Emigration during Turbulent Times

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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 century: 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 exit decisions are responsive to *(i)* wealth shocks, as measured by differential real estate appreciation, and *(ii)* changes in the differential "price" of moving vs. 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 large, positive wealth elasticity of migration and a negative wage elasticity. In both cases, people became more elastic, not less, when the perception of political turbulence became salient. Economic incentives play an important role in shaping migration decisions even during highly politically uncertain times.

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1 Introduction

Migration to avoid risks from political turmoil has occurred throughout history. 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. Balanced against this, even if the political risk does not in fact materialize, those who emigrated nevertheless face the costs from having done so.

What drives individuals, families and firms to move during those uncertain circumstances? Such choices may be in part political: movers may be those who are misaligned with the political ideology of incoming regime, thus facing or perceiving higher political costs of staying put. But moving, as in any circumstance, is also an economic decision: the costs of uprooting families or business may be large, and those with more wealth may better able to pay these costs.

In this paper, we examine two episodes of mass migration out of China's two most cosmopolitan cities to understand the economic factors that weigh into this decision: what are the economic incentives to leave and to stay? We focus on two important episodes: *(i)* firms' migration out of Shanghai (to Hong Kong) in 1930s and 1940s in the midst of the 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 became an increasing concern. For each of these two episodes, we ask both how the decision to migrate depends on how much wealth they have to accumulate in order to cover the costs of migration (which we henceforth term "income effects"), and how much potential migrants would forego economically by leaving (i.e., the difference in the relative attractiveness of staying or leaving, which we henceforth term "price effects").

To do so, we need to first identify migrants in each of these episodes. In the "out of Shanghai" episode where we use historical data, we focus on businesses. We match the universe of Shanghai businesses located in the International and French Concessions in the 1930s with official firm registry records in Hong Kong starting from the 1940s. About 12.7% of firms moved from Shanghai to Hong Kong. In the "out of Hong Kong" episode, we identify migrants by looking at housing transactions, tracing people's moves throughout Hong Kong by matching sellers of one property to buyers of another. We consider households to be migrating away from the city if they have liquidated all their real estate properties, and show that this household-level measure of migration closely approximates known aggregate emigration totals. About 3.83% of the households moved

away from Hong Kong during the past decade based on our measure.

We first investigate the extent to which wealth affects migration decisions. Specifically, we focus on asset values in real estate markets, which was a substantial share of firms' assets in Shanghai and households' wealth in Hong Kong. Prices appreciate at different rates in different neighborhoods, so the amount of real estate wealth one has at a given time is determined by a combination when and where someone entered the land market. Using this differential appreciation across time and space, we can identify the impact of plausibly exogenous housing wealth shocks on emigration, controlling flexibly for both where someone's land is and when they bought it.

In the "out of Shanghai" episode, we match firms to land values measured by the Shanghai Municipal Council throughout the 1920s and 1930s, and calculate the cumulative changes in land value from the year of each firms' incorporation in Shanghai to 1937. We then assess whether cumulative value appreciation through 1937, the beginning of the Sino-Japanese War, shapes migration choices after 1937. We control for firms' entry decade fixed effects and location (street) fixed effects, identifying variation in land value appreciation due to differential trajectories of asset appreciation across the city and across time. We find that appreciation of real estate assets significantly and robustly increased firms' decisions to out-migrate, corresponding to an elasticity of migration with respect to land wealth of around 0.21.

We conduct similar analyses in the "out of Hong Kong" episode. For each household, we link all the real estate property it owns and has transacted, and we calculate the cumulative changes in real estate value; such changes may include value gains from multiple properties as well as unrealized gains based on comparable market valuation for properties not yet transacted. We assess the degree to which real estate property value appreciation accumulated until 2014, the year of the so-called "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 differences 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, with an elasticity of migration with respect to wealth of 0.88.

For Hong Kong, we can corroborate these finding with two additional identification strategies, which isolate particular sources of variation in differential real estate appreciation: *(i)* using the opening of Hong Kong metro stations after the purchase of the property as an instrument for housing value appreciation (à la Gupta, Van Nieuwerburgh, and

Kontokosta 2022); and *(ii)*, following He et al. (2020), using the fact that some underlying land-leases will be renewed after 2047 (i.e., after the end of the "One Country Two Systems" commitment, and hence subject to more uncertainty), and thus appreciated at a slower rate as this fact became more salient. 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, with elasticities of migration with respect to real estate wealth ranging from about 0.4 to 0.7 using these two alternate identification strategies.

The second key question we ask is whether the relative price of staying versus leaving affects migration decisions. In the "out of Shanghai" episode, we examine the impact of war-time bombing that accidentally damaged office buildings. Specifically, in 1937, at the beginning of the Sino-Japanese war, a series of bombs were accidentally dropped on the British and French Settlements in a series of incidents in August and October. The idea is that these bombings effectively increased the affected firms' net cost of staying relative to moving, as they would have to re-build regardless of whether they decided to stay in Shanghai or move to Hong Kong. The locations of the bombings have been documented by historians (e.g., Henriot (2015)), and we compare firms that were bombed (defined as firms located within 200 meters of the bombings) with firms that were just a bit further away and were not directly unaffected (defined as those firms located between 200 and 500 meters from the bombings). We show that whether a firm was hit by one of these bombs is unrelated to pre-period firm characteristics. We then show that firms affected by these 1937 bombings are substantially more likely to relocate to Hong Kong than nearby unaffected firms.

We use a different empirical strategy to estimate the opportunity cost of leaving in the "out of Hong Kong" episode. We consider negative shocks in the labor market as a decrease in the opportunity cost of staying put: for example, unemployed individuals would need to look for new jobs in any case, regardless of whether they stay or leave. Using a shift-share instrumental variable design, we use the interaction between *ex-ante* industrial composition of voting districts in Hong Kong (the smallest geographic unit we have available) and industry-specific Hong Kong-wide unemployment shocks throughout the post-2014 period to predict district level unemployment rates. We examine whether these 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 the migration decision's responsiveness to wealth and in-

come shocks may be shaped by organizational characteristics and political environment. In the "out of Shanghai" episode, we describe firms' organizational flexibility based on their charters, documenting features that may allow more nimble geographic mobility, such as a relaxed requirement on directors' holding local address and a relaxed requirement that directors' meetings can be held anywhere in the world regardless of the company's headquarters 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 examine the heterogeneity of migration decision's responsiveness to wealth and income shocks based on cross-sectional differences in households' political leaning and over-time changes in political uncertainty. We find that households in districts that are more supportive of pro-democracy candidates (and hence less supportive of pro-Beijing candidates) are substantially more responsive to real estate value appreciation and labor market shocks that increased households' cost of staying. We also find that Hong Kong citizens became more responsive to those economic shocks over time when the perceived political risk is higher, measured by population survey. These results suggests an interplay between that political attitudes and perceptions of risk and economic forces, but political salience makes people more elastic to migration, not less.

Finally, we investigate one other short-run cost of migration during turbulent times. In the "out of Hong Kong" episode, we estimate whether the households we identify as emigrating (i.e., the ones who do not then buy another Hong Kong property) 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 1.95% discount in the transaction prices — equivalent to an average of 100,000 Hong Kong dollars and 2.99% of the asset value increases that triggered out-migration — representing a meaningful cost that the emigrant households endured as they liquidated their assets in order to migrate. This suggests that real estate market acts as a modulating force against massive out-migration (before a "bank run" scenario occurs), as moderate fire sale and the resulting decreased cost of staying could make migration decision socially substitutable.

All of this analysis has been about the ex-ante decisions households and firms make, weighing the costs of migration against the potential benefits from escaping political turmoil. Clearly, quantifying the benefit side is more difficult, because it is hard to know

the ex-ante probabilities of various outcomes. But at least for Shanghai, we can briefly discuss — ex-post — what the benefits were from leaving vs. staying. To do so, we collect information on the survival of all 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 and 11% survived until today. Migrant firms ended up surviving for many more decades, and were significantly more likely restore its operation in Mainland China after 1978 when it opened up to private and foreign enterprises again. While this is of course an ex-post assessment, and the confiscation of firms in Shanghai under the Communist regime was quite extensive, it does demonstrate that, at least in this episode, migration did provide substantial benefits to those firms that did so.

Taken together, we find that economic incentives play an important role in shaping migration decisions — among both firms and households — even during highly politically uncertain times. In fact, political uncertainty may exacerbate economic considerations, suggesting that parts of the population might start to make such economic decisions of migration only when political uncertainty surpasses a certain threshold.

This paper connects to several strands of the literature. First, and most directly related, several papers have also studied other dimensions of the decision to migrate in response to political risk. In particular, both Becker et al. (forthcoming) and Buggle et al. (2023) examine different aspects of how social networks and peer effects shaped Jewish emigration out of Nazi Germany. More closely related to our paper, but focusing on the economic opportunities in the destination, Horz and Marbach (2022) argue that sector-specific labor market incentives may affect individuals' decisions to exit an authoritarian regime, drawing evidence from the migration flows 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.[1]

In so doing, our paper also informs the broader literature on migration decisions, even absent political considerations. While there is a large literature on economic migrants, our approach of using unexpected changes in real estate wealth provides (to the best of our knowledge) the first estimate of a migration elasticity with respect to exogenous wealth

1. There is also a separate body of literature studies the long run impacts of politically-induced forced migration on subsequent labor market outcomes. Sarvimäki, Uusitalo, and Jäntti (2022), for example, study an example of forced migration out of areas ceded to the USSR by Finland, and find that, by inducing these households to leave agriculture, they end up with higher incomes than nearby comparable people not induced to migrate. Ferrara and Fishback (2022) study domestic migration of ethnic Germans in the United States during World War I, and find that those induced to move by anti-German sentiment end up with worse labor market outcomes.

shocks in any context.[2] The main exception is Bazzi (2017), who shows that wealthier landowners are less elastic to income shocks in Indonesia, although this does not necessarily translate into a positive migration elasticity with respect to wealth itself.

Moreover, we offer one of the few estimates of *negative* migration elasticity with respect to wage. Many studies document that receiving (one-time) cash transfers, subsidies, or wage increase in general stimulate migration in developing contexts, which are often attributed to liquidity constraints of migration (Clemens 2020; Clark, Hatton, and Williamson 2007; Vogler and Rotte 2000; Hatton and Williamson 2011).[3] Our findings of a negative migration elasticity with respect to wage corroborates the findings in a smaller literature. Bazzi (2017), examining migrants in Indonesia, suggests the possibility of negative migration elasticity to income if the shock term productivity shocks can generate persistent income reduction and hence increase the opportunity cost of not migrating; Imbert et al. (2022), studying migrants out of rural China, finds that places that received positive income shocks retain a (much) larger fraction of their population. While these findings do not necessarily translate into migration elasticities to wage, they suggest potential economic migrants' responsiveness to changing price of migration could be different depending on the extent to which individuals facing migration decisions are cash constrained.

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

2 Historical background

We focus on two episodes of migration during political turbulence in China that are eight decades apart — migration out of Shanghai in the late 1930s and 1940s, and migration out of Hong Kong in the period since the handover in 1997. Both of these episodes concern

2. The theoretical literature has suggested a connection between wealth and migration. However, rather than affecting migration directly, wealth is conceptualized as an indicator of individuals' human capital (as in Orrenius and Zavodny 2005) or flow of earnings at location of origin (as in McKenzie and Rapoport 2010).

3. Regarding magnitudes, Djajic, Kirdar, and Vinogradova (2016) provides an estimate of migration elasticity with respect to wage equals to 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 United States. Randomized control trials studying migration behaviors (e.g., Akram, Chowdhury, and Mobarak 2017, Gazeaud, Mvukiyehe, and Sterck 2023) usually obtain much larger point estimates of migration elasticities with respect to wage or (one-time) cash transfers.

migration out of East Asia's most cosmopolitan and developed cities. This section briefly describes the historical background for both events.

2.1 Shanghai and out-migration in late 1930s

Shanghai in 1930s was East Asia's financial and economic 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 a series of upheavals. In particular, political uncertainty arose as the Chinese Communist Party gained ground around the country during the Civil War and the Republic of China's ruling party, the Kuomintang, began to lose 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, if the Communist Party took control of the country.

