

# Emigration during Turbulent Times

Kaicheng Luo (r)

David Yang (r)

Benjamin Olken \*

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## Abstract

Migration to another country is one approach to avoiding risks from political turmoil, but many more people stay behind than leave. In part, this may be because the economic costs of uprooting families or businesses are large. We explore the economic calculus behind migration during times of political turmoil through two major episodes in China over the past 100 years: movement from Shanghai to Hong Kong in advance of the possible Communist takeover in the 1940s, and exit from Hong Kong in more recent years as the mainland government increased political control over the city. In each case, we document the extent to which people's exit decisions are responsive to (*i*) wealth shocks, as measured by differential real estate appreciation, and (*ii*) changes in the "price" of moving using changes to the opportunity cost of staying put, using quasi-random destruction of businesses by errant bombs in historical Shanghai and Bartik-type unemployment shocks in contemporary Hong Kong. In both episodes, we document a positive wealth elasticity of migration accompanied by a negative income elasticity, and both were aggrandized when the perception of political turbulence became salient.

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\*. Luo: Harvard University; [kluo@fas.harvard.edu](mailto:kluo@fas.harvard.edu). Yang: Harvard University, NBER, and CIFAR; [davidyang@fas.harvard.edu](mailto:davidyang@fas.harvard.edu). Olken: Massachusetts Institute of Technology, NBER, and J-PAL.; [bolken@mit.edu](mailto:bolken@mit.edu). Author names are in (r) random order: AEA randomization archive.

# 1 Introduction

Migration to avoid risks from political turmoil occurs often. During times of (political) crisis, pending but unrealized risks often provide a short window of opportunity: those who catch it may survive in the long-run, and those who miss the opportunity may not be able to remedy the loss.

But many more people stay behind than leave. What drives individuals, families and firms to move during those uncertain circumstances? Such choices may be political: movers may be those who are misaligned with the political ideology of incoming regime, thus facing or perceiving higher political cost. But moving, as in any circumstances, is also an economic decision: the costs of uprooting families or business may be large; the wealth and cost of staying may play an important role.

In this paper, we examine two episodes of mass migration out of China's two most cosmopolitan cities in recent Chinese history to understand the economic factors that weighed into this decision: what are the economic incentives to leave and to stay? We focus on: (*i*) firms' migration out of Shanghai (to Hong Kong) in 1930s and 1940s in the midst of Sino-Japanese War and Chinese Civil War, with the looming risk of take-over by the Communist regime; and (*ii*) households' migration out of Hong Kong since 1997 as the city's sovereignty was handed back to China and the erosion of its freedom and civil liberties loomed large.

We first identify migrants. In the "out of Shanghai" episode, we match the universe of Shanghai business located in the International and French Concessions in the 1930s with official firm registry records in Hong Kong. About 12.7% of the firms moved from Shanghai to Hong Kong. In the "out of Hong Kong" episode, we distinguish exit sales at the household level based on the universe of Hong Kong real estate transactions, and we consider households to be migrating away from the city if they have liquidated all their real estate properties. About 3.83% of the households moved away from Hong Kong during the past decade.

We next investigate the extent to which real estate wealth affects migration decisions. In the "out of Shanghai" episode, we match firms to the land value measured by the Shanghai Municipal Council throughout the 1920s-1930s, and calculate the cumulative changes in land value from the year of firms' incorporation in Shanghai to 1937. We assess whether land value appreciation accumulated until 1937, the beginning of the Sino-Japanese War, shapes migration choices after 1937. We control for firms' entry decade fixed effects and street of location fixed effects, identifying variations in land value appreciation due to years of entering Shanghai real estate market and the street of entering

due to differential trajectories of asset appreciation across the city and across time. We find that appreciation of real estate asset significantly and robustly increased firms' decisions to out-migrate, corresponding to an elasticity of migration with respect to wealth at around 0.50.

We conduct similar analyses in the "out of Hong Kong" episode. For each household, we link all the real estate property it owns and transacted, and we calculate the cumulative changes in real estate value; such changes may include value gains from multiple properties as well as unrealized gain based on comparable market valuation for properties not yet transacted. We assess whether real estate property value appreciation accumulated until 2014, the year of Umbrella Revolution and the beginning of political turmoil, shapes migration choices after 2014. Similar to the "out of Shanghai" episode, we again control for entry-to-real-estate-market year fixed effects and apartment building fixed effects, exploiting variations in real estate asset appreciation due to the difference in years entering the real estate market and differential building-specific appreciation trajectories. We again find that appreciate of real estate asset significantly and robustly increased decisions to out-migrate, corresponding to an elasticity of migration with respect to wealth at around 0.88. We corroborate this finding with two additional identification strategies: (*i*) using the opening of the metro stations after the purchase of the property as an instrument for housing value appreciation; and (*ii*) using the timing of deeds renewal after 2047 (the end of the "One Country Two Systems" commitment) as a source of market uncertainty to instrument for house value depreciation. We observe qualitatively and quantitatively similar results using these two additional strategies: unexpected appreciation of real estate property value substantially increased the households' decisions to out-migrate after 2014.

The second key question we ask is whether the price of staying affect migration decisions. In the "out of Shanghai" episode, we examine the impact of war-time bombing that accidentally damaged office buildings and increased the affected firms' cost of staying as they would have to re-build or at least to move anyway. Using a spatial regression discontinuity design, we show, via a variety of specifications, that while being hit by a bomb was not associated with firms' characteristics, those negatively affected firms became substantially more likely to migrate to Hong Kong.

We again conduct similar analyses in the "out of Hong Kong" episode. We consider negative shocks in the labor market as a major source of increase in cost for households to stay: for example, unemployed individuals would need to look for new jobs in any case, and that may include jobs in different locations. Using a shift-share instrumental variable design, we use the interaction between *ex-ante* industrial composition of voting districts in

Hong Kong and industry-specific unemployment shocks throughout the post-2014 period to predict district level unemployment rates, and we examine whether unemployment shocks (and other similar labor market negative outcomes) affect households' migration decisions. We find consistent evidence that households in districts more negatively hit by labor market shocks became substantially more likely to migrate out of Hong Kong.

Third, we examine whether migration decision's responsiveness to wealth and income shocks may be shaped by organizational and household characteristics. In the "out of Shanghai" episode, we describe firms' organizational flexibility based on their charters, documenting features that may allow more nibble geographic mobility such as relaxed requirement on directors' holding local address and relaxed requirement that directors' meetings can be held anywhere in the world regardless of the company's headquarter location. We find that firms with more flexible organizational characteristics exhibit substantially stronger responsiveness to both the land value appreciation and bombing shocks that increased firms' cost of staying, suggesting an interaction of organizational structure and the firms' ability to navigate during risky times and to capture economic opportunities to migrate. In the "out of Hong Kong" episode, we describe each household's political leaning based on the voting outcomes of the district that they reside. We find that households in districts that are more supportive of pro-democracy candidates (and hence against pro-Beijing candidates) are substantially more responsive to real estate value appreciation and labor market shocks that increased households' cost of staying, suggesting that political attitudes, while a necessary condition for migration, is not sufficient — political attitudes prompt households to be able to capture economic opportunities to out-migrate.

Finally, we investigate the short-run costs and long-run benefits of migration during turbulent times. In the "out of Hong Kong" episode, we estimate whether the emigrating households accepted a discount on their real estate property during the exit sales, as compared to other properties that share identical traits and sold during the same time. We find a sizable discount: exit sales are associated with a 3% discount in the transaction prices, representing a meaningful cost that the emigrant households endured as they liquidated their assets in order to migrate. While the "out of Hong Kong" episode is still too contemporary for us to evaluate the long-run benefits of migrating, the "out of Shanghai" episode offers such opportunity. We collect information on the survival of firms operated in 1930s Shanghai. Only 15% of the firms who did not migrate out of Shanghai survived until 1960, and most of the surviving ones were nationalized during the Communist Revolution. In contrast, 54% of the firms that migrated to Hong Kong were still operating by 1960. Migrant firms ended up surviving for many more decades, and were signifi-

cantly more likely restore its operation in Mainland China after 1978 when it opened up to private and foreign enterprises again.

Taken together, we find that migration during political turbulence is (at least in part) an economic decision. Too few people migrate in general given the ample presence of economic opportunities elsewhere (e.g., Abramitzky, Boustan, and Eriksson 2012 and Banerjee and Duflo 2019). To the extent that economic calculus behind migration during political turbulence is considerable, under-migration became even more stark since many face political risks live in relatively affluent part of the world.

This paper connects to several strands of the literature. First, a strand of literature studies forced migration in political turbulence.<sup>1</sup> Boggle et al. (2023) argues that violence and social network can explain the selection of migrants, in the context of Jewish emigration out of Nazi Germany. Horz and Marbach (2022) argues that sector-specific economic opportunities in the destination country may affect citizens' ability to exit an authoritarian regime, drawing evidences from the migration flow from East to West Germany. We add to the literature highlighting the role economic factors in the country of origin — both wealth and cost of staying — play in shaping political migration decisions.

Our paper also relates to the large literature on migration in general. As we study migration decisions in response to real estate wealth and income changes, we provide (to the best of our knowledge) the first estimate of migration elasticity to wealth in any context. Few have explicitly written about migration away from the wealthier half of the world.<sup>2</sup> When people are not living paycheck-to-paycheck, wealth could have a more complex role to play in migration decisions.<sup>3</sup>

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1. A relatively large body of this literature studies the long run outcomes of political migration, finding, in general, positive outcomes. Sarvimäki, Uusitalo, and Jäntti (2022) found a long run benefit of forced migration switching people out of the agrarian sector exploiting the migration episode in Finland out of USSR ceded areas. Becker et al. (2020) showed that Poles with a family history of forced migration are significantly more educated today than other Poles, due to a shift in preferences away from material possessions toward investment in human capital. One exception being Ferrara and Fishback (2022), where the authors found a negative long-run labor market outcome when forced displacement is accompanied with discrimination. In non-political context, Nakamura, Sigurdsson, and Steinsson (2022), utilizing a natural experiment of Iceland volcano shocks, showed that individuals forced to move face better outcomes regarding lifetime earnings and education, and the effect is larger for those badly matched to the location they happened to be born in. Deryugina, Kawano, and Levitt (2018), using a similar Hurricane Katrina shock confirms the benefit of forced displacement, with a larger emphasis on government relief.

2. Borjas, Kauppinen, and Poutvaara (2019) uses Danish data and argues that emigrants are stochastically better self-selected on observable traits and unobservables, and Gould and Moav (2016) writes a theory paper offering a justification.

3. There's little empirical work that discussed wealth elasticity of migration; the only exception is Bazzi (2017), who shows that wealthier landowners are less elastic to income shocks in Indonesia. However, there is no direct channels related to wealth, or incomes from outside the primary employment. For theory papers, most people take asset holdings as given and in some cases directly associated (in a linear fashion) with an individual's skill level, as in Orrenius and Zavodny (2005) or to the flow of earnings at home as in

Moreover, we offer one of the few estimates income elasticity of migration: in contrast with the positive ones typically found among economic migrants in developing contexts. A majority of the literature focusing on developing countries documents for a positive income elasticity, and most people attribute the reason to liquidity constraints (Clemens 2020; Clark, Hatton, and Williamson 2007; Vogler and Rotte 2000; Hatton and Williamson 2011). Regarding magnitudes, Djajic, Kirdar, and Vinogradova (2016) provides an estimate of 0.28 based on emigrants from developing countries to OECD destinations. Clark, Hatton, and Williamson (2007) obtains an estimate of 0.12 based on emigrants from African countries to the US. Randomized control trials studying migration behaviors (e.g., Gazeaud, Mvukiyehe, and Sterck (2023)) usually obtains a much larger point estimate of elasticity, sometimes larger than 1. In contrast, Bazzi (2017), via distinguishing between short term productivity shocks and persistent income growth, argues that the elasticity can be negative if the income is persistent, thus creating an opportunity cost. Imbert et al. (2022), studying the migrants of rural China, finds that places that received positive income shocks retain a (much) larger fraction of their population.

Finally, our paper contributes to the literature on political resistance and choices during political turbulence. The seminar work of Hirschmann (1970) presents the trade-off between exit and voice during political turbulence. Regarding the consequences of such exit migration, Miller and Peters (2020) finds that when citizens disproportionately emigrate to democracies, countries are more likely to democratize, and that autocrats restrict emigration freedom in response. In contrast, a larger expected flow of economic emigration predicts autocratic survival and freer emigration policy. Mixed evidences have been found on these front. Anelli and Peri (2017), for example, argues that large flows of emigration delay policy change and decrease political participation rate. Escribà-Folch, Meseguer, and Wright (2018), on the other hand, found that emigration enables protests at the origin by offering remittances. Sellars (2019) argues that even the awareness of the possibility of exit in itself can decrease an individual's incentive to participate in collective action. In particular, in contrast with the conventional wisdom that real estate property value increases tend to generate stronger local attachment and foster better local public goods provision and political participation (e.g., Fischel 2002), we find that such increase in wealth could stimulate more out-migration during political turbulence and cause greater asset outflow and downward pressure to the local economic and political conditions.

The rest of the paper is organized as follows: Section 2 describes the political and economic contexts of the “out of Shanghai” and “out of Hong Kong” migration episodes.

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McKenzie and Rapoport (2010).

Section 3 presents data, empirical strategy and results on the migration episode out of Shanghai. Section 4 presents those on the migration episode out of Hong Kong. Finally, Section 5 concludes.

