SF-12 mental health scores, after accounting for potential confounders. Second, our estimates from quantile regression imply heterogeneous effects of gig work and multiple job holding on health outcomes. That is, gig economy participation is found to have a null impact on physical health across at any quantile, but has a negative and significant effect on mental health, particularly for those at the low end of the health distribution. In contrast, holding multiple jobs is associated with improved physical health for individuals at the median and upper quantiles, however, it is linked to worsened mental health, especially among those with average to poor mental health. Third, when we restrict our sample to migrants, the results for SF-12 physical and mental health remain fairly similar to the baseline results, with slightly larger coefficients for mental health. Fourth, the effect of high pay varies by migrants' generational status. We begin by categorizing migrants into two groups: first-generation and higher-order generations (i.e., second, third, and fourth generations). For physical health, we find a positive effect of high pay only among higher-order generations. In contrast, for mental health, the results are reversed, showing a positive effect exclusively for first-generation migrants. Next, we compare first- and second-generation migrants. Our findings indicate no significant difference in physical health outcomes between these two groups. However, they confirm that first-generation migrants experience better mental health outcomes.

Our contribution is three-fold. First, we distinguish from existing research by

using a unique wage definition, namely high pay, to explore its health effects, using data from the USS and addressing endogeneity by instrumenting high pay with regional Gross Value Added (GVA). To date, no studies have utilized the definition of high pay when investigating the income-health relationship, and existing research from the medical literature on high pay does not address endogeneity issues. Second, we explore the mechanisms that might explain health disparities between low and high-paid workers, particularly focusing on job quality, measured through gig economy participation and multiple job holding, and their differential effects on health across the health distribution. Finally, we extend the analysis to migrant populations, investigating whether the positive relationship between high pay and health outcomes observed in the general population also applies to migrants in the UK. In doing so, we further examine differences by migrants' generational status, as first-generation migrants may experience distinct socioeconomic and health-related barriers compared to higher-order generations, shaping the pay-health relationship. These contributions enhance our understanding of the complex interplay between pay, job quality, and health, with particular attention to the experiences of migrant workers.

The rest of the paper is structured as follows. Section 4.2 elaborates the data and variables while Section 4.3 describes the identification strategy. The results, together with robustness checks, are presented in Section 4.4. Finally, Section 4.5 has concluding remarks and discuss the policy implications of our findings.

4.2 Data and Variables

4.2.1 Individual-level Data: Understanding Society Survey (USS)

The data comes from Waves 1-13 (2009-2022) of the USS. The USS is a comprehensive, longitudinal study that collects detailed data on a wide range of topics,

including health, education, employment, family dynamics, income, and social attitudes, as well as their migrant status in the United Kingdom. Launched in 2009 as a successor of BHPS, it tracks over 40,000 households and approximately 100,000 individuals, providing valuable insights into social, economic, and health trends over time. The survey is conducted in annual waves, with data collected on a variety of subjects such as physical and mental health, employment status, family composition, income, social networks, and housing conditions. The USS representative sample allows for in-depth analysis of the long-term effects of various factors on people's lives. The data is publicly available through the UK Data Service and is widely used by policymakers, researchers, and academics to inform policy, conduct studies in sociology, economics, and public health, and investigate the impacts of socioeconomic factors on health and well-being. Managed by the Institute for Social and Economic Research (ISER) at the University of Essex, the USS plays a crucial role in shaping evidence-based decision-making in the UK. A two-stage sampling procedure was used. Primary selection was based upon postcodes, which were then grouped into geographical strata to ensure a nationally representative selection of households. For the empirical analyses, the sample is limited to those who are 25 and older to be consistent with much of the literature in this area. Our operating sample consists of 86,347 individuals, 73,746 of whom are reported to be migrants.[6] We observe each individual at the Intermediate Territorial Level 1

[6]One legitimate concern pertains to the relatively high proportion of migrants in our sample. The Understanding Society Survey (USS) includes a variable called *generation*, which identifies the respondent's migrant generation. This variable is based on information about the respondent's own country of birth, as well as those of their parents and grandparents, as reported across multiple waves of the survey. In the original, unrestricted sample of 167,208 respondents, 19,393 (11.60%) are first-generation migrants, 9,595 (5.74%) are second-generation migrants, 4,207 (2.52%) are third-generation migrants, and 36,809 (22.01%) are fourth-generation migrants. The remaining 33.37% of respondents have missing data, while 24.77% are categorized as "other," indicating that data for their ascendants is unavailable. In our final operating sample of 86,347 respondents, 11,589 (13.42%) are first-generation migrants, 9,595 (11.1%) are second-generation migrants, 6,003 (6.94%) are third-generation migrants, and 46,559 (53.88%) are fourth-generation migrants, totaling 73,746 individuals who identify as migrants. One potential pitfall of this variable is that it does not allow us to distinguish migrants and natives due to missing observations and ascendant information being undetermined. Therefore, we acknowledge here that our analyses does not compare UK natives and migrants. The original sample migrant information can be seen here `https://www.understandingsociety.ac.uk/documentation/mainstage/variables/`

(ITL-1), corresponding to 12 regions in the UK. The descriptive statistics for the variables used in our empirical analyses can be seen in Table 4.1.

Table 4.1: Descriptive Statistics

	Obs.	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Dependent Variables					
SF-12 Physical health	86,347	53.12	7.95	4.64	74.90
SF-12 Mental health	86,347	49.45	9.11	0.00	76.53
SF-12 Physical health (z-score)	86,347	0.37	0.69	-3.85	2.28
SF-12 Mental health (z-score)	86,347	0.02	0.89	-4.84	2.69
Main Independent Variable and Instrument					
High pay	86,347	0.76	0.43	0.00	1.00
Gross Value Added (GVA)*	86,347	1697.36	1075.61	310.20	5191.78
Individual and Household Level Variables					
Age	86,347	44.78	10.72	25.00	88.00
Age square	86,347	2119.98	983.99	625.00	7744.00
Female	86,347	0.53	0.50	0.00	1.00
Urban	86,347	0.77	0.42	0.00	1.00
Bottom quartile HH income	86,347	0.51	0.50	0.00	1.00
Married	86,347	0.78	0.42	0.00	1.00
A-level educated	86,347	0.11	0.32	0.00	1.00
Number of children in HH	86,347	0.49	0.60	0.00	2.00
Migrant Status					
Migrant sample	73,746	1	0	1	1
Migrant generational status	73,746	3.18	1.16	1	4
First-generation migrant	73,746	0.15	0.36	0	1
Job Quality (Only Wave 13)					
Gig job	11,162	0.25	0.43	0	1
Multiple Jobs	11,162	0.06	0.25	0	1

Notes: * The GVA (balanced) is at current basic prices (£ million). GVA is divided by 1000 for scaling purposes.

`generation/`.

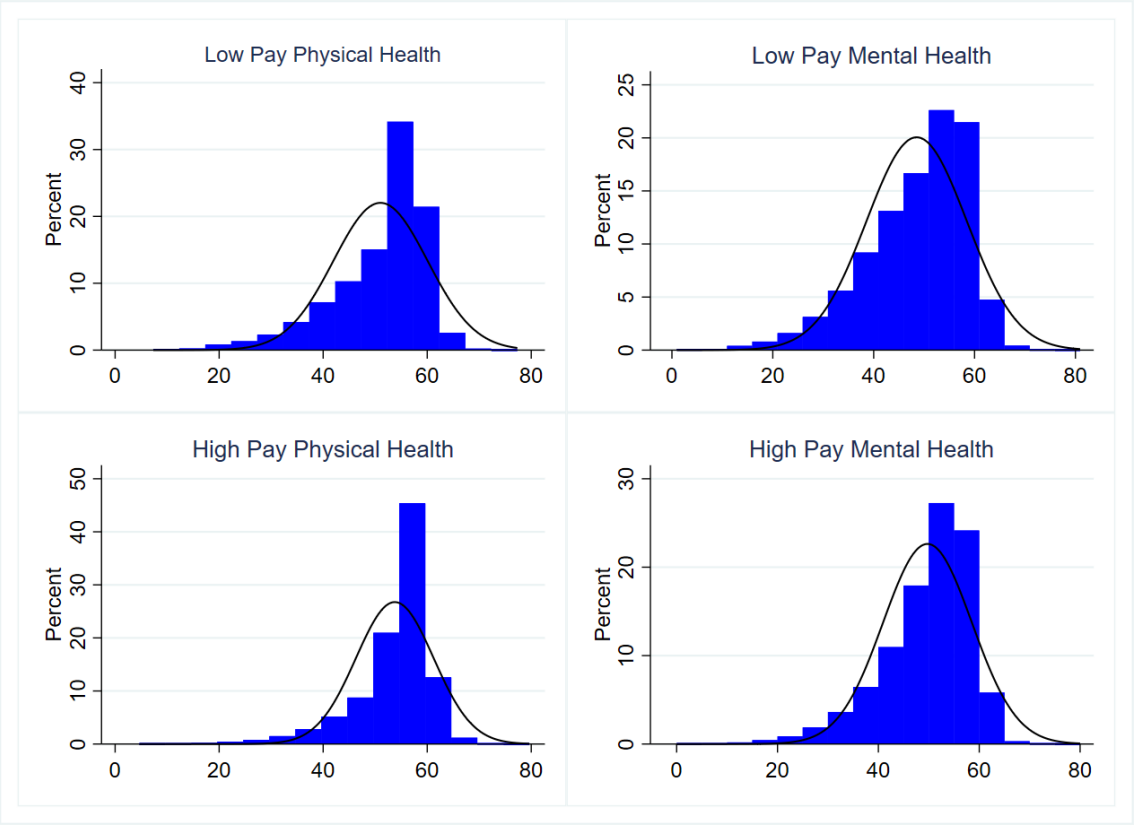
Health outcomes. We measure health using the SF-12 for physical and mental health (The QualityMetric, 2023).[7] The SF-12 (Short Form 12) is a widely used survey tool designed to measure health-related quality of life. It consists of 12 questions that assess physical and mental health, and it is often used in research to capture a general sense of health status across different populations.[8] It is a self-reported outcome measure to assess health in the general population. It assesses health across the following 8 areas using 12 questions. The areas of assessed health are as follows: (1) limitations in physical activities because of health problems, (2) limitations in social activities because of physical or emotional problems, (3) limitations in usual role activities because of physical health problems., (4) bodily pain, (5) general mental health (psychological distress and well-being), (6) limitations in usual role activities because of emotional problems, (7) vitality (energy and tiredness), and (8) how the person feels about their own health. An individual's score across these eight different areas is summed together to create a total score which takes values between 0 for the worst possible health to 100 for the best possible health. For ease of interpretation, we transform SF-12 physical and mental health score into z-scores. We provide detailed information on the health outcomes in Table 4.1. For SF-12 Physical Health, the mean score is 53.12, with a standard deviation of 7.95, indicating that, on average, individuals report slightly above the midpoint of the scale, which ranges from 0 to 100, with higher values representing better physical health. The variation, as shown by the standard deviation, suggests considerable diversity in physical health outcomes across the sample, with scores ranging from a minimum of 4.64 to a maximum of 74.90. For SF-12 Mental Health, the mean score is 49.45, with a standard deviation of 9.11, implying that individuals, on average, report slightly below the midpoint of the mental health scale, which also ranges from 0 to 100. The relatively higher standard deviation compared to SF-12 Physical Health suggests more variation in mental health outcomes, ranging from 0 to 76.53.

[7]Detailed information can be found at `https://www.qualitymetric.com/health-surveys/the-sf-12v2-pro-health-survey/`

[8]The SF-12 health survey questions can be found at `https://www.england.nhs.uk/wp-content/uploads/2022/12/Short-form-12-health-survey-questionnaire.pdf`

The histograms presented in the Figure 4.1 illustrate the differences in SF-12 physical and mental health outcomes between individuals receiving low pay and those receiving high pay. For individuals on low pay, the distribution of both physical and mental health scores is skewed, with a notable concentration around moderate health scores (approximately 60 on the SF-12 scale), but also a significant portion reporting lower health scores. In contrast, individuals on high pay generally report better physical and mental health, with higher concentrations of scores around the 60 mark for physical health and 50-60 range for mental health. These distributions suggest that individuals in the high pay group tend to experience better overall health, both physically and mentally, compared to those in the low pay group. The comparison highlights a clear disparity in health outcomes based on pay, with low earners showing more pronounced negative health outcomes. This underscores the potential impact of financial stability on well-being, with higher pay potentially contributing to improved health outcomes.

Figure 4.1: Physical and Mental Health Gaps between Low versus High Pay Individuals



Notes: Authors' own calculations using data from Waves 1-13 of the USS.

High pay. According to OECD guidelines, low pay is defined as earning less than two-thirds of the median hourly earnings, while high pay is defined as earning 1.5 times the median hourly earnings. We capitalize on Median Hourly Earnings (£) data from Office for National Statistics Annual Survey of Hours and Earnings over the period of 2009 and 2023 to construct *high pay* variable.[9] The median hourly earnings with respect to each year can be seen as Appendix Table C.2. For each year from 2009 to 2023, we create binary variables for each year to identify whether individuals were classified as high earners. A value of 1 is assigned to individuals earning above 1.5 times the median hourly earnings, and 0 is assigned to those earning below or equal to two-thirds of the median. To capture high pay across all years, we combined these annual variables into a single variable, *high pay*, which takes the value of 1 if an individual was considered a high earner in any year from 2009 to 2023, and 0 otherwise. Table 4.1 indicates that 76% of the sample is classified as earning high pay. The standard deviation being 0.43 indicates a relatively high degree of variation across individuals.

Job Quality. The USS Wave 13 collects information on gig employment and how many jobs an individual has. For gig employment, we capitalize on the following question, *"Is this job part of the gig economy? That is, do you use websites or digital platforms to get work for this job?"*. Based on this question, we created a dummy variable taking a value of 1 if the respondents says yes, and 0 otherwise. In a similar manner, the respondents are asked *In total, how many jobs do you have currently?*. Using this question, we construct an indicator variable taking value of 1 if individual has more than one job and 0 otherwise, to proxy multiple job holding. According to Table 4.1, 25% of the sample is engaged in gig work. This suggests a relatively small but notable proportion of individuals in the dataset participate in gig work. On the other hand, it appears that 6% of individuals hold multiple jobs, with a standard deviation of 0.25, indicating a low incidence of multiple job holding in the sample.

[9]The data is available at `https://researchbriefings.files.parliament.uk/documents/CBP-8456/Data-tool-for-publication.xlsx`

These patterns highlight that while gig work is somewhat more prevalent, holding multiple jobs remains relatively uncommon in the sample.

4.3 Identification strategy

4.3.1 Main specification: High pay and Health

Our research design seeks to compare the SF-12 Physical and Mental health outcomes of individuals receiving high pay with individuals who do not earn 1.5 times higher than the median hourly wage (i.e., low pay). More specifically, a naive empirical specification can be presented as follows.

$$\text{SF12 Physical}_{irt} = \alpha_0 + \alpha_1 \text{HighPay}_{it} + \alpha_2 X_{it} + \alpha_t + \alpha_r + t_r + \epsilon_{it} \tag{4.1}$$

$$\text{SF12 Mental}_{irt} = \alpha_0 + \alpha_1 \text{HighPay}_{it} + \alpha_2 X_{it} + \alpha_t + \alpha_r + t_r + \epsilon_{it} \tag{4.2}$$

where, $\text{SF12 Physical}_{irt}$ and SF12 Mental_{irt} denote the physical and mental health scores of an individual i, in region r, at wave/time t, respectively. HighPay_{it} represents our main explanatory variable in the form of an indicator variable, taking the value of 1 if an individual is a recipient of high pay. α_2 is the parameter of coefficients to be estimated from the matrices of individual characteristics captured in X (i.e., age, its square, sex, urban, household income, marital status, education, and number of children in the household). α_t denotes year fixed effects to account for any macroeconomic shocks at the country level. Furthermore, we utilize 12-region fixed effects, α_r, to control for any time-invariant heterogeneity across regions. We further augment our specification with region-specific linear time trends, t_r (and alternatively with region-year fixed effects). Different regions may experience unique economic, social, and health-related trends. For instance, certain regions might have better access to healthcare, or distinct economic conditions that could affect the

physical and mental health of individuals. By including region-specific time trends, we control for these regional differences in both observed and unobserved factors over time. To avoid perfect collinearity, we progressively add the fixed effects and linear time trends. Finally, ϵ_{it} is the unobserved time-varying factor that is not captured in our coefficients.

Despite controlling for observed and unobserved characteristics, a challenge in comparing individuals with different levels of pay is that the wages are not randomly assigned to the individuals. The decision to offer high pay or an individual's choice to work in a high-paying job might depend on both observable factors (like education, skills, or job sector) and unobservable factors (such as individual health, ability to work in a high-demand field, or regional labour market conditions). These factors influence both the dependent variable (SF-12 health outcomes) and the key explanatory variable (high pay), which creates a correlation between the high pay and the error term. The endogenous wage distribution makes it essential to instrument the high pay variable.

To account for the potential endogeneity, we capitalize on the regional and temporal variation in the Gross Value Added (GVA) as an instrument for high pay. The GVA is a key measure of economic activity within a region. It represents the total value of goods and services produced, after subtracting the cost of intermediate inputs used in the production process. GVA is a significant component of Gross Domestic Product (GDP), with the exception of taxes and subsidies on products, such as Value Added Tax (VAT) and duties on fuel or alcohol (the ONS, 2025). The data comes from the Office for National Statistics (ONS) for the years between 2009 and 2022. [10] In particular, we use the annual estimates of balanced GVA at the current price estimates, which are available at ITL-1 level. In total, we have 168 unique and time-varying GVA values across 12 regions and 14 years (i.e., 14 x 12 = 168). It is important to note that GVA (Gross Value Added) data is available at more disaggregated levels, specifically ITL-2 and ITL-3. However, the USS provides

[10]The data is publicly available at `https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalregionalgrossvalueaddedbalancedperheadandincomecomponents`

data only at the ITL-1 level.

The identifying assumption is that the GVA captures regional economic productivity and output, which can influence the wages offered in that region (through industry concentration, labour demand, etc.), but is less likely to be directly affected by the individual health outcomes. Moreover, GVA varies across regions, allowing for variation in high pay that is not driven by individual-level factors. By using regional-level economic conditions, we account for economic shocks or disparities that might affect wage levels but are not tied to individual characteristics or health outcomes. Altogether, these make GVA a plausible candidate instrument for high pay.

4.3.2 Additional specification: Job Quality and Health

To explore if job quality, as measured by gig economy participation and holding multiple jobs, is a mechanism in explaining any of the gaps in physical health scores between high- and low-pay individuals, we employ quantile regression analysis. Quantile regression is particularly relevant for exploring the role of job quality, as measured by gig economy participation and holding multiple jobs, in explaining gaps in physical health scores between high- and low-pay individuals. Unlike traditional OLS regression, which provides an estimate of the average effect, quantile regression allows us to examine how job quality impacts health outcomes at different points across the distribution of physical health scores. This is important because the effect of job quality on health may vary depending on an individual's baseline health status, which may not be uniform across the population. For example, individuals with lower health scores might experience a stronger effect from job quality factors, such as job instability or working multiple jobs, compared to individuals with higher health scores. Quantile regression also offers robustness to outliers and skewed data, which is crucial when health scores are not symmetrically distributed. By focusing on specific quantiles (e.g., lower, median, or upper health scores), quantile regression provides a more nuanced understanding of how job quality influences health, allowing

for insights that are masked by average estimates. This method is particularly useful for identifying whether job quality disparities contribute more significantly to health outcomes for individuals at the lower end of the health distribution, which can inform targeted policy interventions aimed at improving health for the most vulnerable populations.

The quantile regression model for SF-12 health outcomes (quantile τ) can be formulated as follows.

$$Q_\tau(\text{SF12-Physical}_{it}|\text{Gig Job}_{it}, \text{Multi Job}_{it}, X_{it}) = \beta_0(\tau) + \beta_1(\tau)\text{Gig Job}_{it} + \beta_2(\tau)\text{Multi Job}_{it} + \beta_3(\tau)X_{it} \tag{4.3}$$

$$Q_\tau(\text{SF12-Mental}_{it}|\text{Gig Job}_{it}, \text{Multi Job}_{it}, X_{it}) = \beta_0(\tau) + \beta_1(\tau)\text{Gig Job}_{it} + \beta_2(\tau)\text{Multi Job}_{it} + \beta_3(\tau)X_{it} \tag{4.4}$$

where Q_τ is the τ-conditional quantile of health scores (either physical or mental) for individual i at time t. β_1 and β_2 are the quantile-specific coefficients for being in the gig economy and holding more than one job, respectively. X_{it} remains the same as in Equation (4.1) and (4.2), representing the vector of control variables. This approach allows us to examine how high pay affects SF-12 health outcomes at different points of the health distribution (i.e., 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} quantiles) instead of just focusing on the average effect. Therefore, it provides a more comprehensive view of the heterogeneous effects of high pay across the population.

4.4 Main Results

4.4.1 High Pay and Health

In Table 4.2 and Table 4.3, we examine the relationship between physical and mental health outcomes, respectively, for individuals in high-pay versus low-pay categories. Table 4.2 focuses on the effects of high versus low pay on physical health, while Table 4.3 investigates the corresponding impact on mental health. The structures of both tables are the same, where Panel A presents the results without individual and household level control variables, while Panel B provides the estimates with control variables. We present our OLS estimates in Columns (1) to (3) and 2SLS estimates in Column (4) to (6). We also report first stage F-statistics (i.e., Kleibergen-Paap rk Wald F) for 2SLS estimates in both tables. As can be seen, the Kleibergen-Paap rk Wald F values are sufficiently greater than 10, which is rule of thumb. This confirms that the GVA instrument is strong enough for proper identification. To avoid collinearity, we progressively add region-year fixed effects and linear time trends in our specifications. In Column (1) (*Column (4)*), we only introduce year and 12 region fixed effects. In Column (2) (*Column (5)*), we add 12 region-year fixed effects. In Column (3) (*Column (6)*), we further control for 12 region linear time trends. Altogether, our preferred specification is Column (6) of Panel B, where we both control for individual and household level characteristics and region-specific linear time trends, which help accounting for any time-varying factors affecting physical (and mental) health outcomes across all regions.