Ex-post, the Communist takeover effectively eradicated Shanghai's private firms and devastated their owners. Starting in the early 1950s, the ruling Communist Party launched a campaign — the "Socialist Remold of Capitalist Enterprises" — to restructure, confiscate and nationalize private and foreign enterprise. 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 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. By 1956, the Communist party had nationalized or collectivized all private enterprises.[4]

That said, while many firms and individuals engaged in the private sector were clearly concerned about these types of outcomes, full nationalization was by not the only possible outcome ex-ante, and indeed there was uncertainty as to what exactly would happen if the Communists came to power. For example, the New Asia Hotel, Ltd. wrote in a 1951

4. See Alesina et al. (2023) for detailed account and study of the consequences of this nationalization.

memo that "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 wrote in a 1951 memo that, "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."

Faced with this uncertainty, many — though not all — firms operating in Shanghai moved their business headquarters and operations to Hong Kong. Hong Kong was the most popular destination of the time. As a British colony with strong rule of law traditions, Hong Kong was (and has been) considered as a safe haven for business while maintaining relatively easy access to the Chinese market. These outflows were briefly interrupted during the Japanese occupation during 1941 and 1945, which made migration difficult. In 1946, an order from the British government, named "Emergency Registration of Chinese Companies" (Military Proclamation No. 27) was issued to as a coordination device, which substantially simplified the registration process. According to surveys in 1961, at least 70,000 people (and their business) had migrated from Shanghai to Hong Kong (Census Commissioner 1961).[5]

Historians James Carter and Jeffrey Wasserstrom summarized the linked fate between Shanghai and Hong Kong well:[6]

> "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

In the period following World War II, Hong Kong grew into one of the world's most important financial centers since WWII. It is also one of the wealthiest cities in the world, and boasts some of the world's most expensive real estate. In 2022, the city's income per

5. More than half of the population in Hong Kong in 1961 were immigrants, and the adjacent Guangdong was the top location of origin of the migrants. Taiwan was a predominant destination for migrants of the Kuomintang political elite, but not a popular choice among the business community.

6. "Shanghai's Past, Hong Kong's Future," published in *Public Books*. Source: https://www.publicbooks.org/shanghais-past-hong-kongs-future/.

capita was 48,154 US Dollars, slightly higher than that in the United Kingdom (47,232 US Dollars).

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 universal suffrage and civil liberty protections.

In recent years, Hong Kong has experienced immense uncertainty regarding its political prospects for the the coming 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 mechanism 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 had been the case previously. 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 that a circumscribed change in institutions was unacceptable to the people of Hong Kong. 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 of China enacted the National Security Law, substantially curtailing civil liberties in Hong Kong and increasing punishments for political violations, effectively putting an end to the protest movements 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.2). Such erosion of rights and freedoms is also perceived by the general population, according to the Public Opinion Program administered by the University of Hong Kong. Based on a question that asks a representative sample of Hong Kong population to evaluate the extent of freedom (e.g., of procession and demonstration) in Hong Kong, ranging from absolute lack of freedom to full freedom, we observe that the population's assessment of freedom closely tracks the Freedom House's political ratings on Hong Kong.

Under this backdrop of political uncertainty and turbulence in Hong Kong, an increasing number of citizens (and enterprises alike) began to migrate away from the city. The number of applications for police *No Conviction* records, a document necessary for migrant visa applications, tripled in the last decade. While there is no systematic records of the destination the migrants, anecdotally many moved to the United Kingdom and other Commonwealth countries such as Singapore, Canada, and Australia. This is particularly true vis-a-vis the United Kingdom, where the British government announced in 2021 a citizenship pathway for Hong Kong holders of the colonial-era British National Overseas passport. Over 100,000 Hong Kong residents applied to emigrate to the UK in the program's first year alone.[7] Given the lack of systematic and official records on out-migration, and the distinction between temporary and long-term out-migration, we measure migration based on real estate transactions, which we will describe in Section 4.1.

3 Episode 1: Out of Shanghai

We begin our discussion with an analysis of emigration from Shanghai. Section 3.1 begins by describing the data we construct to analyze emigration from Shanghai. We then ask four questions in the subsequent sections. First using real estate shocks, how does changes in wealth affect emigration (Section 3.2)? Second, how do shocks to the cost of staying, identified through quasi-random bombs dropped in 1937, affect emigration decisions (Section 3.3). Third, how do firms organizational structures — as measured from their corporate charters — affect firms' responsiveness to economic shocks (Section 3.4). Fourth, what ended up happening to the firms that migrated — did this actually meaningfully lead to longer firm survival (Section 3.5).

3.1 Firms in 1930s Shanghai

Baseline sample construction We focus on the set of firms operating in the International Settlement (which consolidated both the British and American concessions) and French Settlement before the onset of World War II. These two areas, which were distinct areas set aside under treaties from the mid-19th century in which foreigners were not subject to the Chinese law, were the economic centers of pre-War Shanghai for both foreign and domestic businesses alike. More than 62% of the total population in Shanghai, Chinese included, resided in those two settlements (Ma 2001). The investments in the two Set-

7. Source: https://www.cnbc.com/2022/03/02/hong-kong-bno-visa-100000-apply-to-live-in-united-kingdom.html

tlements accounted for 72.6% and 64.9% of total investment in the entire China from the United Kingdom and the United States, respectively (Zhu 1948).

We focus on a total of 2,871 firms that operated in Shanghai in these two concessions as of July, 1937. Our list of firms comes from *The North-China Desk Hong List*, a business roster published annually by a British newspaper agency in Shanghai, the *North-China Herald* (1850-1941). We use the 1937 July edition as our baseline sample as it was published just before World War II broke out in Shanghai (which began on August 13, 1937). To the best of our knowledge, the sample includes all firms operating in either concession before the war.

Identifying movers To identify firms that move, we match the list of the firms from 1937 Shanghai 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.

We validate potential matches 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 before 1937 and after 1960s 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.

One such example is Harrisons, King & Irwin, Ltd, a joint venture of trading company specialized in tea among Harrisons and Crosfield Ltd (in London), Willian Seaton King (in Shanghai), and Andrew F. Irwin (in Shanghai). The firm was incorporated in Shanghai 1918, with headquarter address as 119 Szechuen Road, as shown in its certificate in Appendix Figure A.3. In 1946, the firm issued formal request to the Registrar of Companies in Hong Kong to move its headquarter to 734 King's Road in Hong Kong. Based on separate records, we find the firm remained active as a tea trader in the region after the move.

In total, 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 had relocated from Shanghai.

Data collection for firm-level characteristics We collect a range of firm-level characteristics. From the *North China Hong List*, we obtain the name, address, type of business, as well as the name of the firm owner and managers. While we use the 1937 edition as our baseline (as described above), we also digitized each year's list from 1900 to 1941 to track within-firm variation over time.[8] We distinguish Chinese ownership and foreign ownership from owner names (i.e. firms with owners with Chinese names are designated as likely Chinese-owned). We identify the year of firm's incorporation from the first year of its presence in the Hong Lists. We also code whether a manager was likely foreign using the manager's names.

We measure firms' land values based of their headquarters location. Specifically, using each firm's address, we obtain land values for that address from the Land Assessment Schedules (1922, 1930, and 1933 waves) — cadastral-level land valuations conducted every few years by the Shanghai Municipal Council and the French Council for tax purposes. Appendix Figure A.5 shows an example of a map and a corresponding table in the 1933 Land Assessment Schedules for the Central District of International Settlement. Each block in the map is called a cadastre. An average cadastre in Shanghai corresponds to an area of 0.39 hectares (about half a soccer field), and usually hosts at most a few firms.

Appendix Figure A.4 shows the number of firm migrants over time based on the date year the firm first registered in Hong Kong. The vast majority of migrant firms are registered immediately after World War II. Firm registration in Hong Kong was closed during the war itself when Hong Kong was under Japanese occupation, so it is possible that some of the firms registered in 1946 actually moved during the war itself.

Who are the movers? Descriptive statistics for all firms in our Shanghai sample are shown in Appendix Table A.1, columns 1 and 2. In columns 3 and 4, we then examine which factors are predictive of firms' migration outcomes. We first show coefficients from univariate OLS regressions (column 3), and then show coefficients from a single multivariate regression where all the firm-level characteristics enter the regression simultaneously (column 4).

A few key facts are worth noting from Appendix Table A.1. First, migrants are not just foreign-owned. Chinese-own firms are equally likely to migrate as non-British foreign firms (the omitted category), and only a few percentage points less likely to migrate than British-owned firms. Second, migration is substantially more likely for firms in finance

8. Note also that there are two versions of *North China Hong List*. The July version, which focuses on Shanghai, was published annually from late 19th century to 1941. The January version, which covers all major ports in China, was published annually from the 1910s. In this paper, we focuses on the Shanghai edition.

than in other sectors such as manufacturing.[9] This is intuitive since they have less physical capital which would need to be relocated. Third, we see that, cross-sectionally, higher land values are associated with moving; we will return to this point in more detail below.

3.2 Does real estate appreciation lead firms to move? *(income effects)*

We begin by examining whether and to what extent rising asset values shape firms' moving decisions. To do so, we use real estate windfalls, coming from the fact that land in different parts of the city appreciated at different rates at different times.

Real estate is a substantial share of firms' assets among the Shanghai firms we examine. We compute the share of assets attributable to land based on firms' balance sheets (Appendix Figure A.1 shows three examples of balance sheets from firms different sectors). Real estate accounted for a major part of many firm's assets: for example, 40% for Sassoon Trustee & Executor Corp, and 70% for Metropolitan Land & Company. Based on the records of 67 balance sheets that we observe, 37.65% of firm assets were held in real estate.

For all the firms in our 1937 baseline sample, we compute the change in land values from the year of their incorporation year to 1937. If a land survey was not conducted at the year of incorporation, we do linear inter-/extrapolation with the data we have. Specifically, we estimate the annual land value growth rate during the time periods that we have records (1920-1937) and project the annual growth rate linearly backwards until the year of incorporation.

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

$$\text{Emigration}_i = \beta \Delta \log(\text{land value})_i + \gamma_{\text{entry decade}} + \eta_{\text{street}} + \varepsilon_i. \quad (1)$$

We include entry decade fixed effects and street fixed effects in equation 1, thus identifying variation in land value appreciation arising from differential appreciation over time and space. That is, once we control for entry decade fixed effects and street fixed effects, the remaining variation in $\Delta \log(\text{land value})_i$ comes from differential trajectories of asset appreciation across different neighborhoods of the city and across time. Controlling for street fixed effects in particular means that we are comparing among firms that are located side-by-side in 1937 (we have approximately 100 street dummies in our analysis, so this is very granular), and not identifying off of the cross-section of spatial differences.

Table 1 presents the results. We observe a robust and significant pattern that firms

9. Appendix Table A.2 presents migration probabilities for sectors with the highest and lowest migration rates more broadly.

that experienced greater land value appreciation became more likely to leave Shanghai and establish themselves in Hong Kong. A 10% additional increase in asset appreciation would lead to a 0.20pp (1.6%) increase in emigration probability, implying an elasticity of migration with respect to land wealth of 0.21.[10] Given the differences in land appreciation, this translates into substantial differences in the rates at which firms leave. For example, the estimates imply that moving from the bottom decile of asset appreciation to the top decile of asset appreciation increases the emigration rates by 12.65pp, or double the mean rate of moving among all firms in the sample.

We consider two robustness checks in particular. First, column (3) of Table Table 1 adds an additional control for the land value in 1937. This confirms that differences are due to unexpected changes in asset appreciation, and not to the cross-sectional differences among firms in the post period. Adding this control does not change the results. Second, we also re-estimate equation (1) with the change in assets in levels, not logs. The results are qualitatively similar (see Appendix Table A.3).

3.3 Do shocks to cost of staying affect moving decisions? *(price effects)*

The previous section explored income effects — the effect of a windfall in assets on emigration. We next turn to price effect, examining shocks to the relative cost of staying vs. moving.

To do so, we focus on a particular shock — destruction of a firm's headquarters due to idiosyncratic war-time bombing. The conceptual idea is that if a building is bombed, the firm will need to rebuild regardless of whether it stays or leaves. This reduces the *relative* cost of leaving compared to a non-bombed firm, since for a bombed firm it will need to incur construction costs regardless of whether it moves or not, whereas for a non-bombed firm, the firm will only need to incur construction costs if it moves to Hong Kong.