## 2 Historical background

We focus on two episodes of migration during political turbulence that are eight decades apart: both of these episodes concern migration out of East Asia's most cosmopolitan and developed cities in face of the political control of the Chinese Communist Party.

### 2.1 Shanghai and out-migration in late 1930s

Shanghai in 1930s was the East Asia's financial center. The city alone accounted for 46% (67%) of total (manufacturing) FDI in China, and it constituted 48% of China's financial capital (Ma 2008).

Two back-to-back wars in China — the Sino-Japanese War between 1937 to 1945 and the Chinese Civil War between 1945 and 1949 — shook the city and generated enormous political turbulence. In particular, political uncertainty arose as the Chinese Communist Party gained grounds around the country during the Civil War and the Republic of China's ruling party Kuomintang lost its grip on power. Enterprises in Shanghai faced uncertainty with respect to what would happen to private and foreign business, and what would happen to the Chinese economy in general had the Communist Party took control of the country.

In hindsight, we know that since the early 1950s, the ruling Communist Party launched aggressive campaign — the “Socialist Remold of Capitalist Enterprises” — to restructure, confiscate and nationalize private and foreign enterprise.<sup>4</sup> In 1953, the United Front Work Department of the Peoples’ Congress Central Committee issued a report titled “Advice on Utilizing, Restricting, and Remolding the Capitalist Enterprises,” which marked the beginning of a three-year-long movement of socialist reform in the urban sector. The report provided principle guidelines to the movement. Mao Zedong, in his comments to this report, asserted that the capitalist class “needs to be eliminated and transformed.” He further emphasized the two-step procedure to follow: first, turn the unrestricted private

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4. Many enterprises and organizations in Shanghai were expressing genuine ambiguity of their expectation on Shanghai's future, even in 1949. For example, New Asia Hotel, Ltd. in its 1951 memo wrote, “we are now making preparation for a resumption of business in Shanghai, and it maybe a[n] accomplished fact in the very near future.” Similarly, the Shanghai Race Club in its 1951 memo wrote, “except for a period after the liberation of Shanghai, the club’s flats and chambers were fully occupied by its members [...] with increased club amenities and social activities introduced, the Club was able to maintain a fair membership.”

enterprises into state capitalism, characterized by a highly restricted ownership structure; second, transition from state capitalism to full socialism. The government thus first exerted intense pressure on capitalists to form ‘joint state-private’ firms, where their power would quickly be taken over by joint labor-management committees. The Communist Revolution completed its transformation of the urban sector in 1956 by nationalizing or collectivizing all remaining businesses. See Alesina et al. (2023) for detailed account and study of the consequences.

Facing political turbulence, many firms operated in Shanghai moved its business headquarter and operation to Hong Kong. As a British colony with strong rule of law and in particular Common Law traditions, Hong Kong was (and has been) considered as a safe haven for business while maintaining relatively easy access to the Chinese market. This is briefly interrupted during the Japanese occupation during 1941 and 1945. According to surveys in 1961, at least 70,000 people (and their business) migrated from Shanghai to Hong Kong (Census Commissioner 1961).

Historians James Carter and Jeffrey Wasserstrom summarized the linked fate between Shanghai and Hong Kong well:<sup>5</sup>

Even though Shanghai was never a formal colony, its cosmopolitanism was possible because it existed outside the sovereignty of all nation-states. Shanghai avoided the worst deprivations of the Second World War (even, famously, racing its horses under occupation), yet it was during that regional and global conflict that the city finally lost its special status. [...] It was no coincidence, then, that Shanghai’s mid-century decline was matched by Hong Kong’s rise.

## 2.2 Hong Kong and out-migration since 1997

Hong Kong grew into one of the world’s most important financial centers since WWII, especially after 1970s. It is also one of the wealthiest and most expensive (in terms of real estate) cities in the world. In 2022, the city’s income per capita is 48,154 US Dollar, slightly higher than that in the United Kingdom (47,232 US Dollar).

Prior to 1997, Hong Kong was a British Crown Colony. The city’s sovereignty was returned to China in 1997, under the arrangement of “one country, two systems” which stated that the economic and social systems in Hong Kong would remain relatively unchanged for 50 years. However, key constitutional issues were left unresolved in Hong Kong, especially those regarding the universal suffrage and its civil liberty protection.

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5. “Shanghai’s Past, Hong Kong’s Future,” published in *Public Books*. Source: <https://www.publicbooks.org/shanghais-past-hong-kongs-future/>.

In recent years, Hong Kong has experienced immense uncertainty regarding its political prospect in the upcoming decades (see Cantoni et al. 2019 and Cantoni et al. 2022 for details; Lim (2023) offers a vivid recount of the turbulence). In 2014, the Twelfth National People's Congress proposed an election mode that would have allowed the citizens of Hong Kong a choice between two or three candidates, but these candidates would be selected by the same pro-Beijing committee as before. In response to this limited expansion of democratic rights, a massive July 1 March was mobilized, with hundreds of thousands of citizens taking to the streets. Further escalation and a police crackdown precipitated the even larger-scale "Umbrella Revolution," named for the ubiquitous umbrellas carried by participants. The Umbrella Revolution persisted for months, being slowly cleared out by police by the end of December 2014. While the movement did not alter the policy proposed by Beijing, it did send a clear signal to the Hong Kong legislature (the "LegCo") that a circumscribed change in institutions was unacceptable to the people of Hong Kong. In June 2015, the LegCo struck down the Chinese proposal led by the opposition of the pan-democratic camp. Since June 2015, the democratic movement in Hong Kong has both fragmented and radicalized. Recent encroachments on Hong Kong citizens' civil liberties, including the arrest of Hong Kong booksellers by the mainland Chinese government, have deepened some Hong Kong citizens' fear of the CCP and their sense of a Hong Kong identity very much distinct from — even opposed to — that of mainland China. In 2019, the People's Congress enacted the National Security Law, substantially curtailing civil liberties in Hong Kong and effectively putting an end of the protest movements and fights for political rights in the city.

The decline in political freedom and civil liberties in recent years in Hong Kong can be seen in the Freedom House's political rating of the city (see Appendix Figure A.1). Such erosion of rights and freedom is also perceived by the general population, according to the Public Opinion Program administered by the University of Hong Kong.

Under this backdrop of the political uncertainty and turbulence in Hong Kong, an increasing number of citizens (and enterprises alike) began to migrate away from the city. The applications of police *No Conviction* record, a document necessary for migrant visa application, tripled in the last decade. While there is no systematic records of the destination the migrants, the consensus is that many moved to the United Kingdom and other Commonwealth countries, in part because of the relatively relaxed migration registration for Hong Kong residents. For example, the British government announced in 2021 a citizenship pathway for Hong Kong holders of the colonial-era British National Overseas passport.

### 3 Episode 1: Out of Shanghai

#### 3.1 Firms in 1930s Shanghai

**Identify movers** In order to distinguish the movers from the stayers, we first obtain the Shanghai firm roster from *The North-China Desk Hong List*, a directory of businesses published annually by a British newspaper agency in Shanghai: *North-China Herald* (1850-1941). We use the 1937 July edition as our baseline sample as it's surveyed right before WWII broke out in the area (August 13). Our sample consists of 2871 firms operating in the International Settlement and French Settlement in 1937.

Next, we match the list of the firms with the official firm registry database in Hong Kong (accessed via the Integrated Companies Registry Information System). A mover is identified if a pair of firm names in the two archives match with one another. Only the main characters of the company names are used to identify potential matches – keywords like "Corp.", "Limited", "Yang Hang" (Foreign Company), "Shang Hao" (Business), etc. are not used for matching. The firm registry in Hong Kong kept the annual balance sheets, memorandum and articles of association (henceforth "charters"), and sometimes communications between the governor and firm managers on record. In recent years a micro-filmed version is made available to public.

We validate our sample by comparing the sectors of business activity, looking for evidence of Shanghai presence in the charters, and identifying name-matches in the director list. Firm registrations outside our time frame of interest are excluded. When firms of similar names are found, we manually read the descriptions of business and lists of managers and shareholder to pick the most relevant entry.

All things combined, we identified 365 (12.7%) migrants firms from Shanghai to Hong Kong. The scale of migration is non-negligible at the destination as well. According to *Registrar General's Department Annual Report, 1976-77*, 32% of new firms registered in Hong Kong during 1940s were migrants from Shanghai.

**Data collection on firm-level characteristics** We collect a range of firm-level characteristics. From the Shanghai firm roster, we obtain the name, address, type of business, as well as the name of owner and managers. We use the 1937 edition as our baseline, but also digitized all the cross-sections from 1900 to 1941 to track within-firm variation over time.<sup>6</sup> We distinguish Chinese ownership and foreign ownership from the names of the

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6. There are two versions of *North China Hong List*. The July version, which focuses on Shanghai, is published annually from late 19th century to 1941. The January version, which covers all major ports in China, is published annually from the 1910s. In this paper, we focus on the Shanghai editions.

owner, assuming that anyone bearing a French-sounding name back in the days would most likely be a citizen of France. We identify the year of firm's incorporation from the first year of its presence in the Hong Lists, and we also label foreign presence utilizing the manager list we digitized.

We measure firms' land value of their headquarter location. Based on firms' address, we match to land value retrieved from the Land Assessment Schedules (1922, 1930, and 1933) — cadastral-level land valuations conducted every few years by the Shanghai Municipal Council and the French Council for tax purposes. Appendix Figure A.2 shows an example of a map and a corresponding table in the 1933 Land Assessment Schedules for Central District, International Settlement. Each block in the map is called a cadastre. An average cadastre occupies an area of 3.91 thousand square meters (half a soccer field), and usually hosts a couple firms. An example of a map and a corresponding table in the 1933 Land Assessment Schedules for Central District, International Settlement.

Table 1, column 1-2, presents summary statistics of these characteristics. Appendix Figure 1 showed the number of firm migrants over time.

**Who are the movers?** Table 1, columns 3-4 examine the correlates predictive of firms' migration outcomes, first showing coefficients of univariate regressions, and then multivariate regression where all the firm-level characteristics enter the regression simultaneously.

One observes that firms with stronger ties to destinations outside of China were substantially more likely to move out of Shanghai; those with bigger business geographic scope that covered other parts of China (beyond Shanghai) were more likely to move; and those in sectors with lighter physical assets (e.g., financial services) were more likely to move, and vice versa for firms with heavier and immobile physical assets (e.g., restaurants, groceries, manufacturing to a smaller extent).<sup>7</sup>

### 3.2 Does asset values affect moving decision?

We begin by examining whether and to what extent did asset values shape firms' moving decisions.

For all the firms continuing their business in 1937, we compute the change of land value from the incorporation year to the 1937. If a land survey is not conducted at the year of incorporation, we do linear inter-/extrapolation with the data we have.

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7. Appendix Table A.1 presents the migration probability for sectors with the highest and lowest migration rate.

We estimate the effect of cumulative land value appreciation until 1937 on firms' emigration outcomes after 1937. Specifically, we estimate the following model:

$$\text{Emigration}_i = \beta \times \Delta \log(\text{land value})_i + \gamma_{\text{entry decade}} + \eta_{\text{street}} + \varepsilon_i,$$

where we include entry decade FEs and street FEs, thus identifying variations in land value appreciation as a result of years of entering Shanghai real estate market and the street of entering. In other words, the identifying variation arises from differential trajectories of asset appreciation across the city and across time.

Table 2 presents the results. We observe a robust and significant pattern that firms experiencing greater land value appreciation became more likely to migrate out of Shanghai. Results are robust measured in levels in current US dollars (see Appendix Table A.2). A 10% additional increase in asset appreciation would lead to a 0.61pp (4.8%) increase in emigration probability, implying an elasticity of migration with respect to land wealth that equals to 0.50. The difference of emigration probability between firms at the top decile and firms at the bottom decile is 12.65pp (99.4%). Note that to the extent firms' headquarter land value was an important component of the firms' total wealth but not its lion's share, the wealth-to-migration elasticity that we estimate is likely to be an underestimate.

### 3.3 Do shocks to cost of staying affect moving decision?

We next examine whether shocks to firms' cost to stay (i.e., decreased price of moving) affect their migration decisions.

To identify such effect, we focus on the destruction of firms' headquarter due to wartime bombing. The British and French settlements in Shanghai were safe harbors during the war despite the fierce Sino-Japanese war in the area. However in August 1937, with the official break-out of WWII in the area, there were a few bombings that struck the area, leaving civilian casualties *en masse*. Those bombs are believed to be dropped by accident, and the settlements were not meant to be targeted by either side of the war in 1937. Regardless, these bombs were reported to have instantly killed 1,200 people and left hundreds of wounded on the ground (Henriot 2015). We retrieve the exact location of the bombs from the daily newspapers *North China Herald* and the work from the *Virtual Shanghai Project*. Appendix Figure A.3 shows the map of bombing locations.

Our identification strategy zooms in on firms located within 500-meter radius of the bombed locations, comparing firms that were hit by the bombing with those barely missed

it. Specifically, we estimate the following model:

$$\text{Emigration}_i = \beta \times \text{Bombed}_i + \gamma_t + \eta_{\text{sector}} + \phi_{\text{nationality}} + \varepsilon_i,$$

where  $\text{Bombed}_i$  is defined as firms located within 200-meter radius of the bombing site, approximately the size of building complex that would be affected by the bombing. We control for firms' entry decade fixed effects ( $\gamma_t$ ), sector fixed effects ( $\eta_{\text{sector}}$ ), and nationality fixed effects ( $\phi_{\text{nationality}}$ ).