Starting with SF-12 physical health, the estimates presented in Table 4.2 consistently confirm the positive effect of receiving high pay across both panels and all specifications, with the exception of Column (4). Overall, the 2SLS results are slightly larger than the OLS estimates which reflects the fact that the OLS estimates are likely to be downward biased. That is, the OLS estimates can be biased due to unobserved factors that affect both high pay and physical health, leading to underestimation of the true causal effect. In contrast, 2SLS estimation

tackles endogeneity by using an instrument that is correlated with the endogenous regressor but not with the error term, providing a consistent estimate of the causal effect. As a result, 2SLS estimates often reveal a stronger relationship between high pay and physical health than OLS estimates, particularly when OLS suffers from downward bias. This phenomenon is typical when the instrument is strong, as in the GVA at the 12-region level, which helps isolate the exogenous variation in high pay and leads to a more accurate and robust estimate. In our preferred specification (Column (6) of Panel B), the estimated effect of high pay on SF-12 physical health is 0.3362, which is statistically significant at the 1% level. This coefficient suggests that, after controlling for individual and household characteristics and accounting for regional differences through linear time trends, individuals who earn 1.5 times the median wage report a physical health score that is 0.3363 standard deviations higher than those earning less than 1.5 times the median wage.

In Table 4.3, the results for SF-12 mental health generally indicate a positive relationship with high pay, though the effect is less precise than for SF-12 physical health. In Column (6) of Panel A, the estimate for high pay is not statistically significant in the base model, suggesting no clear evidence of a positive impact on mental health when no controls are included. However, when we account for individual and household control variables, as well as linear time trends to capture time-varying factors, the relationship becomes statistically significant at conventional levels. Specifically, the coefficient of 0.3212 in Column (6) implies that individuals receiving high pay report a 0.3212 standard deviation increase in their SF-12 mental health score, after controlling for various confounding factors. This suggests that while the effect of high pay on mental health is positive, it is relatively weaker and more sensitive to the inclusion of additional controls compared to the impact on physical health.

Overall, the findings suggest that high pay has a positive and significant effect on both physical and mental health outcomes, with a stronger impact observed for

physical health. [11] The use of 2SLS to address potential endogeneity ensures more reliable estimates, revealing a stronger relationship between high pay and physical health compared to OLS results. The effect on mental health, though positive, is relatively weaker and more sensitive to the inclusion of additional controls. These findings are in line with previous work aiming to explore the effect of income changes on SF-12 mental and physical health outcomes in the UK (Maxwell et al., 2022; Reed et al., 2024, 2025).

[11] Appendix Table C.3 and Appendix Table C.4 show all coefficients on control variables included in the analysis for SF-12 physical and mental health, respectively.

Table 4.2: Effect of High pay on SF-12 Physical Health

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2347***	0.2379***	0.2388***	-0.0656	0.3495***	0.3542***
	(0.0097)	(0.0097)	(0.0097)	(0.3274)	(0.0930)	(0.0919)
Kleibergen-Paap rk Wald F				26.35	303.5	309.6
Panel B	With individual and household controls					
High pay	0.2068***	0.2098***	0.2102***	0.1291	0.3262***	0.3363***
	(0.0097)	(0.0097)	(0.0097)	(0.2805)	(0.0978)	(0.0965)
Kleibergen-Paap rk Wald F				35.75	298.7	306.5
Observations	86,347	86,347	86,347	86,347	86,347	86,347
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table 4.3: Effect of High pay on SF-12 Mental Health

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.1054***	0.1069***	0.1089***	0.8625*	0.0636	0.0778
	(0.0116)	(0.0116)	(0.0116)	(0.4607)	(0.1235)	(0.1221)
Kleibergen-Paap rk Wald F				26.35	303.5	309.6
Panel B	With individual and household controls					
High pay	0.0716***	0.0752***	0.0761***	0.7717*	0.2998**	0.3212**
	(0.0115)	(0.0115)	(0.0115)	(0.4014)	(0.1282)	(0.1268)
Kleibergen-Paap rk Wald F				35.75	298.7	306.5
Observations	86,347	86,347	86,347	86,347	86,347	86,347
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

4.4.2 Robustness checks

Exclusion of Covid-19 Years. The Covid-19 pandemic had significant and widespread impacts on both physical and mental health (Pieh et al. (2021); Pierce et al. (2020); O'Connor et al. (2021)), as well as on the labour market (Mayhew and Anand (2020); Blundell et al. (2022); Richardson (2023)), potentially distorting the relationship between high pay and health outcomes. By removing these years, we aim to ensure that the estimates reflect more typical economic conditions and are not influenced by the exceptional health, social, and economic disruptions caused by the pandemic. Therefore, in Appendix Table C.5 and Appendix Table C.6, we exclude the years (i.e., 2020 and 2021) affected by the Covid-19 pandemic to mitigate potential bias that may arise from the unprecedented health shock. This exclusion allows for a clearer understanding of the true effect of high pay on health outcomes, excluding potential confounding factors introduced by the pandemic. The significance levels and magnitudes for both SF-12 physical and mental health remain largely consistent with the baseline results when the COVID-19 affected years are excluded from the analysis.

Exclusion of London. London has a significantly different economic profile compared to other regions in the UK. It is home to many high-paying industries such as finance, technology, and media, which are not as prevalent in other regions (OECD (2022)). The concentration of wealth and high-paying jobs in London could skew the results, making the effect of high pay on health outcomes appear stronger than it would be in other areas where high-paying jobs are less concentrated. Additionally, health outcomes in London may be influenced by factors such as greater access to healthcare, different lifestyle patterns, and higher levels of economic inequality. Therefore, we exclude London from the analysis due to its unique economic, social, and health characteristics that may differ significantly from other regions (Hatch et al. (2011); Higgins et al. (2014); Vizard et al. (2015); Travers et al. (2016); Barr et al. (2017)). By excluding London, we aim to ensure that our results are

not disproportionately driven by these unique regional factors and reflect a more generalizable relationship between high pay and health outcomes across a broader set of regions. The results are presented in Appendix Table C.7 and in Appendix Table C.8 for physical and mental health, respectively. We still confirm the positive effect for both outcomes with notably larger coefficients.

Exclusion of Self-employed. Another legitimate concern can arise from the presence of individuals who are self-employed in the sample. The health outcomes of self-employed individuals might differ from those working as employees due to some particular reasons. These include, but are not limited to, income instability, lack access to employer-provided health benefits and unique work-related stress (Parslow* et al. (2004); Cooper et al. (2015); Lee et al. (2023)). Thereby, including self-employed individuals could introduce confounding factors that obscure the true relationship between high pay and health. By excluding them, we aim to concentrate on a more homogeneous group with stable incomes and consistent access to health benefits, leading to more accurate and reliable estimates of the effect of high pay on health outcomes. The estimates without self-employed individuals are fairly similar to the baseline results in Table 4.2 and Table 4.3 (see Appendix Table C.9 and Appendix Table C.10).

Placebo exercise. Adding 12 region-specific linear time trends might not be sufficient to assume that individuals living in regions with large (predicted) share of high paying jobs follow a similar trend in their health outcomes compared to individuals living in regions with lower share of high paying jobs. Therefore, we assess the presence of pre-existing trends using the following exercise: quantifying the effect of the future high pay on the current health outcomes (i.e., using the forward values of the high pay and the instrument). We use the average of high pay and the instrument at *t+1*, *t+2*, *t+3*, *t+4*, and *t+5*. Therefore, we assign five-year average future values of the high pay and the instrument (from 2018 to 2022) to the sample of individuals in 2013 to 2017. For physical health, we find

a positive correlation with the OLS estimates but the estimated 2SLS coefficients are all statistically insignificant (see Appendix Table C.11). For mental health, the coefficients are all insignificant irrespective of the specification (see Appendix Table C.12) Overall, such a placebo exercise rejects the possibility that the positive effect found in our main results may be explained by pre-existing trends in SF-12 physical and mental health.

Alternative high pay measures. We test the sensitivity of our results by utilising two alternative measures of *pay*. First, we define high pay as earning 2 times above the median wage rather than 1.5 times. The estimates for both health outcomes are presented in Appendix Table C.13 and Appendix Table C.14. Latter, we use continuous hourly wage. Despite smaller coefficients, our preferred specifications still validate the positive impact as shown in Appendix Table C.15 and Appendix Table C.16.

4.4.3 Role of Job Quality

The quantile regression results in Table 4.4 provide insights into the differential effects of gig economy participation and holding multiple jobs on physical and mental health outcomes across different quantiles of the health distribution. Panel A shows the results for physical health while estimates for mental health are displayed in Panel B. Both panels include individual and household level control variables as well as 12 region fixed effects.

For gig economy participation, the results in Panel A suggest that it does not have a significant impact on physical health at any quantile. However, it has a negative and significant effect on mental health as shown in Panel B, particularly for individuals at the lower quantiles (10^{th}, 25^{th}, and 50^{th}), indicating that those with poorer mental health are more likely to experience worsened mental health outcomes due to gig work. In contrast, having multiple jobs seem to have heterogeneous results across physical and mental health. That is, multiple job-holding is associated with

improved physical health for individuals who are at the median (50^{th}) and upper quantiles (75^{th} and 90^{th}). It is plausible that individuals might be motivated to take up multiple jobs to earn extra income and/or to expand their skills and social network as suggested by Hipple (2010); González (2014); Vleminckx et al. (2025). Given that higher income provides better access to healthcare, promotes a healthier lifestyle through improved nutrition, and reduces risky behaviors (e.g., smoking) (Grossman, 2000; Mangalore, 2006; Casetta et al., 2017; French et al., 2019), it is not surprising to observe a positive effect of holding multiple jobs on physical health. The extant literature, however, documents mixed results. For example, Marucci-Wellman et al. (2014) contends that having multiple jobs is associated with greater risk of experiencing injury at the workplace. However, work-related injury is sensitive to sector (e.g., construction, manufacturing) , thereby not generalizable to different sectors. Bouwhuis et al. (2017) report no evidence of long-term sickness absence among Danish workers having multiple jobs, indicating no harmful effect on overall health. Moreover, Bell et al. (2024) explore the effect of multiple job holding on American workers hypertension with respect to sex and ethnicity. Their results indicate that multiple job holding is not related to hypertension for women, irrespective of their ethnicity. However, non-Hispanic black men are found to suffer from hypertension. Such an heterogeneity is likely to stem from country differences, short term versus long term exposure to multiple job holding settings, sex, and sector specific differences. When it comes to mental health impacts of multiple job holding, the positive effect observed in physical health disappears and even turn out to be negative. In other words, holding multiple jobs is consistently associated with worse mental health, with the strongest negative effects observed among individuals with average to poor mental health. This signals that although multiple jobs might be associated with larger income and better access to resources, it comes with a cost. The work-related stress and role-conflict associated with managing multiple employment responsibilities are likely to deteriorate mental health (Campion et al., 2020). The literature also cites heightened fatigue, sleep deprivation, and mental

stress from working in disruptive or unpredictable environments with irregular schedules to explain the mechanisms through which multiple jobs worsens mental health (Pouliakas and Wieteke, 2023).

Table 4.4: Effect of Job Quality on SF-12 Physical and Mental Health (Only Wave 13)

Model	Quantile Regression				
	(1)	(2)	(3)	(4)	(5)
Quantile	10^{th}	25^{th}	50^{th}	75^{th}	90^{th}
Panel A	SF-12 Physical Health				
Gig Job	0.0110	-0.0280	0.0144	0.0010	-0.0083
	(0.0474)	(0.0261)	(0.0132)	(0.0091)	(0.0134)
Multiple Jobs	0.7214	-0.3794	0.5724**	0.6443***	0.4219*
	(0.9486)	(0.5214)	(0.2638)	(0.1815)	(0.2688)
Panel B	SF-12 Mental Health				
Gig Job	-0.1080**	-0.0826**	-0.0724***	-0.0186	0.0039
	(0.0461)	(0.0384)	(0.0264)	(0.0192)	(0.0154)
Multiple Job	-0.0993	-0.1475**	-0.1252***	-0.0684**	-0.0225
	(0.0807)	(0.0671)	(0.0462)	(0.0336)	(0.0268)
Observations	11,162	11,162	11,162	11,162	11,162
12 Region Fixed Effect	Yes	Yes	Yes	Yes	Yes

Notes: The data come from the USS, Wave 13. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

4.4.4 Wage and Health among Migrants

Health outcomes of migrants might be different, particularly more fragile, than those of native populations. Pignon et al. (2018) contend that migration process is frequently conceptualized as a series of stress-inducing events, encompassing the pre-migration phase of decision-making and planning, followed by the actual migration phase, which is often marked by various forms of loss, such as the departure from familiar environments, employment, and social connections. Even when the destination country is free from conflict, violence, and ethnic persecution, the act of fleeing can introduce some uncertainties, such as potential threats to life, separation from close family members, and unexpected setbacks. The post-migration phase involves the need for adaptation to unfamiliar social and cultural environments, including mastering a new language. This process entails reconciling the migrant's original cultural identity with that of the new society, which can be a prolonged and challenging undertaking filled with numerous stressors, including bureaucratic hurdles.

In Table 4.5, we present the effect of high pay on physical health for the migrant population, regardless of the generation. That is, the sample accounts for first, second, third and the fourth generation migrants. Similarly, Table 4.6 shows the mental health results for the migrant sample. For physical health, the effect of high pay is still persistent, the coefficients in the preferred specification being very close to the baseline results in Table 4.2, confirming better physical health outcomes. For mental health, the coefficients are slightly larger in magnitude compared to baseline results in Table 4.3. This could reflect the additional stresses and challenges migrants face —such as social integration, economic insecurity, or discrimination— where high pay might play a more significant role in alleviating these challenges and improving mental health.

When it comes to the effect of job quality on health outcomes of migrant sample, we present our estimates in Table 4.7. As can be seen in Panel A, there is no evidence of job quality, as measured by gig economy participation or holding more than one

job, affects the physical health of the migrant sample. The null effect of gig economy jobs observed in the baseline results (see Table 4.4) persists in the migrant sample, while the positive effect and significance of holding multiple jobs seems to disappear for migrants (i.e., the only positive impact is observed in the 75th quantile). That is, the migrant sample do not get physical health benefits from holding multiple jobs. Migrants often face higher levels of job exploitation and poor employment arrangements, such as longer working hours and working on weekends (Ronda Pérez et al., 2012; Ortlieb and Winterheller, 2020). The challenging work conditions may discourage migrants from taking on multiple jobs, limiting their ability to earn higher income and access resources that could potentially improve their physical health. In Panel B, gig economy employment shows a consistent negative effect on the migrant sample, in line with the baseline results, especially for individuals at the lower end of the health distribution. In other words, migrant individuals with SF-12 mental health scores at or below the median are more vulnerable to the negative impacts of gig employment. This is not the case for those in higher quantiles. For multiple job holding, no significant effect is found for migrant sample. This contradicts with baseline results in Table 4.4 because holding more than one job seems to worsen mental health for all sample. Altogether, although the baseline and migrant sample results seem to slightly differ, we conclude that gig economy participation is detrimental for mental health for individual, irrespective of whether they are migrants.

Table 4.5: Effect of High pay on SF-12 Physical Health (Using Migrant Sample)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2450***	0.2450***	0.2496***	-0.0256	0.3738***	0.3828***
	(0.0106)	(0.0106)	(0.0107)	(0.3784)	(0.1078)	(0.1053)
Kleibergen-Paap rk Wald F				19.78	224.2	233.6
Panel B	With individual and household controls					
High pay	0.2138***	0.2164***	0.2173***	0.1140	0.3112***	0.3305***
	(0.0107)	(0.0108)	(0.0108)	(0.3289)	(0.1147)	(0.1120)
Kleibergen-Paap rk Wald F				26.37	216.4	226.7
Observations	73,746	73,746	73,746	73,746	73,746	73,746
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table 4.6: Effect of High pay on SF-12 Mental Health (Using Migrant Sample)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.0918***	0.0939***	0.0968***	1.1158**	0.1486	0.1715
	(0.0126)	(0.0126)	(0.0126)	(0.5580)	(0.1446)	(0.1413)
Kleibergen-Paap rk Wald F				19.78	224.2	233.6
Panel B	With individual and household controls					
High pay	0.0612***	0.0656***	0.0671***	1.0420**	0.4420***	0.4695***
	(0.0125)	(0.0125)	(0.0125)	(0.4902)	(0.1534)	(0.1500)
Kleibergen-Paap rk Wald F				26.37	216.4	226.7
Observations	73,746	73,746	73,746	73,746	73,746	73,746
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table 4.7: Effect of Job Quality on SF-12 Physical and Mental Health (Only Wave 13 and Migrant Sample)

Model	Quantile Regression				
	(1)	(2)	(3)	(4)	(5)
Quantile	10^{th}	25^{th}	50^{th}	75^{th}	90^{th}
Panel A	SF-12 Physical Health				
Gig Job	-0.0234	-0.0085	0.0169	0.0024	-0.0055
	(0.0544)	(0.0314)	(0.0161)	(0.0101)	(0.0149)
Multiple Jobs	0.0824	-0.0113	0.0278	0.0405**	0.0239
	(0.0950)	(0.0548)	(0.0281)	(0.0176)	(0.0261)
Panel B	SF-12 Mental Health				
Gig Job	-0.1049*	-0.1105**	-0.0768***	-0.0100	-0.0026
	(0.0540)	(0.0439)	(0.0294)	(0.0215)	(0.0184)
Multiple Job	-0.0501	-0.0402	-0.0750	-0.0270	-0.0134
	(0.0943)	(0.0767)	(0.0513)	(0.0375)	(0.0321)
Observations	8,336	8,336	8,336	8,336	8,336
12 Region Fixed Effect	Yes	Yes	Yes	Yes	Yes

Notes: The data come from the USS, Wave 13. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

4.4.5 Generational Status of Migrants

Existing research suggests that generational status plays a significant role in shaping the health outcomes of migrants, though the findings are mixed. The first strand of the literature focuses on mental health outcomes. Some studies argue that first-generation migrants are more likely to experience mental health disorders, such as anxiety, compared to later generations (Beutel et al., 2016; Close et al., 2016). In contrast, other research has found that second-generation migrants show higher rates of anxiety-related disorders than their first-generation counterparts (Cantor-Graae and Pedersen, 2013; Liddell et al., 2016). Another body of the literature provides examples from physical health across generations. Bates et al. (2008) explore the patterns of body mass index (BMI) and obesity in a nationally representative sample of first-, second-, and third-generation Latinos and Asian Americans. Their findings suggest significant variation in BMI and obesity across later generations as compared to first-generation migrants. On the contrary, Sundquist and Li (2006) report that the risk of cardiovascular heart disease is larger in first-generation migrant than higher-orders.

The prevalence of these contrasting results highlights the heterogeneity across generations, making it necessary to investigate their health outcomes relying on their generational status. Thereby, we start by classifying migrants into two groups: first-generation and higher-order generations (i.e., second, third, and fourth generations). Latter, we compare first- and second-generation migrants. The results presented in Table 4.8 provide insights into the effect of high pay on SF-12 physical and mental health outcomes for (i) first-generation versus higher-order generation migrants in Panel A and (ii) first-generation versus second-generation migrants in Panel B. [12] The estimates are from our preferred 2SLS specification. Column (1) and Column (2) show the estimates for SF-12 physical health while Column (3) and Column (4) display the results for SF-12 mental health. For SF-12 physical health, high

[12]The detailed results, where all specifications can be seen, are presented in Appendix Tables C.17 , C.18, C.19, C.20, C.21, and C.22.

pay has a significant positive effect on higher-order generation migrants. Starting with the comparison between first- and higher-order generations, the results suggest that the individuals in higher-order generations with high pay, on average, 0.6775 standard deviations higher physical health scores. However, the effect is negative for first-generation migrants, though it is not statistically significant. For SF-12 mental health, the results show a positive, significant effect of high pay for first-generation migrants. That is, first-generation migrants with high pay have, on average, 0.6313 standard deviations better mental health scores than individuals with low pay. These findings suggest that high pay has differential benefits on health outcomes depending on the generational status. When comparing first- and second-generation migrants, high pay does not lead to improved physical health in either group. However, first-generation migrants exhibit better mental health outcomes than their second-generation counterparts. Altogether, the positive physical health effect of high pay for higher-order generations may reflect better labor market integration, access to healthcare, and adaptation to host-country lifestyle factors. Meanwhile, the stronger mental health benefits for first-generation migrants suggest that financial stability may be particularly important in reducing stress and anxiety associated with migration-related challenges (e.g., economic insecurity, social adaptation). However, the fact that high pay does not improve physical health for first-generation migrants could indicate underlying barriers, such as limited healthcare access, physically demanding jobs, or lifestyle factors that persist despite higher earnings.