Specifically, we examine the impact of bombs that were dropped in Shanghai in 1937. The British and French settlements in Shanghai were safe harbors during the war despite the fierce Sino-Japanese fighting in the area. However, in August 1937, with the official break-out of World War II, several bombs struck the settlements, leaving civilian casualties *en masse*. The bombs are believed to be dropped by accident — indeed, one version of events is that they were dropped by the Chinese, who were targeted a Japanese boat in the harbor but missed — 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

10. Slight difference between 0.20 and 0.21 is due to non-linearity in the level-log regression.

exact location of the bombs from the daily newspapers *North China Herald* and the work of the *Virtual Shanghai Project*. Appendix Figure A.6 shows the map of bombing locations from the Virtual Shanghai Project.

Our identification strategy zooms in on firms located within a 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:

$$\text{Emigration}_i = \beta \text{Bombed}_i + \gamma_t + \eta_{\text{sector}} + \phi_{\text{nationality}} + \varepsilon_i, \tag{2}$$

where Bombed_i is defined as firms located within 200-meter radius of the bombing site, approximately the size of a building complex that would be affected by the bombing. We control for firms' entry decade fixed effects (γ_t), sector fixed effects (η_{sector}, e.g., textile, real estate, banks), and nationality of the owner (or chief director) fixed effects ($\phi_{\text{nationality}}$, e.g., British, Japanese, or Chinese).

Identification hinges on the assumption that these locations (and the firms operating at these locations)were not expressly targeted for some reason. This is particularly plausible in this setting given that the bombing was likely accidental to begin with; more broadly, bombing prior and during World War II was notoriously imprecise (Gladwell 2021). To test this more formally, Appendix Table A.4 shows a balance test, comparing firms that were hit to firms in the 500 meter buffer areas that were not hit. We find that firms that were hit by the bombs are virtually indistinguishable in terms of their observable characteristics compared with those firms that were nearly missed by the bombing.

Table 2, Panel A, columns 1-2, present the baseline results from estimating equation (2). We find that firms hit by the bombing were substantially — 3.5 percentage points, or 26.3% higher than the mean — more likely to migrate to Hong Kong. This suggests that firms are also responsive to the relative costs of staying vs. moving.

We explore several robustness checks to these results. First, columns 3 and 4 of Table 2 add street fixed effects and controls for the land value as assessed in 1937. The results remain qualitatively unchanged, and if anything, are slightly larger in magnitude (about 4.5 percentage points, or 34 percent above the baseline mean). Second, Panel B re-estimates equation (2) using a continuous distance to the bombing site variable as a measure of the degree of destruction. The results are qualitatively similar. Third, Appendix Table A.5) explores a range of alternative choices for the comparison group, considering regression where the control group is defined using either a slightly larger radius (600m) or all firms in the sample. Results are broadly similar in these alternative specifications.

3.4 Organizational structure and migration choices

While firms are, on average, responsive to shocks to wealth and cost of staying, moving firms entails additional complexities above and beyond a single individual or household's move. In particular, firms have complex organizational structures. We next explore the degree to which these organizational restrictions were important in the decision of firms to move or to stay, and how that interacts with the wealth and price effects discussed above.

To do so, we look at the degree to which firms that had more *flexible* charter provisions were more likely to move to Hong Kong.

We measure firms' organizational flexibility based on various clauses in firm charters clauses we located in both Shanghai and Hong Kong. We collect data from the Hong List, as well as from the Firm Registry in Hong Kong and from the Shanghai Municipal Archive. According to *Hong Kong Companies Ordinance* (1932) and *Shanghai Company Law* (1929), each firm was required to submit a copy of their charters before incorporation. On net, we obtained charters for 108 Shanghai firms that did not move to Hong Kong, or 4.3% of the sample.[11] We also repeated the same search in the Hong Kong registry, and found charters for 289 movers (78% of the total) in the Hong Kong registry.

We extract four key features indicative of firms' organizational flexibility. First, we code whether the firm imposed a local *director address requirement*. For example, one firm's charter stated that "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.); other examples. These requirements that privilege local directors may make relocating to Hong Kong more difficult. If firms do *not* impose such director address requirement, we consider its structure to be more flexible. Second, we code whether the firm required *director rotation*. For example, one firm required that "at every general meeting one-third of the directors [...] shall retire from office" (CR 2020, Shanghai Worsted Mill). These rotation requirements also likewise reduce flexibility because the firm cannot replace all or most of its directors all at once. If firms do *not* impose such director rotation requirement, we consider its structure to be more flexible. Third, we code whether the firm allowed *director to be held in other countries* (i.e. other than where the firm's headquarter office is). This can refer to either directors' residence or to meeting locations; for example, "a meeting of directors may be

11. Despite searching for all firms in our baseline 1937 sample, we only observe firm charters for a small subset of firms in Shanghai. This is both because many firms that we observe in practice in the Hong List did not file a charter with the Shanghai authorities, and also because many documents were lost during World War II, the Chinese Civil War, and during the Cultural Revolution.

held in Hong Kong or elsewhere" (CR 1599, Shewan Thomes & Co. Ltd.). Allowing directors to be elsewhere also reduces firms ties to Shanghai and presumably increased firm flexibility. Fourth, we code whether the firm can *set up branches in other countries* (i.e. other than where its headquarter office is located). 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.). This clearly also allows more flexibility to move internationally.

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.6 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.[12] Nor were there systematic differences of the legal system that might affect the way these charters were written.

We investigate whether firms' responsiveness to shocks that change wealth accumulation (due to land value appreciation) and cost of staying (due to bombing) as identified in the previous sections were differentially high if their organizational structure was more flexible. Table 3 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

The discussion thus far has all been about the ex-ante decisions firms make. Clearly, what happened ex-post is only one possible realization of potential outcomes firms were con-

12. 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.7 shows that the firm, incorporated in 1923 in Shanghai, submitted their original charter when registering in Hong Kong in 1946.

sidering. It is nevertheless instructive to compare outcomes in the medium run for those who stayed and those who moved to ascertain whether, in this case — which was most likely among the worse for firms that stayed among possible scenarios being contemplated at the time — moving made a difference. To do so, we trace our baseline firms from 1937 — both those that stayed and those that migrated to Hong Kong — to determine the whether each set of firms survived in the medium term.[13]

All firms that remained in Shanghai were nationalized during the Communist Revolution and the subsequent takeovers of private industry in the 1950s. However, a few international companies survived without their Shanghai branch, and a few local firms survived by cooperating with the new regime (and so had their assets reinstated after 1978, albeit in different form).[14] For all the firms that do not move, we searched extensively for their presence on the internet as well as British archive websites in order to determine their survivorhood. We use the last instance of their presence in these sources as indicator of the years until which they survive. There are 44 that survived till this day, and 19 that survived past 1949 but winded up in history. For the rest of them, we consider the last year of presence in China, indicated by the Hong List, assuming that they all stopped business after the Communist takeover. For all the firms that moved to Hong Kong, we acquire information about their dissolution from the Hong Kong Firm Registry in order to measure how long they survive.

Perhaps not surprisingly, moving to Hong Kong made an enormous difference ex-post. 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, and at least 11% still exist as of 2023. This suggests a very high return to migration in the median run. However, this raw comparison may not reflect the causal estimate from migration for the marginal migrant — i.e., the firm just on the margin between migrating and staying — which is what is most relevant for thinking through the migration decision, because it may reflect selection — those firms that were most likely to survive anyway migrated.

To examine this more closely and to account for the confounding factor of firms' selection into migration, we exploit the bombing shocks discussed in Section 3.3. Specifically, we compare firms within 500m of the bomb location, and look for whether there is a difference in long-run survival probabilities between those firms hit by the bomb and those

13. Focusing on firms' survivorhood likely substantially underestimates the median run return to migration in this context. Non-migrating firms survived in Mainland China, if at all, likely existed only in name and the assets were transferred away from their original owners. Many individuals associated with the private enterprise prior to the founding of the People's Republic of China were persecuted personally, some even to death.

14. This over-counts surviving firms as many may not be considered as having survived the turbulence from the firms' owners perspective.

barely missed by them; this yields the survival effect *for the marginal firm* induced to migrate by the bombing. We run a two-stage-least-squares specification, where we use the baseline specification in Section 3.3 as the 1st stage. We examine the 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.7 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 (though not statistically significantly) higher chance of returning to Mainland China after the country re-opened to foreign enterprises in 1978.

4 Episode 2: Out of Hong Kong

We next shift our focus to Hong Kong, where, after describing the data in Section 4.1, we ask four broadly parallel questions as we did examining the "Out of Shanghai" episode. As in the previous analysis, we begin by asking *(i)* How does wealth affect emigration (Section 4.2)? and *(ii)* How do changes in the opportunity cost of staying affect emigration (Section 4.3)? In Hong Kong, we can also estimate *(iii)* a lower bound on the financial cost of migration in the short run, by examining whether households who migrate sell at a discount (Section 4.4). Finally, we return to the question of political uncertainty, examining *(iv)* whether households who are more likely to perceive the risks of migration as higher are more likely to migrate, and examine how this changes their economic elasticities (Section 4.5).

4.1 Identifying emigrating households in Hong Kong

Identifying migrants from Hong Kong is more challenging. 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.

We present a novel solution to this issue: utilizing the universe of real-estate transactions records, we identify emigrating households as those who liquidate of all real estate assets by end of our sample period and made no new purchases. Such measure allows us to distinguish households whose emigration is plausibly permanent from the temporary population out-flow such (e.g., studying abroad) and merely intention to migrate. Importantly, this migration measure captures a joint decision of emigration and assets liquidation, and applies only to households who are homeowners in Hong Kong, which is about 51.2% of the population according to the Hong Kong Government.

We observe a total of 2.45 million records of real estate transaction during 1991 to 2021 from the Hong Kong Land Registry, accessed via the Integrated Registration Information System. We cross-check the scope of these transaction records with the company database on 28HSE, the most widely-used property-sales portal in Hong Kong, and confirm the comprehensiveness of the data that we collect (see Appendix Figure A.8). 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.

In our baseline strategy, we discard various of exits from the housing market for reasons other than emigration. The unique structure of Hong Kong's real estate transaction records allow us to distinguish alternative scenarios of property liquidation other than emigration such as mortgage defaults, deaths and bequests. For instance, for the same unit, if the seller of a transaction is a bank or financial institution that does not match with its preceding buyer, this likely implies a mortgage-related default. A death or a gift also entails mismatches between a seller and its preceding owner.[15] Appendix B describes in detail our validation efforts and other aspects of data cleaning, including unsuccessful transactions, name aliases, a validation of our death estimates, and joint tenancy issues.

Any household who made at least one transaction from 1991 to 2021 appears in our transaction records. However, if a non-migrant owned properties before 1991 and didn't participate in any housing market transactions during our entire sample period, we won't be able to observe this. We supplement the transaction data we observe to make sure we also include residents who never switched houses. Specifically, we fill in the transaction data using the structure of apartment buildings in order to make sure we have a complete and comparable estimate of real estate assets appreciation among non-movers.[16] We validate our supplemented data with a random sample of raw deeds downloaded from the Hong Kong Land Registry, where records sometimes extend 10 years longer than in our data, and find that this strategy to offer us a reasonably good approximation to the ground truth.

All things combined, we identify 1.87% of households as potential permanently migrating away from Hong Kong between January 2015 and December 2020. Appendix

15. In Hong Kong, if someone dies and the heir sells the house, it is their heir (or administrator or executor of the will) who is listed as the seller, not the deceased.

16. Observing that *(i)* the vast majority of Hong Kong residents live in apartments instead of townhouses or single family dwellings, and *(ii)* within each building, we usually have the same set of units on each floor (that is, the floor plan is typically the same across floors of the same building), we proceed by filling in the complete floors of buildings based on the transactions we observe. For example, if we observe unit 1, 2 and 3 transacting on the second floor but only 1, 3 on the third floor, then we assume that 3F/unit 2 is one of the stayers.

Figure A.10 plots the number of estimated emigrants based on our data across years, and its comparison with official statistics when we observe them. The two trends are qualitatively similar: migration peaks at 1997 during the handover (though the level is much larger in observed data than in our data.[17] Appendix Table A.8 shows summary statistics for both stayers and movers. Interestingly, households with better social economic status were more likely to move.