Identification hinges on the assumption that low-altitude bombing prior and during WWII was nearly impossible to deliver precise targeting. Indeed, as shown in Appendix Table A.3, we observe that those hit by the bombs were indistinguishable in terms of their observable characteristics as compared with those firms nearly missed the bombing.

Table 3, Panel A, columns 1-2, present the baseline results. One observes that firms hit by the bombing were substantially (an increase by 26.3%) more likely to migrate to Hong Kong. Columns 3 and 4 in addition controls for street fixed effects and land value assessed in 1937, and the positive effect of bombing on migration remain qualitatively unchanged and quantitatively slightly enlarged. The results we identify here are robust to using continuous distance to the bombing site as a measure of the degree of destruction (see Panel B), as well as a range of alternative choices of bombing site radius and sample firm coverage (see Appendix Table A.4).

### 3.4 Organizational structure and migration choices

Having shown that firms exhibit positive elasticity of migration with respect to wealth and cost of staying, we next explore firms' organizational structure and its interaction with their responsiveness to wealth and cost of staying shocks.

We measure firms' organizational flexibility based on their charter clauses. We collect data from the Hong List, as well as the Firm Registry in Hong Kong and Shanghai Municipal Archive. According to *Hong Kong Companies Ordinance* (1932) and *Shanghai Company Law* (1929), each firm is required to submit a copy of their charters before incorporation.

We extract four key features indicative of firms' organizational flexibility. First, whether the firm imposed director address requirement. For example, "each member whose registered place of address is not the colony of Hong Kong shall [...] notify in writing some place in the colony of Hong Kong which shall be deemed his registered place" (CR 2744, Baboud Mary, Ltd.). Second, whether the firm required director rotation. For example, "at every general meeting one-third of the directors [...] shall retire from office" (CR 2020, Shanghai Worsted Mill). Third, whether the firm allowed directors' meetings to be held in countries other than firm's headquarter office. For example, "a meeting of directors

may be held in Hong Kong or elsewhere" (CR 1599, Shewan Thomes & Co. Ltd.). Fourth, whether the firm can set up branches in countries other than its headquarter office. For example, "the business of the company shall be carried on [...] at places the Directors may from time to time determine" (CR 2017, Pacific Investors Ltd.).

We compare, along each of the four dimensions above, migrant firms with stayers (firms in Shanghai that did not migrate to Hong Kong) and local firms in Hong Kong (a random sample of firms registered in 1940s that did not come from Shanghai). Appendix Table A.5 presents the comparison: migrant firms looks substantially like Hong Kong locals, but very different from their peers in Shanghai.

While it is challenging to distinguish whether the difference between migrant and non-migrant firms in Shanghai were due to selection or the impact of migration, we found 4 migrant firms with their original charters filed in Shanghai prior to their move as well as new charters filed in Hong Kong after their move. We find no evidence suggesting that firms modified their charters as they move.<sup>8</sup> Nor were there systematic differences of the legal system that might affect the way these charters were written.

We investigate whether firms' responsiveness to wealth (due to land value appreciation) and cost of staying (due to bombing) shocks as identified in the previous sections were differentially high if their organizational structure was more flexible. Table 4 presents the estimates, where we combine all four dimensions of organizational flexibility into a z-score index, and we investigate its interaction with wealth shocks in Panel A and cost of staying shocks in Panel B. We find that firms with more flexible organizational structure were significantly more responsive to wealth shocks and changes in cost of staying as they made decisions to migrate firms' headquarters to Hong Kong. This suggests that organizational flexibility may be important in allowing firms to be more agile in navigating economic shocks (and opportunities) during turbulent times, which as we show in the next section, is critical to the firms' survival.

### 3.5 Firms' outcomes in the median run

Finally, we examine firms' median-run outcomes, particularly in terms of their survival likelihood.

For the firms that do not migrate, most of them were nationalized during the Communist Revolution. A few international companies survived without the Shanghai branch,

8. Some firms' charters can be observed on both sides. For them, we find that the difference are merely up to translation errors. (e.g., Jardine Engineering Co., Ault & Wiborg Co., etc.) In addition, we find that some firms inherited their old charters from Shanghai when they move to Hong Kong (e.g., Pottings & Co.). The microfilmed charters shown in appendix Figure A.4 shows that the firm, incorporated in 1923 in Shanghai, submitted their original charter when registering in Hong Kong in 1946.

and a few local firms survived by cooperating with the new regime (so their assets are reinstated after 1978). We collect those information from the County Gazetteers and various online sources. For firms that do migrate to Hong Kong, we observe their operation (and dissolution) reported by the Firm Registry.

Only 15% of the firms in Shanghai who didn't migrate to Hong Kong survived till 1960, whereas about 54% of the firms in Hong Kong were still operating by 1960. This suggests a very high return to migration in the median run. To examine this more closely and to account for the confounding factor of firms' selection into migration, we exploit the bombing shocks and compare the outcomes of firms within the bombing zone, among those hit by the bomb and those barely missed it. We run a two-stage-least-square specification, where we use the baseline specification in Section 3.3 as the 1st stage, and firm's years of survival after 1937 and likelihood of returning to Mainland China to operate after 1978 as outcomes of interest. Appendix Table A.6 presents the results. We find that firms migrated to Hong Kong due to bombing (relative to those who stayed due to narrowly avoiding the bombing) have survived business operation for more than four decades longer, and they have a substantially higher chance of returning to Mainland China after the country re-opened to foreign enterprises in 1978.

## 4 Episode 2: Out of Hong Kong

### 4.1 Identify movers

Identifying migrants from Hong Kong is a challenging task. In most occasions, short of individual-level data, even aggregate numbers are not easily available as Hong Kong residents traveling abroad are not required to declare to the Government their purpose of travel.

However, a comprehensive dataset on real-estate transactions sheds new light on its solution. Observing that permanent migration is usually associated with the liquidation of all real estate assets in the country of origin, we are able to identify emigrant homeowners from the universe of 2.45 million housing transactions in Hong Kong between 1991 and the third quarter of 2021. In our baseline strategy, we define migrants as households who have sold *all* their real estate assets by end of our sample period and made no new purchases.

The transaction data is obtained from Hong Kong Land Registry, accessed via the Integrated Registration Information System. For each transaction, we observe the names of the buyer(s) and seller(s), closing prices, special terms (e.g., death), as well as a range of

unit-level observations such as location, amenities, and year of construction. We cross-checked the scope of our transaction data with company databases (28HSE, the most widely-used property-sales portal), and found our data to be comprehensive (See Appendix Figure A.5).

Not every property seller is a migrant; mortgage defaults, deaths and bequests could be alternative scenarios when property liquidation usually happen. Given the unique structure that real estate transactions are organized, we are fully able to tell mortgage defaults, deaths and gifts apart from migration sales. For instance, if the seller of a transaction is a bank or financial institution that does not match with its preceding buyer, it likely implies a mortgage default. Similarly, a death or a gift also entails mismatches between a seller and its preceding owner. Appendix B explains in detail our validation efforts where we compare "imputed" deaths which we identified from the transactions, with the officials records on the government deeds. It further describes other miscellaneous parts of data cleaning, including unsuccessful transactions, name alias, and joint tenancy.

Another major concern for the data comprehensiveness comes from the residents who never switched houses. Any household who made at least one transaction from 1991 to 2021 will appear in our transaction records. But if a non-migrant owned properties before 1991 and didn't participate in any of the housing market transactions during our entire sample period, we won't be able to know who they are. We proceed with a few plausible assumptions. In the first step, we identify where those never-sold units are, observing that (i) the majority of Hong Kong residents live in apartments instead of townhouses, and (ii) within each building, we usually have the same set of units on each floor.<sup>9</sup> We next validate our data with a random sample of raw deeds downloaded from the Land Registry, where records sometimes extend 10 years longer, and find this strategy to offer us a reasonably good approximation to the ground truth.

All things combined, we identified 1.87% migrant households who emigrated between 2015 and 2020. Figure 2 plots the number of emigrants across years, and its comparison with official statistics. The two trends fits nicely with each other. Migration peaks at 1997 during the handover, and started to rise again in recent years.

**Who are the movers?** Appendix Table A.7 showed summary statistics for both stayers and movers. Correlation-wise, we find that individuals with stronger ties to the destination and better social economic status were more likely to move.

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9. As an example, if we observe unit 1, 2 and 3 on second floor but only 1, 3 on the third floor, then we assume that 3F/unit 2 is one of the stayers.

## 4.2 Does asset values affect moving decision?

We begin by investigating whether real estate asset value appreciation affects households' migration decisions. We start with the baseline specification below, where we examine the relationship between cumulative real estate asset value changes until 2014 and migration decision after 2014:

$$\text{Emigration}_i = \beta \times \Delta \log(\text{Asset value})_i + \gamma_{\text{start year}} + \eta_{\text{building}} + \varepsilon_i.$$

We control for the real-estate-market-entering-year fixed effects ( $\gamma_{\text{start year}}$ ) and apartment complex building fixed effects ( $\eta_{\text{building}}$ ). Similar to the empirical strategy in identifying such relationship in the episode of "out of Shanghai," by including these fixed effects, we exploit variation in real estate asset appreciation as a result of years entering housing market combined with location-specific appreciation trajectory. The sample only include households who have not left Hong Kong by 2014.

Computing asset appreciation for those who sold their houses is straightforward. If there's no transaction for unit  $i$  in year  $t$ , we use the following strategy to impute its market-fair housing price. We use the average (unit) price within the same block (usually a few buildings) in the same year  $t$ ; if none of the units in the same block is sold during year  $t$ , we use the average (unit) price within the same neighborhood by the same developer in year  $t$ . More than 97% of the price can be imputed at the block and neighborhood and transaction year level. If there is no transaction within the neighborhood, we use time-series variation and predict the unit price of unit  $i$  in year  $t$  by fitting a linear model with building and year fixed effects; our baseline results are robust to more flexible functional forms of price imputation. If the households own multiple assets, we compute the logged difference of asset value for each property separately and add them together.

Table 5 presents the results. One observe a strong, positive, and statistically significant relationship between real estate asset appreciation and households' migration decision. The estimates suggest that a 10% increase in asset appreciation would lead to a 0.15pp (8.11%) increase in emigration probability, implying an elasticity of migration with respect to real estate wealth equal to 0.88. The difference of emigration probability between households at the top decile and those at the bottom decile is 2.21 pp (119.4%). The results are robust to: (i) measuring real estate asset values in levels instead of changes; (ii) measuring values in current US dollars; and (iii) restricting the analyses to a subsample of households who only own one real estate property in Hong Kong (see Appendix Table A.8).

We use two additional, complementary empirical strategies to estimate the relationship between real estate value appreciation and emigration decision: first using the open-

ing of MTR stations as instrument for appreciation of housing value, and second using the timing of deeds relative to the 2047 takeover as instrument for depreciation of housing value.

#### IV strategy: MTR opening

The Mass Transit Railway (MTR) system in Hong Kong is one of the most efficient public transportation systems in the world. Real estate properties in close proximity to the MTR system tend to have higher market valuation. We use the opening of MTR stations near the property *after* the purchase of the property as a shock that increases the households' asset value. Appendix Figure A.6, Panel A, shows the number of new MTR stations opened across years. 52.9% of the MTR stations in the current network opened after 1990, during our housing transaction sample period. Panel B maps the location of the stations built before 1990 and after 1990. Finally, in Panel C, we plot real estate properties throughout Hong Kong, distinguished by having no access to MTR network (further than 1km from the station), having access to MTR network before 1990 already, and gained access to MTR network since 1990 due to the opening of new stations.

Appendix Table A.9 presents the first stage results, where we predict the real estate asset value gain until 2014 with the MTR access gained since the purchase of the property, again controlling for year-entering-real-estate-market fixed effects and neighborhood fixed effects. One observe a strong relationship: connected with the MTR system is associated with an 36.76% increase in the real estate property value until 2014. This pattern is robust to alternative measures of MTR access using different choices of radius, using distance to the nearest MTR station as measure of access to the system, or counting only substantial shortening in distance (greater than 1km) to the MTR station; these results are shown in Appendix Table A.10. Importantly, as shown in Appendix Table A.11, neighborhood demographics and socioeconomic conditions do not predict MTR access, controlling for the baseline fixed effects.

Table 5, Panel B presents the two-stage-least-squared results; Appendix Table A.9, columns 4-6 presents the reduced form results; One again observes a positive relationship between real estate asset value appreciation and migration; the estimates imply an elasticity of migration with respect to real estate wealth equals to 0.39. These results are robust to alternative measures of MTR access using different choices of radius, using distance to the nearest MTR station as measure of access to the system, or counting only substantial shortening in distance (greater than 1km changes) to the MTR station (see Appendix Table A.10).

#### **IV strategy: timing of deeds renewal**

He et al. (2020) finds that houses whose ground lease expires after July 1, 2047 are prone to political uncertainty. By Basic Law, leases that expire on or before June 30 are automatically granted an additional 50 years extension signed by the current government, while people are uncertain about how leases that expire afterwards will be extended, if they can be extended at all. We exploit this variation by using the timing of deeds as an instrument for appreciation (depreciation) of housing value.