Table 4.8: Summary Table: Effect of High pay on SF-12 Physical and Mental Health (Heterogeneity by Migrant Generational Status)

Model	2SLS		2SLS	
	SF-12 Physical Health		SF-12 Mental Health	
	First Gen	Higher-Order Gen	First Gen	Higher-Order Gen
	(1)	(2)	(3)	(4)
Panel A	With individual and household controls			
High pay	-0.1337	0.6775***	0.6313**	0.0568
	(0.2253)	(0.1070)	(0.2988)	(0.1392)
Kleibergen-Paap rk Wald F	46.15	226.7	46.15	226.7
Observations	11,589	62,157	11,589	62,157
	First Gen	Second Gen	First Gen	Second Gen
Panel B	With individual and household controls			
High pay	-0.1337	0.1087	0.6313**	0.3461
	(0.2253)	(0.2504)	(0.2988)	(0.3320)
Kleibergen-Paap rk Wald F	46.15	65.93	46.15	65.93
Observations	11,589	9,595	11,589	9,595
Year Fixed Effect	Yes	Yes	Yes	Yes
12 Region Fixed Effect	No	No	No	No
12 Region-year Fixed Effect	No	No	No	No
12 Region linear Time Trends	Yes	Yes	Yes	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

4.5 Conclusion

The Office for National Statistics (ONS) reports that almost 9% of jobs in the United Kingdom were low paid (paid less than two-thirds of median hourly pay) in 2023, when considered in terms of hourly earnings. Low-paid workers are likely to encounter a number of challenges (e.g., hardships in terms of meeting their household needs or being unable to buy enough food as suggested by (Tiehen et al., 2020; Gundersen and Ziliak, 2018). Low pay is likely to induce economic inactivity –a major policy concern in the UK– through its detrimental effects on health. This study explores the association between high pay and health outcomes, particularly examining the effects on SF-12 physical and mental health scores, using data from the Understanding Society Survey. The key finding of this paper is that earning high pay promotes both physical and mental health outcomes, with a stronger impact observed for physical health. The results underscore the importance of income in shaping individuals' well-being, suggesting that higher earnings contribute to better health through improved access to healthcare, better living conditions, and reduced financial stress. Furthermore, we extend our analyses to migrant workers when exploring the effects of high pay. The results align with the baseline results, confirming the positive effect of high pay on migrant sample, although the effect is found to differ by generational status. Specifically, first-generation migrants tend to have mental health benefits, while higher-order generations experience more significant improvements in physical health. This suggests that financial stability plays a particularly crucial role in alleviating the stressors associated with migration for first-generation migrants, while later generations benefit from greater integration and access to health resources.

The additional analysis relies on the exploration of job quality as proxied by precarious job engagements, namely gig economy participation and multiple job holding. The results from quantile regression suggest heterogeneous results as follows. Gig economy employment is found to negatively affect mental health, particularly among individuals with lower baseline health, while holding multiple

jobs is associated with improved physical health but worse mental health. This underscores the trade-offs between income generation and the potential stress and instability associated with non-standard forms of employment. These findings adrress the need for policies that focus on the mental health risks associated with precarious employment and support workers in achieving better health outcomes through improved working conditions. The importance of further analysis using data from succeeding waves of the USS is not negligible to better understand the influence of extracanonical forms of employment on health outcomes.

The findings of this study suggest several important policy implications. First, given the positive relationship between high pay and health outcomes, policies aimed at raising wages and reducing income inequality could have significant public health benefits. Expanding the National Living Wage, for instance, could help mitigate the negative effects of economic inactivity linked to poor health, as higher earnings have been shown to improve both physical and mental health. In addition, improving job quality is essential to address the negative health impacts associated with gig work and multiple job holding. Policymakers should consider introducing regulations to enhance job security, provide access to benefits, and improve working conditions in non-standard employment sectors, such as the gig economy, to reduce stress and improve overall health outcomes. Moreover, the findings highlight the importance of supporting migrant workers, as the positive effects of high pay on health outcomes were more pronounced among first-generation migrants, particularly for mental health. This underscores the need for targeted policies that address the unique challenges faced by migrants, including economic insecurity, discrimination, and barriers to healthcare access. By ensuring better economic security and promoting social integration, such policies can alleviate migration-related stress and improve migrants' well-being. These policies could include promoting flexible working arrangements, mental health support, and addressing gender-based discrimination to reduce the mental health gap between men and women.

Overall, policymakers must concentrate on prioritizing interventions that target

the most vulnerable populations, such as low-paid workers, gig economy participants, and migrants, to improve both physical and mental health outcomes. These interventions could include improving access to healthcare, promoting better working conditions, and providing income security, thereby contributing to better public health and reducing inequalities in health outcomes across different socio-economic groups, as well as combating economic inactivity in the UK.

Chapter 5

Conclusions

This thesis delves into the effect of migration (and refugee presence) in low-income (i.e., 16 African countries), upper-middle-income (i.e., Türkiye), and high-income (i.e., the United Kingdom) contexts, focusing on three key areas: health, politics, and labor markets. By analyzing various country groups, this thesis offers a deeper understanding on migration's effects, considering both forced displaced individuals and voluntary migrants. Each chapter draws conclusions and policy implications from research questions explored.

Chapter 2 offers several potentially useful policy takeaways for managing refugee influxes in low-income countries, particularly in Africa. Firstly, it emphasizes that inclusive refugee policies are not just a humanitarian imperative but also a strategic political tool. By granting refugees access to rights, services, and economic opportunities, governments can foster political stability and economic development, leading to increased support for incumbents and reduced political competition. Secondly, humanitarian and development aid should be strategically leveraged to benefit both refugees and host communities. This approach can improve local public goods, stimulate economic activity, and enhance institutional trust, thereby mitigating potential social tensions. Thirdly, policymakers must recognize refugees as potential contributors to local economies, not merely as burdens. Shifting the narrative from competition to coexistence through inclusive policies can unlock

economic growth and strengthen social cohesion. Finally, given the observed trend of greater inclusivity in the Global South compared to the Global North, there is a need for further research to understand and address the institutional barriers preventing the adoption of such policies, particularly in high-income nations, and to explore how this disparity affects the ability of low-income countries to manage refugee flows in the future.

Chapter 3 highlights the need for Türkiye to prioritize investments in accessible and affordable childcare services to mitigate the trade-off between maternal employment and child health, specifically within the context of the Syrian refugee inflow. Extending public childcare programs to children below school-age and recognizing childcare provision as a tool for women's economic empowerment are vital policy considerations. Furthermore, policymakers could monitor and address the potential strain on social infrastructure, including healthcare and childcare, due to increased population density, while also improving data collection to facilitate targeted interventions. While financial aid can provide short-term relief, long-term strategies should focus on strengthening social protection systems and childcare availability to ensure equitable outcomes for both native and refugee populations.

Chapter 4 also presents several key policy implications for improving health outcomes through better pay and job quality, particularly for vulnerable populations such as migrants. Firstly, policies aimed at increasing wages and reducing income inequality may be important for enhancing public health. Expanding the National Living Wage, for instance, could directly improve physical and mental health by alleviating financial stress. Secondly, addressing the negative health impacts of precarious employment, such as gig work and multiple job holding, is essential. Policymakers should implement regulations to improve job security, benefits, and working conditions in these sectors. Thirdly, targeted support for migrant workers is necessary, especially for first-generation migrants. Policies should potentially focus on reducing economic insecurity, combating discrimination, and improving access to healthcare to alleviate migration-related stress. Finally, interventions should focus

on the most vulnerable populations, including low-paid workers and gig economy participants, to improve overall health outcomes. This could involve enhancing healthcare access, promoting better working conditions, and providing income security, ultimately reducing health inequalities across socio-economic groups.

This thesis also underscores the importance of migrant (or refugee) integration. The relevant question here is "why?". First, voluntary repatriation does not seem to be an option, particularly among those fleeing from wars and civil conflicts like Syrian refugees. The literature contends that the (voluntary) return aspiration of migrants is notably at low levels, with an average duration of refugee status reported to be 26 years (Kayaoglu et al., 2022; Zhou et al., 2025). For example, only around 5% of the Syrian refugees in Türkiye report to have an intention to return in the next 12 months (UNHCR, 2019). On a global scale, Blair and Wright (2022) point out that less than 1% of the refugees' stock choose to return to their home country in any given year. The decision not to return, despite their best intentions, is influenced by legitimate concerns regarding security, access to livelihoods, exemption from military service, and the availability of property and essential services (RPIS, 2019). Second, an opportunity to re-settle in a high-income country is rarely given to migrant (and refugee) population – around 0.5% of the annual refugee population are given the chance to resettle (Albu, 2023). Since voluntary return and re-settlement do not seem to be attainable for more than 98% of refugees, displacement in the country of asylum turn out to be prolonged. As such, the integration of refugees into their host country becomes a primary concern, particularly in developing countries, where over 75% of refugees reside (Zhou et al., 2025).

This thesis is not without limitations. Starting with Chapter 2, an area of improvement would the exploration of selective migration, considering that the displacement of native populations is a significant issue in the migration literature (Borjas, 2006; Card and DiNardo, 2000; Card, 2001a; Andersson et al., 2021). That is, large-scale outflows of natives across regions is likely to account for the findings, particularly if individuals from lower socio-economic backgrounds are the

ones migrating. Accounting for the migration inflows and outflows at the GADM-1 level is currently not possible due to a lack of data. Another limitation pertains to the generalizability of our results considering the elections in other countries. The CLEA dataset lacks sufficient information at both the constituency and sub-national levels, which prevents the aggregation of vote shares for the incumbent. Examples of this include Ivory Coast and Togo. For Chapter 3, one legitimate concern could be the fact that general equilibrium effects cannot be estimated. In other words, Chapter 3 seeks to compare health outcomes of Turkish native children residing in refugee-hosting provinces with children living in provinces without refugees (or with provinces where the refugee density is low). This, for example, prevents the analysis capturing the effect of a reduction (e.g., possibly due to re-allocation of budget) or an increase (e.g., possibly due to financial aid from international bodies) in the central government's healthcare budget. Chapter 3 is also limited by data gaps, preventing the investigation of other mechanisms. First, while optimal nutrition is key for child growth, the TDHS data lacks detailed dietary information, providing data only for the past 24 hours. Second, the TDHS data on the time allocation is perhaps too broad to accurately measure shifts in mother-offspring interaction time. Third, the nature of the TDHS is repeated cross-sectional survey, making it impossible to consider the longitudinal aspect of life course and health outcomes. One potential avenue for future research can be the exploration of this topic in other middle-income countries, preferably utilising panel data. For Chapter 4, one limitation is the relatively high proportion of migrants in the sample, as the survey *generation* variable does not allow distinguishing between migrants and natives due to missing data and undetermined information about ascendants. Consequently, the analysis does not directly compare UK natives with migrants.

Overall, this thesis emphasizes the importance of inclusive policy frameworks in ensuring that the positive spillover effects induced by migration are equitably shared among both native and migrant populations. The policymakers should recognize migrants as economic contributors, not burdens. However, a better understanding

is an area of investigation to reveal the potential bureaucratic barriers to liberal migration policies. Furthermore, future research is also essential to examine the extent to which the findings of this thesis can be applied to other contexts. It is worth noting that generalizability does not have to concentrate on whether these effects are observed in different settings today, but rather whether similar outcomes would arise if other countries adopted inclusive hosting policies, along with policies ensuring that a significant portion of migrant-related aid is directed towards host communities.

Appendix A

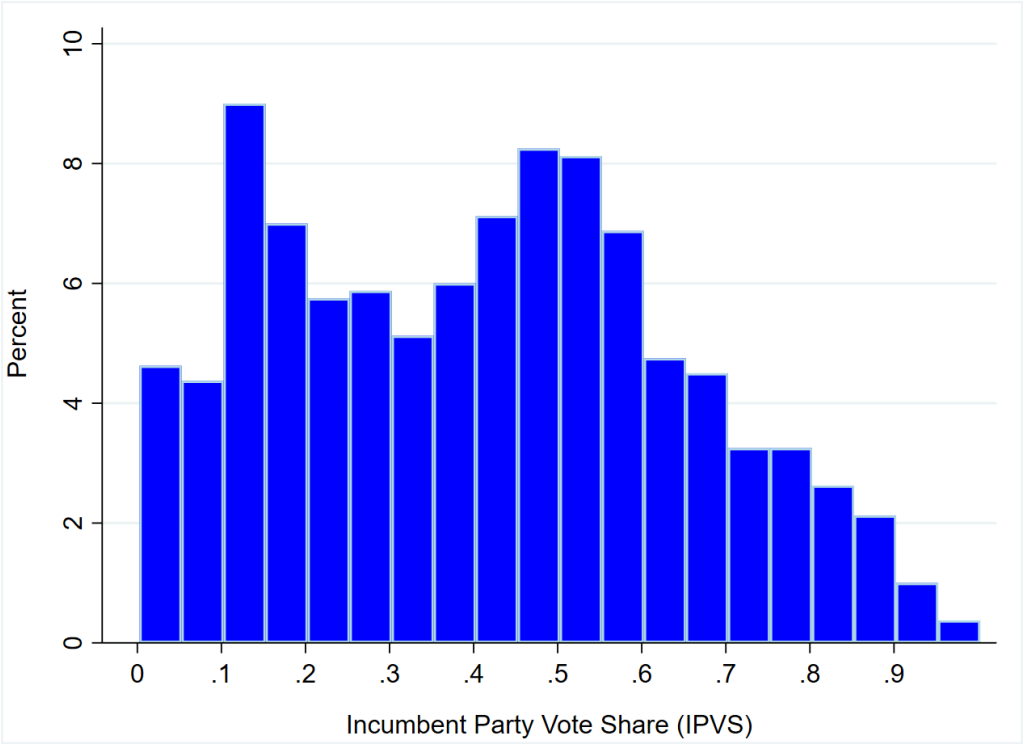
Tables and Figures for Chapter 2

Table A.1: Summary table for data availability for AB and CLEA countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Data			**Afrobarometer (AB)**				**UNHCR camps**	**CLEA Elections**
	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6		
Survey year	1999–2001	2002–2003	2005–2006	2008–2009	2012–2013	2014–2015	2000–2016	2000–2016
Angola^{C}							2000-2006	2008, 2012
Benin^{A,C}		1,198	1,200	1,200	1,200	1,200	2001–2012	2011, 2015
Botswana^{A,C}	1,200	1,200	1,200	1,200	1,200	1,200	2000–2016	2004, 2009, 2014
Burkina Faso^{A,C}				1,200	1,200	1,200	2012–2016	2007, 2012, 2015
Cameroon^{A,C}					1,200	1,182	2012–2016	2002, 2007
Djibouti^{C}							2000–2016	2003, 2013
Gambia^{C}							2000–2003	2007, 2012
Ghana^{A,C}	2,004	1,200	1,197	1,200	2,400	2,400	2000-2016	2000, 2004, 2008, 2012, 2016
Guinea-Bissau^{C}							2000–2011	2004, 2008, 2014
Kenya^{A,C}		2,398	1,278	1,104	2,399	2,397	2000-2016	2002, 2007, 2013
Liberia^{A,C}				1,200	1,199	1,199	2004–2016	2005, 2011
Malawi^{A,C}	1,208	1,200	1,200	1,200	2,407	2,400	2000–2016	2004, 2009, 2014
Mozambique^{A,C}		1,400	1,198	1,200	2,400	2,400	2005–2016	2004, 2009, 2014
Niger^{A,C}					1,199	1,200	2010–2016	2004, 2011, 2016
Senegal^{A,C}		1,200	1,200	1,200	1,200	1,200	2000–2010	2007, 2012
Sierra Leone^{A,C}					1,190	1,191	2002–2011	2007, 2012
Tanzania^{A,C}	2,198	1,223	1,304	1,208	2,400	2,386	2000–2016	2005, 2015
Uganda^{A,C}	2,271	2,400	2,400	2,431	2,400	2,400	2000–2016	2006, 2011, 2016
Zambia^{A,C}	1,198	1,198	1,200	1,200	1,200	1,199	2000–2016	2001, 2006, 2016
Zimbabwe^{A,C}	1,200	1,104	1,048	1,200	2,400	2,400	2000–2014	2005, 2008, 2013
Total			AB surveys and clusters				Camps	Elections
			74 surveys and 7,346 clusters				202	53

Note: The superscript A,C indicates that the country of interest is present in either Afrobarometer (A) or CLEA (C) dataset, or both.

Figure A.1: Percent distribution of incumbent party vote share (IPVS)

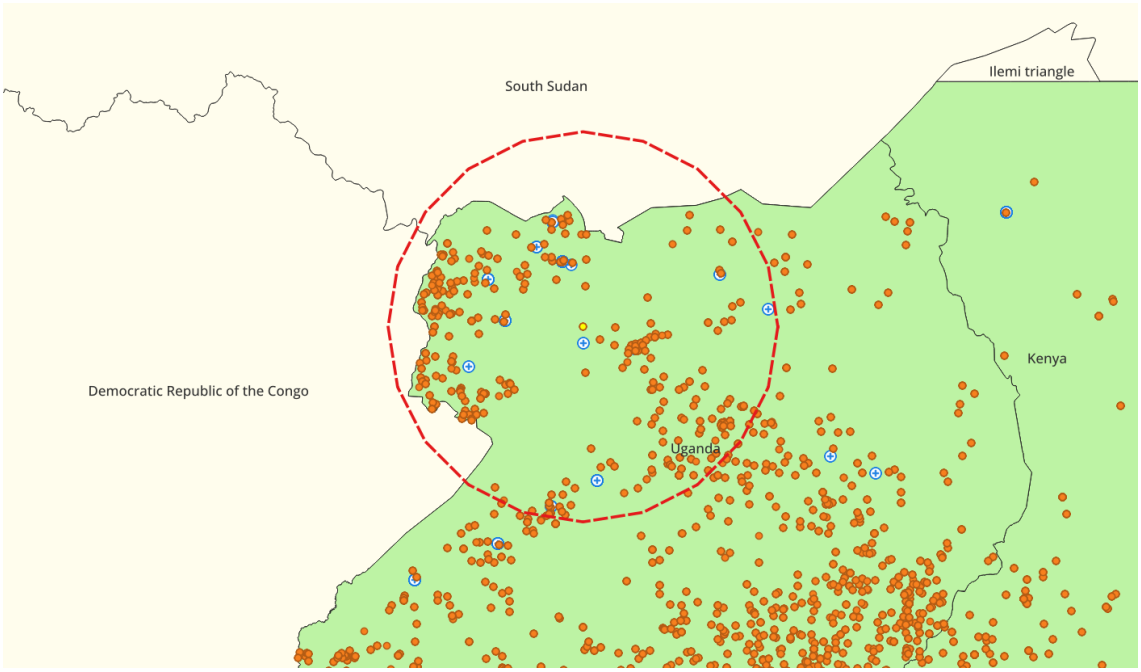


Notes: Authors' own calculations.

Figure A.2: Refugee Camps and Afrobarometer Clusters

Note: Authors' own calculations.

Figure A.3: Refugee Camps and Afrobarometer Clusters (Detailed)



Note: Authors' own calculations. The red dash line shows a 150 km buffer around the specified Afrobarometer cluster (i.e., highlighted in yellow).

Figure A.4: Testing pre-trends (reference category is 0)