4.2 Does real estate appreciation lead households to emigrate? *(income effects)*

We begin by investigating whether real estate asset value appreciation affects households' migration decisions. Real estate represents a substantial share of households' wealth in Hong Kong. While an exact estimate of households' real estate holdings (net of mortgages) to households' total wealth is difficult to come by, Hong Kong is one of the most expensive real estate markets in the world.[18]

Baseline specification

We start with the baseline specification below, where we examine the relationship between cumulative real estate asset value changes until 2014 and migration decisions after 2014:

$$\text{Emigration}_i = \beta \Delta \log(\text{Asset value})_i + \gamma_{\text{start year}} + \eta_{\text{building}} + \varepsilon_i. \quad (3)$$

We control for real-estate-market-entering-year fixed effects ($\gamma_{\text{start year}}$) and apartment complex building fixed effects (η_{building}).[19] Similar to the empirical strategy in identifying the analogous relationship in the "out of Shanghai" episode, by including these fixed effects, we exploit variation in real estate asset appreciation as a result of different years entering housing market combined with different location-specific appreciation trajectories. The sample only include households who have not left Hong Kong by 2014.

Computing asset appreciation when properties transact is straightforward. If there is no transaction for unit i in year t, we use the following strategy to impute its market-

17. Real estate sales may lag behind the actual migration, so we might not be capturing all emigration in recent years.

18. According to the annual Demographia International Housing Affordability Survey, the ratio of median house prices to annual median household income is 18.1, so an average person making $50,000 annually who owned a house would have spent more than $900,000 in the housing market.

19. For households with multiple real estate transactions during the sampling period, this refers to their initial apartment complex building as they enter the real estate market. We alternatively control for their last apartment complex building fixed effects instead, and we find qualitatively and quantitatively very similar results.

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 prices can be imputed at the block and neighborhood and transaction year level.[20] The correlation between our imputed price and actual consideration paid on transacted units is 0.999; 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 sum them together.

Table 4, Panel A, presents the results from estimating equation (3). One observes a strong, positive, and statistically significant relationship between real estate asset appreciation through the end of 2014 and households' subsequent emigration decisions. 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. More broadly, to get a sense of magnitudes, the difference in emigration probabilities between households at the top decile of real asset appreciation and those at the bottom decile is 2.21 pp (119.4% over the mean rate). The results are robust to: *(i)* measuring values in levels in current US dollars; and *(ii)* restricting the analyses to a subsample of households who only own one real estate property in Hong Kong (see Appendix Table A.9).

The identification strategy in Panel A already is based on differential real estate appreciation across time and space, and by controlling for apartment building fixed effects, we control for cross-sectional differences in who lives where. To further improve the identification and to rule out the possibility that real estate appreciation may capture income and economic trajectory that households in specific neighborhoods may face more generally, we use two additional, complementary empirical strategies to estimate the relationship between real estate value appreciation and emigration decision in cases where we know precisely why there was unexpected differential price appreciation. First, we use the opening of MTR stations as instrument for appreciation of housing value; and second, we use the timing of land deeds relative to 2047 (the end of the 50-year "one country, two systems" transition period) as an instrument for depreciation of housing value.

IV strategy #1: 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

20. 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.

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. 52.9% of the MTR stations in the current network opened after 1990, during our housing transaction sample period. Appendix Figure A.9, Panel A, shows the number of new MTR stations opened across years. 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, differentiating between those with no access to MTR network (further than 1km from the station), those which had access to MTR network prior to 1990, and those which gained access to the MTR network in the period since 1990 due to the opening of new MTR stations.

Appendix Table A.10 presents the first stage results, where we predict the real estate asset value gain accumulated until 2014 with the MTR access added (if any) after the purchase of the property. We again control for year-entering-real-estate-market fixed effects and apartment complex building fixed effects. We observe a strong, positive relationship: becoming connected with the MTR system is associated with an 36.76% increase in real estate property values. This pattern is robust to alternative measures of MTR access using different choices of radius, using distance to the nearest MTR station, or counting only substantial shortening in distance (greater than 1km) to the MTR station; these results are shown in Appendix Table A.11. Importantly, as shown in Appendix Table A.13, neighborhood demographics and socioeconomic conditions do *not* predict access to the MTR, controlling for the baseline fixed effects.

Table 4, Panel B, presents two-stage-least-squared results, where we instrument for $\log(\text{Asset value})_i$ using a dummy for MTR station opening within 1km of the residence after the person bought the property. Appendix Table A.10, 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 0.28. These results are again robust to alternative measures of MTR access using different choices of radius, using distance to the nearest MTR station, or counting only substantial shortening in distance (greater than 1km changes) to the MTR station (see Appendix Table A.12).

IV strategy #2: timing of deeds renewal

Land in Hong Kong is not owned outright; it is instead leased under long (typically 99-year) leases from the government. The expectation is that these leases would be renewed or extended, but this is an expectation, not a formal guarantee. In particular, under the Hong Kong Basic Law, leases that expire on or before June 30, 2047 (the end of the 50-

year "one-country, two systems" period) have been automatically granted an additional 50 years extension. What happens to leases that end after June 30, 2047, however, has not been addressed, and there is substantial uncertainty about what will occur once those leases expire. He et al. (2020) study the implications of this phenomenon, and document that houses whose ground lease expires after July 1, 2047 lost value after 1997 once people realized that they did not have the same certainty as leases expiring before that date (and hence which were eligible for an automatic 50 year extension). We exploit this variation by using the timing of deeds as an instrument for appreciation (depreciation) of housing value in the period since 1997.

Specifically, following the same empirical strategy as He et al. (2020), we compare the group of buildings whose leases expires on June 30, 2047, versus the group of buildings whose leases expire between July 1, 2047 and 2067.[21] Appendix Figure A.11 plots the trend in unit price across the apartment blocks with leases expiring before and after July 1, 2047. One observe that prior to 2000, these two groups of apartment blocks do not differ in market valuation; since 2000, apartments with leases expiring before July 1, 2047 are appreciate more. The difference emerges between 1997-2000 — just after the end of the British colonial rule of Hong Kong — as the new Basic Law took effect and differences in the security between these two types of leases became salient. Appendix Table A.14 presents the first stage regression results. As before, we control for building fixed effects (column 2), as well as year-entering-real-estate-market fixed effects (column 3). Note that even though lease type is a building fixed characteristic, identification comes from the fact that some people bought properties prior to the 1997-2000 period when the deeds renewal (or lack thereof) became salient, and some bought after once this was already capitalized in. 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 4, Panel C, presents the two-stage-least-squared results using differential appreciation due to lease types as an instrument; Appendix Table A.14, 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.

21. 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 Hong Kong Land Registry.

4.3 Does the changing opportunity cost of staying affect moving decisions? *(price effects)*

We next study whether changes to cost of staying affect households' decisions to emigrate. In particular, we focus on labor market shocks that result in lower wages or higher unemployment, which could change the relative economic calculus of staying in Hong Kong vs. emigrating. 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's industrial employment composition and overall Hong Kong-wide industry-specific unemployment or income growth rate shocks.

Specifically, we estimate the following model:

$$\text{Emigration}_{it} = \beta \sum_{k} z_{ik} u_{kt} + \gamma_t + \lambda_i + \varepsilon_{it}, \tag{4}$$

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

We collect voting district level industrial shares data in 2016 from the census, and industrial level annual unemployment rate and income growth rates 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.

To check the plausibility of the exogeneity of the shift-share instrument, we follow Goldsmith-Pinkham, Sorkin, and Swift (2020) and conduct a series of balance tests focusing on the three sectors with the Rotemberg weights. As Appendix Table A.15 shows, reassuringly, while the 2016 level industry share in the voting districts is associated with subsequent household wage changes, but uncorrelated with demographic changes and changes in housing ownership conditions.

Table 5 presents the results from estimating equation (4). Note that this is a reduced form regression, not an IV, because we only observe unemployment and wages for a cross-sectional sample representative for all of Hong Kong. Panel A focuses on changes in unemployment rates, while Panel B examines changes in log wages (conditional on employment). One observes that negative changes in labor market conditions, either on the extensive margin in terms of unemployment or on the intensive margin in terms of income, significantly increase households' decisions to migrate out of Hong Kong. To gauge magnitudes, a 1% increase in wage across all industries would lead to a 0.036 percentage point decrease in the annual migration rate, which is about 7.5% change from the average migration rate. The difference in emigration probability between regions at the

top decile of predicted wage growth and those at the bottom decile is -0.17pp (35.6% of the average annual migration rate).

4.4 Cost of migration in the short-run: fire sales

Having shown the economic incentives that stimulate households to emigrate, we assess the short-run cost that 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 but not in an exit sale.

To identify the transaction price differences for exit sales, we compare the sale price for units that are part of the emigrating households' last transactions (i.e., 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 6 presents the results, where we control for a combination of neighborhood fixed effects, apartment complex block fixed effects, apartment complex 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 sale. On average, emigrants sell their property for about 100,000 HKD (about US $13,000) lower than the market price — this amounts to about 1.95% of their total property value, and 2.99% of the emigrating households accumulated real estate wealth increase. Such a 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).

Interestingly, we find that buyers of the emigrating households' properties are more likely to be first-time homeowners and less likely to be incoming migrants from the Mainland China (see Appendix Table A.16). These households may have purchased properties at a lower price due to the fire sale discount rate identified above, and hence marginally less likely to emigrate themselves. In other words, real estate market may act as a modulating force against emigration — at least before emigration increases to a level that causes the market to collapse. Fire sale and the decreased cost of staying could make migration decision socially substitutable.

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.

First, we examine the interaction between economic and political incentives cross-sectionally. We assess whether the migration decisions in response to economic incentives differ across districts in Hong Kong with different political leanings. To do so, we use voting district-level vote shares in 2019 for the Democratic Party, which is the leading pro-democracy party in Hong Kong. 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 Democratic Party vote share. The idea is to test whether, in areas of the city which are less supportive of the Chinese Communist Party (and hence potentially more concerned about political crackdowns in the city), the responsiveness to economic incentives is higher.

Figure 1, Panel A, presents the estimated coefficients for districts in 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 labor market 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.

Second, we examine the interaction between economic and political incentives in the time-series, asking whether the migration decisions in response to economic incentives differ in years when political uncertainty rises. To do so, 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), but now estimate separate coefficients for each year.

To measure political perceptions in each year, in Figure 1, Panel B, we plot perceived political freedom and liberty according to the Public Opinion Program administered by the University of Hong Kong. We then overlay this with the coefficients we estimate

from re-estimating the results on assets, unemployment, and fire sales year-by-year. 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 considerate rise in political uncertainty, we observes 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

Migration to another country is one approach to avoiding risks from political turmoil (e.g., Jews fleeing Nazi Germany). In this paper, we document the economic calculus behind migration during times of political turmoil in two major episodes in China over the past century. We find that exit decisions are responsive to changes in "income" in order to compensate for moving due to wealth shocks, as measured by differential real estate appreciation, as well as changes in "prices" of moving due to different opportunity cost of staying put.

In other words, even in highly politically uncertain times, economic incentives make a big difference in migration decisions. In fact, we find that increased political uncertainty may even exacerbate these elasticities.

In general, fewer people migrate than may be expected given the presence of greater 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.

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.

Akram, Agha Ali, Shyamal Chowdhury, and Ahmed Mushfiq Mobarak. 2017. *Effects of emigration on rural labor markets.* Technical report. National Bureau of Economic Research.

Alesina, Alberto F, Marlon Seror, David Y Yang, Yang You, and Weihong Zeng. 2023. "Persistence despite revolutions." *NBER Working paper,* no. w27053.

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, Volker Lindenthal, Sharun Mukand, and Fabian Waldinger. Forthcoming. "Persecution and escape: professional networks and high-skilled emigration from nazi Germany." *American Economic Journal: Applied Economics.*

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.

Djajic, Slobodan, Murat G Kirdar, and Alexandra Vinogradova. 2016. "Source-country earnings and emigration." *Journal of International Economics* 99:46–67.

Ferrara, Andreas, and Price Fishback. 2022. "Discrimination, migration, and economic outcomes: evidence from World War I." *Review of Economics and Statistics,* 1–44.

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.

Gladwell, Malcolm. 2021. *The Bomber Mafia: A Story Set in War.* Penguin UK.