Following the same empirical strategy of He et al. (2020), we compare the group of buildings whose lease expires on June 30, 2047, versus the group of buildings whose lease expires between July 1, 2047 and 2067.<sup>10</sup> Appendix Figure A.7 presents the trend in unit price across the apartment blocks with leases expiring before and after July 1, 2047. One observes that prior to 2000, these two groups of apartment blocks do not differ in market valuation; since 2000, apartments with lease expiring before July 1, 2047 are valued substantially more. Appendix Table A.12 presents the first stage regression results, where we control for building fixed effects (column 2), as well as year-entering-real-estate-market fixed effects (column 3). Again one observes a strong relationship that safe lease (those expired before July 2047) is associated with a substantial positive value appreciation of the property by 2014.

Table 5, Panel C presents the two-stage-least-squared results; Appendix Table A.12, columns 4-6, presents the reduced form results. One again observes a positive relationship between real estate asset value appreciation and migration; the estimates imply an elasticity of migration with respect to real estate wealth equals to 0.66.

### **4.3 Do shocks to cost of staying affect moving decision?**

We next study the question whether changes to cost of staying affect households' decisions to migrate. In particular, we focus on labor market shocks that result in income drop or unemployment that increase the cost of staying in Hong Kong. We implement a shift-share instrument strategy where we explore changes to labor market conditions experienced by households in different districts due to the district industrial employment composition and industry-specific unemployment or income growth rate in Hong Kong in recent years due to economy-wide changes (e.g., industries were differentially affected by Covid-19 pandemic and the lockdown).

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10. Real estate developers sign separate leases with the government for each block (usually a handful of buildings). The lease terms are documented on the deeds from the Land Registry.

Specifically, we estimate the following model:

$$\text{Emigration}_{it} = \beta \sum_k z_{ik} u_{kt} + \gamma_t + \lambda_i + \varepsilon_{it},$$

where  $z_{ik}$  measures the industry share (fixed at 2016) of industry  $k$  at voting district  $i$  and  $u_{kt}$  the unemployment rate (or income growth rate) of industry  $k$  at year  $t$ .

We collect voting district level industrial shares data from 2016 by-census, and industrial level annual unemployment rate and income growth rate from Hong Kong Census and Statistics Department from 2004 to 2021. Our baseline unit of observation is a voting district (District Council Constituency Area). There are about 430 voting districts across the city, with a population average of about 17,000.

Following Goldsmith-Pinkham, Sorkin, and Swift (2020), we conduct balance test choosing the three sectors with the largest Rotemberg weights (see Appendix Table A.13). Reassuringly, the 2016 level industry share at the voting districts are associated with subsequent household income changes, but uncorrelated with demographic changes and changes in housing ownership conditions.

Table 6 presents the results. Panel A focuses on unemployment shocks, and Panel B focuses on income changes (conditional on employment). One observes that negative changes in labor market conditions, either in the extensive margin in terms of unemployment or in the intensive margin in terms of income, significantly increase households' decisions to migrate out of Hong Kong. A 1% increase in income across all industries would lead to a 0.036 percentage point decrease in annual migration rate, which is about 7.5% on top of average migration rate. The difference of emigration probability between regions at the top decile of highest income growth and those at the bottom decile is -0.17pp (35.6% of the average annual migration rate).

#### 4.4 Cost in the short-run: fire sales

Finally, we examine the short-run cost that the households need to pay in order to liquidate real estate assets and migrate away from Hong Kong. In particular, we ask whether real estate assets were sold at a lower price if those were the exit sale for the emigrating households, compared to properties transacted at the same time and shared similar attributes.

To identify the transaction price differences due to exit sales, we compare the sale price for units that part of the emigrating households' last transactions (namely, they do not purchase additional properties in Hong Kong subsequently) with those owned by households who would purchase additional properties in Hong Kong afterwards. Table 7

presents the results, where we control for a combination of neighborhood fixed effects, apartment block fixed effects, apartment building fixed effects, transaction year fixed effects, and the household's year-entering-real-estate-market fixed effects. One observes a robust negative relationship between transaction price and the unit being part of the emigrating households' exit sales. On average, emigrants sell their property at about 100,000 HKD lower than the market price, about 3% of the total property value. Such discount presents the price that the emigrating households have to pay in the short run, which could be a result of their desire to settle the transaction in a relatively urgent manner (and hence do not exploit the full market potential).

## 4.5 Economic incentives during turbulent times

Throughout the sections above, we have documented that economic incentives play an important role in households' decisions regarding emigration out of Hong Kong (similar to the earlier episode of emigration out of Shanghai). The natural question remains whether the pattern of economic incentives shaping emigration decision differs during times of political turbulence. In this section, we present evidence that economic incentives interact with underlying political conditions, and are often amplified in shaping migration during turbulent times.

We begin with cross-sectional analysis, examining whether the migration decisions in response to economic incentives differ across districts with different political leaning. We re-estimate our baseline specifications on emigration with respect to real estate asset appreciation (Section 4.2), with respect to labor market condition (Section 4.3), and its short-run cost in terms of fire sale discount (Section 4.4), separately for each decile of political misalignment with the Chinese Communist regime. This is measured as % of votes the Democratic Party got in 2019. Figure 3, Panel A, presents the estimated coefficients for each corresponding political leaning decile. One observes that households in the more pro-democracy (i.e., anti-Beijing) districts are more responsive to real estate assets appreciation, to unemployment shocks in their migration decisions, and the emigrating households in those districts are willing to pay a higher discount to the real estate property sale in order to liquid asset and migrate. This pattern is robust to controlling for district level average income level.

We proceed to time-series analysis, examining whether the migration decisions in response to economic incentives differ during years when political uncertainty rise. We again re-estimate our baseline specifications on emigration with respect to real estate asset appreciation (Section 4.2), with respect to labor market condition (Section 4.3), and its

short-run cost in terms of fire sale discount (Section 4.4), now separately for each year. In Figure 3, Panel B, we overlay the yearly estimated coefficients with the perceived political freedom and liberty according to the Public Opinion Program administered by the University of Hong Kong. One observes that households were substantially more responsive to real estate assets appreciation, to unemployment shocks in their migration decisions during time periods of political uncertainty and turbulence. While we have limited power to identify all emigrating families around 1997, the first episode of considerable rise in political uncertainty, we observe a consistent pattern of increased migration elasticities to real estate wealth, to cost of staying, and discount on real estate transition due to migrating since 2014 when political uncertainty rapidly rose again in Hong Kong following the Umbrella Revolution.

Taken together, these patterns suggest that economic incentives intertwine with political Turbulence. Economic incentives play a bigger role in shaping migration among households exhibit political preferences in out-migration and when political uncertainty increased the long-run payoff of out-migration.

## 5 Discussion

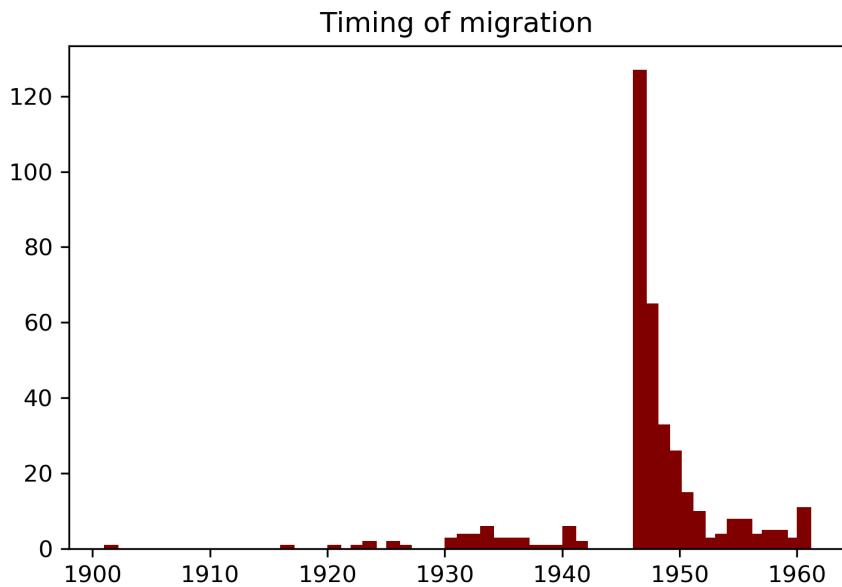
## References

- Abramitzky, Ran, Leah Platt Boustan, and Katherine Eriksson. 2012. "Europe's tired, poor, huddled masses: Self-selection and economic outcomes in the age of mass migration." *American Economic Review* 102 (5): 1832–1856.
- Alesina, Alberto F, Marlon Seror, David Y Yang, Yang You, and Weihong Zeng. 2023. "Persistence despite revolutions." *NBER Working paper*, no. w27053.
- Anelli, Massimo, and Giovanni Peri. 2017. "Does emigration delay political change? Evidence from Italy during the Great Recession." *Economic Policy* 32 (91): 551–596.
- Angus, Maddison. 1998. *Development Centre studies Chinese economic performance in the long run*. OECD publishing.
- Banerjee, Abhijit V, and Esther Duflo. 2019. *Good economics for hard times*. PublicAffairs.
- Bazzi, Samuel. 2017. "Wealth heterogeneity and the income elasticity of migration." *American Economic Journal: Applied Economics* 9 (2): 219–255.
- Becker, Sascha O, Irena Grosfeld, Pauline Grosjean, Nico Voigtlander, and Ekaterina Zhuravskaya. 2020. "Forced migration and human capital: Evidence from post-WWII population transfers." *American Economic Review* 110 (5): 1430–1463.
- Borjas, George J, Ilpo Kauppinen, and Panu Poutvaara. 2019. "Self-selection of emigrants: Theory and evidence on stochastic dominance in observable and unobservable characteristics." *The Economic Journal* 129 (617): 143–171.
- Buggle, Johannes, Thierry Mayer, Seyhun Orcan Sakalli, and Mathias Thoenig. 2023. "The Refugee's Dilemma: Evidence from Jewish Migration out of Nazi Germany." *The Quarterly Journal of Economics* 138 (2): 1273–1345.
- Cantoni, Davide, Louis-Jonas Heizlsperger, David Y Yang, Noam Yuchtman, and Y Jane Zhang. 2022. "The fundamental determinants of protest participation: Evidence from Hong Kong's antiauthoritarian movement." *Journal of Public Economics* 211:104667.
- Cantoni, Davide, David Y Yang, Noam Yuchtman, and Y Jane Zhang. 2019. "Protests as strategic games: experimental evidence from Hong Kong's antiauthoritarian movement." *The Quarterly Journal of Economics* 134 (2): 1021–1077.
- Census Commissioner. 1961. *Report on the 1961 Census*. Vol. II, page 118. S . Young, Government Printer at the Government Press.
- Clark, Ximena, Timothy J Hatton, and Jeffrey G Williamson. 2007. "Explaining US immigration, 1971–1998." *The Review of Economics and Statistics* 89 (2): 359–373.
- Clemens, Michael A. 2020. "Migration from Developing Countries: Selection, Income Elasticity and Simpson's Paradox." *Centro Studi Luca d'Agliano Development Studies Working Paper*, no. 465.
- Deryugina, Tatyana, Laura Kawano, and Steven Levitt. 2018. "The economic impact of Hurricane Katrina on its victims: Evidence from individual tax returns." *American Economic Journal: Applied Economics* 10 (2): 202–233.
- Djajic, Slobodan, Murat G Kirdar, and Alexandra Vinogradova. 2016. "Source-country earnings and emigration." *Journal of International Economics* 99:46–67.