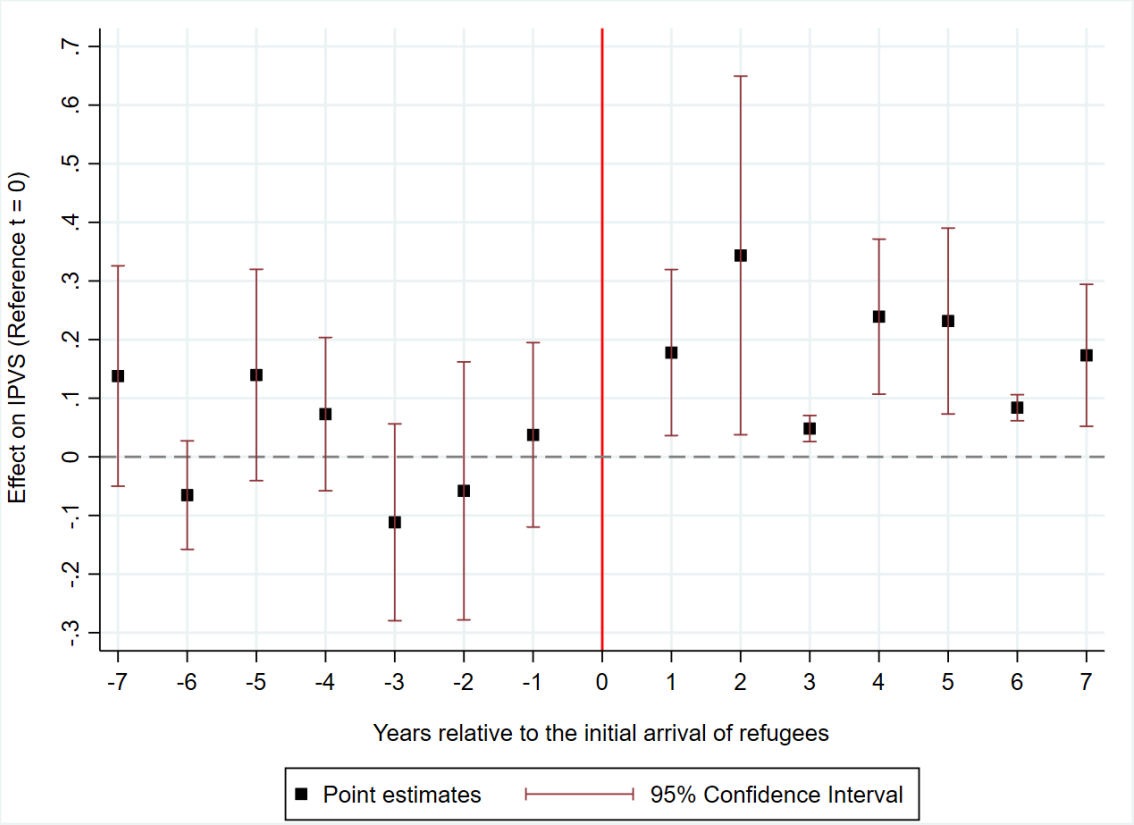
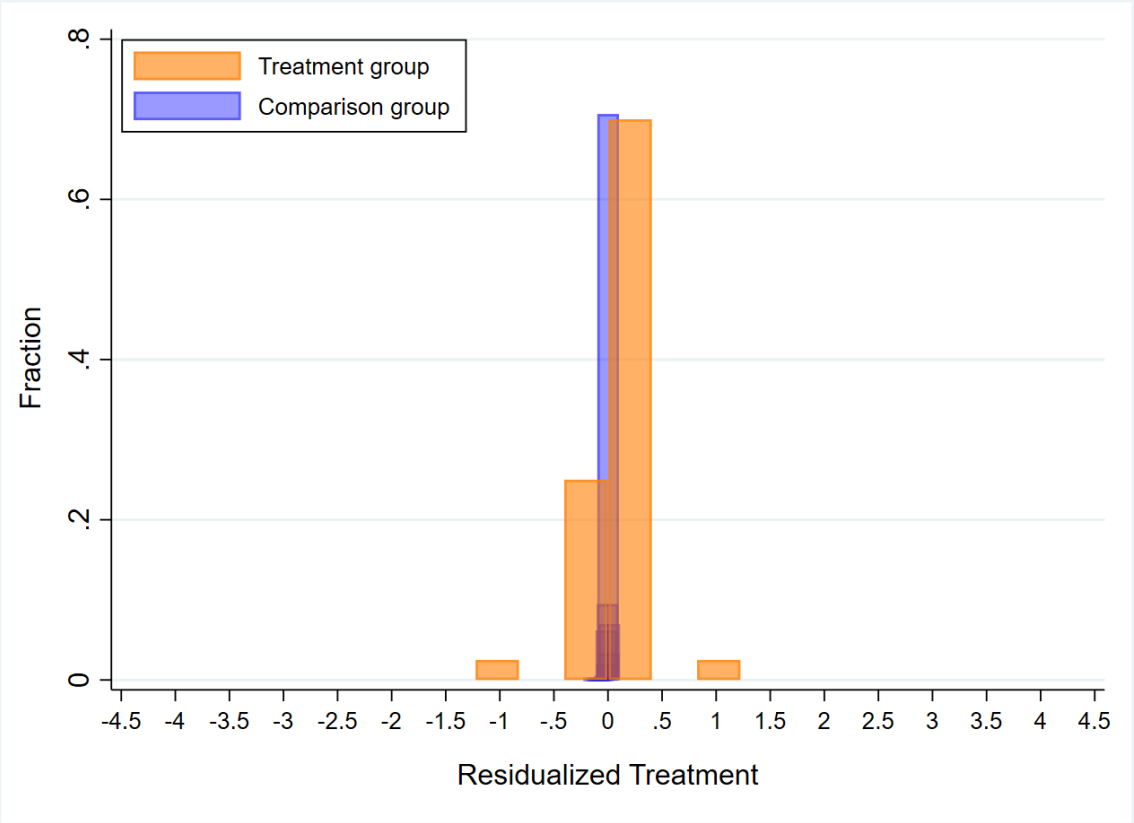
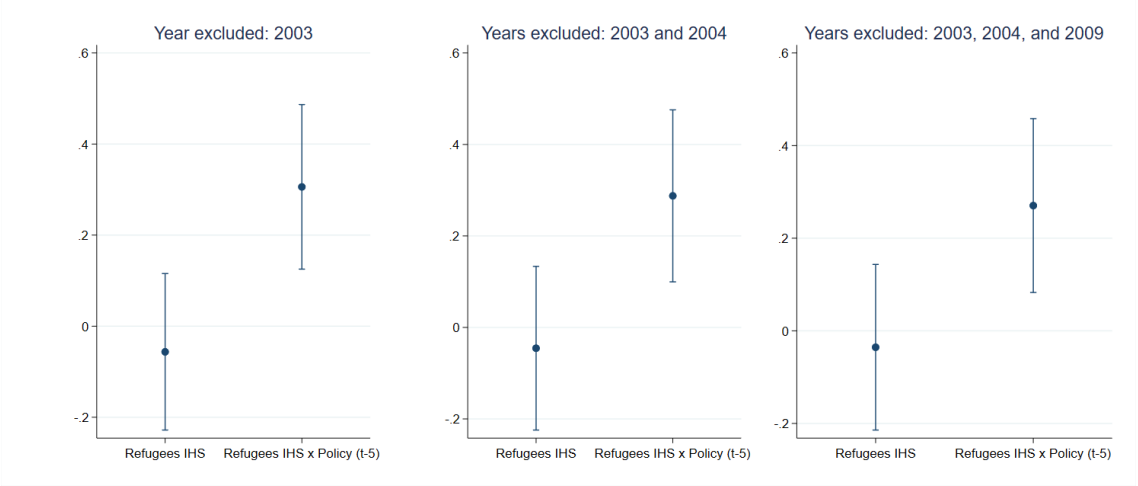


Figure A.5: Two-Way Fixed Effects Weights, by Treatment Status (Jakiela (2021))



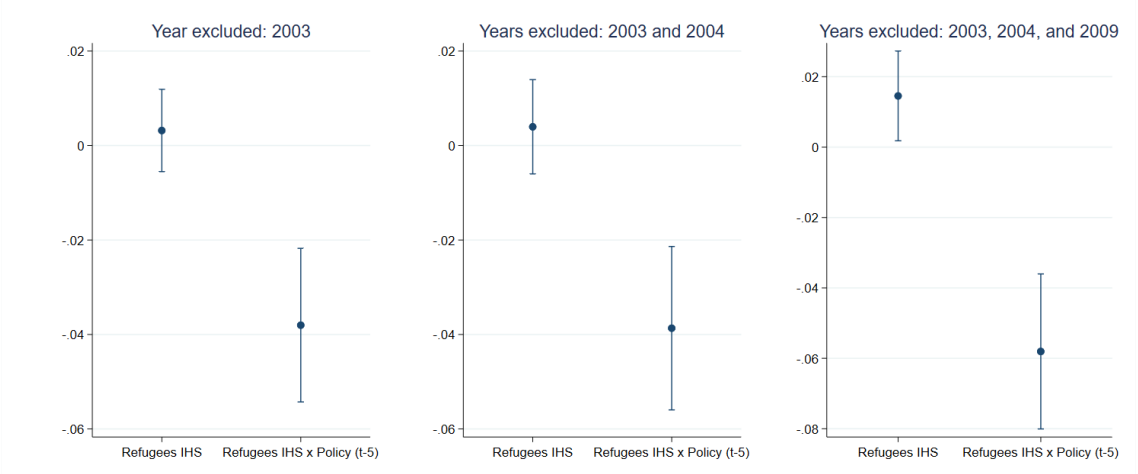
Note: Authors' own calculations.

Figure A.6: Robustness to exclusion of selected years for IPVS (Jakiela (2021))



Note: Authors' own calculations. The dependent variable is incumbent party vote share (IPVS). The estimates include year, GADM-1, and country-year fixed effects as well as time varying controls.

Figure A.7: Robustness to exclusion of selected years for PC (Jakiela (2021))



Note: Authors' own calculations. The dependent variable is political competition (PC). The estimates include year, GADM-1, and country-year fixed effects as well as time varying controls.

Table A.2: Effect of refugees on Incumbent support and Political competition (Using stock numbers, Excluding Angola, Cameroon, Gambia and Guinea-Bissau)

	(1)	(2)	(3)	(4)
Panel A	Incumbent Party Vote Share			
IHS Refugee Ratio (at t-1)	0.1484	0.0864	0.0552	-0.0409
	(0.1319)	(0.1584)	(0.0778)	(0.0835)
Elasticity	0.0025	0.0014	0.0010	-0.0007
IHS Refugee Ratio (at t-1) x Policy			0.3317***	0.4532***
			(0.1167)	(0.0965)
Elasticity			0.0065	0.0081
Panel B	Political Competition			
IHS Refugee Ratio (at t-1)	-0.0175	-0.0140	-0.0098	0.0010
	(0.0241)	(0.0159)	(0.0073)	(0.0040)
Elasticity	-0.0026	-0.0021	-0.0016	0.0001
IHS Refugee Ratio (at t-1) x Policy			-0.0274	-0.0535***
			(0.0676)	(0.0091)
Elasticity			-0.0046	-0.0088
Observations	700	700	700	700
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	No	Yes	No	Yes
Time-varying controls	No	Yes	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level)

Table A.3: Relationship between refugee camp opening and previous incumbent support

Dep. var.	Pr (Refugee Camp Opening) at t			
	Coefficient	SE	Obs	R-squared
Previous incumbent support (t-1)	-0.0407	(0.0687)	471	0.98
Previous political competition (t-1)	-0.0145	(0.0286)	471	0.98

Note: Authors' own calculations. We regress probability of opening a refugee camp at time t in the GADM-1 region of interest on IPVS (and PC) at time t-1 (or, IPVS and PC in the previous election). To do so, we create a variable, previous IPVS and PC, and assign t-1 values of IPVS and PC. The specifications include year and GADM-1 fixed effects. We control for the peripheral areas by utilizing an indicator variable taking value of 1 if a GADM-1 region has a border to another country and 0 otherwise, as well as conflict and climate controls. The standard errors clustered at the GADM-1 level.

Table A.4: Gardner (2021) two-stage DID

Dep. var.	Incumbent Party Vote Share		
	Coefficient	SE	Obs
IHS Refugee Ratio (at t)	0.1032	(0.0765)	700
IHS Refugee Ratio (at t) x Policy	0.2192**	(0.1169)	700
Dep. var.	Political Competition		
	Coefficient	SE	Obs
IHS Refugee Ratio (at t)	-0.0442***	(0.0135)	700
IHS Refugee Ratio (at t) x Policy	-0.0727**	(0.0372)	700

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.5: Robustness by electoral democracy, Excluding Angola, Cameroon, Gambia and Guinea-Bissau

	(1)	(2)
Panel A	Incumbent Party Vote Share	
IHS Refugee Ratio (at t)	0.0743	-0.0367
	(0.0983)	(0.0992)
IHS Refugee Ratio (at t) x Policy	0.2025**	0.2966***
	(0.1006)	(0.0988)
IHS Refugee Ratio (at t) x Policy x Electoral democracy	2.0303	-2.0493
	(2.2410)	(2.9571)
Observations	700	700
Year Fixed Effects	Yes	Yes
Region Fixed Effects	Yes	Yes
Country-Year Fixed Effects	No	Yes
Time-varying controls	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.6: Robustness by electoral democracy, Excluding Angola, Cameroon, Gambia and Guinea-Bissau

	(1)	(2)
Panel A	Political Competition	
IHS Refugee Ratio (at t)	-0.0095	0.0034
	(0.0090)	(0.0052)
IHS Refugee Ratio (at t) x Policy	-0.0416**	-0.0377***
	(0.0192)	(0.0081)
IHS Refugee Ratio (at t) x Policy x Electoral democracy	-0.8585	0.0181
	(0.8911)	(0.1234)
Observations	700	700
Year Fixed Effects	Yes	Yes
Region Fixed Effects	Yes	Yes
Country-Year Fixed Effects	No	Yes
Time-varying controls	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.7: Robustness by urban, non-bordering regions and distance-to-capital, Excluding Angola, Cameroon, Gambia and Guinea-Bissau

	(1)	(2)	(3)
	Incumbent Party Vote Share		
	Exclude urban regions	Exclude non-bordering regions	Distance-to-capital x Year
IHS Refugee Ratio	-0.0346	-0.0628	-0.0321
	(0.0698)	(0.1326)	(0.1028)
IHS Refugee Ratio x Policy	1.3536**	0.2940**	0.2776***
	(0.6523)	(0.1367)	(0.1049)
Observations	264	354	700
Year Fixed Effects	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes
Time-varying controls	Yes	Yes	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests. Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.8: Robustness by urban, non-bordering regions and distance-to-capital, Excluding Angola, Cameroon, Gambia and Guinea-Bissau

	(1)	(2)	(3)
	Political Competition		
	Exclude urban regions	Exclude non-bordering regions	Distance-to-capital x Year
IHS Refugee Ratio	0.0014	-0.0028	0.0075
	(0.0038)	(0.0041)	(0.0052)
IHS Refugee Ratio x Policy	-0.0562	-0.0202***	-0.0392***
	(0.0386)	(0.0051)	(0.0081)
Observations	264	354	700
Year Fixed Effects	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes
Time-varying controls	Yes	Yes	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests. Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.9: Robustness by refugee-policy determinants, Excluding Angola, Cameroon, Gambia and Guinea-Bissau

	(1)	(2)	(3)
	Incumbent Party Vote Share		
	Neighboring conflict (t-5) x Ref Pres	Aid I x Ref Pres	Aid II x Ref Pres
IHS Refugee Ratio	-0.1050	-0.0744	-0.0479
	(0.1053)	(0.0935)	(0.0924)
IHS Refugee Ratio x Policy	0.3524***	0.3115***	0.2875***
	(0.1056)	(0.0974)	(0.0973)
Observations	700	700	700
Year Fixed Effects	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes
Time-varying controls	Yes	Yes	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests. Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.10: Robustness by refugee-policy determinants, Excluding Angola, Cameroon, Gambia and Guinea-Bissau

	(1)	(2)	(3)
	Political Competition		
	Neighboring conflict (t-5) x Ref Pres	Aid I x Ref Pres	Aid II x Ref Pres
IHS Refugee Ratio	-0.0109	0.0210	0.0110
	(0.0176)	(0.0193)	(0.0119)
IHS Refugee Ratio x Policy	-0.0211	-0.0501***	-0.0395***
	(0.0191)	(0.0169)	(0.0107)
Observations	700	700	700
Year Fixed Effects	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes
Time-varying controls	Yes	Yes	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests. Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.11: Summary robustness checks table for Incumbent Party Vote Share

	(1)	(2)	(3)	(4)
Panel A	All countries included			
IHS Refugee Ratio (at t)	0.1857*	0.1191	0.0593	-0.0353
	(0.1041)	(0.1262)	(0.0974)	(0.0992)
Elasticity	0.0032	0.0021	0.00103	-0.0006
IHS Refugee Ratio (at t) x Policy			0.2328**	0.2844***
			(0.0655)	(0.0668)
Elasticity			0.0044	0.0047
Observations	791	791	791	791
Panel B	Non-IHS refugee ratio			
Refugee Ratio (at t)	0.1391	0.0765	0.0430	-0.0405
	(0.0910)	(0.1098)	(0.0622)	(0.0624)
Refugee Ratio (at t) x Policy			0.2156***	0.2627***
			(0.0655)	(0.0668)
Observations	700	700	700	700
Panel C	Log (x+1) refugee ratio			
Ln Refugee Ratio (at t)	0.2671**	0.1705	0.1217	-0.0312
	(0.1221)	(0.1577)	(0.1557)	(0.1576)
Ln Refugee Ratio (at t) x Policy			0.2478	0.3438**
			(0.1592)	(0.1628)
Observations	700	700	700	700
Panel D	Placebo exercise			
IHS Refugee Ratio (at t+1)	0.0055	-0.1291	0.0724	-0.0344
	(0.1349)	(0.1616)	(0.1316)	(0.1326)
Elasticity	8.97e-05	-0.0021	0.0013	-0.0006
IHS Refugee Ratio (at t+1) x Policy			-0.7541	-1.0748
			(0.6127)	(0.7028)
Elasticity			-0.0135	-0.0202
Observations	700	700	700	700
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	No	Yes	No	Yes
Time-varying controls	No	Yes	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests. Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.12: Summary robustness checks table for Political Competition

	(1)	(2)	(3)	(4)
Panel A	All countries included			
IHS Refugee Ratio (at t)	-0.0286	-0.0171	0.0068	0.0035
	(0.0246)	(0.0135)	(0.0096)	(0.0049)
Elasticity	-0.0050	0.0012	-0.0030	0.0006
IHS Refugee Ratio (at t) x Policy			-0.0653***	-0.0379***
			(0.0204)	(0.0085)
Elasticity			-0.0114	-0.0066
Observations	791	791	791	791
Panel B	Non-IHS refugee ratio			
Refugee Ratio (at t)	-0.0272	-0.0124	-0.0076	0.0023
	(0.0175)	(0.0117)	(0.0065)	(0.0035)
Refugee Ratio (at t) x Policy			-0.0440***	-0.0330***
			(0.0148)	(0.0066)
Observations	700	700	700	700
Panel C	Log (x+1) refugee ratio			
Ln Refugee Ratio (at t)	-0.0458*	-0.0228	-0.0118	0.0055
	(0.0259)	(0.0168)	(0.0133)	(0.0079)
Ln Refugee Ratio (at t) x Policy			-0.0579**	-0.0482***
			(0.0265)	(0.0116)
Observations	700	700	700	700
Panel D	Placebo exercise			
IHS Refugee Ratio (at t+1)	-0.0053	0.0135	-0.0064	0.0056
	(0.0278)	(0.0152)	(0.0117)	(0.0119)
Elasticity	-0.0007	0.0019	-0.0010	0.0021
IHS Refugee Ratio (at t+1) x Policy			0.0130	0.0892*
			(0.2863)	(0.0468)
Elasticity			0.0021	0.0017
Observations	700	700	700	700
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	No	Yes	No	Yes
Time-varying controls	No	Yes	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.13: Summary robustness checks table for Incumbent Party Vote Share (Using stock numbers)

	(1)	(2)	(3)	(4)
Panel A	All countries included			
IHS Refugee Ratio (at t-1)	0.1291	0.0867	0.0295	-0.0402
	(0.1302)	(0.1583)	(0.0704)	(0.0835)
Elasticity	0.0021	0.0014	0.0005	-0.0007
IHS Refugee Ratio (at t-1) x Policy			0.3558***	0.4528***
			(0.1137)	(0.0963)
Elasticity			0.0064	0.0075
Observations	791	791	791	791
Panel B	Non-IHS refugee ratio			
Refugee Ratio (at t-1)	0.0844	0.0382	0.0307	-0.0406
	(0.0926)	(0.1097)	(0.0483)	(0.0509)
Refugee Ratio (at t-1) x Policy			0.3405***	0.4330***
			(0.0923)	(0.0679)
Observations	700	700	700	700
Panel C	Log (x+1) refugee ratio			
Ln Refugee Ratio (at (t-1))	0.1949	0.1452	0.0918	-0.0384
	(0.1725)	(0.2148)	(0.1238)	(0.1347)
Ln Refugee Ratio (at (t-1)) x Policy			0.3647**	0.5381***
			(0.1732)	(0.1487)
Observations	700	700	700	700
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	No	Yes	No	Yes
Time-varying controls	No	Yes	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.14: Summary robustness checks table for Political Competition (Using stock numbers)

	(1)	(2)	(3)	(4)
Panel A	All countries included			
IHS Refugee Ratio (at t-1)	-0.0008	-0.0131	0.0093	0.0020
	(0.0285)	(0.0158)	(0.0111)	(0.0037)
Elasticity	-0.0001	-0.0021	0.0016	0.0003
IHS Refugee Ratio (at t-1) x Policy			-0.0362	-0.0539***
			(0.1137)	(0.0963)
Elasticity			-0.0062	-0.0094
Observations	791	791	791	791
Panel B	Non-IHS refugee ratio			
Refugee Ratio (at t-1)	-0.0084	-0.0081	-0.0072	0.0009
	(0.0170)	(0.0110)	(0.0053)	(0.0027)
Refugee Ratio (at t-1) x Policy			-0.0310	-0.0511***
			(0.0616)	(0.0080)
Observations	700	700	700	700
Panel C	Log (x+1) refugee ratio			
Ln Refugee Ratio (at (t-1))	-0.0096	-0.0195	-0.0130	0.0012
	(0.0402)	(0.2148)	(0.0103)	(0.0059)
Ln Refugee Ratio (at (t-1)) x Policy			-0.0204	-0.0634***
			(0.0920)	(0.0121)
Observations	700	700	700	700
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	No	Yes	No	Yes
Time-varying controls	No	Yes	No	Yes

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.Control variables at the GADM 1 level are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The standard errors are clustered at the region level (i.e., GADM-1 level).