Goldsmith-Pinkham, Paul, Isaac Sorkin, and Henry Swift. 2020. "Bartik instruments: What, when, why, and how." *American Economic Review* 110 (8): 2586–2624.

Gupta, Arpit, Stijn Van Nieuwerburgh, and Constantine Kontokosta. 2022. "Take the Q train: Value capture of public infrastructure projects." *Journal of Urban Economics* 129:103422. https://doi.org/https://doi.org/10.1016/j.jue.2021.103422. https://www.sciencedirect.com/science/article/pii/S0094119021001042.

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.

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, Changlin. 2001. *Shanghai Concession Gazzette.* The Publishing House of Shanghai Academy of Social Sciences.

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.

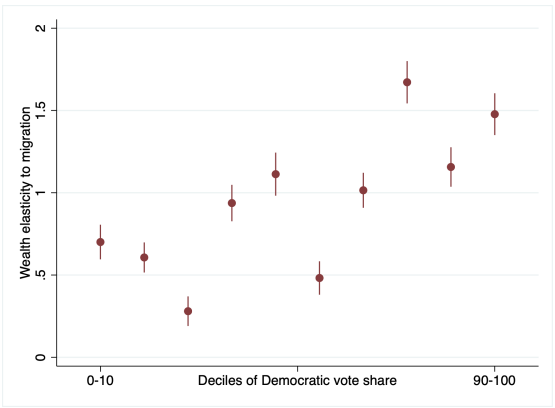
Orrenius, Pia M, and Madeline Zavodny. 2005. "Self-selection among undocumented immigrants from Mexico." *Journal of Development Economics* 78 (1): 215–240.

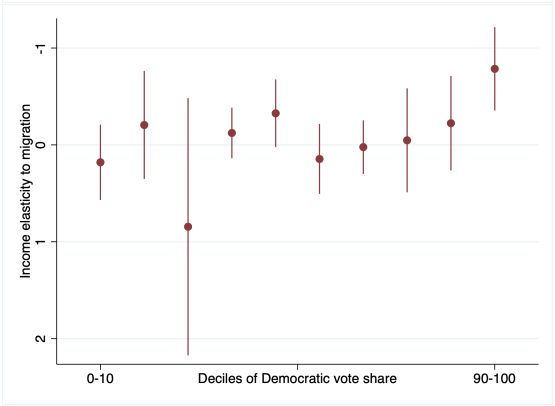
Sarvimäki, Matti, Roope Uusitalo, and Markus Jäntti. 2022. "Habit formation and the misallocation of labor: evidence from forced migrations." *Journal of the European Economic Association* 20 (6): 2497–2539.

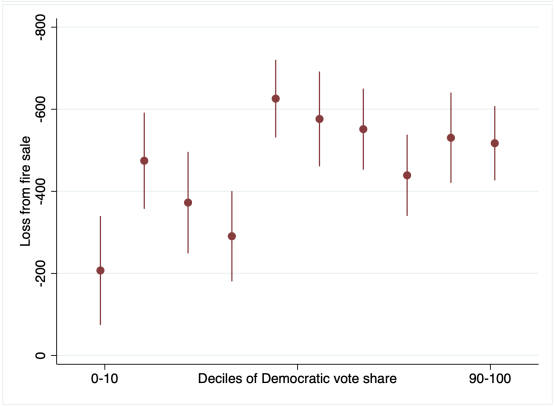
Vogler, Michael, and Ralph Rotte. 2000. "The effects of development on migration: Theoretical issues and new empirical evidence." *Journal of Population Economics* 13 (3): 485–508.

Zhu, Sihuang. 1948. "Economic History of Republican China." *Shanghai Yinhang Zhoubaoshe.*

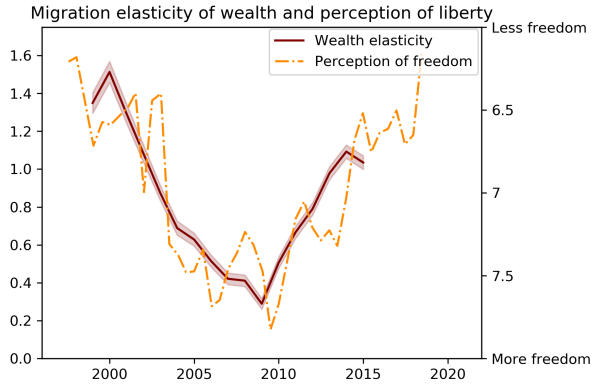
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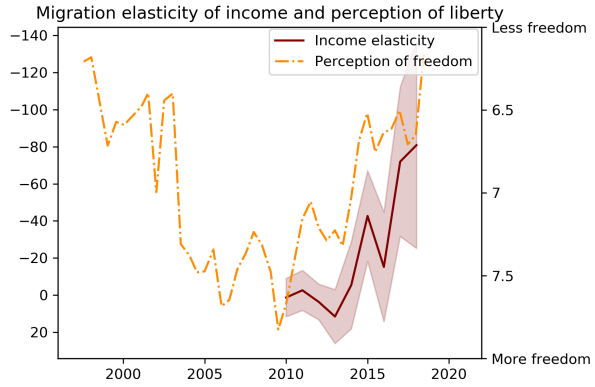


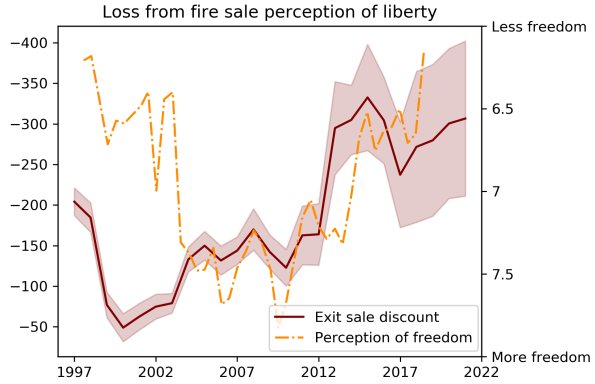




Panel A: Cross-sectional variation







Panel B: Time-series variation

Figure 1: 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 building FEs. In Panel B, we run separate regressions by year. For each year t on the first plot, the dependent variable is $1\{\text{migration in the 5-year-window starting from year } t\}$, 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.

Tables

Table 1: Land value appreciation and emigration

	Emigration after 1937		
	(1)	(2)	(3)
Δ log (Land value) until 1937	0.039***	0.023*	0.027**
	(0.011)	(0.013)	(0.013)
# of obs.	1,263	1,260	1,260
Mean of Dep. Var.	0.127	0.127	0.127
Mean of Indep. Var.	0.835	0.835	0.835
Entry semi-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. Δ log (Land value) until 1937 is computed as the difference in logged land values from the year a firmed entered the Shanghai market to 1937. If the land value was not surveyed in a specific year, we interpolate or extrapolate in a log-linear fashion, assuming constant growth rate over the entire sample period.

Table 2: Cost of staying and emigration: Shanghai

	Emigration			
	(1)	(2)	(3)	(4)
Panel A: Indicator: Firm $<$ 200 m radius				
Bombed	0.0358**	0.0357**	0.0389*	0.0419*
	(0.0156)	(0.0156)	(0.0207)	(0.0228)
Panel B: Continuous distance (km)				
Distance to the nearest bomb	-0.134***	-0.128***	-0.151**	-0.148**
	(0.0384)	(0.0392)	(0.0591)	(0.0710)
# of obs.	1,891	1,858	1,292	1,273
Mean of DV	0.133	0.133	0.133	0.133
Nationality FE	Yes	Yes	Yes	Yes
Entry semi-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: Standard errors clustered at cadastral level 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 kilometers) to the nearest bomb as an alternative measure.

Table 3: Organizational structures and migration elasticity

	Emigration			
	(1)	(2)	(3)	(4)
Panel A: Response to land value appreciation				
Δ log (land value) × Org flexibility z-score	0.085	0.187	0.231	0.235*
	(0.174)	(0.167)	(0.143)	(0.131)
Δ log (land value)	0.165	0.224*	0.339***	0.306**
	(0.146)	(0.125)	(0.120)	(0.126)
Org flexibility z-score	-0.237**	-0.192	-0.200**	-0.201**
	(0.109)	(0.118)	(0.097)	(0.086)
# of obs.	107	107	107	107
Mean of DV	0.682	0.682	0.682	0.682
Panel B: Response to bombing				
Bombed × Org flexibility z-score	0.213**	0.226**	0.227**	0.210*
	(0.103)	(0.104)	(0.103)	(0.117)
Bombed	0.190**	0.187**	0.0623	0.0991
	(0.0743)	(0.0752)	(0.0903)	(0.110)
Org flexibility z-score	-0.347***	-0.354***	-0.342***	-0.307***
	(0.0651)	(0.0683)	(0.0693)	(0.0708)
# of obs.	179	179	169	120
Mean of DV	0.639	0.639	0.639	0.639
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: Standard errors clustered at cadastral level are reported below the estimates. We extract 4 features of the charters. (Detailed descriptions can be found in the Table notes of Appendix Table A.6) The organizational z-score is defined as the average standardized value of those four characteristics. Among them, 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 4: Real estate asset appreciation and emigration

	Emigration after 2014		
	(1)	(2)	(3)
Panel A: Baseline			
Δ log(Asset value till 2014)	0.0156***	0.0165***	0.0161***
	(0.001)	(0.0004)	(0.0004)
Panel B: Instrumented by MTR shock			
Δ log(Asset value till 2014) (instrumented)	0.0063***	0.0089***	0.0052***
	(0.002)	(0.001)	(0.001)
First stage F stat	18511.55	55930.30	48674.96
Panel C: Instrumented by land lease expiration date cutoff			
Δ log(Asset value till 2014) (instrumented)	0.0045**	0.0244***	0.0202***
	(0.002)	(0.003)	(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 block FE	No	Yes	Yes
Control for housing value in 2014	Yes	Yes	Yes

Notes: Standard errors clustered at block level 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 5: Cost of staying and emigration: Hong Kong

	Annual emigration rate			
	(1)	(2)	(3)	(4)
Panel A: Unemployment shock				
Industry-level unemployment × industry shares	0.0905***	0.0896**	0.102*	0.100*
	(0.0323)	(0.0427)	(0.0562)	(0.0558)
Panel B: Income shock				
Δ Log (Industry-level income) × industry shares	-0.0358***	-0.0558***	-0.0897***	-0.0931***
	(0.0124)	(0.0195)	(0.0233)	(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 × Year FE	No	Yes	Yes	Yes
Pre-period wage and education × Year FE	No	No	No	Yes
Political leaning × 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.

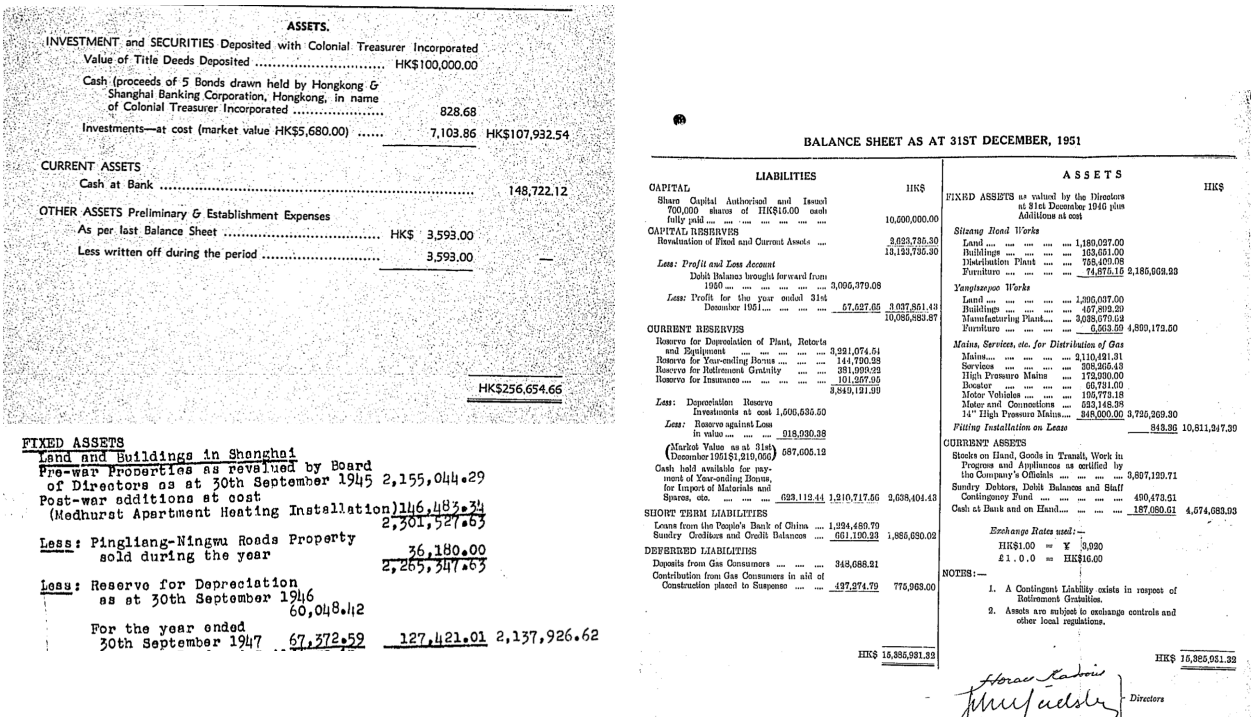
Table 6: Short run cost of emigration: fire sale in Hong Kong

	Unit price of transaction			
	(1)	(2)	(3)	(4)
Exit sales	-172.3637***	-140.6614***	-159.9934***	-164.2820***
	(8.838)	(6.642)	(8.648)	(7.844)
# 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: Standard errors clustered at block level 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



ASSETS.