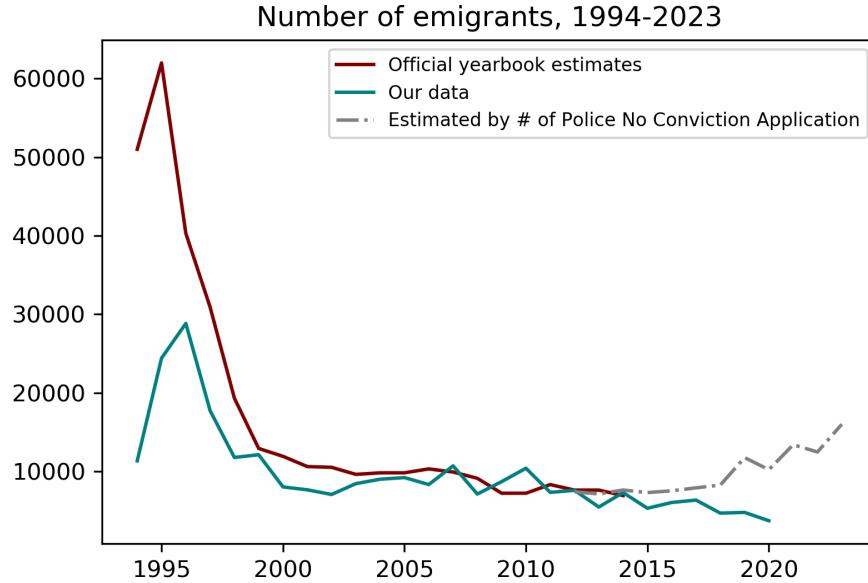
- Escribà-Folch, Abel, Covadonga Meseguer, and Joseph Wright. 2018. "Remittances and protest in dictatorships." *American Journal of Political Science* 62 (4): 889–904.
- Ferrara, Andreas, and Price Fishback. 2022. "Discrimination, migration, and economic outcomes: evidence from World War I." *Review of Economics and Statistics*, 1–44.
- Fischel, William A. 2002. *The homevoter hypothesis: How home values influence local government taxation, school finance, and land-use policies*. Harvard University Press Cambridge, MA.
- Gazeaud, Jules, Eric Mvukiyehe, and Olivier Sterck. 2023. "Cash transfers and migration: Theory and evidence from a randomized controlled trial." *Review of Economics and Statistics* 105 (1): 143–157.
- Goldsmith-Pinkham, Paul, Isaac Sorkin, and Henry Swift. 2020. "Bartik instruments: What, when, why, and how." *American Economic Review* 110 (8): 2586–2624.
- Gould, Eric D, and Omer Moav. 2016. "Does high inequality attract high skilled immigrants?" *The Economic Journal* 126 (593): 1055–1091.
- Hatton, Timothy J, and Jeffrey G Williamson. 2011. "Are third world emigration forces abating?" *World Development* 39 (1): 20–32.
- He, Zhiguo, Maggie Rong Hu, Zhenping Wang, and Vincent Yao. 2020. *Valuation of long-term property rights under political uncertainty*. Technical report. National Bureau of Economic Research.
- Henriot, Christian. 2015. "August 1937: War and the death en masse of civilians." *War in History and Memory*, 492–568.
- Hirschmann, Albert O. 1970. *Exit, voice, and loyalty: Responses to decline in firms, organizations, and states*.
- Horz, Carlo M, and Moritz Marbach. 2022. "Economic opportunities, emigration and exit prisoners." *British Journal of Political Science* 52 (1): 21–40.
- Imbert, Clement, Marlon Seror, Yifan Zhang, and Yanos Zylberberg. 2022. "Migrants and firms: Evidence from china." *American Economic Review* 112 (6): 1885–1914.
- Lim, Louisa. 2023. *Indelible City: Dispossession and Defiance in Hong Kong*. Penguin.
- Ma, Debin. 2008. "Economic growth in the Lower Yangzi region of China in 1911–1937: a quantitative and historical analysis." *The Journal of Economic History* 68 (2): 355–392.
- McKenzie, David, and Hillel Rapoport. 2010. "Self-selection patterns in Mexico-US migration: the role of migration networks." *the Review of Economics and Statistics* 92 (4): 811–821.
- Miller, Michael K, and Margaret E Peters. 2020. "Restraining the huddled masses: Migration policy and autocratic survival." *British Journal of Political Science* 50 (2): 403–433.
- Nakamura, Emi, Jósef Sigurdsson, and Jón Steinsson. 2022. "The gift of moving: Inter-generational consequences of a mobility shock." *The Review of Economic Studies* 89 (3): 1557–1592.
- Orrenius, Pia M, and Madeline Zavodny. 2005. "Self-selection among undocumented immigrants from Mexico." *Journal of Development Economics* 78 (1): 215–240.

- Sarvimäki, Matti, Roope Uusitalo, and Markus Jäntti. 2022. "Habit formation and the mis-allocation of labor: evidence from forced migrations." *Journal of the European Economic Association* 20 (6): 2497–2539.
- Sellars, Emily A. 2019. "Emigration and collective action." *The Journal of Politics* 81 (4): 1210–1222.
- Vogler, Michael, and Ralph Rotte. 2000. "The effects of development on migration: Theoretical issues and new empirical evidence." *Journal of Population Economics* 13 (3): 485–508.

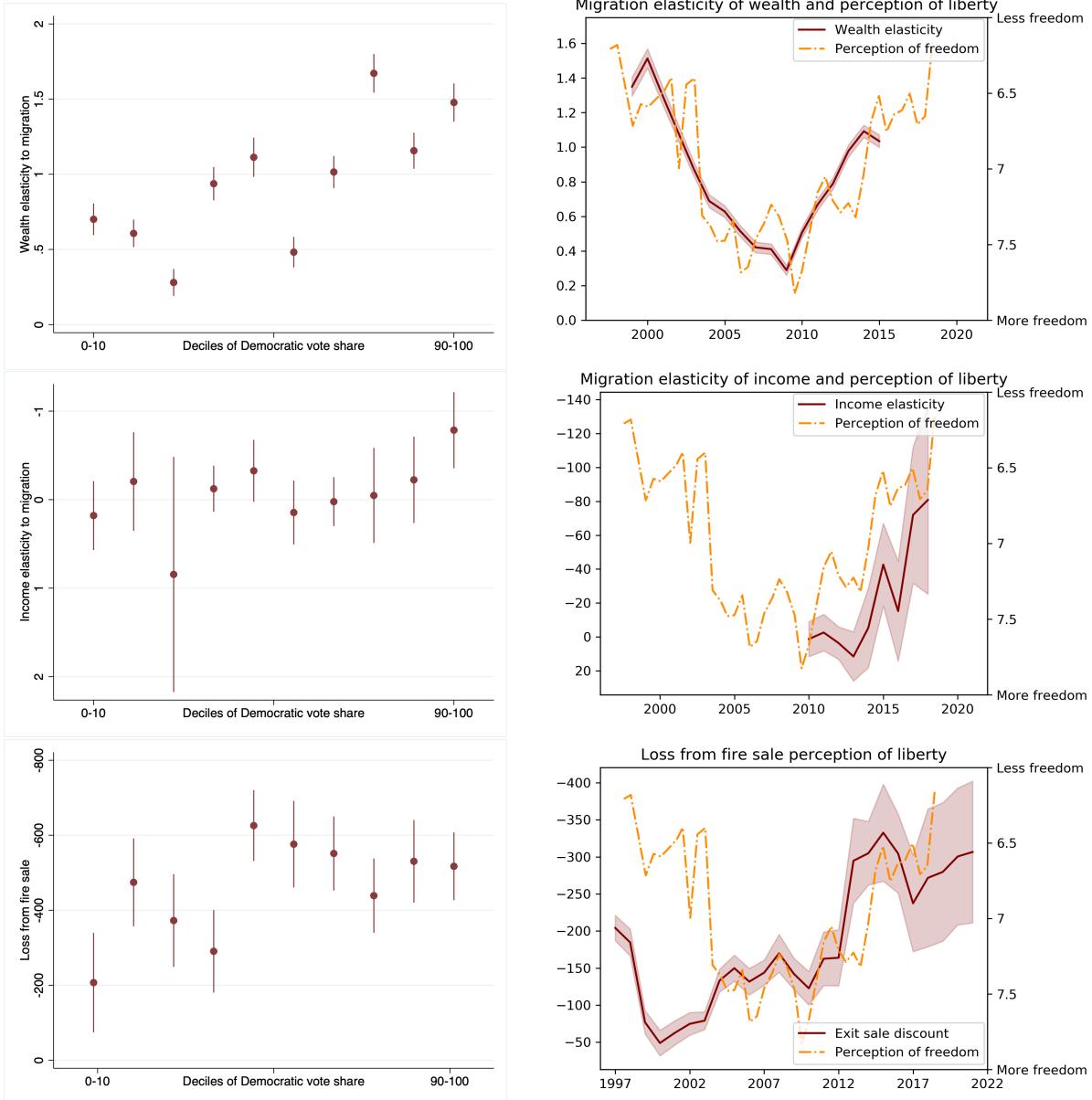
## Figures



**Figure 1:** This figure plots the number of firm emigrants from Shanghai to Hong Kong over time. The year of emigration is defined as the year the company registered with the Hong Kong government. Data comes from the digital archives of Hong Kong firm registry, which was shut down during Japanese occupation during WWII (1941-1945).



**Figure 2:** This figure plots the number of emigrant households from Hong Kong between 1994 and 2020. We compare our estimates (in teal) with official estimates from the yearbooks during 1994-2014 (in maroon) and estimated numbers based on the applications to Police No Conviction Records during 2012-2023 (in gray dashes). Post-2014 emigration numbers are estimated from the number of applications to Hong Kong Police No Conviction Records. We obtain data from 2012-2016 from Hong Kong legislative website link, and data from 2017 onward from CEIC database. When applying for immigration-visas (e.g. BMO), one have to obtain a certificate of no-conviction record from the police first. Therefore, the number of applications to No-Conviction records is highly correlated with actual migration. These numbers were also cited by a few media sources when they tried to show that people were really checking out, when nobody had official numbers. (e.g. Bloomberg example) We understand that not everyone who applied for the certificate used it for emigration, and not everyone who wanted to move moved. In fact, the numbers of applications are 3 times higher than the official emigration stats during 2012-2014 (the overlapping period). What we do is to use the overlapping period to estimate the ratio of # who applied over number who emigrated, and use that ratio to scale the time series.



Panel A: Cross-sectional variation

Panel B: Time-series variation

**Figure 3:** This figure illustrates how perception of political turbulence affects the migration elasticity of wealth. In Panel A, we replicate our baseline in Sections 4.2, 4.3 and 4.4, but run a separate regression for each decile of political mis-alignment with the CCP regime, measured by the % of votes the Democratic Party got in 2019. We use the same post-2014 emigrant sample across three figures. The bottom decile (0-10) is the most pro-Beijing district. Average vote share is 57%, with a standard deviation of 0.068. In each of the regressions, we control for entry year FEs and entry neighborhood FEs. In Panel B, we run separate regressions by year. For each year  $t$  on the first plot, the dependent variable is  $\{ \text{migration in the 5-year-window starting from year } t \}$ , and the independent variable is total logged asset value growth up until the start of year  $t$ . For each year  $t$  on the second plot, we run a district-year level regression on the subsample  $[t-2, t+2]$ . For each year  $t$  on the third plot, we estimate the negative premium of exit sales at that particular year. We overlay the figure with the freedom perception score from the HKU Public Opinion Programme.

# Table

**Table 1:** Summary statistics: Emigrants from Shanghai

	Emigration					
			Uni-variate		Multi-variate	
	Mean	Std.	coef.	s.e.	coef.	s.e.
<b>Panel A: Ownership</b>						
Chinese-owned	0.4340	0.4957	-0.0218*	0.0120	0.0285	0.0211
British-owned	0.2881	0.4529	0.0433***	0.0141	0.0618***	0.0238
<b>Panel B: Presence in China</b>						
Incorporation in Shanghai	1926.2515	39.4657	-0.0006	0.0005	-0.0003	0.0003
Business in other parts of China	0.3268	1.5209	0.0440***	0.0054	0.0458***	0.0107
<b>Panel C: Foreign presence</b>						
Total number of foreign staff	0.5587	2.0602	0.0108***	0.0039	0.0005	0.0144
Δ foreign managers	0.1262	1.2033	-0.0024	0.0072	-0.0071	0.0099
# foreign managers / # Chinese	0.2812	1.1672	0.0167**	0.0074	0.0045	0.0225
<b>Panel D: Industries</b>						
Finance	0.0857	0.2799	0.1391***	0.0280	0.1125***	0.0382
Groceries & restaurants	0.1007	0.3009	-0.0990***	0.0117	-0.0706***	0.0228
Manufacturing	0.1351	0.3419	-0.0276*	0.0161	-0.0272	0.0240
<b>Panel E: Land value</b>						
Logged land value at 1937	11.8640	0.6350	0.0481***	0.0114	0.0194*	0.0116

Notes: In this table we show summary statistics and comparisons between movers and stayers in 1930s-40s, Shanghai. Columns 1 and 2 show mean and standard deviation of all the variables. Columns 3-6 show the regression coefficients and standard errors of retrieved from a specification where we regress emigration indicator on each of the variables.

**Table 2:** Land value appreciation and emigration

	Emigration after 1937		
	(1)	(2)	(3)
$\Delta \log (\text{Land value}) \text{ until } 1937$	0.070*** (0.018)	0.065*** (0.017)	0.064*** (0.017)
# of obs.	1346	1346	1346
Mean of Dep. Var.	0.127	0.127	0.127
Mean of Indep. Var.	0.647	0.647	0.647
Entry decade FE	No	Yes	Yes
Street FE	Yes	Yes	Yes
Control for land value in 1937	No	No	Yes

Notes: Standard errors clustered at cadastral level are reported below the point estimates. We collect the land value data from 1922, 1930, and 1933 *Land Assessment Schedules* in Shanghai, tax surveys conducted by the Municipal Council run by the British, and then map them to firms according to their geo-locations. Therefore, the variation of price comes at cadastral level.  $\Delta \log (\text{Land value}) \text{ until } 1937$  is computed as the difference in logged land values from the year a firmed entered the Shanghai market to 1937. Extrapolations sometimes creates negative land values; to avoid using these sample, we winsorize the largest 15% of absolute differences.

**Table 3:** Cost of staying and emigration: Shanghai

	Emigration			
	(1)	(2)	(3)	(4)
Panel A: Indicator: Firm < 200 m radius				
Bombed	0.0349** (0.0161)	0.0350** (0.0165)	0.0466** (0.0207)	0.0442** (0.0210)
Panel B: Continuous distance				
Distance to the nearest bomb	-0.000164** (6.82e-05)	-0.000162** (7.03e-05)	-0.000148** (6.83e-05)	-0.000174* (9.21e-05)
# of obs.	1,778	1,745	1,745	1,745
Mean of DV	0.133	0.133	0.133	0.133
Nationality FE	Yes	Yes	Yes	Yes
Entry decade FE	Yes	Yes	Yes	Yes
Sector FE	No	Yes	Yes	Yes
Control for 1937 land value	No	No	Yes	Yes
Street FE	No	No	No	Yes

Notes: Robust standard errors are reported below the point estimates. The sample is all firms located within 500 meter radius of the actual bombed locations. Results are robust to alternative choices of cutoffs. In Panel A, we use an indicator variable capturing whether a bombed is dropped within 200 meter radius of each firm to proxy for bombing impact. In Panel B, we use the continuous distance (in meters) to the nearest bomb as an alternative measure.