Table A.15: Afrobarometer Questions and Round Availability

Question	Response	Rounds
Performance of President		
Do you approve or disapprove of the way the following people have performed their jobs over the past twelve months, or haven't you heard enough about them to say: President	0=Unsatisfied/Disapprove, 1=Satisfied/Approved	1-6
Performance of Parliament		
Do you approve or disapprove of the way the following people have performed their jobs over the past twelve months, or haven't you heard enough about them to say: Your Member of Parliament?	0=Unsatisfied/Disapprove, 1=Satisfied/Approved	1-6
Trust in President		
How much do you trust each of the following, or haven't you heard enough about them to say: The President?	0=Do not Trust, 1=Trust	1-6
Trust in Parliament		
How much do you trust each of the following, or haven't you heard enough about them to say: The Parliament?	0=Do not Trust, 1=Trust	2-6

Dislike Immigrants and Foreign Workers		
For each of the following types of people, please tell me whether you would like having people from this group as neighbors, dislike it, or not care: Immigrants and/or foreign workers.	0=Like, 1=Dislike	5-6
Addressing Educational Needs		
How well or badly would you say the current government is handling the following matters, or haven't you heard enough about them to say: Addressing educational needs?	0=Not handling well, 1=Handling well	1-6
Improving Basic Health Services		
How well or badly would you say the current government is handling the following matters, or haven't you heard enough about them to say: Improving basic health services?	0=Not handling well, 1=Handling well	1-6
Maintaining Roads and Bridges		
How well or badly would you say the current government is handling the following matters, or haven't you heard enough to say: Maintaining roads and bridges?	0=Not handling well, 1=Handling well	3-6
Ability to Reduce Crime		

How well or badly would you say the current government is handling the following matters, or haven't you heard enough about them to say: Reducing crime?	0=Not handling well, 1-6 1=Handling well
Nationel Identity	
Let us suppose that you had to choose between being a [National identity] and being a [Ethnic identity]. Which of these two groups do you feel most strongly attached to?	0=Not handling well

Table A.16: Government performance indicators, trust, perception (Two-year window, Different buffers)

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
President performance (80 km)	-0.2524	(0.2829)	0.3270	(0.2847)	43,095
Parliament performance (80 km)	-0.3446**	(0.1616)	0.4005**	(0.1629)	38,340
President trust (80 km)	-0.1421	(0.1287)	0.2016	(0.1308)	43,356
Parliament trust (80 km)	-0.1844	(0.1171)	0.2685**	(0.1175)	39,476
Dislike immigrants (80 km)	0.0633***	(0.6333)	-0.5973***	(0.0479)	10,475
President performance (120 km)	-0.3297	(0.2170)	0.4439**	(0.2208)	43,095
Parliament performance (120 km)	-0.2464*	(0.1392)	0.2916**	(0.1396)	38,340
President trust (120 km)	-0.1943*	(0.1017)	0.2643**	(0.1039)	43,356
Parliament trust (120 km)	-0.1925**	(0.0788)	0.2677***	(0.0801)	39,476
Dislike immigrants (120 km)	0.7663***	(0.0592)	-0.7428***	(0.0591)	10,475
President performance (200 km)	-0.1553***	(0.0393)	0.2560***	(0.0530)	43,095
Parliament performance (200 km)	-0.1349***	(0.0447)	0.1999***	(0.0501)	38,340
President trust (200 km)	-0.0378	(0.0284)	0.1143***	(0.0337)	43,356
Parliament trust (200 km)	-0.0542	(0.0403)	0.1511***	(0.0425)	39,476
Dislike immigrants (200 km)	0.5180***	(0.0401)	-0.5864***	(0.0400)	10,475
Year Fixed Effects	Yes	Yes	Yes	Yes	
Cluster Fixed Effects	Yes	Yes	Yes	Yes	
Time-varying controls	Yes	Yes	Yes	Yes	

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

Table A.17: Testing contact hypothesis for selected outcomes (150 km buffer)

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy x Dist		Obs
	Coef	SE	Coef	SE	N
President performance	-0.0059	(0.0503)	0.0013*	(0.0008)	43,095
President trust	0.0287	(0.0214)	0.0005	(0.0004)	43,356
Dislike immigrants	0.5180***	(0.0400)	-0.0033***	(0.0002)	10,475
Year Fixed Effects	Yes	Yes	Yes	Yes	
Cluster Fixed Effects	Yes	Yes	Yes	Yes	
Time-varying controls	Yes	Yes	Yes	Yes	

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

Table A.18: Summary Table for Mechanisms without Controls (150 km buffer)

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
Educational needs	-0.2013**	(0.0830)	0.1936**	(0.0851)	40,652
Improving healthcare	-0.2189***	(0.0433)	0.2377***	(0.0482)	40,696
Infrastructural maintenance	-0.5571***	(0.0840)	0.5436***	(0.0475)	30,233
Reducing crime	-0.0388	(0.0404)	0.0719	(0.0475)	40,137
National identity	0.0648**	(0.0268)	-0.0927**	(0.0414)	39,222
Nightlights	-0.1271***	(0.0415)	0.1424***	(0.0427)	27,235
Year Fixed Effects	Yes	Yes	Yes	Yes	
Cluster Fixed Effects	Yes	Yes	Yes	Yes	
Time-varying controls	No	No	No	No	

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). The robust standard errors are clustered at the cluster level.

Table A.19: Summary Table for Mechanisms with controls and fixed effects (80 km buffer)

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
Educational needs	-0.6643***	(0.2574)	0.6794***	(0.2588)	39,960
Improving healthcare	-0.4297*	(0.2234)	0.4661**	(0.2253)	40,006
Infrastructural maintenance	-0.0515	(0.0279)	0.0554**	(0.0286)	29,825
Reducing crime	0.0291	(0.1395)	0.0505	(0.1434)	39,464
National identity	0.1288	(0.1608)	-0.1117	(0.1640)	38,627
Nightlights	-0.0701**	(0.0309)	0.0962***	(0.0324)	26,669
Year Fixed Effects	Yes	Yes	Yes	Yes	
Cluster Fixed Effects	Yes	Yes	Yes	Yes	
Time-varying controls	Yes	Yes	Yes	Yes	

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

Table A.20: Summary Table for Mechanisms with Controls and FEs (120 km buffer)

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
Educational needs	-0.4286*	(0.2232)	0.4360*	(0.2241)	39,960
Improving healthcare	-0.3052*	(0.1722)	0.3377*	(0.1736)	40,006
Infrastructural maintenance	-0.9844***	(0.1118)	1.0071***	(0.1190)	29,825
Reducing crime	-0.0552	(0.1127)	0.1221	(0.1154)	39,464
National identity	0.0333	(0.0833)	-0.0560	(0.0916)	38,627
Nightlights	-0.1215***	(0.0376)	0.1318***	(0.0381)	26,669
Year Fixed Effects	Yes	Yes	Yes	Yes	
Cluster Fixed Effects	Yes	Yes	Yes	Yes	
Time-varying controls	Yes	Yes	Yes	Yes	

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

Table A.21: Summary Table for Mechanisms with Controls and FEs (200 km buffer)

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
Educational needs	-0.1403***	(0.0350)	0.1523***	(0.0415)	39,960
Improving healthcare	-0.1399***	(0.0309)	0.1669***	(0.0389)	40,006
Infrastructural maintenance	-0.2284*	(0.1292)	0.2014	(0.1346)	29,825
Reducing crime	-0.0758**	(0.0351)	0.1018**	(0.0433)	39,464
National identity	-0.0006	(0.0348)	-0.0684	(0.0442)	38,627
Nightlights	-0.0472*	(0.0250)	0.0196	(0.0349)	26,669
Year Fixed Effects	Yes	Yes	Yes	Yes	
Cluster Fixed Effects	Yes	Yes	Yes	Yes	
Time-varying controls	Yes	Yes	Yes	Yes	

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

Table A.22: Living conditions and Income (150 km buffer)

	(1)	(2)	(3)	(4)	(5)
	Refugees IHS		Refugees IHS x Policy		Obs
	Coef	SE	Coef	SE	N
Better present living conditions	-0.1203**	(0.0559)	0.1803***	(0.0666)	38,402
Ever gone without cash	0.1415***	(0.0427)	-0.1388***	(0.0460)	40,653
Year Fixed Effects	Yes	Yes	Yes	Yes	
Cluster Fixed Effects	Yes	Yes	Yes	Yes	
Time-varying controls	Yes	Yes	Yes	Yes	

Notes:*** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$). Control variables at the individual level are (1) age and age square, (2) sex, (3) education status, and (4) rural versus urban residence. Control variables are as follows: (1) conflict intensity as measured by a dummy taking value of 1 if fatalities as a result of a conflict is greater than 0, and 0 otherwise, (2) mean temperature per land area and its square, and (3) mean precipitation per land area and its square. The robust standard errors are clustered at the cluster level.

Table A.23: Rationale for Determining the Incumbent Party in Angola

Country	Year	Election Type	Elected Party	Pty vote	Elected President	Pres vote	Incumbent	Notes
Angola	1999	General	Movimento Popular de Libertação de Angola (MPLA)	53.74%	José Eduardo dos Santos	49.56%	Movimento Popular de Libertação de Angola (MPLA)	In 1992, Angola held both presidential and parliamentary elections separately. José Eduardo dos Santos, the MPLA candidate, won the presidential election with 53.74% of the vote. The parliamentary elections were held under a proportional representation system, and the MPLA won 49.56% of the vote in those elections. The presidential and parliamentary vote shares are different because voters cast separate ballots for the president and for legislative representatives. Political affiliation of José Eduardo dos Santos is MPLA.
	2008	Parliamentary	Movimento Popular de Libertação de Angola (MPLA)	81.64%			Movimento Popular de Libertação de Angola (MPLA)	
	2012	General	Movimento Popular de Libertação de Angola (MPLA)	20.40%	José Eduardo dos Santos	71.84%	Movimento Popular de Libertação de Angola (MPLA)	In 2012, Angola used a proportional representation system for both presidential and parliamentary elections. José Eduardo dos Santos, the MPLA candidate, won 71.84% of the vote in both the presidential and parliamentary elections, which made their vote shares the same for both elections.
Benin	2007	Parliamentary	Forces Cauris pour un Bénin émergent (FCBE)	58.69%			Union pour le Bénin du futur (UBF)	In 2003, the ruling party was UBF. This is the main reason of UBF being incumbent in 2007 elections.

Country	Year	Election Type	Elected Party	Party Voteshare	Elected President	President Voteshare	Incumbent	Notes
	2011	General	Forces Cauris pour un Bénin émergent (FCBE)	33.30%	Yaya Boni	53.14%	Forces Cauris pour un Bénin émergent (FCBE)	In 2007 parliamentary elections, the FCBE won the 35 of the 83 seats. Turnout was estimated at 58.690%. This is the main reason of the FCBE being incumbent in 2011 elections. Political affiliation of Yaya Boni is independent.
	2015	Parliamentary	Forces Cauris pour un Bénin émergent (FCBE)	30.19%			Forces Cauris pour un Bénin émergent (FCBE)	
Botswana	1999	General	Botswana Democratic Party (BDP)	57.14%	Festus Mogae	57.14%	Botswana Democratic Party (BDP)	Political affiliation of Festus Mogae is BDP.
	2004	General	Botswana Democratic Party (BDP)	51.73%	Festus Mogae	51.73%	Botswana Democratic Party (BDP)	
	2009	General	Botswana Democratic Party (BDP)	53.26%	Ian Khama	53.26%	Botswana Democratic Party (BDP)	Political affiliation of Ian Khama is BDP.
	2014	General	Botswana Democratic Party (BDP)	46.45%	Ian Khama	46.45%	Botswana Democratic Party (BDP)	
Burkina Faso	2002	Parliamentary	Congrès pour la Démocratie et le Progrès (CDP)	49.52%			Congrès pour la Démocratie et le Progrès (CDP)	The president in 2002 elections was Blaise Compaoré whose political affiliation was CDP.
	2005	Presidential			Blaise Compaoré	80.35%	Congrès pour la Démocratie et le Progrès (CDP)	
	2007	Parliamentary	Congrès pour la Démocratie et le Progrès (CDP)	58.85%			Congrès pour la Démocratie et le Progrès (CDP)	
	2010	Presidential			Blaise Compaoré	80.21%	Congrès pour la Démocratie et le Progrès (CDP)	
	2012	Parliamentary	Congrès pour la Démocratie et le Progrès (CDP)	48.66%			Congrès pour la Démocratie et le Progrès (CDP)	

Country	Year	Election Type	Elected Party	Party Voteshare	Elected President	President Voteshare	Incumbent	Notes
	2015	General	Mouvement du Peuple pour le Progrès (MPP)	53.49%	Roch Marc Christian Kaboré	53.49%	Congrès pour la Démocratie et le Progrès (CDP)	Political affiliation of Roch Marc Christian Kaboré is MPP.
Cameroon	1997	Presidential			Paul Biya	92.57%	Rassemblement démocratique du Peuple Camerounais (RDPC)	Political affiliation of Paul Biya was RDPC.
	2002	Parliamentary	Rassemblement démocratique du Peuple Camerounais (RDPC)	NA				The president in 2002 elections was Paul Biya whose political affiliation was RDPC.
	2004	Presidential			Paul Biya	70.92%	Rassemblement démocratique du Peuple Camerounais (RDPC)	
	2007	Parliamentary	Rassemblement démocratique du Peuple Camerounais (RDPC)	67.30%			Rassemblement démocratique du Peuple Camerounais (RDPC)	
Djibouti	1999	Presidential			Ismaïl Omar Guelleh	74.02%	Rassemblement populaire pour le Progrès (RPP)	The incumbent part is RPP because in 1997 elections it was the winning party. Political affiliation of Ismaïl Omar Guelleh was RPP.
	2003	Parliamentary	Union pour la Majorité Présidentielle (UMP)	62.73%			Rassemblement populaire pour le Progrès (RPP)	UMP is a coalition that supports Ismail Omar Guelleh. The coalition is composed of four parties; the RPP, the FRUD, the PSD, and the UPR.
	2005	Presidential			Ismaïl Omar Guelleh	100%	Union pour la Majorité Présidentielle (UMP)	
	2008	Parliamentary	Union pour la Majorité Présidentielle (UMP)	94.06%			Rassemblement démocratique du Peuple Camerounais (RDPC)	
	2011	Presidential			Ismaïl Omar Guelleh	80.63%	Union pour la Majorité Présidentielle (UMP)	

Country	**Year**	**Election Type**	**Elected Party**	**Party Voteshare**	**Elected President**	**President Voteshare**	**Incumbent**	**Notes**
	2008	Parliamentary	Union pour la Majorité Présidentielle (UMP)	61.50%			Union pour la Majorité Présidentielle (UMP)	
Gambia	2006	Presidential			Yahya Jammeh	67.30%	Alliance for Patriotic Reorientation and Construction (APRC)	The incumbent party is APRC due to the fact that it was the wnning party in previous (2002) parliamentary elections. Political affiliation of Yahya Jammeh was APRC.
	2007	Parliamentary	Alliance for Patriotic Reorientation and Construction (APRC)	59.70%			Alliance for Patriotic Reorientation and Construction (APRC)	
	2011	Presidential			Yahya Jammeh	71.10%	Alliance for Patriotic Reorientation and Construction (APRC)	
	2012	Parliamentary	Alliance for Patriotic Reorientation and Construction (APRC)	51.82%			Alliance for Patriotic Reorientation and Construction (APRC)	
Ghana	1996	General	National Democratic Congress (NDC)	52.97%	Jerry Rawlings	57.40%	National Democratic Congress (NDC)	The incumbent party is NDC due to the fact that NCD winning the previoys (1992) parliamentary elections. Political affiliation of Jerry Rawlings is NDC.
	2000	General	New Patriotic Party (NPP)	44.98%	John Kufuor	56.90%	National Democratic Congress (NDC)	Political affiliation of John Kufuor is NPP.
	2004	General	New Patriotic Party (NPP)	49.04%	John Kufuor	52.45%	New Patriotic Party (NPP)	
	2008	General	National Democratic Congress (NDC)	44.17%	John Atta Mills	50.20%	New Patriotic Party (NPP)	Political affiliation of John Atta Mills is NDC.
	2012	General	National Democratic Congress (NDC)	46.41%	John Mahama	50.70%	National Democratic Congress (NDC)	Political affiliation of John Atta Mills is NDC.
	2016	General	New Patriotic Party (NPP)	52.48%	Nana Akufo-Addo	53.72%	National Democratic Congress (NDC)	Political affiliation of Nana Akufo-Addo is NPP.

Country	Year	Election Type	Elected Party	Party Voteshare	Elected President	President Voteshare	Incumbent	Notes
Guinea Bissau	1999	General	Partido da Renovaçao Social (PRS)	29.71%	Kumba Lalá	72.00%	Partido Africano da Independência de Guiné e Cabo Verde (PAIGC)	The incumbent party is PAIGC due to the fact that PAIGC winning the previoys (1994) parliamentary elections. Political affiliation of Kumba Lalá is PRS.
	2004	Parliamentary	Partido Africano da Independência de Guiné e Cabo Verde (PAIGC)	33.88%			Partido da Renovaçao Social (PRS)	Political affiliation of John Kufuor is NPP.
	2008	Parliamentary	Partido Africano da Independência de Guiné e Cabo Verde (PAIGC)	49.52%			Partido Africano da Independência de Guiné e Cabo Verde (PAIGC)	
	2014	General	Partido Africano da Independência de Guiné e Cabo Verde (PAIGC)	47.98%	José Mário Vaz	50.70%	Partido Africano da Independência de Guiné e Cabo Verde (PAIGC)	Political affiliation of José Mário Vaz Mills is PAIGC.
Kenya	1997	General	Kenya African National Union (KANU)	NA	Daniel Arap Moi	40.40%	Kenya African National Union (KANU)	The incumbent party is KANU due to the fact that KANU winning the previous (1992) parliamentary elections. Political affiliation of Daniel Arap Moi is KANU.
	2002	General	National Rainbow Coalition (NARC)	61.00%	Mwai Kibaki	62.20%	Kenya African National Union (KANU)	Political affiliation of Mwai Kibaki is NARC.
	2007	General	Party of National Unity (PNU)	46.42%	Mwai Kibaki	46.42%	National Rainbow Coalition (NARC)	The Party of National Unity (PNU) is a political party in Kenya originally founded as a political coalition. In 2007, Kenyan President Mwai Kibaki announced the party's formation and declared that he would run as its presidential candidate in the 2007 Kenyan elections.
	2013	General	The National Alliance	47.98%	Uhuru Kenyatta	50.51%	National Rainbow Coalition (NARC)	Political affiliation of Uhuru Kenyatta is the National Alliance.

Country	Year	Election Type	Elected Party	Party Voteshare	Elected President	President Voteshare	Incumbent	Notes
Liberia	1997	General	National Patriotic Party (NPP)	75.33%	Charles Taylor	75.33%	National Democratic Party of Liberia (NDPL)	The incumbent party is NDPL due to the fact that KANU winning the previous (1985) general elections. Political affiliation of Charles Taylor is NPP.
	2005	General	Unity Party (UP)	59.40%	Ellen Johnson Sirleaf	59.40%	National Patriotic Party (NPP)	Political affiliation of Ellen Johnson Sirleaf is UP.
	2011	General	Unity Party (UP)	46.42%	Ellen Johnson Sirleaf	17.76%	Unity Party (UP)	
Malawi	1999	General	United Democratic Front (UDF)	47.32%	Bakili Muluzi	52.38%	United Democratic Front (UDF)	The incumbent party is UDF due to the fact that UDF winning the previous (1994) general elections. Political affiliation of Bakili Muluzi is UDF.
	2004	General	United Democratic Front (UDF)	25.34%	Bingu wa Mutharika	35.97%	United Democratic Front (UDF)	Political affiliation of Bingu wa Mutharika is UDF.
	2009	General	Democratic Progressive Party (DPP)	39.99%	Bingu wa Mutharika	66.17%	Unity Party (UP)	
	2014	General	Democratic Progressive Party (DPP)	21.98%	Peter Mutharika	36.42%	Democratic Progressive Party (DPP)	Political affiliation of Peter Mutharika is DPP.
Mozambique	1999	General	Mozambique Liberation Front (FRELIMO)	48.54%	Joaquim Chissano	52.29%	Mozambique Liberation Front (FRELIMO)	The incumbent party is FRELIMO due to the fact that FRELIMO winning the previous (1994) general elections. Political affiliation of Joaquim Chissano is FRELIMO.
	2004	General	Mozambique Liberation Front (FRELIMO)	62.03%	Armando Guebuza	63.74%	Mozambique Liberation Front (FRELIMO)	Political affiliation of Armando Guebuza is FRELIMO.
	2009	General	Mozambique Liberation Front (FRELIMO)	74.66%	Armando Guebuza	75.01%	Mozambique Liberation Front (FRELIMO)	
	2014	General	Mozambique Liberation Front (FRELIMO)	55.68%	Filipe Nyus	57.00%	Mozambique Liberation Front (FRELIMO)	Political affiliation of Filipe Nyusi is FRELIMO.

Country	Year	Election Type	Elected Party	Party Voteshare	Elected President	President Voteshare	Incumbent	Notes
Niger	1999	General	Mouvement National de la Societé de Développement(NASSARA)	34.65%	Olusegun Obasanjo	54.42%	Convention Démocratique et Sociale (RAHAMA)	The incumbent party is RAHAMA due to the fact that RAHAMA winning the previous (1993) general elections. Political affiliation of Olusegun Obasanjo is NASSARA.
	2004	General	Mouvement National de la Societé de Développement(NASSARA)	37.13%	Mamadou Tandja	65.33%	Mouvement National de la Societé de Développement(NASSARA)	Political affiliation of Mamadou Tandja is NASSARA.
	2011	General	Mouvement National de la Societé de Développement(NASSARA)	33.00%	Mahamadou Issoufou	58.04%	Mouvement National de la Societé de Développement(NASSARA)	Political affiliation of Mahamadou Issoufou is NASSARA.
	2016	General	Mouvement National de la Societé de Développement(NASSARA)	35.73%	Mahamadou Issoufou	92.49%	Mouvement National de la Societé de Développement(NASSARA)	
Senegal	2007	General	SOPI Coaliation	69.21%	Abdoulaye Wade	55.90%	Senegalese Democratic Party (PDS)	The incumbent party is RAHAMA due to the fact that PDS winning the previous (2001) parliamentary elections. Political affiliation of Abdoulaye Wade is Senegalese Democratic Party (PDS). The Sopi Coalition was the ruling political alliance in Senegal under Abdoulaye Wade's presidency. It included the Senegalese Democratic Party (PDS) along with several smaller parties. Wade served as the Secretary-General of the PDS
	2012	General	SOPI Coaliation	37.13%	Macky Sall	65.80%	SOPI Coaliation	Political affiliation of Macky Sall is Alliance for the Republic–Yakaar (APR).
Sierra Leone	2007	General	All People's Congress (APC)	40.73%	Ernest Bai Koroma	54.62%	Sierra Leone People's Party (SLPP)	The incumbent party is SLPP due to the fact that SLPP winning the previous (2002) general elections. Political affiliation of Ernest Bai Koroma is APC.

Country	Year	Election Type	Elected Party	Party Voteshare	Elected President	President Voteshare	Incumbent	Notes
	2007	General	All People's Congress (APC)	53.67%	Ernest Bai Koroma	58.65%	All People's Congress (APC)	
Tanzania	2005	General	Chama cha Mapinduzi (CCM)	69.99%	Jakaya Kikwete	80.28%	Chama cha Mapinduzi (CCM)	The incumbent party is CCM due to the fact that CCM winning the previous (2000) general elections. Political affiliation of Jakaya Kikwete is CCM..
	2015	General	Chama cha Mapinduzi (CCM)	55.06%	John Magufuli	58.46%	Chama cha Mapinduzi (CCM)	Political affiliation of Jakaya Kikwete is CCM.
Uganda	2006	General	National Resistance Movement (NRM)	NA	Yoweri Museveni	59.26%	National Resistance Movement (NRM)	The incumbent party is NRM due to the fact that NRM winning the previous (2001) general elections. Political affiliation of Yoweri Museveni is NRM. NRM won 213 seats out of 319 in the parliament.
	2011	General	National Resistance Movement (NRM)	51.56%	Yoweri Museveni	68.38%	National Resistance Movement (NRM)	
	2016	General	National Resistance Movement (NRM)	49.95%	Yoweri Museveni	60.62%	National Resistance Movement (NRM)	
Zambia	2001	General	Movement for Multiparty Democracy (MMD)	28.02%	Levy Mwanawasa	59.26%	Movement for Multiparty Democracy (MMD)	The incumbent party is MMD due to the fact that MMD winning the previous (1996) general elections. Political affiliation of Levy Mwanawasa is MMD.
	2006	General	Movement for Multiparty Democracy (MMD)	39.05%	Levy Mwanawasa	42.98%	Movement for Multiparty Democracy (MMD)	
	2011	General	Patriotic Front (PF)	38.42%	Michael Sata	42.85%	Movement for Multiparty Democracy (MMD)	Political affiliation of Michael Sata is PF
	2016	General	Patriotic Front (PF)	42.01%	Edgar Lungu	50.35%	Patriotic Front (PF)	Political affiliation of Edgar Lungu is PF.
Zimbabwe	2005	Parliamentary	Zimbabwe African National Union-Patriotic Front (ZANU-PF)	59.59%			Zimbabwe African National Union-Patriotic Front (ZANU-PF)	The incumbent party is ZANU-PF due to the fact that ZANU-PF winning the previous (2000) parliamentary elections.