INVESTMENT and SECURITIES Deposited with Colonial Treasurer Incorporated

Value of Title Deeds Deposited	HK$100,000.00	
Cash (proceeds of 5 Bonds drawn held by Hongkong & Shanghai Banking Corporation, Hongkong, in name of Colonial Treasurer Incorporated	828.68	
Investments—at cost (market value HK$5,680.00)	7,103.86	HK$107,932.54
CURRENT ASSETS		
Cash at Bank		148,722.12
OTHER ASSETS Preliminary & Establishment Expenses		
As per last Balance Sheet	HK$ 3,593.00	
Less written off during the period	3,593.00	—
		HK$256,654.66

FIXED ASSETS

Land and Buildings in Shanghai		
Pre-war Properties as revalued by Board of Directors as at 30th September 1945	2,155,044.29	
Post-war additions at cost		
(Medhurst Apartment Heating Installation)	146,483.34	
	2,301,527.63	
Less: Pingliang-Ningwu Roads Property sold during the year	36,180.00	
	2,265,347.63	
Less: Reserve for Depreciation as at 30th September 1946	60,048.42	
For the year ended 30th September 1947	67,372.59	127,421.01 2,137,926.62

BALANCE SHEET AS AT 31ST DECEMBER, 1951

LIABILITIES	HK$		ASSETS	HK$	
CAPITAL			FIXED ASSETS as valued by the Directors at 31st December 1946 plus Additions at cost		
Share Capital Authorised and Issued 700,000 shares of HK$16.00 each fully paid		10,000,000.00	*Sitsang Road Works*		
CAPITAL RESERVES			Land	1,180,027.00	
Revaluation of Fixed and Current Assets		3,023,735.30	Buildings	163,651.00	
		13,133,735.30	Distribution Plant	758,409.08	
Less: Profit and Loss Account			Furniture	74,875.15	2,185,962.23
Debit Balance brought forward from 1950	3,096,379.08		*Yangtzepoo Works*		
Less: Profit for the year ended 31st December 1951	57,527.65	3,037,851.43	Land	1,200,037.00	
		10,095,883.87	Buildings	467,892.20	
CURRENT RESERVES			Manufacturing Plant	3,038,670.52	
Reserve for Depreciation of Plant, Retorts and Equipment		3,221,074.54	Furniture	6,563.20	4,899,172.50
Reserve for Year-ending Bonus		144,790.98	*Mains, Services, etc. for Distribution of Gas*		
Reserve for Retirement Gratuity		331,999.99	Mains	2,110,491.31	
Reserve for Insurance		101,267.95	Services	308,365.43	
		3,849,131.99	High Pressure Mains	172,000.00	
Less: Depreciation Reserve Investments at cost 1,506,535.50			Booster	66,791.00	
Less: Reserve against Loss in value	918,930.38		Motor Vehicles	105,773.18	
(Market Value as at 31st December 1951 $1,219,066)	587,605.12		Meter and Connections	533,148.38	
Cash held available for payment of Year-ending Bonus, for Import of Materials and Spares, etc.	629,112.44	1,210,717.56 2,638,414.43	14" High Pressure Mains	348,000.00	3,726,269.30
SHORT TERM LIABILITIES			*Plitting Installation on Lease*		843.36 10,811,247.30
Loans from the People's Bank of China		1,224,480.79	CURRENT ASSETS		
Sundry Creditors and Credit Balances		661,100.33 1,885,630.02	Stocks on Hand, Goods in Transit, Work in Progress and Appliances as certified by the Company's Officials		3,827,129.71
DEFERRED LIABILITIES			Sundry Debtors, Debit Balances and Staff Contingency Fund		490,473.51
Deposits from Gas Consumers		343,688.21	Cash at Bank and on Hand	187,080.01	4,574,683.03
Contribution from Gas Consumers in aid of Construction placed to Suspense		427,274.79 775,963.00	*Exchange Rates used:—*		
			HK$1.00 = ¥ 3.920		
			£1.0.0 = HK$16.00		
		HK$ 15,385,931.33			HK$ 15,385,931.33

NOTES:—

1. A Contingent Liability exists in respect of Retirement Gratuities.
2. Assets are subject to exchange controls and other local regulations.

Horace Kadoorie
Directors

Figure A.1: In this figure we show 3 balance sheets examples from firms in Shanghai the year before migration. Depending on the accountant, land value show up as *Value of Title Deed Deposited* (in the top left panel), or simply *Land* (in the right panel)

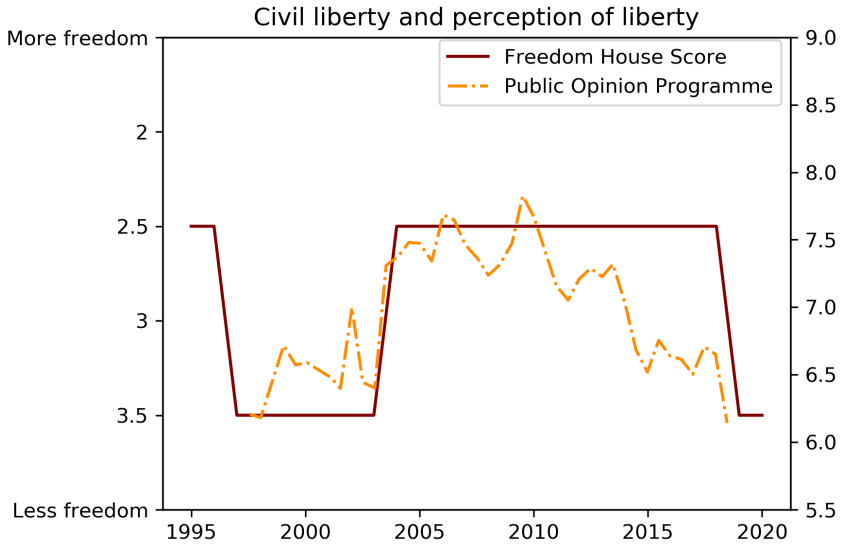
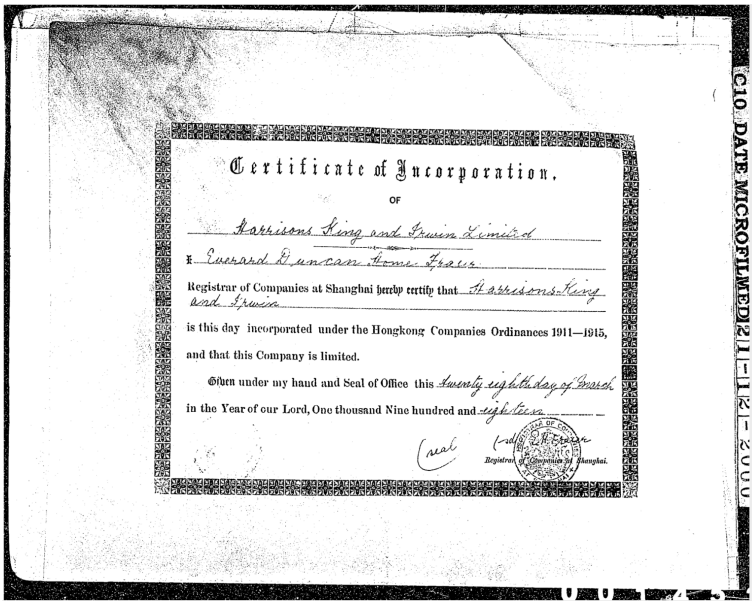


Figure A.2: In this figure we overlay Hong Kong's legal and institutional civil liberty score and its citizen's perception of civil liberty across the past 25 years. The first comes from Freedom Houses Country and Territory Ratings and Statuses, 1973-2023, and the second from Public Opinion Programme, HKU, 1997-2019.



Certificate of Incorporation.

OF

Harrisons King and Irwin Limited

I Everard Duncan Home Fraser

Registrar of Companies at Shanghai hereby certify that Harrisons King and Irwin

is this day incorporated under the Hongkong Companies Ordinances 1911—1915, and that this Company is limited.

Given under my hand and Seal of Office this twenty eighth day of March

in the Year of our Lord, One thousand Nine hundred and eighteen

(seal)

Registrar of Companies at Shanghai.

C10 DATE MICROFILMED 2-11-12-2000

HARRISONS, KING & IRWIN, LTD.
(INCORPORATED IN HONGKONG)

P. O. Box 311
SHANGHAI June 6th, 1946

The Registrar of Companies,
HONG KONG

Dear Sir,

It is desired to register this Company (already incorporated under the Hong Kong Companies Ordinance) as a Hong Kong Company under Proclamation No.27 of March 11th, 1946: the Head Office of the Company to be at its Hong Kong premises at 734 King's Road (I.L.3507).

The consent of the Directors of the Company has already been obtained although the undersigned are the only two directors at present in the Far East. The Directors are:-

Norman Frederick Meyers, c/o Harrisons & Crosfield, Ltd., London.
Sydney William Harris, c/o the same, at present represented by the undersigned Valdemar Reginald Zimmerman as alternate director,
Carleton Reid, of Harrisons & Crosfield, Ltd., London.
Charles Cecil King the undersigned, of this address.

A fifth Director, Mr. A.P.Irwin of Irwin-Harrisons-Whitney, Philadelphia, died recently and we have not been informed of any new appointment to his seat on the Board.

It would be much appreciated if you would be good enough to institute the registration of this Company as requested and hand the Registration Certificates to Messrs. Lowe Bingham & Matthews of Hong Kong who are temporarily acting as our local representatives and through whom this application will be presented to you.

Yours faithfully,
HARRISONS, KING & IRWIN, LTD.

Director

Alternate Director to S. W. Harris

I certify that the above signatures C.C.King and V.R. Zimmerman are in the handwriting of Mr. C.C. King, a director, and of Mr V.R. Zimmerman, an alternate director of Harrisons King and

P.T.O.

Figure A.3: This figure provides A mover example: Harrisons, King & Irwin, Ld. was a tea company that focused on the China market. The photocopy on the upper panel was their certificate of incorporation in Shanghai, 1918. The letter on the lower panel was a request sent to the Hong Kong firm registry in 1946, asking for their registration in Hong Kong.