**Table 4:** Organizational structures and migration elasticity

	Emigration			
	(1)	(2)	(3)	(4)
<b>Panel A: Response to bombing</b>				
Bombed × Organizational z-score	0.206** (0.0973)	0.211** (0.102)	0.201* (0.109)	0.206* (0.109)
Bombed	0.205*** (0.0723)	0.205*** (0.0727)	0.107 (0.0904)	0.0929 (0.0890)
Organizational z-score	-0.344*** (0.0745)	-0.351*** (0.0762)	-0.334*** (0.0794)	-0.345*** (0.0793)
# of obs.	179	179	169	169
Mean of DV	0.639	0.639	0.639	0.639
<b>Panel B: Response to land value appreciation</b>				
Δ log (land value) × Organizational z-score	0.085 (0.174)	0.187 (0.167)	0.231 (0.143)	0.235* (0.131)
Δ log (land value)	0.165 (0.146)	0.224* (0.125)	0.339*** (0.120)	0.306** (0.126)
Organizational z-score	-0.237** (0.109)	-0.192 (0.118)	-0.200** (0.097)	-0.201** (0.086)
# of obs.	107	107	107	107
Mean of DV	0.682	0.682	0.682	0.682
Nationality FE	Yes	Yes	Yes	Yes
Entry decade FE	Yes	Yes	Yes	Yes
Sector FE	No	Yes	Yes	Yes
Control for 1937 land value	No	No	Yes	Yes
Street FE	No	No	No	Yes

Notes: Robust standard errors are reported below the estimates. The organizational z-score is defined as the average standardized value of the above four characteristics. Director address requirements and mandatory rotations are considered as constraints imposed on the management team (so we take the opposite value), whereas the other two clauses signal flexibility.

**Table 5:** Real estate asset appreciation and emigration

	Emigration after 2014		
	(1)	(2)	(3)
<i>Panel A: Baseline</i>			
$\Delta \log(\text{Asset value till 2014})$	0.0151*** (0.000)	0.0159*** (0.000)	0.0158*** (0.000)
<i>Panel B: Instrumented by MTR shock</i>			
$\Delta \log(\text{Asset value till 2014})$ (instrumented)	0.0063*** (0.002)	0.0089*** (0.001)	0.0052*** (0.001)
First stage F stat	18511.55	55930.30	48674.96
<i>Panel C: Instrumented by land lease expiration date cutoff</i>			
$\Delta \log(\text{Asset value till 2014})$ (instrumented)	0.0045** (0.002)	0.0244*** (0.003)	0.0202*** (0.003)
First stage F stat	25626.09	11205.08	12207.40
Mean of Dep. Var.	0.0185	0.0185	0.0185
Mean of Indep. Var.	0.823	0.823	0.823
# of obs.	1,601,161	1,601,157	1,599,314
Entry year FE	No	No	Yes
Entry neighborhood FE	No	Yes	Yes

Notes: Robust standard errors are shown below the estimates. In Panel A, we define migration with the following assumptions: (i) everyone has one stock in the housing market before 1990; (ii) the baseline level of observation is household (instead of individual). In column (2) we control for the year each household enters the housing market as a fixed effect. In column (3) we control for the "building of first owned unit" fixed effect. Therefore, we are effectively comparing people of the same cohort starting from the same neighborhood. Residents who migrated before 2014 are excluded from our sample. We also exclude residents who died, or gave up their houses to a mortgage default. In Panel A, we present our baseline estimates. In Panel B, we instrument the asset appreciation with the exposure to MTR shock(s). A family enjoys an exposure if they do not have MTR access when they bought the house, and a new MTR station is built within 1 km radius during their ownership. In Panel C, we instrument the asset appreciation with an indicator variable showing whether the land lease of the building expires before June 30, 2047, following He et al. (2020).

**Table 6:** Cost of staying and emigration: Hong Kong

	Annual emigration rate			
	(1)	(2)	(3)	(4)
<b>Panel A: Unemployment shock</b>				
Industry-level unemployment $\times$ industry shares	0.0905*** (0.0323)	0.0896** (0.0427)	0.102* (0.0562)	0.100* (0.0558)
<b>Panel B: Income shock</b>				
$\Delta \text{Log}(\text{Industry-level income}) \times \text{industry shares}$	-0.0358*** (0.0124)	-0.0558*** (0.0195)	-0.0897*** (0.0233)	-0.0931*** (0.0243)
Observations	7,758	7,758	7,758	7,758
Mean of Dep. Var.	0.005	0.005	0.005	0.005
Mean of Indep. Var.	0.031	0.031	0.031	0.031
Year FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Demographics $\times$ Year FE	No	Yes	Yes	Yes
Income and education $\times$ Year FE	No	No	No	Yes
Political leaning $\times$ Year FE	No	No	No	Yes

Notes: Standard errors clustered at voting district level are reported below the estimates. The Bartik-style independent variable is defined as the dot product of voting district level industry employment share and the annual industry-specific unemployment rate (industry-specific wage growth). We include two-way fixed effect as well as a full set of controls interacted with year fixed effect to capture location and time invariant characteristics as well as time-varying confounders.

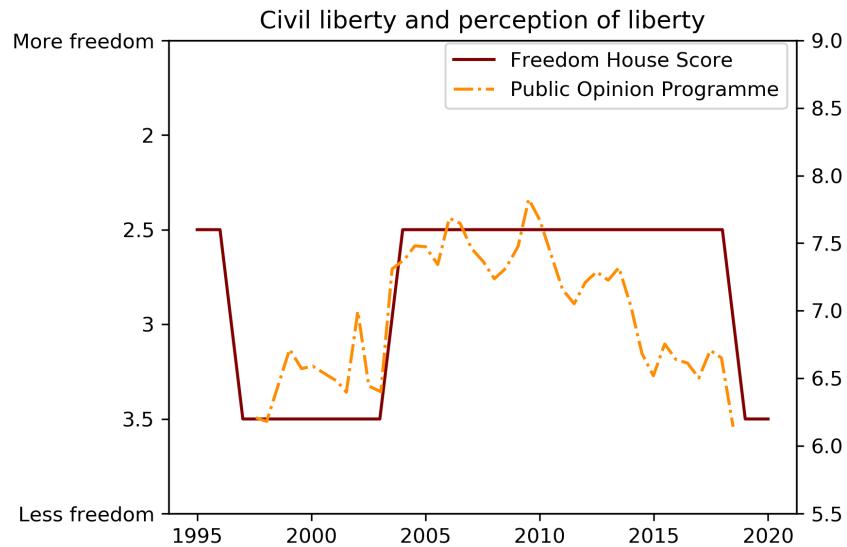
**Table 7:** Short run cost of emigration: fire sale in Hong Kong

	Unit price of transaction			
	(1)	(2)	(3)	(4)
Exit sales	-168.3114*** (3.655)	-147.5765*** (3.559)	-164.6641*** (3.551)	-175.6662*** (4.685)
# of obs.	2,572,802	2,572,725	2,571,016	2,571,012
Mean of DV	6154.389	6154.389	6154.389	6154.389
Neighborhood FE	Yes	No	No	No
Block FE	No	Yes	No	No
Building FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Entry Year FE	No	No	No	Yes

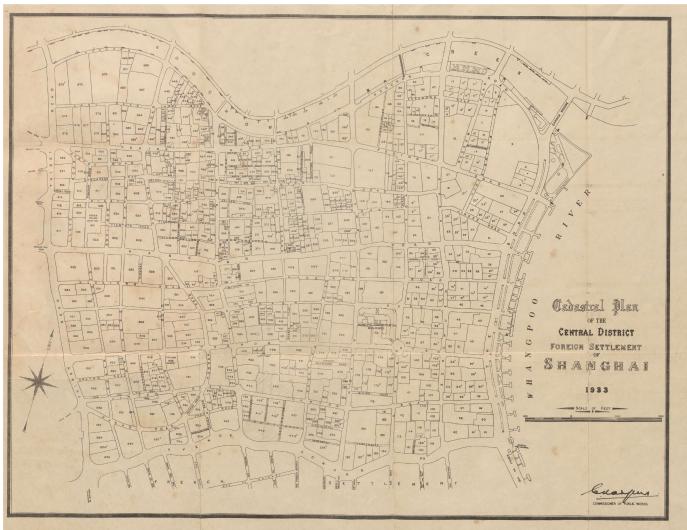
Notes: Robust standard errors are reported below the point estimates. Units are in HK dollars per square feet. We control for transaction year fixed effect across all columns, and entry year fixed effect in column 4 to capture potential demographical differences between home-sellers. We compare unit price differences between transactions happening in the same building in the same year. On average, emigrants sell their property at about 100,000 HKD lower than the market price — about 3% of the total property value.

# Online Appendix

## Appendix A Additional figures and tables



**Figure A.1:** In this figure we overlay Hong Kong's legal and institutional civil liberty score and its citizen's perception of civil liberty across the past 25 years. The first comes from Freedom Houses Country and Territory Ratings and Statuses, 1973-2023, and the second from Public Opinion Programme, HKU, 1997-2019.



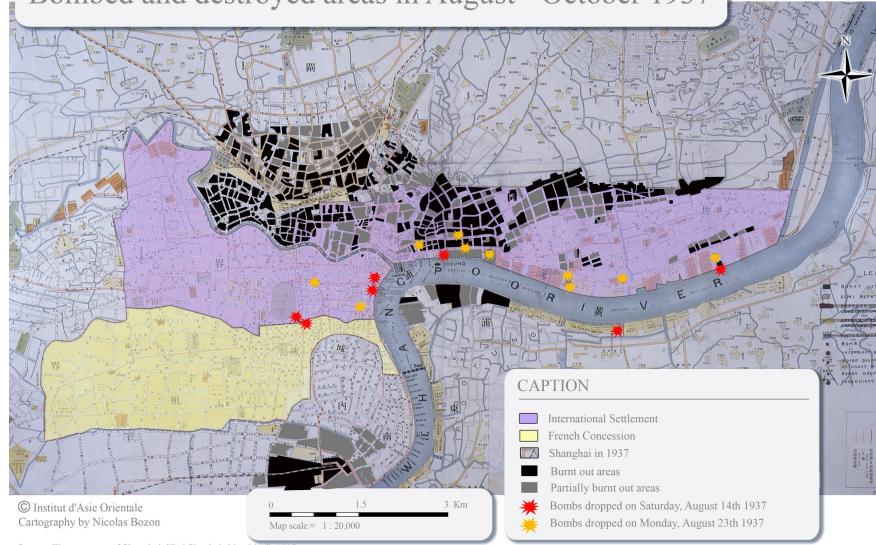
*Panel A: Map of Central District, 1933*

NUMBER OF LOT.		REGISTERED OWNER	AREA FOR TAXATION.	VALUE PER MOW.	TOTAL VALUE.	
CONSULAR.	CADASTRAL.				Mow.	Tls.
31	Brit.	35 Chartered Bank of India, Australia and China.	0.421	90,000	37,890	
6	"	36 "	5.292	280,000	1,481,760	
6A	"					
501	"	442 "	10.025	120,000	1,311,000	
1725	"					
1761	"	549 "	2.061	82,000	169,002	
1762	"					
1087	"	599 "	3.000	85,000	255,000	3,254,652
74	U.S.	285 Chase Bank, The .....	0.478	120,000	57,360	
3873	"	9A China Baptist Publication Society, Fed. Inc., U.S.A.	0.856	110,000	94,160	
293	Ger.	100 China Export, Import and Bank Co.	2.111	140,000	295,540	
3214	U.S.	89A China Realty Co., Ltd. .....	0.919	245,000	225,155	
12949	Brit.	53A China Realty Co., Fed. Inc., U.S.A.	2.198	190,000	417,620	
8233	"	54C "	2.520	230,000	575,600	
2372	Fr.	88 "	4.350	225,000	978,750	1,975,970
—	—	45 Chinese Government .....	4.104	275,000	1,128,600	
201	Gen.	52 "	1.984	195,000	386,880	1,515,480
578	Brit.	9 Christian Literature Society, Incorporated.	0.937	120,000	112,440	
410	"	268 Cowie, G. J. W. (estate) .....	0.340	85,000	28,900	
553	Fr.	123 Credit Foncier d'Extreme Orient	1.283	110,000	141,130	
7608	Brit.	202 "	0.447	80,000	35,760	
9493	"	219A "	0.235	80,000	16,800	
2279	"	486D "	0.429	92,000	39,468	255,158
		139 Cushey, A. (estate) .....	0.984	127,000	124,968	
390	"	439A "	2.020	110,000	222,200	
		439B "	2.070	110,000	237,700	574,868

*Panel B: Land Assessment Schedule*

**Figure A.2:** An example of a map and a corresponding table in the 1933 Land Assessment Schedules for Central District, International Settlement. Each block in the map is called a cadastre. An average cadastre occupies an area of 3.91 thousand square meters (half a soccer field), and usually hosts a couple firms.