Country	Year	Election Type	Elected Party	Party Voteshare	Elected President	President Voteshare	Incumbent	Notes
	2008	General	Zimbabwe African National Union-Patriotic Front (ZANU-PF)	45.84%	Robert Mugabe	90.22%	Zimbabwe African National Union-Patriotic Front (ZANU-PF)	Political affiliation of Robert Mugabe is ZANU-PF.
	2013	General	Zimbabwe African National Union-Patriotic Front (ZANU-PF)	63.16%	Emmerson Mnangagwa	61.88%	Zimbabwe African National Union-Patriotic Front (ZANU-PF)	Political affiliation of Emmerson Mnangagwa is ZANU-PF.

Appendix B

Tables and Figures for Chapter 3

Table B.1: Summary Table - Province Characteristics

	(1)	(2)	(3)
	Entire Period	Before Syrian Crisis	After Syrian Crisis
	(2003-2018)	(2003-2011)	(2013-2018)
Number of Refugees (in thousands)	12.026	0	30.104
	(54.181)	(0)	(82.535)
Native Population (in thousands)	915.748	873.662	978.876
	(161.366)	(150.637)	(176.214)
Total Population (in thousands) [1]	928.172	873.662	1.010.105
	(163.172)	(150.637)	(181.303)
Doctors per 1,000 inhabitant	1.34	1.23	1.50
	(0.50)	(0.50)	(0.45)
Nurses per 1,000 inhabitant	1.59	1.44	1.99
	(0.54)	(0.41)	(0.47)
Midwives per 1,000 inhabitant	0.81	0.80	0.82
	(0.32)	(0.33)	(0.32)
Hospital Beds per 1,000 inhabitant	2.40	2.27	2.61
	(0.90)	(0.90)	(0.86)
Hospitals per 1,000 inhabitant	2.33	2.28	2.40
	(1.00)	(0.98)	(1.01)
Terrorism Index	0.15	0.04	0.31
	(0.82)	(0.30)	(1.23)
Public Expenditure per 1,000 inhabitant	344.426	224.319	524.957
	(401.450)	(347.532)	(409.697)
Observation	1,215	729	486

Notes: The data on population and number of hospitals are obtained from Turkish Statistical Institute (TSI) (2022). The data on public budget comes from Presidential Strategy and Budget department. The data on terrorism are gathered from Global Terrorism Database (GTD). Year 2012 is excluded. [1] Native and refugee population.

Table B.2: Relationship between Refugee Flows and province Attributes

Dep. Var.	(Log) Number of Refugees			
Model	OLS			
	(1)	(2)	(3)	(4)
(Log) Native Population	0.1204***	0.1194**	0.1028*	0.1067
	(0.0442)	(0.0470)	(0.0485)	(0.0504)
(Log) Number of Hospitals per 1,000 inhabitant	-0.0266	-0.0315	-0.0282	-0.0281
	(0.0214)	(0.0212)	(0.0212)	(0.0214)
(Log) Public Expenditure per 1,000 inhabitant	-0.0612	-0.0092	-0.0098	-0.0102
	(0.1578)	(0.0065)	(0.0067)	(0.0069)
Terrorism Index	0.0395	0.0203	0.0204	0.0271
	(0.0247)	(0.0178)	(0.0186)	(0.0302)
Observations	1,215	1,215	1,215	1,170
Year FE	Y	Y	Y	Y
province FE	Y	Y	Y	Y
Region trends	N	Y	N	N
Region-year FE	N	N	Y	N
Exclude Ankara, Istanbul, and Izmir	N	N	N	Y

Notes: The data on population and number of hospitals are obtained from Turkish Statistical Institute (TSI) (2022). The data on Public Budget comes from Presidential Strategy and Budget department. The data on terrorism is obtained from Global Terrorism Database (GTD). Year 2012 is excluded from the analysis due to the unavailability of refugee data. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.3: Effect of Refugees on Children's WAZ (Excluding 2012)

Dep. Var.	Weight-for-Age z-scores (WAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share (IHS)	0.0127	-0.0022	-0.0134	0.2166***	0.2511***	0.2374***
	(0.0574)	(0.0621)	(0.0604)	(0.0799)	(0.0802)	(0.0814)
Elasticity	0.0006	-0.0001	-0.0006	0.0107	0.0124	0.0117
Kleibergen-Paap rk Wald F				19.07	24.83	26.25
Panel B	With individual and household controls					
Refugee Share (IHS)	0.0129	-0.0030	-0.0162	0.2097***	0.2401***	0.2233***
	(0.0652)	(0.0693)	(0.0667)	(0.0750)	(0.0754)	(0.0763)
Elasticity	0.000639	-0.000147	-0.000800	0.0104	0.0119	0.0110
Kleibergen-Paap rk Wald F				19.35	25.62	26.95
Panel C	With province-level, individual, and household controls					
Refugee Share (IHS)	-0.0102	-0.0191	-0.0394	0.1640**	0.1934***	0.1525**
	(0.0574)	(0.0636)	(0.0578)	(0.0720)	(0.0734)	(0.0744)
Elasticity	-0.0005	- 0.0009	-0.0019	0.0081	0.0095	0.0075
Kleibergen-Paap rk Wald F				18.31	24.39	24.33
Observations	5,613	5,613	5,613	5,613	5,613	5,613
Year FE	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.4: Effect of Refugees on Children's HAZ

Dep. Var.	Height-for-Age z-scores (HAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Refugee Share (IHS)					
Refugee Share (IHS)	0.0454	0.0243	0.0193	0.5133***	0.6515***	0.6669***
	(0.0286)	(0.0333)	(0.0322)	(0.1675)	(0.1873)	(0.1852)
Elasticity	0.00169	0.000903	0.000717	0.0191	0.0243	0.0248
Kleibergen-Paap rk Wald F				18.08	24.25	24.15
Panel B	province-level controls					
(Log) public Expenditure per 1,000 inhabitant	0.1465**	0.1364**	0.1575**	0.2079***	0.2347***	0.2344***
	(0.0587)	(0.0622)	(0.0666)	(0.0518)	(0.0617)	(0.0645)
(Log) Number of Hospitals	1.4655***	1.4249***	1.4614***	0.8545***	0.9021**	0.8330**
	(0.2402)	(0.2379)	(0.2432)	(0.3248)	(0.3693)	(0.3873)
Terrorism Index	0.1412	0.1395	0.1517	0.1296	0.0908	0.0743
	(0.1685)	(0.1699)	(0.1941)	(0.1702)	(0.1688)	(0.1836)
Panel C	Individual- and Household- level controls					
Female	0.0401	0.0406	0.0389	0.0443	0.0433	0.0419
	(0.0380)	(0.0377)	(0.0376)	(0.0391)	(0.0386)	(0.0389)
Female Household Head	0.1220	0.1225	0.1225	0.1171	0.1152	0.1162
	(0.1016)	(0.1017)	(0.1016)	(0.1004)	(0.1017)	(0.1025)
Mother Education (Base: No Edu/Primary Incomplete)						
Primary Complete	0.1026	0.0967	0.0968	0.0885	0.1018	0.1052
	(0.0749)	(0.0757)	(0.0756)	(0.0780)	(0.0773)	(0.0765)
Secondary Complete	0.2380***	0.2380***	0.2362***	0.2323***	0.2323***	0.2333***
	(0.0885)	(0.0883)	(0.0878)	(0.0887)	(0.0897)	(0.0884)
Complete High School/Higher	0.2257*	0.2263*	0.2250*	0.1915	0.1846	0.1875
	(0.1174)	(0.1159)	(0.1165)	(0.1210)	(0.1206)	(0.1203)
Rural	-0.0721	-0.0714	-0.0752	-0.0532	-0.0554	-0.0571
	(0.0852)	(0.0844)	(0.0847)	(0.0837)	(0.0830)	(0.0839)
Wealth Index (Base: Poorest)						
Poorer	0.2226***	0.2222***	0.2154***	0.2221***	0.2254***	0.2175***
	(0.0601)	(0.0600)	(0.0605)	(0.0611)	(0.0629)	(0.0636)
Middle	0.4992***	0.4975***	0.4904***	0.6373***	0.5293***	0.5206***
	(0.0780)	(0.0780)	(0.0770)	(0.1176)	(0.0785)	(0.0762)
Rich	0.6099***	0.6104***	0.6035***	0.6373***	0.6410***	0.6254***
	(0.1198)	(0.1192)	(0.1199)	(0.1176)	(0.1175)	(0.1192)
Richest	0.6122***	0.6113***	0.6020***	0.6324***	0.6383***	0.6181***
	(0.0846)	(0.0834)	(0.0828)	(0.0863)	(0.0881)	(0.0880)
Total Number of (Older) Siblings	-0.0366***	-0.0356***	-0.0359***	-0.0381***	-0.0408***	-0.0414***
	(0.0133)	(0.0134)	(0.0134)	(0.0131)	(0.0132)	(0.0131)
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. The coefficients of child's month of birth, mother's age, mother's age square exhibit expected signs, and the results available upon request. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.5: Effect of Refugees on Children's (Biologically Plausible) HAZ

Dep. Var.	Height-for-Age z-scores (HAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share (IHS)	0.1005***	0.0757**	0.0872**	0.6024***	0.7970***	0.8236***
	(0.0327)	(0.0325)	(0.0366)	(0.1770)	(0.2042)	(0.2042)
Elasticity	0.00363	0.00273	0.00315	0.0218	0.0288	0.0297
Kleibergen-Paap rk Wald				18.94	24.98	26.35
Panel B	With individual and household controls					
Refugee Share (IHS)	0.0954**	0.0714*	0.0799*	0.5991***	0.8005***	0.8233***
	(0.0393)	(0.0392)	(0.0430)	(0.1715)	(0.2030)	(0.2029)
Elasticity	0.00345	0.00258	0.00288	0.0216	0.0289	0.0297
Kleibergen-Paap rk Wald F				19.25	25.70	27.01
Panel C	With province-level, individual, and household controls					
Refugee Share (IHS)	0.0505*	0.0437	0.0429	0.5189***	0.7135***	0.7236***
	(0.0267)	(0.0330)	(0.0314)	(0.1601)	(0.1910)	(0.1860)
Elasticity	0.00182	0.00158	0.00155	0.0187	0.0258	0.0261
Kleibergen-Paap rk Wald F				17.94	24.04	23.99
Observations	5,308	5,308	5,308	5,308	5,308	5,308
Year FE	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.6: Effect of Refugees on Children's HAZ (Excluding 2012) (Without IHS Transformation)

Dep. Var.	Height-for-Age z-scores (HAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share	0.1005***	0.0553*	0.0658*	0.2733***	0.2427***	0.2790***
	(0.0361)	(0.0312)	(0.0352)	(0.0842)	(0.0688)	(0.0774)
Kleibergen-Paap rk Wald F				41.69	49.79	48.89
Panel B	With individual and household controls					
Refugee Share	0.0961**	0.0961**	0.0584	0.2731***	0.2731***	0.2731***
	(0.0431)	(0.0431)	(0.0411)	(0.0829)	(0.0829)	(0.0829)
Kleibergen-Paap rk Wald F				41.44	41.44	41.44
Panel C	With province-level, individual, and household controls					
Refugee Share	0.0460	0.0243	0.0192	0.2006***	0.2052***	0.1992***
	(0.0291)	(0.0335)	(0.0321)	(0.0765)	(0.0738)	(0.0704)
Kleibergen-Paap rk Wald F				38.69	48.13	43.77
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.7: Effect of Refugees on Children's HAZ (Excluding 2012), NUTS-1 level (12-Region)

Dep. Var.	Height-for-Age z-scores (HAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share (IHS)	0.0991***	0.0610	0.0750	0.6404***	0.9842***	1.0689***
	(0.0325)	(0.0426)	(0.0518)	(0.1970)	(0.2666)	(0.2812)
Elasticity	0.00369	0.00227	0.00279	0.0238	0.0366	0.0398
Kleibergen-Paap rk Wald F				19.07	23.43	24.21
Panel B	With individual and household controls					
Refugee Share (IHS)	0.0959**	0.0548	0.0636	0.6198***	0.9718***	1.0533***
	(0.0387)	(0.0480)	(0.0560)	(0.1845)	(0.2623)	(0.2782)
Elasticity	0.00357	0.00204	0.00237	0.0231	0.0362	0.0392
Kleibergen-Paap rk Wald F			19.41	24.12	24.69	
Panel C	With province-level, individual, and household controls					
Refugee Share (IHS)	0.0454	0.0574	0.0555	0.5133***	0.8243***	0.8716***
	(0.0286)	(0.0487)	(0.0521)	(0.1675)	(0.2345)	(0.2404)
Elasticity	0.00169	0.00214	0.00207	0.0191	0.0307	0.0325
Kleibergen-Paap rk Wald F				18.08	23.04	22.74
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
NUTS-1 Region trends	N	Y	N	N	Y	N
NUTS-1 Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.8: Effect of Refugees on Children's HAZ (Excluding 2012), NUTS-2 level (26 Regions)

Dep. Var.	Height-for-Age z-scores (HAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share (IHS)	0.0991***	0.1104**	0.1556**	0.6404***	1.3209***	1.5802***
	(0.0325)	(0.0430)	(0.0663)	(0.1970)	(0.3100)	(0.3446)
Elasticity	0.00369	0.00411	0.00579	0.0238	0.0492	0.0588
Kleibergen-Paap rk Wald F				19.07	27.38	30.02
Panel B	With individual and household controls					
Refugee Share (IHS)	0.0959**	0.1029*	0.1387*	0.6198***	1.3093***	1.5731***
	(0.0387)	(0.0538)	(0.0741)	(0.1845)	(0.3092)	(0.3502)
Elasticity	0.00357	0.00383	0.00517	0.0231	0.0488	0.0586
Kleibergen-Paap rk Wald F				19.41	27.98	29.69
Panel C	With province-level, individual, and household controls					
Refugee Share (IHS)	0.0454	0.1290***	0.1557***	0.5133***	1.1131***	1.2934***
	(0.0286)	(0.0407)	(0.0463)	(0.1675)	(0.2843)	(0.3142)
Elasticity	0.00169	0.00480	0.00580	0.0191	0.0414	0.0482
Kleibergen-Paap rk Wald F				18.08	25.32	24.89
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
NUTS-2 Region trends	N	Y	N	N	Y	N
NUTS-2 Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.9: Effect of Refugees on Children's HAZ (Including 2012)

Dep. Var.	Height-for-Age z-scores (HAZ)					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share (IHS)	0.0906***	0.0477*	0.0634*	0.5707***	0.6673***	0.7422***
	(0.0285)	(0.0280)	(0.0322)	(0.1774)	(0.1886)	(0.2030)
Elasticity	0.0035	0.0018	0.0024	0.0219	0.0257	0.0285
Kleibergen-Paap rk Wald F				19.23	24.69	26.64
Panel B	With individual and household controls					
Refugee Share (IHS)	0.0897**	0.0487	0.0597	0.5666***	0.6694***	0.7371***
	(0.0357)	(0.0341)	(0.0373)	(0.1680)	(0.1824)	(0.1946)
Elasticity	0.00345	0.00187	0.00229	0.0218	0.0257	0.0283
Kleibergen-Paap rk Wald F				19.62	25.49	27.51
Panel C	With province-level, individual, and household controls					
Refugee Share (IHS)	0.0480*	0.0280	0.0236	0.4772***	0.5898***	0.6262***
	(0.0287)	(0.0339)	(0.0323)	(0.1542)	(0.1710)	(0.1735)
Elasticity	0.0019	0.0011	0.0009	0.0183	0.0227	0.0241
Kleibergen-Paap rk Wald F				19.16	25.43	25.78
Observations	5,892	5,892	5,892	5,892	5,892	5,892
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.10: Placebo Test for Effect of Refugees on Children's HAZ Using Pre-Immigration Data

Dep. Var.	Height-for-Age z-scores (HAZ), Pre-treatment					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Refugee Share (IHS)	-0.0167	0.0116	0.0116	0.0774	0.0292	0.0292
	(0.0825)	(0.0697)	(0.0697)	(0.1944)	(0.2125)	(0.2125)
Elasticity	-0.0003	0.0002	0.0002	0.0017	0.0006	0.0006
Kleibergen-Paap rk Wald F				9.10	16.83	16.83
Panel B	With individual and household controls					
Refugee Share (IHS)	0.0393	0.2936*	0.2936*	0.0952	-0.0511	-0.0511
	(0.1196)	(0.1485)	(0.1486)	(0.2842)	(0.2983)	(0.2983)
Elasticity	0.0009	0.0068	0.0068	0.0022	-0.0011	-0.0011
Kleibergen-Paap rk Wald F				8.92	16.14	16.14
Observations	2,510	2,510	2,510	2,510	2,510	2,510
Year FE	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: The data come from the TDHS-2008 and -2003. The 2018 values for the refugee share and instrument variables are assigned for each province in 2008 data. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Time varying province controls include (log) public expenditure per 1,000 inhabitant, number of hospitals per 1,000 inhabitant, and terrorism index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.11: Pre-immigration Residual Trends in HAZ on the 2016-Instrument across Regions

Model	Without Controls			With Controls I		
Controls Include				Indv and HH		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	5 Region-level Analysis					
Instrument in 2016	-0.0319	-0.0396	-0.0324	0.0185	-0.0043	-0.0050
	(0.0519)	(0.0478)	(0.0483)	(0.0470)	(0.0428)	(0.0434)
Panel B	NUTS-1 Region-level Analysis					
Instrument in 2016	-0.0319	-0.0256	-0.0198	0.0185	0.0045	0.0010
	(0.0519)	(0.0415)	(0.0422)	(0.0470)	(0.0382)	(0.0391)
Panel C	NUTS-2 Region-level Analysis					
Instrument in 2016	-0.0319	-0.0286	-0.0242	0.0185	-0.0016	-0.0088
	(0.0519)	(0.0382)	(0.0370)	(0.0470)	(0.0349)	(0.0345)
Observations	6,004	6,004	6,004	6,004	6,004	6,004
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS) 2003 and 2008 rounds. Each cell shows the estimates for the slope coefficient from a regression of residual trends of the dependent variable (i.e., HAZ) on the value of the instrument in 2016, where the residuals are obtained after regressing the dependent variable on a set of individual-specific control variables. In Panel A, region-trends in Columns (2) and (4) and region-year FEs in Columns (3) and (5) are introduced using 5 regions of Turkey. In Panel B and Panel C, we introduce region-trends in Columns (2) and (4) and region-year FEs in Columns (3) and (5) using 12- and 26-regions of Turkey, respectively. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. This table excludes The table presents the estimated coefficient, the standard error clustered at the 81 province-level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.12: Effect of Refugees on Migration Patterns (Excluding 2012, with Controls)

Model	2SLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	(Log) Inflow			(Log) Outflow		
IHS Refugee Share	-0.4135	-0.2149	-0.1583	0.0244	0.2008	0.1490
	(0.3425)	(0.2946)	(0.2935)	(0.2269)	(0.2262)	(0.2355)
Elasticity	-0.00329	-0.00171	-0.00126	0.000193	0.00160	0.00118
Kleibergen-Paap rk Wald F	17.14	17.67	16.99	17.14	17.67	16.99
Observations	810	810	810	810	810	810
Panel B	(Log) Inflow					
	Low Education			High Education		
IHS Refugee Share	0.0615	0.3389*	0.3047	-0.5261	-0.4619	-0.4058
	(0.2156)	(0.1918)	(0.2269)	(0.4333)	(0.4059)	(0.4214)
Elasticity	5.01e-05	0.000276	0.000248	-0.000414	-0.000364	-0.000320
Kleibergen-Paap rk Wald F	15.06	16.81	15.94	12.83	13.23	12.84
Observations	255	255	255	555	555	555
Panel C	(Log) Outflow					
	Low Education			High Education		
IHS Refugee Share	0.0096	-0.1044	-0.1679	0.0803	0.3976	0.2785
	(0.2367)	(0.2508)	(0.2771)	(0.2555)	(0.3016)	(0.3099)
Elasticity	7.63e-06	-8.34e-05	-0.000134	6.33e-05	0.000313	0.000219
Kleibergen-Paap rk Wald F	15.06	16.81	15.94	12.83	13.23	12.84
Observations	255	255	255	555	555	555
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Information on the migration (i.e., inflow and outflow) is obtained from Turkish Statistical Institute (TSI) for the period of 2008-2018. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Education data, referring to the average years of education by province, also comes from TSI. The average years of education at the province level is 7.30 with a min (max) of 5.10 (9.96) years. Therefore, we split the sample as "High Education" and "Low Education" where "High Education" refers to equal and/or more than 7.30 years and "Low Education" refers to lower than 7.30 years. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.13: Effect of Refugees on Selective Marriage and Fertility (with Controls)