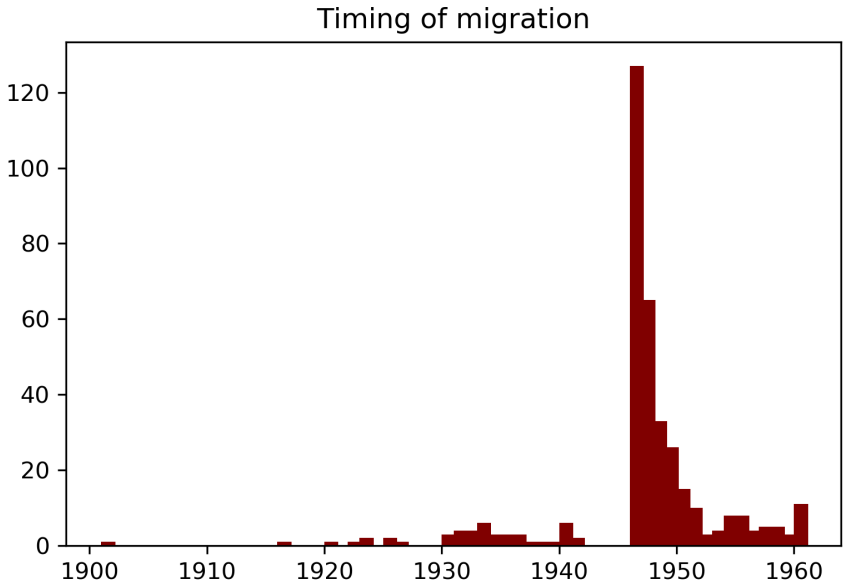
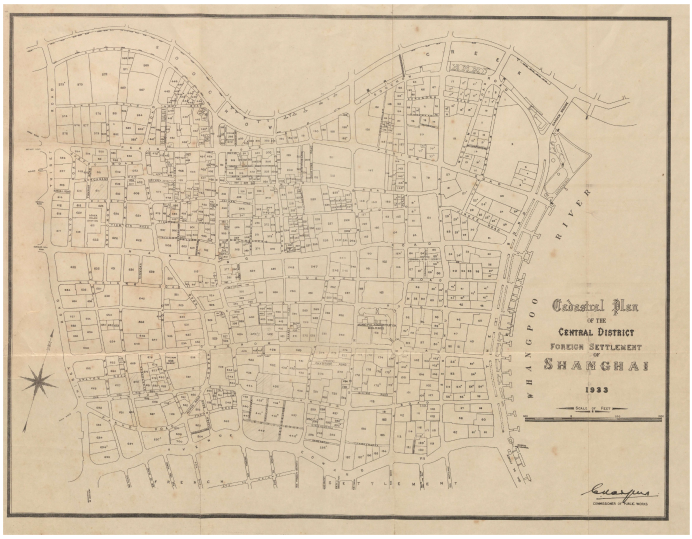
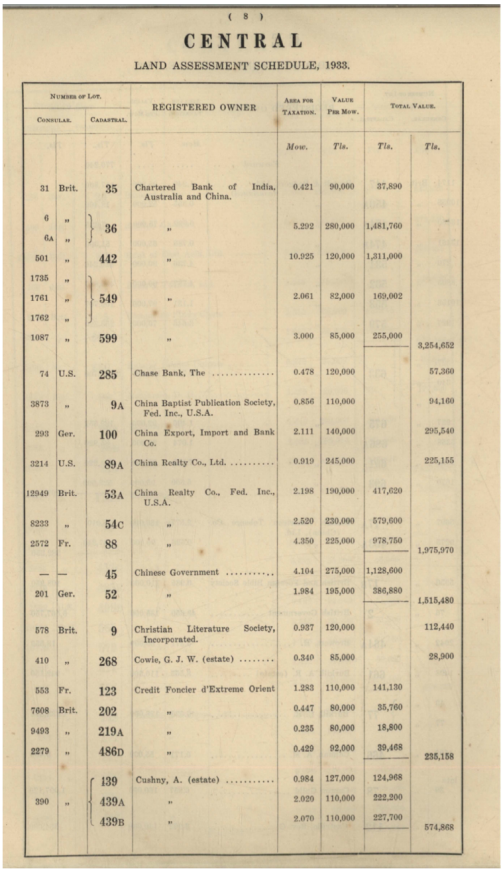


Figure A.4: This figure plots the number of firm emigrants from Shanghai to Hong Kong over time. The year of emigration is defined as the year the company registered with the Hong Kong government. Data comes from the digital archives of Hong Kong firm registry. Note that the registry was shut down during Japanese occupation during World War II (1941-1945), which is why there are no registrants during this period.



Panel A: Map of Central District, 1933



(8)

CENTRAL

LAND ASSESSMENT SCHEDULE, 1933.

Number of Lot. Consular.		Cadastral.	Registered Owner	Area for Taxation.	Value Per Mow.	Total Value.	
				Mow.	*Tls.*	*Tls.*	*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	„	10.925	120,000	1,311,000	
1735	„	549	„	2.061	82,000	169,002	
1761	„						
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	579,600	
2572	Fr.	88	„	4.350	225,000	978,750	1,975,970
—	—	45	Chinese Government	4.104	275,000	1,128,600	
201	Ger.	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	18,800	
2279	„	486D	„	0.429	92,000	39,468	235,158
390	„	139	Cushny, A. (estate)	0.984	127,000	124,968	
		439A	„	2.020	110,000	222,200	
		439B	„	2.070	110,000	227,700	574,868

Panel B: Land Assessment Schedule

Figure A.5: 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 0.39 hectares, and usually hosts a couple firms.

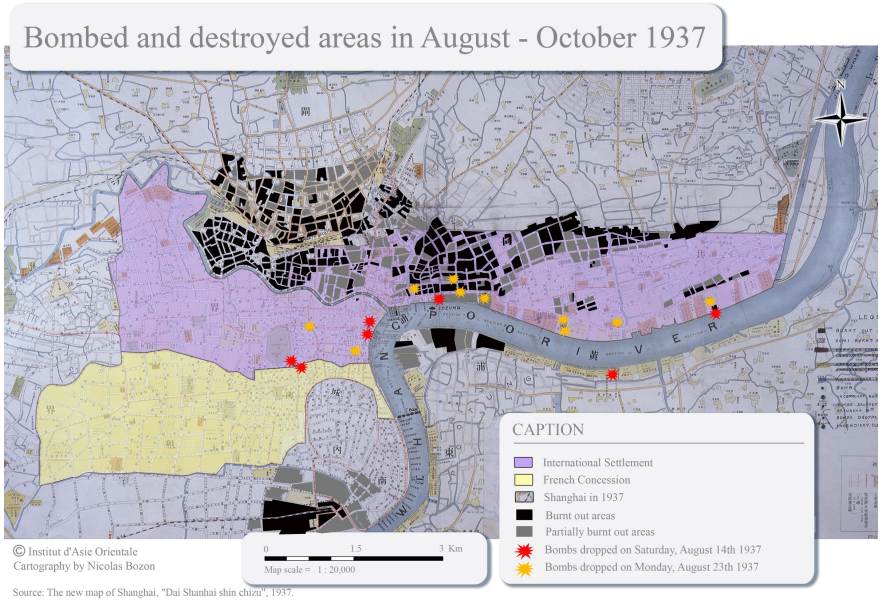
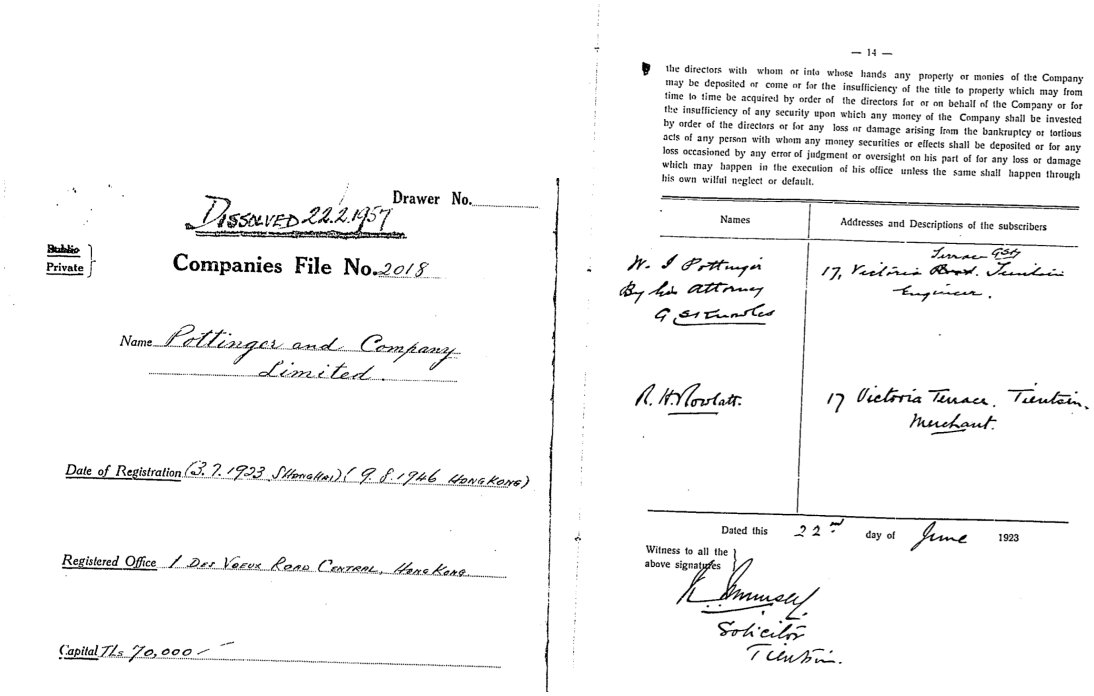


Figure A.6: This map plots the location bombed and destroyed areas in August 1937. Our firm sample includes all firms located within the two settlements: the International Concession (in purple), and the French Concession (in yellow). The settlements in Shanghai were safe harbors during the war despite the fierce Sino-Japanese war in the area, and these bombings where 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*



Drawer No.

DISSOLVED 22.2.1957

~~Public~~
Private

Companies File No. 2018

Name Pottinger and Company Limited

Date of Registration (3.7.1923 Shanghai) (9.8.1946 Hong Kong)

Registered Office 1 Des Voeux Road Central, Hong Kong

Capital Hs. 70,000/-

— 14 —

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 or on behalf 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.

Names	Addresses and Descriptions of the subscribers
W. J. Pottinger By his attorney G. Stewardes	17, Victoria Terrace Gdy Victoria Road. Tientsin Engineer.
R. H. Rowlatt.	17 Victoria Terrace. Tientsin. Merchant.

Dated this 22nd day of June 1923

Witness to all the above signatures

Solicitor Tientsin.

Figure A.7: An example of firms in Hong Kong inheriting their old charters from Shanghai.

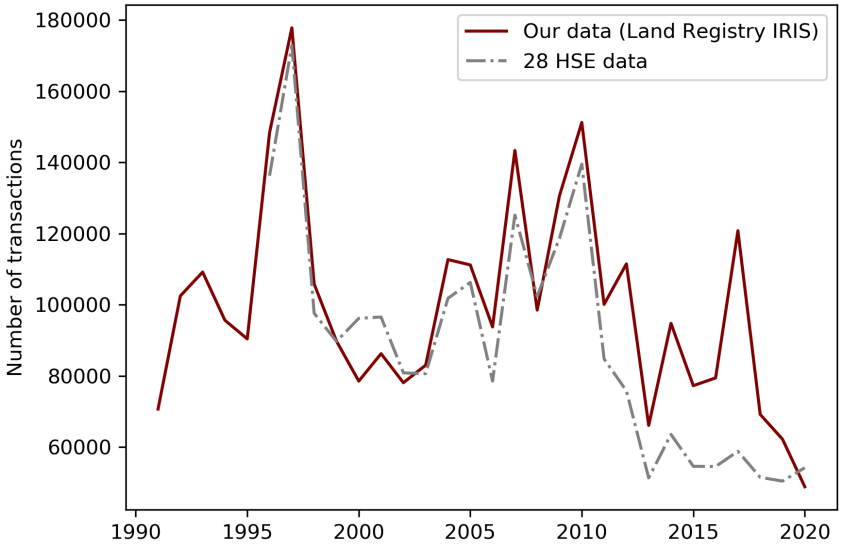
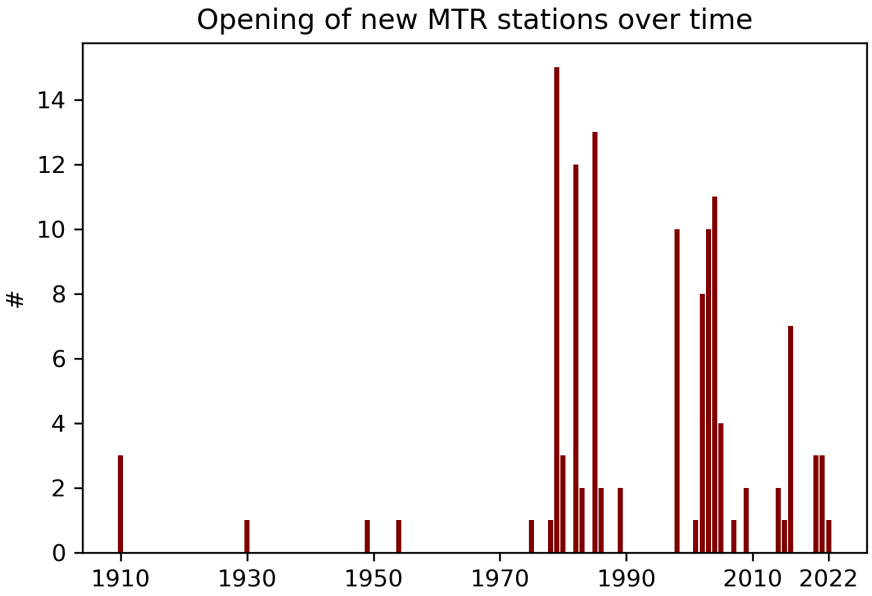
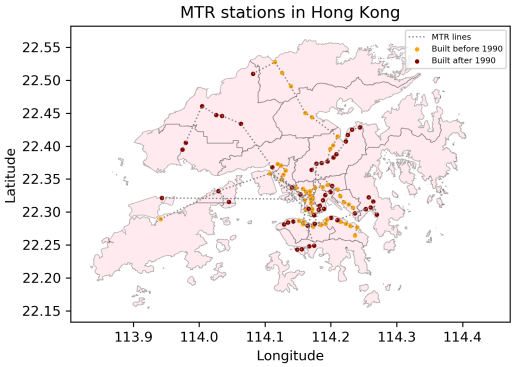