Bombed and destroyed areas in August - October 1937



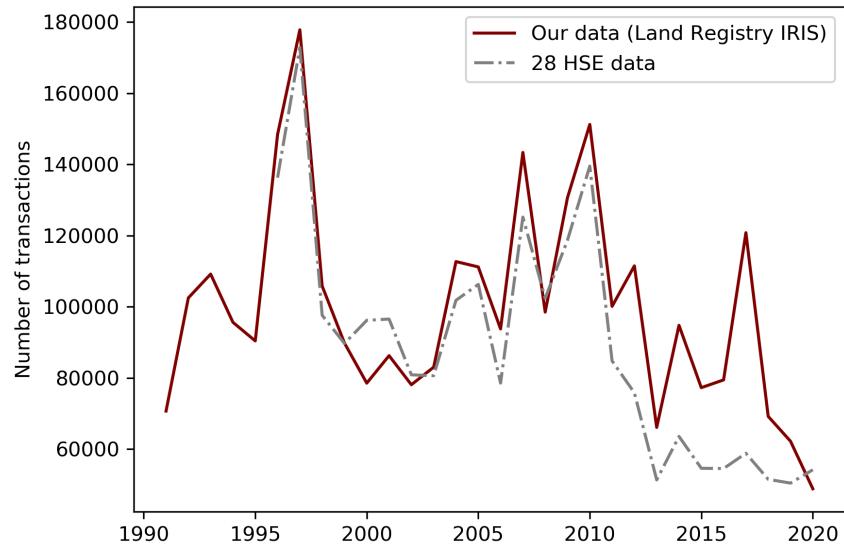
Source: The new map of Shanghai, "Dai Shanghai shin chizu", 1937.

**Figure A.3:** This map plots the location bombed and destroyed areas in August 1937. Our firm sample includes all firms located within the two settlements: the International Concession (in purple), and the French Concession (in yellow). The settlements in Shanghai were safe harbors during the war despite the fierce Sino-Japanese war in the area, and these bombings were believed to be the only episodes of physical war damage during WWII. We retrieve the exact location of the bombs from the daily newspapers *North China Herald* and the work from the *Virtual Shanghai Project*

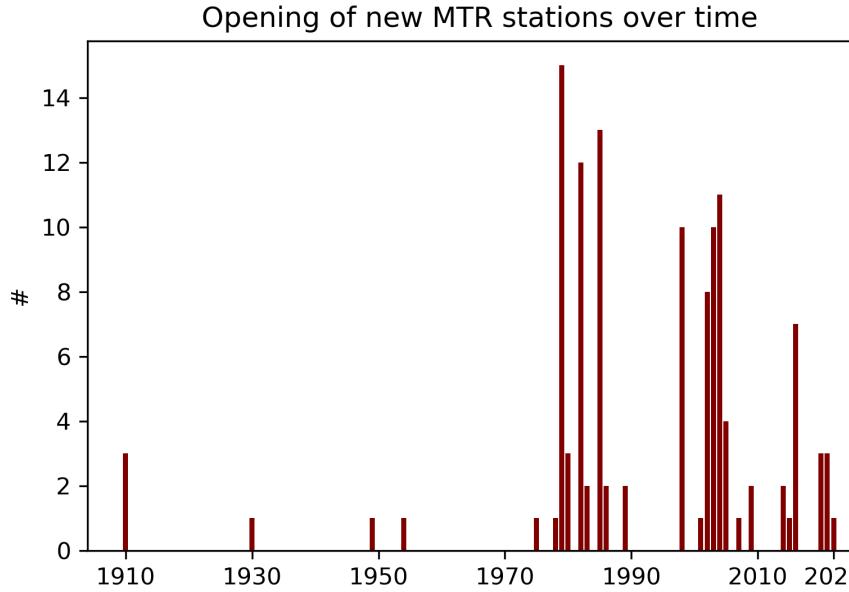
— 14 —

<b>Public Private</b>	<u>Drawer No.</u>	
	<u>Dissolved 22.2.1957</u>	
	<u>Companies File No. 2018</u>	
	Name <u>Pettenger and Company Limited</u>	
	Date of Registration <u>(27.7.1923, Shanghai) (G.S. 1746 Hong Kong)</u>	
	Registered Office <u>1, Des Voeux Road Central, Hong Kong</u>	
	Capital <u>Rs. 70,000/-</u>	
<small>the directors with whom or into whose hands any property or monies of the Company may be deposited or come or for the insufficiency of the title to property which may from time to time be acquired by order of the directors for the benefit of the Company or for the insufficiency of any security upon which any money of the Company shall be invested by order of the directors or for any loss or damage arising from the bankruptcy or tortious acts of any person with whom any money securities or effects shall be deposited or for any loss occasioned by any error of judgment or oversight on his part of for any loss or damage which may happen in the execution of his office unless the same shall happen through his own wilful neglect or default.</small>		
Names	Addresses and Descriptions of the subscribers	
<u>W. J. Pettenger By his attorney G. Estanster</u>	<u>Town 2nd 17, Victoria Road, Tsimshauz Engineer.</u>	
<u>R. H. Norlatt.</u>	<u>17 Victoria Terrace, Tsimshauz. Merchant.</u>	
<small>Dated this 22<sup>nd</sup> day of June 1923</small> <small>Witness to all the above signatures</small> <u>R. J. Murray Solicitor Tsimshauz.</u>		

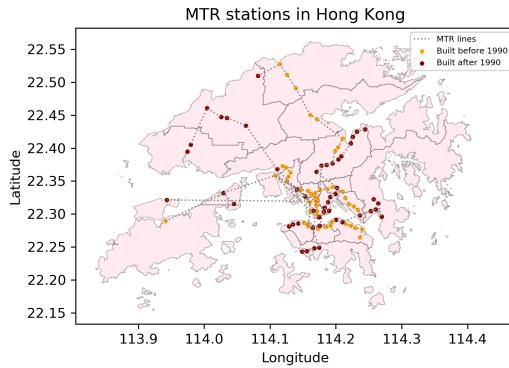
**Figure A.4:** An example of firms in Hong Kong inheriting their old charters from Shanghai.



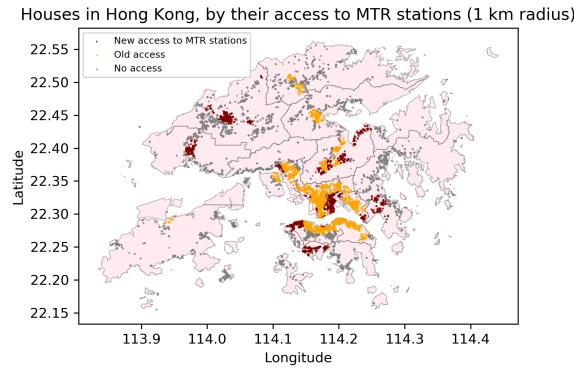
**Figure A.5:** In this figure we compare the total number of housing transactions in our baseline database (HK Land Registry IRIS) and 28HSE, a company database. We find strong evidence suggesting that our data is of reasonably good quality.



Panel A

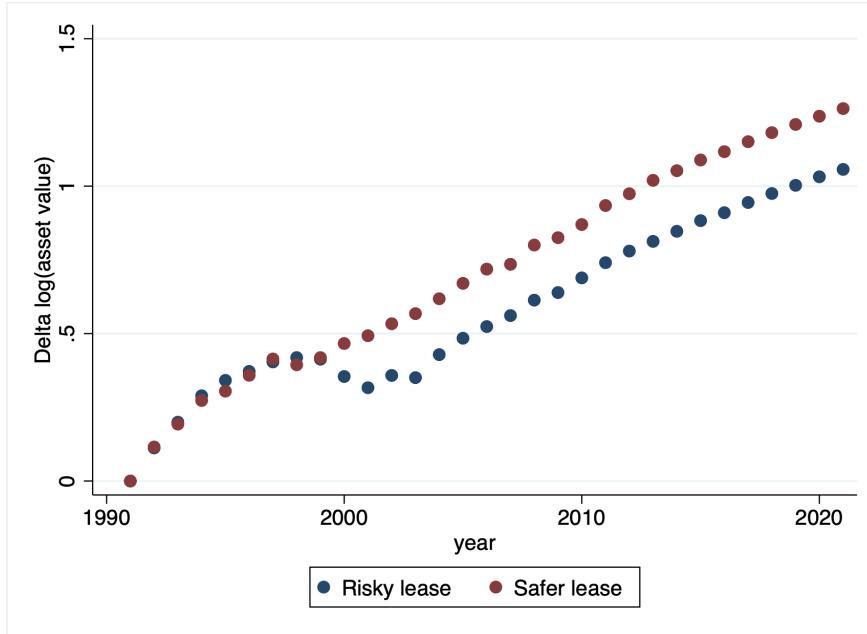


Panel B



Panel C

**Figure A.6:** This figure plots some summary statistics on Mass Transit Railway (MTR) station construction in Hong Kong. Figure A plots its distribution over time. Figure B plots the location of each station, and differentiates them by the year of construction. Figure C plots the universe of housing locations in our data, and uses a different color for each of the 3 groups: (i) units with no access to MTR stations; (ii) units with access to MTR stations before 1994; (iii) units with new access to MTR stations after 1994 when a new station was built. Access here is defined as at least one station within 1 kilometer radius of the apartment. Geo-locations of MTR stations as well as housing units are retrieved by the Google Map API.



**Figure A.7:** This figure plots the differential price appreciation trajectories of units of which the land leases expiring before June 30, 2047 (guaranteed renewal by the current government, henceforth “no risk lease”), and those expiring right after July 1, 2047 and before 2065 (henceforth “risky lease”). The choice of 2065 can be arbitrary; we follow the choice of He et al. (2020) defining them as the “main treatment lease group”.

**Table A.1:** Industries in Shanghai with the highest and lowest migration rate

Sector	# firms	% emigration
Panel A: Industries w./ highest migration rate		
Tobacco	21	0.38
Insurance	117	0.29
Real estate	70	0.24
Finance	72	0.22
Telegraph and radio	18	0.22
Panel B: Industries w./ lowest migration rate		
Bookstores	14	0
Furniture	12	0
Apartment leasing	15	0
Catering	39	0
Architect	15	0
Doctor	134	0.01

Notes: From *North China Hong List*, we collect information on the firms' products on sale, we then manually group firms together according to their primary product. This gives us a granular division of sectors within Shanghai. In this table, only sectors with more than 10 firms are included.

**Table A.2:** Land value appreciation and emigration: current US dollars

	Emigration		
	(1)	(2)	(3)
Δ land value (thousand current US dollars)	0.099*** (0.032)	0.079*** (0.028)	0.078* (0.042)
# of obs.	1346	1346	1346
Mean of DV	0.127	0.127	0.127
Entry decade FE	No	Yes	Yes
Street FE	No	Yes	Yes
Control for land value in 1937	No	No	Yes

Notes: Standard errors are clustered at cadastral level as the variation of price comes at cadastral level. We are using unit price per square feet here because we don't know exactly what's the area of land that each firm is occupying if more than one firm is located in a cadastre. Following Angus (1998), we convert one tael of silver in 1933 to US dollars in 1990 at a rate of 89.75 : 1. Following World Bank calculations, we convert US dollars in 1990 to current US dollars at a rate of 1 : 2.3.

**Table A.3:** Balance test: bombing episode in Shanghai

	Hit by bomb (200m radius)	Distance to bomb
	(1)	(2)
<b>Panel A: Ownership</b>		
Chinese-owned	-0.0549 (0.0379)	19.2790** (8.3254)
British-owned	0.0230 (0.0367)	-6.1601 (7.1230)
<b>Panel B: Presence in China</b>		
Decade of incorporation in Shanghai	-0.0316 (0.0197)	7.2164 (4.4977)
Business presence in other parts of China	0.0069 (0.0110)	-1.6519 (2.2821)
<b>Panel C: Foreign presence</b>		
Total number of foreign staff	-0.0000 (0.0059)	-0.1067 (1.2147)
Δ foreign employee from 1934 to 1937	0.0154 (0.0109)	-2.6789 (2.5686)
% of foreigners in the managerial board	0.0659 (0.0448)	-10.2479 (10.2734)
<b>Panel D: Land value and assets</b>		
Land value at 1937 (in logarithm)	0.0084 (0.0090)	-1.7072 (1.9308)
<b>Panel E: Industry</b>		
Finance sector	0.0278 (0.0602)	-10.5441 (14.2253)
Groceries, restaurants and clothing	-0.0808 (0.0503)	13.4111 (11.7484)

Notes: Standard errors clustered at cadastral level are reported below the estimates. We include all variables from Table 1 in our balance test. The sample is all firms located within 500 meter radius of the actual bombed locations. In column (1) we use the indicator capturing whether a bombed is dropped within 200 meter radius of each firm to proxy for bombing impact, and in column (2) we use continuous distance (in meters).

**Table A.4:** Cost of staying and emigration: robustness checks

	Emigration			
	(1)	(2)	(3)	(4)
<b>Panel A: Radius of comparison group = 600m</b>				
Bombed	0.0364** (0.0157)	0.0367** (0.0161)	0.0325** (0.0158)	0.0439** (0.0204)
<b>Panel B: All firms</b>				
Bombed	0.0364** (0.0155)	0.0359** (0.0158)	0.0318** (0.0156)	0.0411** (0.0199)
# of obs.	1,778	1,745	1,745	1,745
Mean of DV	0.133	0.133	0.133	0.133
Nationality FE	Yes	Yes	Yes	Yes
Entry decade FE	Yes	Yes	Yes	Yes
Sector FE	No	Yes	Yes	Yes
Control for 1937 land value	No	No	Yes	Yes
Street FE	No	No	No	Yes

Notes: Robust standard errors are reported below the point estimates. The specification follows the exact same specification as Table 3, but we extend our comparison group sample to a larger (or smaller) radius from the bombing centers.