Model	2SLS					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Age at First Birth			Age at First Marriage		
Refugee Share (IHS)	-0.4096	-0.3304	-0.3444	-0.2019	-0.1528	-0.1618
	(0.2506)	(0.2821)	(0.2807)	(0.1926)	(0.2182)	(0.2183)
Elasticity	-0.0002	-0.0001	-0.0002	-0.0001	-8.38e-05	-8.88e-05
Kleibergen-Paap rk Wald F	19.12	25.42	26.73	19.12	25.42	26.73
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Panel B	Maternal Age at First Birth					
	Edu≥12 Years			Edu<12 Years		
Refugee Share (IHS)	-0.2426	-0.4960	-0.4849	-0.5070	-0.4170	-0.4247
	(1.0141)	(1.3591)	(1.2910)	(0.3258)	(0.3512)	(0.3435)
Elasticity	-0.0001	-0.0002	-0.0002	-0.0003	-0.0002	-0.0002
Kleibergen-Paap rk Wald F	8.12	12.86	13.70	20.03	27.08	28.77
Observations	636	636	636	4,705	4,705	4,705
Panel C	Maternal Age at Marriage					
	Edu≥ $12Years$			Edu<12 Years		
Refugee Share (IHS)	-0.4583	-0.8576	-0.8377	-0.2623	-0.1927	-0.1944
	(0.8781)	(1.1869)	(1.1194)	(0.2242)	(0.2403)	(0.2352)
Elasticity	-0.0002	-0.0004	-0.0004	-0.0001	-0.0001	-0.0001
Kleibergen-Paap rk Wald F	8.12	12.86	13.70	20.03	27.08	28.77
Observations	636	636	636	4,705	4,705	4,705
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. The set of controls include mother's education (not in Panel B and Panel C), whether the mother reside rural area, being a female headed household, and wealth index as control variables. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.14: Effect of Refugees on Selective Mortality

Dep. Var.	Ever had Miscarriage			Ever had Abortion			Ever had Stillbirth		
Model	2SLS								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Refugee Share (IHS)	0.0803	0.0904	0.0904	0.0610	0.0484	0.0484	-0.0145	0.0024	0.0024
	(0.0657)	(0.0657)	(0.0657)	(0.0425)	(0.0471)	(0.0471)	(0.0359)	(0.0306)	(0.0306)
Kleibergen-Paap rk Wald F	13.89	14.44	14.44	13.89	14.44	14.44	13.89	14.44	14.44
Elasticity	0.00417	0.00469	0.00469	0.00693	0.00549	0.00549	-0.0045	0.0007	0.0007
Observations	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. The set of controls include mother's age, mother's age square, mother's education, whether the mother reside rural area, being a female headed household, and wealth index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.15: Effect of Refugees on Selective Mortality by Education (with Controls)

Model	2SLS					
	Edu≥12 Years			Edu<12 Years		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Ever had Miscarriage					
Refugee Share (IHS)	0.4952	0.5147	0.5147	0.0500	0.0554	0.0554
	(0.5041)	(0.5493)	(0.5493)	(0.0774)	(0.0679)	(0.0679)
Elasticity	0.0398	0.0414	0.0414	0.0025	0.0027	0.0027
Kleibergen-Paap rk Wald F	7.68	11.29	11.29	14.09	14.65	14.65
Observations	310	310	310	3,415	3,415	3,415
Panel B	Ever had Abortion					
Refugee Share (IHS)	-0.3106	-0.3901	-0.3901	0.0759*	0.0641	0.0641
	(0.3499)	(0.3684)	(0.3684)	(0.0451)	(0.0478)	(0.0478)
Elasticity	-0.0346	-0.0435	-0.0435	0.00863	0.00729	0.00729
Kleibergen-Paap rk Wald F	7.68	11.29	11.29	14.09	14.65	14.65
Observations	310	310	310	3,415	3,415	3,415
Panel C	Ever had Stillbirth					
Refugee Share (IHS)	-0.0335	-0.0064	-0.0064	-0.0136	0.0039	0.0039
	(0.0361)	(0.0232)	(0.0232)	(0.0384)	(0.0318)	(0.0318)
Elasticity	-0.116	-0.0221	-0.0221	-0.00393	0.00114	0.00114
Kleibergen-Paap rk Wald F	7.689	11.29	11.29	14.09	14.65	14.65
Observations	310	310	310	3,415	3,415	3,415
Year FE	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The full sample is for the 2003–2018 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings, being a female headed household, and wealth index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.16: Effect of Refugees on Investment in Healthcare Resources (In Numbers and Per Capita Terms)

Dep. Var.	Healthcare Resources											
Model	OLS			2SLS			OLS			2SLS		
	Doctor			Doctor			Nurse			Nurse		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A	In numbers											
Refugee Share (IHS)	1.0464***	0.7475***	0.8774***	1.0142***	0.6748***	0.9578***	1.5432***	1.1650***	1.2447***	1.9395***	1.4085***	1.5942***
	(0.1453)	(0.1553)	(0.1656)	(0.2039)	(0.2289)	(0.2288)	(0.1406)	(0.1679)	(0.1564)	(0.2828)	(0.2781)	(0.2882)
Elasticity	0.00127	0.000906	0.00106	0.00123	0.000818	0.00116	0.00182	0.00138	0.00147	0.00229	0.00166	0.00188
Kleibergen-Paap rk Wald F				16.80	17.29	16.81				16.80	17.29	16.81
	Midwives			Midwives			Hospital Beds			Hospital Beds		
Panel B	In numbers											
Refugee Share (IHS)	0.7503***	0.6079***	0.7064***	0.8837***	0.7969***	0.9028***	1.6740***	1.1055**	1.1503**	2.1918***	1.4714**	1.6573**
	(0.1298)	(0.1633)	(0.1529)	(0.1825)	(0.2255)	(0.2420)	(0.5906)	(0.5071)	(0.5366)	(0.7044)	(0.6195)	(0.7046)
Elasticity	0.000989	0.000801	0.000931	0.00116	0.00105	0.00119	0.00186	0.00123	0.00128	0.00244	0.00164	0.00185
Kleibergen-Paap rk Wald F				16.80	17.29	16.81				16.80	17.29	16.81
	Doctor			Doctor			Nurse			Nurse		
Panel C	Per 1,000 Inhabitant											
Refugee Share (IHS)	-0.8256***	-0.9091***	-0.8572***	-0.9585***	-1.0325***	-0.9078***	-1.0997***	-1.2196***	-1.2339***	-0.7239**	-1.1091**	-1.1355**
	(0.1433)	(0.1483)	(0.1546)	(0.2673)	(0.2838)	(0.2540)	(0.2978)	(0.3140)	(0.3501)	(0.3540)	(0.4718)	(0.4927)
Elasticity	-0.00478	-0.00516	-0.00496	-0.00572	-0.00593	-0.00535	-0.00502	-0.00575	-0.00592	-0.00309	-0.00512	-0.00539
Kleibergen-Paap rk Wald F				16.80	17.29	16.81				16.80	17.29	16.81
	Midwives			Midwives			Hospital Beds			Hospital Beds		
Panel D	Per 1,000 Inhabitant											
Refugee Share (IHS)	-0.4158***	-0.4600***	-0.4127***	-0.2585*	-0.3093	-0.2826	-0.2811	-0.9147	-0.9316	0.7233	-0.1380	-0.0286
	(0.0661)	(0.1227)	(0.1214)	(0.1550)	(0.2173)	(0.2283)	(0.6534)	(0.5945)	(0.6138)	(1.0136)	(0.9692)	(1.0534)
Elasticity	-0.00406	-0.00449	-0.00403	-0.00253	-0.00302	-0.00276	-0.00092	-0.00300	-0.00306	0.00237	-0.000453	-9.37e-05
Kleibergen-Paap rk Wald F				16.80	17.29	16.81				16.80	17.29	16.81
Observations	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Notes: Information on the healthcare resources variables is obtained from Turkish Statistical Institute (TSI). The full sample is for the 2003–18 period, excluding 2012, at the 81-province level. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Standard errors, given in parentheses, are clustered at the province level *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.17: Effect of Refugees on Employment, Household Wealth, and Time with Offspring

Dep. Var.	Probability of Working					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	With individual, and household controls					
Refugee Share (IHS)	-0.0089	-0.0066	-0.0105	-0.0318*	-0.0426**	-0.0505**
	(0.0075)	(0.0076)	(0.0087)	(0.0184)	(0.0216)	(0.0220)
Elasticity	-0.000690	-0.000509	-0.000812	-0.00245	-0.00329	-0.00390
Kleibergen-Paap rk Wald F				19.41	25.96	27.24
Dep. Var.	Household Wealth Index					
Panel B	With individual, and household controls					
Refugee Share (IHS)	-0.0601	-0.0563	-0.0446	-0.0272	-0.0126	-0.0084
	(0.0434)	(0.0472)	(0.0460)	(0.0614)	(0.0708)	(0.0767)
Elasticity	-0.0003	-0.0002	-0.0002	-0.0001	-5.27e-05	-3.51e-05
Kleibergen-Paap rk Wald F				19.30	25.80	27.14
Dep. Var.	Time with Offspring					
Panel C	With individual, and household controls					
Refugee Share (IHS)	0.0040	-0.0020	-0.0006	0.0346*	0.0451	0.0506*
	(0.0085)	(0.0080)	(0.0082)	(0.0189)	(0.0280)	(0.0297)
Elasticity	5.95e-05	-2.92e-05	-8.88e-06	0.000511	0.000667	0.000747
Kleibergen-Paap rk Wald F				19.41	25.96	27.24
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Year FE	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, being a female headed household, and wealth index (not in wealth index regression). Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.18: Effect of Refugees on Employment, Household Wealth, and Time with Offspring by Education

Dep. Var.	Probability of Working											
Model	OLS			2SLS			OLS			2SLS		
	Edu$\geq$ 12$Years$			Edu$\geq$ 12$Years$			Edu<12 Years			Edu<12 Years		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A	With individual, and household controls											
Refugee Share (IHS)	0.0741**	0.1000**	0.0908*	0.0615	0.1033	0.1156	-0.0124	-0.0094	-0.0141	-0.0469**	-0.0567**	-0.0677**
	(0.0311)	(0.0464)	(0.0486)	(0.0976)	(0.1174)	(0.1056)	(0.0138)	(0.0148)	(0.0163)	(0.0203)	(0.0265)	(0.0283)
Elasticity	0.00306	0.00412	0.00374	0.00255	0.00428	0.00479	-0.00108	-0.000824	-0.00123	-0.00410	-0.00495	-0.00591
Kleibergen-Paap rk Wald F				8.336	12.04	12.74				20.52	28.13	29.83
Dep. Var.	Household Wealth Index											
Panel B	With individual, and household controls											
Refugee Share (IHS)	-0.1934*	-0.1065	-0.0953	0.0898	0.3970	0.4600*	-0.0556*	-0.0567	-0.0469	-0.0426	-0.0420	-0.0460
	(0.1079)	(0.1090)	(0.1039)	(0.1913)	(0.2453)	(0.2727)	(0.0298)	(0.0355)	(0.0373)	(0.0569)	(0.0672)	(0.0729)
Elasticity	-0.000512	-0.000282	-0.000252	0.000238	0.00105	0.00122	-0.000252	-0.000257	-0.000213	-0.000193	-0.000191	-0.000209
Kleibergen-Paap rk Wald F				7.602	10.72	11.27				20.41	27.87	29.59
Dep. Var.	Time Spent at Home											
Panel C	With individual, and household controls											
	0.0226	0.0351	0.0435	0.1058	0.2433	0.2535	0.0123	0.0054	0.0067	0.0265	0.0390	0.0427*
	(0.0518)	(0.0616)	(0.0641)	(0.1207)	(0.1984)	(0.1967)	(0.0101)	(0.0088)	(0.0091)	(0.0174)	(0.0233)	(0.0247)
Elasticity	0.0005	0.0008	0.0010	0.0023	0.0053	0.0055	0.0002	7.66e-05	9.47e-05	0.0004	0.0005	0.0006
Kleibergen-Paap rk Wald F				8.335	12.04	12.74				20.52	27.24	29.83
Dep. Var.	Children's HAZ											
Panel D	With province-level, individual, and household controls											
Refugee Share (IHS)	0.0660	0.0231	-0.0103	0.5263	0.5112*	0.5421	0.0415	0.0174	0.0147	0.5342***	0.6648***	0.6911***
	(0.2093)	(0.2202)	(0.2260)	(0.4722)	(0.5131)	(0.4859)	(0.0392)	(0.0451)	(0.0439)	(0.1780)	(0.2031)	(0.2010)
Elasticity	0.0039	0.0013	-0.0006	0.0461	0.0623	0.0604	0.0012	0.0005	0.0004	0.0164	0.0204	0.0212
Kleibergen-Paap rk Wald F				7.84	10.87	11.51				19.74	27.24	27.80
Observation	636	636	636	636	636	636	4,705	4,705	4,705	4,705	4,705	4,705
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, being a female headed household, and wealth index (not in wealth index regression). Individual survey weights are used in each specificat the meanion. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.19: Effect of Refugees on Receiving Antenatal and Postnatal Care

Dep. Var.	(Log) Number of Antenatal Care Visits					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	With individual, and household controls					
Refugee Share (IHS)	0.0006	-0.0261**	-0.0115	0.1093***	0.0724*	0.0990**
	(0.0124)	(0.0131)	(0.0117)	(0.0397)	(0.0419)	(0.0447)
Elasticity	3.12e-06	-0.0001	-6.38e-05	0.0006	0.0004	0.0005
Kleibergen-Paap rk Wald F				19.33	25.86	27.16
Observations	5,323	5,323	5,323	5,323	5,323	5,323
Dep. Var.	Probability of Receiving Postnatal Care two months within birth					
Panel B	With individual, and household controls					
Refugee Share (IHS)	0.0198***	-0.0011	0.0007	0.0478***	0.0057	0.0070
	(0.0065)	(0.0051)	(0.0055)	(0.0151)	(0.0112)	(0.0111)
Elasticity	0.000240	-1.29e-05	9.00e-06	0.000580	6.91e-05	8.46e-05
Kleibergen-Paap rk Wald F				19.42	26	27.29
Observations	5,336	5,336	5,336	5,336	5,336	5,336
Year FE	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, being a female headed household, and wealth index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.20: Effect of Refugees on Receiving Antenatal and Postnatal Care by Education (With Controls)

Dep. Var.	(Log) Number of Antenatal Care Visits											
Model	OLS			2SLS			OLS			2SLS		
	Edu≥ 12$Years$			Edu≥ 12$Years$			Edu<12 Years			Edu<12 Years		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A	With individual, and household controls											
Refugee Share (IHS)	0.0242	0.0388	0.0454	0.1646	0.1599	0.1377	-0.0065	-0.0331***	-0.0180	0.1110***	0.0783*	0.1069**
	(0.0682)	(0.0671)	(0.0675)	(0.1390)	(0.1523)	(0.1340)	(0.0127)	(0.0113)	(0.0124)	(0.0364)	(0.0426)	(0.0466)
Elasticity	0.0001	0.0002	0.0002	0.0007	0.0007	0.0006	-3.73e-05	-0.0002	-0.0001	0.0006	0.0004	0.0006
Kleibergen-Paap rk Wald F				7.73	10.35	11.04				20.52	28.18	29.88
Observations	634	634	634	634	634	634	4,689	4,689	4,689	4,689	4,689	4,689
Dep. Var.	Probability of Receiving Postnatal Care two months within birth											
Panel B	With individual, and household controls											
Refugee Share (IHS)	-0.0224*	-0.0205	-0.0211	-0.0143	-0.0004	-0.0007	0.0216***	-0.0007	0.0014	0.0525***	0.0074	0.0090
	(0.0128)	(0.0130)	(0.0140)	(0.0118)	(0.0153)	(0.0157)	(0.0077)	(0.0058)	(0.0061)	(0.0174)	(0.0126)	(0.0124)
Kleibergen-Paap rk Wald F				8.33	12.04	12.74				20.54	28.19	29.90
Observations	636	636	636	636	636	636	4,700	4,700	4,700	4,700	4,700	4,700
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. Individual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, being a female headed household, and wealth index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table B.21: Effect of Refugees on Total Births per woman and Probability of Vaccine Completion

Dep. Var.	Total Births per Woman					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	With individual, and household controls					
Refugee Share (IHS)	0.0328	0.0522	0.0609*	0.2364***	0.3635***	0.3842***
	(0.0335)	(0.0333)	(0.0342)	(0.0710)	(0.1032)	(0.1050)
Elasticity	0.000139	0.000221	0.000258	0.00100	0.00154	0.00163
Kleibergen-Paap rk Wald F				19.44	25.99	27.29
Observations	5,341	5,341	5,341	5,341	5,341	5,341
Dep. Var.	Hapatitus B Completion					
Panel B	With individual, and household controls					
Refugee Share (IHS)	-0.0001	-0.0096	-0.0136*	-0.0637***	-0.1179***	-0.1283***
	(0.0097)	(0.0076)	(0.0074)	(0.0208)	(0.0315)	(0.0347)
Elasticity	-2.85e-06	-0.000188	-0.000265	-0.00124	-0.00230	-0.00250
Kleibergen-Paap rk Wald F				20.64	27.77	29.17
Observations	2,689	2,689	2,689	2,689	2,689	2,689
Dep. Var.	Tuberculosis (BCG) Completion					
Panel C	With individual, and household controls					
Refugee Share (IHS)	-0.0323***	-0.0362***	-0.0382***	-0.0865***	-0.1299***	-0.1309***
	(0.0064)	(0.0076)	(0.0090)	(0.0211)	(0.0334)	(0.0334)
Elasticity	-0.000389	-0.000436	-0.000460	-0.00104	-0.00157	-0.00158
Kleibergen-Paap rk Wald F				20.17	26.14	27.75
Observations	3,217	3,217	3,217	3,217	3,217	3,217
Dep. Var.	Measles Completion					
Panel D	With individual, and household controls					
Refugee Share (IHS)	-0.0068	-0.0101	-0.0081	-0.1415**	-0.2231***	-0.2439***
	(0.0182)	(0.0158)	(0.0175)	(0.0613)	(0.0821)	(0.0945)
Elasticity	-9.38e-05	-0.000140	-0.000112	-0.00196	-0.00310	-0.00338
Kleibergen-Paap rk Wald F				19.49	28.92	29.06
Observations	2,352	2,352	2,352	2,352	2,352	2,352
Year FE	Y	Y	Y	Y	Y	Y
province FE	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y

Notes:Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. The vaccination questions are only available for children aged 0-36 months. The doses and completion dates of vaccines differ, so the sample sizes for each outcome do. Hepatitis B vaccine has three doses: at birth, end of 1-month of age, and end of 6-month of age. Therefore, Hepatitis B regressions consider children aged between 6-36 months. Tuberculosis vaccine has one dose at 2-month of age. Thus, Tuberculosis regressions consider only children aged between 2-36 months.Measles vaccine has one dose at 9-month of age. Hence, Measles regressions consider only children aged between 9-36 months. Standard errors, clustered at the 81-province level, are in parentheses.

Table B.22: Effect of Refugees on the Total Births per Woman and Vaccine Completion by Education (With controls)

Dep. Var.	Total Births											
Model	OLS			2SLS			OLS			2SLS		
	Edu≥ 12$Years$			Edu≥ 12$Years$			Edu<12 Years			Edu<12 Years		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A	With individual, and household controls											
Refugee Share (IHS)	0.1359	0.1416*	0.1484*	0.2310	0.4280**	0.4361**	0.0434	0.0592	0.0696	0.2765***	0.4028***	0.4285***
	(0.0871)	(0.0840)	(0.0841)	(0.1492)	(0.1968)	(0.1944)	(0.0429)	(0.0429)	(0.0448)	(0.0819)	(0.1148)	(0.1176)
Kleibergen-Paap rk Wald F				8.287	12.10	12.84				20.55	28.10	29.80
Observations	636	636	636	636	636	636	4,705	4,705	4,705	4,705	4,705	4,705
Dep. Var.	Hepatitis B											
Panel B	With individual, and household controls											
Refugee Share (IHS)	0.0414	0.0012	-0.0011	-0.0801	-0.3104	-0.3241	0.0018	-0.0058	-0.0109	-0.0712***	-0.1207***	-0.1321***
	(0.0361)	(0.0418)	(0.0394)	(0.1139)	(0.2394)	(0.2422)	(0.0132)	(0.0109)	(0.0117)	(0.0247)	(0.0359)	(0.0388)
Kleibergen-Paap rk Wald F				5.890	5.923	6.246				19.27	26.30	28.72
Observations	328	328	328	342	342	342	2,347	2,347	2,347	2,347	2,347	2,347
Dep. Var.	Tuberculosis (BCG)											
Panel C	With individual, and household controls											
Refugee Share (IHS)	-0.0287***	-0.0377***	-0.0267**	-0.0781**	-0.1576**	-0.1284*	-0.0377***	-0.0426***	-0.0469***	-0.0999***	-0.1497***	-0.1512***
	(0.0097)	(0.0127)	(0.0125)	(0.0371)	(0.0714)	(0.0706)	(0.0090)	(0.0101)	(0.0115)	(0.0259)	(0.0379)	(0.0377)
Kleibergen-Paap rk Wald F				7.334	7.842	8.330				18.77	24.73	26.76
Observations	390	390	390	405	405	405	2,812	2,812	2,812	2,812	2,812	2,812
Dep. Var.	Measles											
Panel D	With individual, and household controls											
Refugee Share (IHS)	-0.0671	-0.0692	-0.0715	-0.1890	-0.3962*	-0.4707**	-0.0030	-0.0041	-0.0008	-0.1597**	-0.2419***	-0.2634**
	(0.0590)	(0.0652)	(0.0669)	(0.1165)	(0.2145)	(0.2329)	(0.0218)	(0.0192)	(0.0219)	(0.0701)	(0.0919)	(0.1054)
Kleibergen-Paap rk Wald F				7.719	9.694	11.86				16.94	24.01	24.58
Observations	269	269	269	287	287	287	2,064	2,064	2,064	2,065	2,065	2,065
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Province FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region trends	N	Y	N	N	Y	N	N	Y	N	N	Y	N
Region-year FE	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Notes: Data come from Turkish Demographic and Health Survey (TDHS). The sample includes mothers in 81 provinces in the 2003–2018 period excluding year 2012. The 2SLS model instruments the refugee share utilizing a distance-based instrument. ndividual and household controls include child's sex, child's month of birth, mother's age, mother's age square, mother's education, whether the mother reside rural area, total number of older siblings (not in total births per woman regression), being a female headed household, and wealth index. Individual survey weights are used in each specification. Standard errors, clustered at the 81-province level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Appendix C

Tables and Figures for Chapter 4

Table C.1: Description of the different wage floors in the UK

Date	**Enacted Policy**	**Body of Implementation**
April 1999	National Minimum Wage - minimum pay all workers were entitled to set annually by the Low Pay Commission. In 2016, national minimum wage is only applied to workers aged 23 or younger (National Minimum Wage Act 1998). Since 2016, the national minimum wage is set at a lower rate than the National Living Wage.	The UK Government
2003	Real Living Wage - independently calculated annually by the Resolution Foundation (Cominetti, 2021). Wage rate is higher than the National Living Wage.	Voluntary scheme developed by the Living Wage Foundation (Living Wage Foundation N.D.)
April 2016	National Living Wage - national minimum wage for workers aged over 23 and is set annually by the Low Pay Commission.	The UK Government
April 2024	National Living Wage is extended to anyone 21 years and older. National Minimum Wage applies to those 20 and younger (rate for 18-20 year olds and under 18s).	The UK Government

Table C.2: Median Hourly Earnings of All Employees (2009-2023)

Year	**Median Hourly Earnings (£)**	**USS Wave**
2009	11.00	Wave 1
2010	11.14	Wave 1
2011	11.20	Wave 2
2012	11.28	Wave 3
2013	11.59	Wave 4
2014	11.61	Wave 5
2015	11.78	Wave 6
2016	12.16	Wave 7
2017	12.47	Wave 8
2018	12.78	Wave 9
2019	13.28	Wave 10
2020	13.68	Wave 11
2021	14.10	Wave 12
2022	14.77	Wave 13
2023	16.00	Wave 13

Notes: The data comes from the Office for National Statistics Annual Survey of Hours and Earnings.