**Table A.5:** Charter clauses by emigration status

Charter clause	Stayers	Migrants	HK locals
Director address requirement	0	0.116	0.091
Director rotation	0.020	0.370	0.427
Directors can be in other countries	0.495	0.646	0.672
Directors can set up foreign branches	0.309	0.662	0.577
Number of firms with charter records	108 (4.3%)	289 (78%)	162

Notes: We extract 4 features of the charters by reading through their clauses. (i) The “director address requirement” is defined as an explicit requirement that each director must have a registered place in the city. For example, “each member whose registered place of address is not the colony of Hong Kong shall [...] notify in writing some place in the colony of Hong Kong which shall be deemed his registered place” (CR 2744, Baboud Mary, Ltd.). (ii) “Director rotation” means that there must be mandatory rotation every (few) meetings. For example, “at every general meeting one-third of the directors [...] shall retire from office” (CR 2020, Shanghai Worsted Mill). (iii) “Directors can be in other countries” asks whether the firm allowed directors to reside, or directors’ meetings to be held in countries other than firm’s headquarter office. For example, “a meeting of directors may be held in Hong Kong or elsewhere” (CR 1599, Shewan Thomes & Co. Ltd.). (iv) “Directors can set up foreign branches” is a indicator of, on paper, whether the firm can set up branches in countries other than its headquarter office. For example, “the business of the company shall be carried on [...] at places the Directors may from time to time determine” (CR 2017, Pacific Investors Ltd.).

**Table A.6:** Emigration and long run performance

	Years of survival after 1937				Returning to China after 1978			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Emigration (instrumented)	49.56** (24.60)	54.23** (26.99)	42.09* (22.23)	44.33* (25.05)	0.300 (0.358)	0.397 (0.393)	0.458 (0.379)	0.470 (0.424)
First stage F stats	6.77	5.22	4.59	3.28	6.77	5.22	4.59	3.28
# of obs.	1,569	1,537	1,541	1,541	1,569	1,537	1,541	1,541
Mean of DV	4.785	4.785	4.785	4.785	0.060	0.060	0.060	0.060
Nationality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Entry decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Control for 1937 land value	No	No	Yes	Yes	No	No	Yes	Yes
Street FE	No	No	No	Yes	No	No	No	Yes

Notes: Robust standard errors are reported below the estimates. This table shows some instrumented evidence on the causal effect emigration had on firm's long run performance. The instrument variable we use here is the indicator of 1937 bombing impact. Following what we did in Table 3, Panel A, the sample here is all the firms within 500 meter radius of the bombing centers. We define the year(s) of survival after 1937 as follows. (i) For the firms that do not migrate, most of them were nationalized during the Communist Revolution. A few international companies survived without the Shanghai branch, and a few local firms survived by cooperating with the new regime (so their assets are reinstated after 1978). We collect those information from the County Gazetteers and various online sources. For firms that do migrate to Hong Kong, we observe their operation (and dissolution) reported by the Firm Registry. The *Returning to China* variable is collected by hand searching the Chinese company database as well as online search engines.

**Table A.7:** Summary statistics: Emigrants from Hong Kong

		Emigration					
				Uni-variate		Multi-variate	
		Mean	Std.	coef.	s.e.	coef.	s.e.
<b>Panel A: Demographic characteristics</b>							
% male		46.73	1.84	-0.0008**	(0.0003)	0.0008	(0.0005)
Median age		42.11	3.18	0.0002	(0.0002)	0.0006**	(0.0002)
<b>Panel B: Education and income</b>							
College education		0.16	0.10	0.03440***	(0.00638)	0.02739	(0.02034)
Medium income		12.65	4.25	0.00073***	(0.00015)	0.00006	(0.00030)
<b>Panel C: Chinese vs. foreign orientation</b>							
% able to read English		67.75	11.68	0.00030***	(0.00005)	0.00036***	(0.00013)
% able to read Mandarin		89.45	6.65	-0.00007	(0.00008)	0.00036***	(0.00012)
<b>Panel D: Political orientation</b>							
% pro-democracy vote		0.43	0.17	-0.00597	(0.00380)	-0.00622*	(0.00371)

Notes: In this table we show summary statistics and comparisons between movers and stayers in 2014-2020, Hong Kong. Columns 1 and 2 show mean and standard deviation of all the variables. Columns 3-6 show the regression coefficients and standard errors of retrieved from a district-level specification where we regress emigration indicator on each of the variables, weighted by the population size of each district. Average migration rate is 1.8%. All variables are retrieved from 2011 DCCA level census, except for English and Chinese reading ability, which wasn't surveyed then, and appear during the 2016 by-census.

**Table A.8:** Asset appreciation and migration: robustness

	Emigration after 2014		
	(1)	(2)	(3)
<b>Panel A: Values in current USD</b>			
$\Delta$ asset value till 2014	0.0323*** (0.001)	0.0187*** (0.000)	0.0300*** (0.001)
Mean of DV	0.018	0.018	0.018
# of obs.	1,577,474	1,579,315	1,577,470
<b>Panel C: Stayer subsample</b>			
$\Delta$ log (asset value till 2014)	0.0076 (0.005)	0.0298*** (0.002)	0.0119*** (0.005)
Mean of DV	0.027	0.027	0.027
# of obs.	640,277	640,277	640,277
Entry year FE	No	No	Yes
Entry neighborhood FE	No	Yes	Yes

Notes: Robust standard errors are reported below the point estimates. In panel A, we use asset appreciation in levels instead of in delta-log form, and convert HKD to USD at a market rate of 1:0.13. In panel B, we focus on movers and non-movers who never switched houses over the whole sample period. That's about 40% of all Hong Kong households. To illustrate, if we control for entry year  $\times$  entry neighborhood fixed effects, then that absorbs all the variation and nothing can be identified.

**Table A.9:** MTR access, asset appreciation and emigration

	Δ asset gain until 2014			Emigration		
	(1)	(2)	(3)	(4)	(5)	(6)
MTR shock	0.1609*** (0.001)	0.3511*** (0.002)	0.3054*** (0.002)	0.0011*** (0.000)	0.0032*** (0.000)	0.0018*** (0.000)
# of obs.	1,577,574	1,575,728	1,575,724	1,603,168	1,601,589	1,601,585
Mean of DV	0.831	0.831	0.831	0.019	0.019	0.019
Entry year FE	No	No	Yes	No	No	Yes
Entry neighborhood FE	No	Yes	Yes	No	Yes	Yes

Notes: Robust standard errors are reported below the estimates. In columns 1 to 3, we present the first stage estimates. In columns 4 to 6, we present the reduced form estimates. MTR shocks are defined as a new MTR station built within 1 km radius during one's ownership, in the same fashion as Table 5.

**Table A.10:** MTR access and asset appreciation, robustness

	$\Delta$ asset gain until 2014		
	(1)	(2)	(3)
Panel A: New MTR access < 1 mile radius			
MTR shock	0.0666*** (0.002)	0.0684*** (0.002)	0.0414*** (0.002)
Panel B: $\Delta$ distance to nearest MTR station (km)			
MTR shock	0.0691*** (0.001)	0.0771*** (0.001)	0.0533*** (0.001)
Panel C: Substantial shortening of distance (> 1 km)			
MTR shock	0.0336*** (0.001)	0.0275*** (0.000)	0.0171*** (0.001)
# of obs.	961,947	961,947	507,831
Mean of DV	1.87	1.87	1.87
Building FE	No	Yes	Yes
Unit FE	No	No	Yes
Entry year FE	Yes	Yes	Yes

Notes: Robust standard errors are reported below the estimates. In Panel A, we use the indicator of a new MTR station built within 1 mile radius (instead of 1 kilometer in our baseline) as a proxy for MTR access. In Panel B, we use continuous  $\Delta$  distance during one's ownership to proxy for MTR shock. In Panel C, we count the instances of substantial shortening to the nearest MTR station – only those  $> 1$  km distance-cuts are counted towards an MTR shock.

**Table A.11:** Balance check for MTR shocks

	MTR shock	
	(1)	(2)
% English writing ability	-0.000841 (0.00137)	-0.000756 (0.00131)
% Mandarin writing ability	-0.000399 (0.00122)	-0.000630 (0.00116)
College education	-0.148 (0.209)	-0.138 (0.198)
% Male	-0.00104 (0.00499)	-0.000207 (0.00479)
Median age	-0.00294 (0.00325)	-0.00390 (0.00313)
Median income	-1.65e-07 (3.03e-06)	-4.32e-07 (2.90e-06)
Average family size	0.0348 (0.0299)	0.0364 (0.0290)
% Pro-democracy rate (2011)	0.0149 (0.0938)	0.0194 (0.0886)
# of obs.	1,889,292	1,889,286
Mean of DV	0.184	0.184
Building FE	Yes	Yes
Entry year FE	No	Yes

Notes: Standard errors clustered at voting district level are reported below the estimates. We run regression at household level and assign district level characteristics to each household.

**Table A.12:** Deed expiration date, asset appreciation and emigration

	Δ asset gain until 2014			Emigration		
	(1)	(2)	(3)	(4)	(5)	(6)
Safer lease (renewed before June 30, 2047)	0.4066*** (0.015)	0.4294*** (0.006)	0.4208*** (0.006)	0.0018 (0.002)	0.0104*** (0.001)	0.0084*** (0.001)
# of obs.	492,288	490,216	490,214	493,082	491,014	491,012
Mean of DV	0.831	0.831	0.831	0.019	0.019	0.019
Entry year FE	No	No	Yes	No	No	Yes
Entry neighborhood FE	No	Yes	Yes	No	Yes	Yes

Notes: Robust standard errors are reported below the estimates. In columns 1 to 3, we present the first stage estimates. In columns 4 to 6, we present the reduced form estimates. MTR shocks are defined as a new MTR station built within 1 km radius during one's ownership, in the same fashion as Table 5.

**Table A.13:** Balance check for Bartik regressions

	% Food	% Real estate	% Trade
$\Delta$ median household income	4.2570*** (1.269)	2.8043*** (0.628)	1.7307 (1.522)
$\Delta$ % male	-0.0013 (0.041)	-0.0377 (0.026)	0.0501 (0.039)
$\Delta$ median age	0.0011 (0.001)	0.0008 (0.001)	0.0016 (0.001)
$\Delta$ % college	0.0538 (0.066)	-0.0555 (0.032)	0.0886 (0.071)
$\Delta$ % private-house ownership	0.0019 (0.010)	0.0126* (0.007)	0.0161 (0.010)
# of obs.	347	347	347
Mean of DV	0.105	0.171	0.103

Notes: Robust standard errors are reported below the point estimates. The dependent variable is the % of employment for sector  $k$  within each of the voting district. To be more specific, we are estimating an econometrics model:  $\text{Share}_i(p) = (X_{i,2021} - X_{i,2016})'\beta + \varepsilon_i$ , where  $\text{Share}_{i(p)}$  is the share of industry- $p$ -employment in district  $i$  in our baseline period, and  $(X_{i,2021} - X_{i,2016})$  is a vector measuring changes in demographics and social economic conditions during our sample period. We chose the three sectors with the largest Rotemberg weights (0.14, 0.13, 0.09), computed following Goldsmith-Pinkham, Sorkin, and Swift (2020). Delta values are computed as the difference between 2021 and 2016 (by-)census. Regression is weighted by the population size of each voting district to reflect proper relative importance.

## Appendix B Identifying migrants: details

### Comparing death instances we identified with official sources

Death records are required to be registered at the land registry by law. They are searchable in the Title Deeds for each unit at the expense of some monetary cost.

The owner's death certificate will be registered in the Land Registry's Land Register with the cause and place of death to facilitate the purchaser's own checking and verification. (Land Title Ordinance; Blog post 1, Blog post 2)

We took a random sample of 150 units, and found 29 registered death registered on their deeds, that is 19%. We compare this number with some back-of-the-envelope calculations: the official deeds we downloaded dates back further than our sample, extending an average of 40 years. Combined with the fact that the crude death rate of HK is 5-6 per thousand per year, and assuming that the total # of housing market participants remain constant, we are expecting about 16% to 19% of the population to be emigrating from our sample. Our estimate falls well into the expected range, as a sign of consistency.

There's one special case that we would have to mention: We observe substantial number of death cases where, in the first transaction we observe for a specific unit, seller = N/A. Since there's no previous transactions, that person who have died do not enter our data at all, and will not affect our emigration definition.

### Unsuccessful transactions

Unsuccessful purchases sometimes appear in our dataset. We discard them from our sample by only keeping the second transaction if two consecutive records on the same unit appear to have the same seller.

### Name alias

Hong Kongers sometimes use an English name alongside their legal Chinese name in the documents. To test whether Sam Cheung in unit A and Kevin Sam Cheung in unit B are the same person, we exploit the fact that, unless rare occasions like death, the last person who bought the house should be the same person who sold it in the next transaction. We create a dictionary focusing on the buyer-seller pairs of consecutive transactions. If Sam Cheung and Kevin Sam Cheung at least once appear as the same person, then we treat them as one observation when we aggregate the data.

When it comes to joint tenancy, we sorted the order of the names so that a reshuffling won't affect our matching. (So that A, B and C is counted as the same family as A, C and B). When the names are in the form of A,B and Others, we use the same strategy as above, building our alias dictionary from consecutive transactions.