Table C.3: Effect of High pay on SF-12 Physical Health (All Coefficients)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	With individual and household level controls					
High pay	0.2068***	0.2098***	0.2102***	0.1291	0.3262***	0.3362***
	(0.0097)	(0.0097)	(0.0097)	(0.2805)	(0.0978)	(0.0965)
Female	-0.0219***	-0.0226***	-0.0226***	-0.0353	-0.0022	-0.0004
	(0.0081)	(0.0081)	(0.0081)	(0.0490)	(0.0190)	(0.0188)
Age	-0.0083***	-0.0080***	-0.0080***	-0.0046	-0.0136**	-0.0140**
	(0.0028)	(0.0028)	(0.0028)	(0.0136)	(0.0055)	(0.0055)
Age square	-0.0000	-0.0000	-0.0000	-0.0001	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0002)	(0.0001)	(0.0001)
Urban area	-0.0451***	-0.0453***	-0.0482***	-0.0474***	-0.0440***	-0.0462***
	(0.0098)	(0.0095)	(0.0093)	(0.0128)	(0.0095)	(0.0094)
Bottom quartile HH income	-0.0063	-0.0046	-0.0048	-0.0026	-0.0100	-0.0107
	(0.0081)	(0.0081)	(0.0081)	(0.0156)	(0.0092)	(0.0092)
Married	0.0138	0.0151	0.0145	0.0203	0.0059	0.0047
	(0.0104)	(0.0104)	(0.0104)	(0.0255)	(0.0127)	(0.0126)
A-level educated	-0.0449***	-0.0417***	-0.0423***	-0.0487**	-0.0359**	-0.0360**
	(0.0132)	(0.0132)	(0.0132)	(0.0194)	(0.0144)	(0.0144)
Number of children in HH	0.0278***	0.0282***	0.0282***	0.0247*	0.0329***	0.0333***
	(0.0068)	(0.0067)	(0.0067)	(0.0132)	(0.0079)	(0.0079)
Kleibergen-Paap rk Wald F				35.75	298.7	306.5
Observations	86,347	86,347	86,347	86,347	86,347	86,347
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.4: Effect of High pay on SF-12 Mental Health (All coefficients)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	With individual and household level controls					
High pay	0.0716***	0.0752***	0.0761***	0.7717*	0.2998**	0.3212**
	(0.0115)	(0.0115)	(0.0115)	(0.4014)	(0.1282)	(0.1268)
Female	-0.1607***	-0.1609***	-0.1608***	-0.0398	-0.1214***	-0.1177***
	(0.0103)	(0.0103)	(0.0103)	(0.0702)	(0.0248)	(0.0245)
Age	-0.0236***	-0.0235***	-0.0234***	-0.0569***	-0.0342***	-0.0351***
	(0.0031)	(0.0031)	(0.0031)	(0.0193)	(0.0068)	(0.0068)
Age square	0.0004***	0.0004***	0.0004***	0.0007***	0.0005***	0.0005***
	(0.0000)	(0.0000)	(0.0000)	(0.0002)	(0.0001)	(0.0001)
Urban area	-0.0369***	-0.0356***	-0.0415***	-0.0158	-0.0330***	-0.0378***
	(0.0121)	(0.0117)	(0.0116)	(0.0177)	(0.0119)	(0.0119)
Bottom quartile HH income	-0.0123	-0.0126	-0.0131	-0.0461**	-0.0232**	-0.0245**
	(0.0100)	(0.0100)	(0.0100)	(0.0218)	(0.0115)	(0.0115)
Married	0.1776***	0.1763***	0.1751***	0.1191***	0.1586***	0.1560***
	(0.0127)	(0.0127)	(0.0127)	(0.0363)	(0.0163)	(0.0162)
A-level educated	0.0042	0.0036	0.0022	0.0379	0.0147	0.0146
	(0.0161)	(0.0161)	(0.0161)	(0.0256)	(0.0173)	(0.0174)
	(0.0130)	(0.0130)	(0.0129)	(0.0773)	(0.0279)	(0.0279)
Number of children in HH	-0.0191**	-0.0187**	-0.0188**	0.0094	-0.0096	-0.0088
	(0.0089)	(0.0089)	(0.0089)	(0.0188)	(0.0103)	(0.0103)
Kleibergen-Paap rk Wald F				35.75	298.7	306.5
Observations	86,347	86,347	86,347	86,347	86,347	86,347
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.5: Effect of High pay on SF-12 Physical Health (Excluding COVID-19 Years)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2308***	0.2340***	0.2350***	-0.0451	0.3731***	0.3786***
	(0.0100)	(0.0100)	(0.0100)	(0.3597)	(0.0982)	(0.0970)
Kleibergen-Paap rk Wald F				22.85	277.8	283.7
Panel B	With individual and household controls					
High pay	0.2055***	0.2085***	0.2089***	0.1457	0.3364***	0.3487***
	(0.0100)	(0.0100)	(0.0100)	(0.2948)	(0.1029)	(0.1016)
Kleibergen-Paap rk Wald F				33.80	273.6	280.8
Observations	77,034	77,034	77,034	77,034	77,034	77,034
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.6: Effect of High pay on SF-12 Mental Health (Excluding COVID-19 Years)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.0962***	0.0979***	0.0998***	0.9554*	0.0532	0.0657
	(0.0116)	(0.0116)	(0.0116)	(0.5231)	(0.1337)	(0.1322)
Kleibergen-Paap rk Wald F				22.85	277.8	283.7
Panel B	With individual and household controls					
High pay	0.0638***	0.0678***	0.0686***	1.0667**	0.3335**	0.3548***
	(0.0117)	(0.0117)	(0.0117)	(0.4357)	(0.1333)	(0.1318)
Kleibergen-Paap rk Wald F				33.80	273.6	280.8
Observations	77,034	77,034	77,034	77,034	77,034	77,034
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.7: Effect of High pay on SF-12 Physical Health (Excluding London)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2285***	0.2325***	0.2334***	0.4287	0.7392***	0.7384***
	(0.0103)	(0.0103)	(0.0103)	(0.4096)	(0.1648)	(0.1670)
Kleibergen-Paap rk Wald F				13.79	82.29	79.57
Panel B	With individual and household controls					
High pay	0.2013***	0.2058***	0.2062***	0.2444	0.8633***	0.8633***
	(0.0104)	(0.0104)	(0.0104)	(0.5051)	(0.1699)	(0.1698)
Kleibergen-Paap rk Wald F				9.839	96.16	95.97
Observations	75,221	75,221	75,221	75,221	75,221	75,221
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.8: Effect of High pay on SF-12 Mental Health (Excluding London)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.1133***	0.1168***	0.1188***	0.1943	0.4312**	0.4190**
	(0.0123)	(0.0122)	(0.0123)	(0.5388)	(0.2041)	(0.2068)
Kleibergen-Paap rk Wald F				13.79	82.29	79.57
Panel B	With individual and household controls					
High pay	0.0794***	0.0823***	0.0830***	0.2739	0.3668*	0.3667*
	(0.0122)	(0.0122)	(0.0122)	(0.6699)	(0.2017)	(0.2018)
Kleibergen-Paap rk Wald F				9.839	96.16	95.97
Observations	75,221	75,221	75,221	75,221	75,221	75,221
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.9: Effect of High pay on SF-12 Physical Health (Excluding Self-employed)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2363***	0.2395***	0.2404***	-0.0892	0.3483***	0.3529***
	(0.0097)	(0.0097)	(0.0097)	(0.3274)	(0.0931)	(0.0920)
Kleibergen-Paap rk Wald F				26.68	303.9	309.8
Panel B	With individual and household controls					
High pay	0.2080***	0.2111***	0.2115***	0.1079	0.3275***	0.3374***
	(0.0098)	(0.0098)	(0.0098)	(0.2822)	(0.0979)	(0.0967)
Kleibergen-Paap rk Wald F				35.59	298.6	306.3
Observations	85,435	85,435	85,435	85,435	85,435	85,435
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.10: Effect of High pay on SF-12 Mental Health (Excluding Self-employed)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.1044***	0.1059***	0.1079***	0.9169**	0.0629	0.0767
	(0.0116)	(0.0116)	(0.0116)	(0.4631)	(0.1233)	(0.1220)
Kleibergen-Paap rk Wald F				26.68	303.9	309.8
Panel B	With individual and household controls					
High pay	0.0704***	0.0740***	0.0749***	0.8158**	0.2940**	0.3153**
	(0.0116)	(0.0116)	(0.0116)	(0.4060)	(0.1281)	(0.1267)
Kleibergen-Paap rk Wald F				35.59	298.6	306.3
Observations	85,435	85,435	85,435	85,435	85,435	85,435
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.11: Effect of High pay on SF-12 Physical Health (Placebo Exercise Using Future Average High Pay)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Avg. Future High Pay	0.0825***	0.0857***	0.0848***	-0.3686	0.2162	0.2063
	(0.0255)	(0.0254)	(0.0254)	(1.4019)	(0.1991)	(0.1932)
Kleibergen-Paap rk Wald F				1.847	33.43	35.55
Panel B	With individual and household controls					
Avg. Future High Pay	0.0780***	0.0817***	0.0810***	-0.3279	0.2515	0.2371
	(0.0297)	(0.0297)	(0.0298)	(2.1449)	(0.2208)	(0.2148)
Kleibergen-Paap rk Wald F				0.946	29.36	30.85
Observations	5,012	5,012	5,012	5,012	5,012	5,012
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.12: Effect of High pay on SF-12 Mental Health (Placebo Exercise Using Future Average High Pay)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Avg. Future High Pay	0.0506	0.0514	0.0490	-1.8706	-0.0393	-0.0521
	(0.0339)	(0.0338)	(0.0338)	(2.3633)	(0.2506)	(0.2448)
Kleibergen-Paap rk Wald F				2.005	42.07	44.47
Panel B	With individual and household controls					
Avg. Future High Pay	0.0188	0.0199	0.0180	-2.8613	-0.0489	-0.0714
	(0.0370)	(0.0370)	(0.0370)	(3.7034)	(0.2811)	(0.2756)
Kleibergen-Paap rk Wald F				1.236	34.83	36.37
Observations	5,012	5,012	5,012	5,012	5,012	5,012
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.13: Effect of High pay on SF-12 Physical Health (Alternative definition of High pay)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay (alternative)	0.2260***	0.2299***	0.2308***	0.1976	0.3882***	0.3926***
	(0.0097)	(0.0097)	(0.0097)	(0.2013)	(0.0779)	(0.0770)
Kleibergen-Paap rk Wald F				58.51	354.1	362.3
Panel B	With individual and household controls					
High pay (alternative)	0.1994***	0.2030***	0.2035***	0.2565	0.3615***	0.3715***
	(0.0097)	(0.0098)	(0.0098)	(0.1867)	(0.0854)	(0.0845)
Kleibergen-Paap rk Wald F				71.98	335.6	344.7
Observations	70,744	70,744	70,744	70,744	70,744	70,744
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.14: Effect of High pay on SF-12 Mental Health (Alternative definition of High pay)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay (alternative)	0.1112***	0.1127***	0.1147***	0.5074*	0.0896	0.1032
	(0.0117)	(0.0117)	(0.0117)	(0.2747)	(0.1040)	(0.1028)
Kleibergen-Paap rk Wald F				58.51	354.1	362.3
Panel B	With individual and household controls					
High pay (alternative)	0.0713***	0.0754***	0.0762***	0.5111**	0.2971***	0.3141***
	(0.0116)	(0.0116)	(0.0116)	(0.2575)	(0.1118)	(0.1107)
Kleibergen-Paap rk Wald F				71.98	335.6	344.7
Observations	70,744	70,744	70,744	70,744	70,744	70,744
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.15: Effect of High pay on SF-12 Physical Health (Alternative definition of High pay)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Hourly wage	0.0000	0.0000	0.0000	-0.0005	0.0014**	0.0014**
	(0.0000)	(0.0000)	(0.0000)	(0.0025)	(0.0006)	(0.0005)
Kleibergen-Paap rk Wald F				0.191	10.23	10.79
Panel B	With individual and household controls					
Hourly wage	0.0000	0.0000	0.0000	0.0009	0.0012**	0.0012**
	(0.0000)	(0.0000)	(0.0000)	(0.0026)	(0.0005)	(0.0005)
Kleibergen-Paap rk Wald F				0.238	11.40	12.71
Observations	86,347	86,347	86,347	86,347	86,347	86,347
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.16: Effect of High pay on SF-12 Mental Health (Alternative definition of High pay)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
Hourly wage	0.0000**	0.0000**	0.0000***	0.0060	0.0002	0.0003
	(0.0000)	(0.0000)	(0.0000)	(0.0140)	(0.0005)	(0.0005)
Kleibergen-Paap rk Wald F				0.191	10.23	10.79
Panel B	With individual and household controls					
Hourly wage	0.0000**	0.0000**	0.0000**	0.0053	0.0011*	0.0011**
	(0.0000)	(0.0000)	(0.0000)	(0.0112)	(0.0006)	(0.0006)
Kleibergen-Paap rk Wald F				0.238	11.40	12.71
Observations	86,347	86,347	86,347	86,347	86,347	86,347
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.17: Effect of High pay on SF-12 Physical Health (Using First Generation Migrant Sample)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2331***	0.2278***	0.2359***	-0.0087	-0.8520**	-0.4386
	(0.0212)	(0.0213)	(0.0215)	(0.6664)	(0.4151)	(0.2866)
Kleibergen-Paap rk Wald F				4.972	19.82	31.42
Panel B	With individual and household controls					
High pay	0.2072***	0.2017***	0.2086***	0.2778	-0.4226	-0.1337
	(0.0211)	(0.0210)	(0.0212)	(0.6419)	(0.2917)	(0.2253)
Kleibergen-Paap rk Wald F				5.277	31.26	46.15
Observations	11,589	11,589	11,589	11,589	11,589	11,589
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.18: Effect of High pay on SF-12 Physical Health (Using Higher-Order Generation Migrant Sample)

Dep. Var.	SF-12 Physical Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2430***	0.2506***	0.2515***	0.2820	0.7002***	0.7003***
	(0.0121)	(0.0121)	(0.0121)	(0.5144)	(0.1032)	(0.1024)
Kleibergen-Paap rk Wald F				12	295.3	298.4
Panel B	With individual and household controls					
High payhighpay_allyears	0.2054***	0.2125***	0.2131***	0.2094	0.6725***	0.6775***
	(0.0123)	(0.0123)	(0.0123)	(0.4441)	(0.1080)	(0.1070)
Kleibergen-Paap rk Wald F				26.37	216.4	226.7
Observations	62,157	62,157	62,157	62,157	62,157	62,157
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.19: Effect of High pay on SF-12 Mental Health (Using First Generation Migrant Sample)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.0329	0.0354	0.0381	1.3665	0.7377	0.6161*
	(0.0264)	(0.0263)	(0.0262)	(1.0766)	(0.4487)	(0.3370)
Kleibergen-Paap rk Wald F				4.972	19.82	31.42
Panel B	With individual and household controls					
High pay	-0.0139	-0.0102	-0.0081	1.3603	0.7462**	0.6313**
	(0.0264)	(0.0263)	(0.0263)	(1.0685)	(0.3785)	(0.2988)
Kleibergen-Paap rk Wald F				5.277	31.26	46.15
Observations	11,589	11,589	11,589	11,589	11,589	11,589
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.20: Effect of High pay on SF-12 Mental Health (Using Higher-Order Generation Migrant Sample)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.1110***	0.1079***	0.1105***	0.8694	-0.1719	-0.1595
	(0.0142)	(0.0142)	(0.0142)	(0.7495)	(0.1396)	(0.1385)
Kleibergen-Paap rk Wald F				12.00	295.3	298.4
Panel B	With individual and household controls					
High pay	0.0878***	0.0880***	0.0892***	0.8624	0.0339	0.0568
	(0.0141)	(0.0141)	(0.0141)	(0.6484)	(0.1406)	(0.1392)
Kleibergen-Paap rk Wald F				26.37	216.4	226.7
Observations	62,157	62,157	62,157	62,157	62,157	62,157
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.21: Effect of High pay on SF-12 Physical Health (Using Second Generation Migrant Sample)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2282***	0.2270***	0.2366***	-2.4885	0.0867	0.2059
	(0.0326)	(0.0330)	(0.0335)	(2.4703)	(0.2524)	(0.2306)
Kleibergen-Paap rk Wald F				1.767	55.73	67.48
Panel B	With individual and household controls					
High pay	0.2161***	0.2131***	0.2206***	-1.7306	-0.0615	0.1087
	(0.0339)	(0.0341)	(0.0344)	(1.6784)	(0.2712)	(0.2504)
Kleibergen-Paap rk Wald F				2.589	55.02	65.93
Observations	9,595	9,595	9,595	9,595	9,595	9,595
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Table C.22: Effect of High pay on SF-12 Mental Health (Using Second Generation Migrant Sample)

Dep. Var.	SF-12 Mental Health					
Model	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Without controls					
High pay	0.2265***	0.2264***	0.2340***	0.5158	-0.2875	-0.1441
	(0.0380)	(0.0381)	(0.0384)	(1.9101)	(0.3679)	(0.3241)
Kleibergen-Paap rk Wald F				1.767	55.73	67.48
Panel B	With individual and household controls					
High pay	0.1810***	0.1878***	0.1916***	-0.0408	0.2864	0.3461
	(0.0390)	(0.0386)	(0.0389)	(1.6095)	(0.3686)	(0.3320)
Kleibergen-Paap rk Wald F				2.589	55.02	65.93
Observations	9,595	9,595	9,595	9,595	9,595	9,595
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
12 Region Fixed Effect	Yes	No	No	Yes	No	No
12 Region-year Fixed Effect	No	Yes	No	No	Yes	No
12 Region linear Time Trends	No	No	Yes	No	No	Yes

Notes: The data come from the USS, Waves 1 to 13. The full sample is for the 2009–2023 period. The 2SLS model instruments the high pay utilizing the Gross Value Added (GVA) at the 12-region level. Individual and household level controls include age, age square, sex, urban versus rural residence, household income quartile based on OECD equivalence scale, marital status, educational status, and number of children in the household. Standard errors, clustered at the individual level, are in parentheses. *** denotes statistical significance at the 1 percent level ($p < 0.01$), ** at the 5 percent level ($p < 0.05$), and * at the 10 percent level ($p < 0.10$), all for two-sided hypothesis tests.

Appendix D

Joint Authorship Forms

Joint Authorship: Chapter 2

We certify that Cansu Oymak was involved in the conception and design of the work in Chapter 2 titled: "The political economy of refugees in Africa". She has contributed significantly to the data analysis and its interpretation. She is the main contributor to the drafting the chapter, the critical revision of the chapter, and the final approval of the article version set to be sent for publication.

Anna Maria Mayda

Jean-François Maystadt

Joint Authorship: Chapter 3

I certify that Cansu Oymak was involved in the conception and design of the work in Chapter 3 titled: "Can refugees improve native children's health?: Evidence from Turkey". She has contributed significantly to the data analysis and its interpretation. She is the main contributor to the drafting the chapter, the critical revision of the chapter, and the final approval of the article version published in Journal of Demographic Economics, Volume 90, Issue 3, Pages 521-551, March 2024, doi:10.1017/dem.2024.1. The published version of the article can be found at Cambridge Core Article.

Jean-François Maystadt

Joint Authorship: Chapter 4

I certify that Cansu Oymak was involved in the conception and design of the work in Chapter 3 titled: "The Relationship Between Low Pay, High Pay and Physical and Mental Health for Migrants: Evidence from the United Kingdom". She has contributed significantly to the data analysis and its interpretation. She is the main contributor to the drafting the chapter, the critical revision of the chapter, and the final approval of the article version set to be sent for publication.

Heather Brown

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