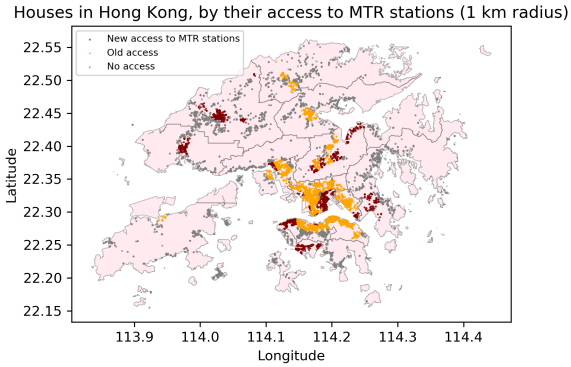
Figure A.8: In this figure we compare the total number of housing transactions in our baseline database (HK Land Registry IRIS) and 28HSE, a company database. We find strong evidence suggesting that our data is of reasonably good quality.



Panel A



Panel B



Panel C

Figure A.9: 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.

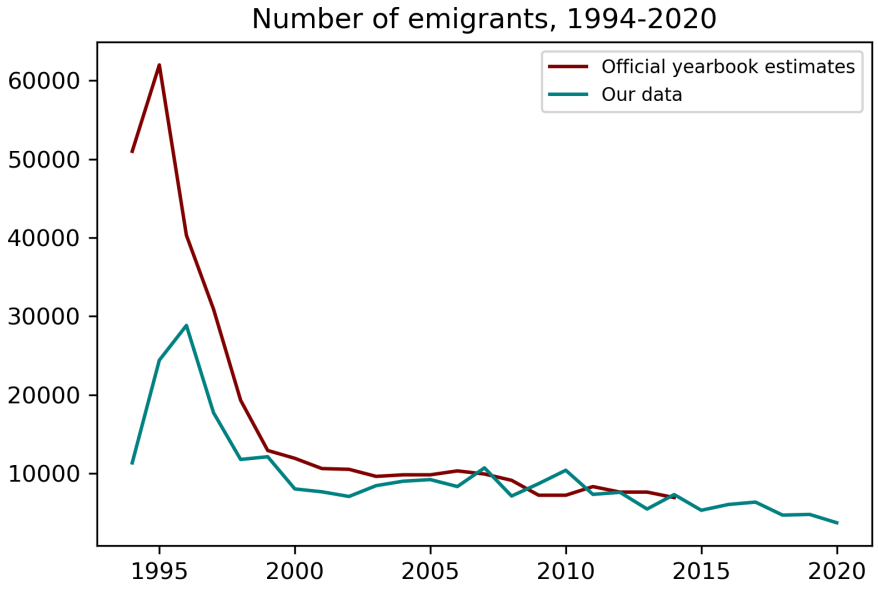


Figure A.10: This figure plots the number of emigrant households from Hong Kong between 1994 and 2020. We compare our estimates (in teal) with official estimates from the yearbooks during 1994-2014 (in maroon) and estimated numbers based on the applications to Police No Conviction Records during 2012-2023 (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.

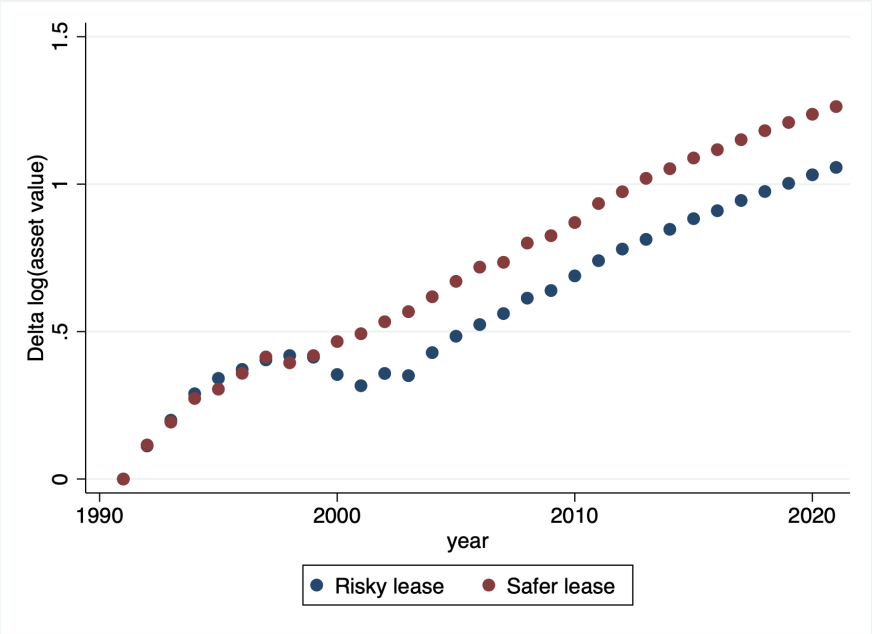


Figure A.11: This figure plots the differential price appreciation trajectories of units of which the land leases expiring before June 30, 2047 (guaranteed renewal by the current government, henceforth "no risk lease"), and those expiring right after July 1, 2047 and before 2065 (henceforth "risky lease"). 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: Summary statistics: Emigrants from Shanghai

			Emigration			
			Uni-variate		Multi-variate	
	Mean	Std.	coef.	s.e.	coef.	s.e.
Panel A: Ownership						
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
Panel B: Presence in China						
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
Panel C: Foreign presence						
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
Panel D: Industries						
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
Panel E: Land value						
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 A.2: 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.3: Land value appreciation and emigration: current US dollars

	Emigration		
	(1)	(2)	(3)
Δ land value (thousand current US dollars)	0.099***	0.079***	0.078*
	(0.032)	(0.028)	(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 taels 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.4: Balance test: bombing episode in Shanghai

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

Notes: Standard errors clustered at cadastral level are reported below the estimates. We include all variables from Table A.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.5: Cost of staying and emigration: robustness checks

	Emigration			
	(1)	(2)	(3)	(4)
Panel A: Radius of comparison group = 600m				
Bombed	0.0364**	0.0367**	0.0325**	0.0439**
	(0.0157)	(0.0161)	(0.0158)	(0.0204)
Panel B: All firms				
Bombed	0.0364**	0.0359**	0.0318**	0.0411**
	(0.0155)	(0.0158)	(0.0156)	(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: Standard errors clustered at cadastral level are reported below the point estimates. The specification follows the exact same specification as Table 2, but we extend our comparison group sample to a larger (or smaller) radius from the bombing centers.

Table A.6: Chater 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.7: 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**	54.23**	42.09*	44.33*	0.300	0.397	0.458	0.470
	(24.60)	(26.99)	(22.23)	(25.05)	(0.358)	(0.393)	(0.379)	(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 casual 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 2, 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.8: Summary statistics: Emigrants from Hong Kong

			Emigration			
			Uni-variate		Multi-variate	
	Mean	Std.	coef.	s.e.	coef.	s.e.
Panel A: Demographic characteristics						
% 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)
Panel B: Education and income						
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)
Panel C: Chinese vs. foreign language skills						
% 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)
Panel D: Political orientation						
% 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.9: Asset appreciation and migration: robustness

	Emigration after 2014		
	(1)	(2)	(3)
Panel A: Values in current USD			
Δ asset value till 2014	0.0222***	0.0323***	0.0300***
	(0.004)	(0.001)	(0.001)
Mean of DV	0.018	0.018	0.018
# of obs.	1,577,474	1,579,315	1,577,470
Panel C: Stayer subsample			
Δ log (asset value till 2014)		-0.0008	0.0298***
0.0101**			
	(0.001)	(0.005)	(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 block FE	No	Yes	Yes

Notes: Standard errors clustered at block level 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.10: MTR access, asset appreciation and emigration

	Δ asset gain until 2014			Emigration		
	(1)	(2)	(3)	(4)	(5)	(6)
MTR shock	0.1609***	0.3511***	0.3054***	0.0011**	0.0032***	0.0018***
	(0.008)	(0.005)	(0.005)	(0.0004)	(0.001)	(0.001)
# 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 block 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 4.

Table A.11: MTR access and asset appreciation, robustness

	Δ asset gain until 2014		
	(1)	(2)	(3)
Panel A: New MTR access $<$ 1 mile radius			
MTR shock	0.0666***	0.0684***	0.0414***
	(0.002)	(0.002)	(0.002)
Panel B: Δ distance to nearest MTR station (km)			
MTR shock	0.0691***	0.0771***	0.0533***
	(0.001)	(0.001)	(0.001)
Panel C: Substantial shortening of distance ($>$ 1 km)			
MTR shock	0.0336***	0.0275***	0.0171***
	(0.001)	(0.000)	(0.001)
# of obs.	961,947	961,947	507,831
Mean of DV	1.87	1.87	1.87
Block 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 Δ 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.12: Instrumented asset appreciation and emigration, robustness

	Emigration		
	(1)	(2)	(3)
Panel A: New MTR access $<$ 1 mile radius			
Δ asset gain until 2014 (instrumented)	0.0144***	0.0277***	0.0397***
	(0.001)	(0.001)	(0.002)
Panel B: Δ distance to nearest MTR station (km)			
Δ asset gain until 2014 (instrumented)	0.0691***	0.0771***	0.0533***
	(0.001)	(0.001)	(0.001)
Panel C: Substantial shortening of distance ($>$ 1 km)			
Δ asset gain until 2014 (instrumented)	0.0218***	0.0346***	0.0472***
	(0.002)	(0.003)	(0.006)
# 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: Standard errors clustered at block level 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 Δ 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.13: Balance check for MTR shocks

	MTR shock	
	(1)	(2)
% English writing ability	-0.000841	-0.000756
	(0.00137)	(0.00131)
% Mandarin writing ability	-0.000399	-0.000630
	(0.00122)	(0.00116)
College education	-0.148	-0.138
	(0.209)	(0.198)
% Male	-0.00104	-0.000207
	(0.00499)	(0.00479)
Median age	-0.00294	-0.00390
	(0.00325)	(0.00313)
Median income	-1.65e-07	-4.32e-07
	(3.03e-06)	(2.90e-06)
Average family size	0.0348	0.0364
	(0.0299)	(0.0290)
% Pro-democracy rate (2011)	0.0149	0.0194
	(0.0938)	(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.14: Deed expiration date, asset appreciation and emigration

	Δ asset gain until 2014			Emigration		
	(1)	(2)	(3)	(4)	(5)	(6)
Safer lease	0.4066***	0.4294***	0.4208***	0.0018	0.0104***	0.0084***
(renewed before June 30, 2047)	(0.015)	(0.006)	(0.006)	(0.002)	(0.001)	(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 Block FE	No	Yes	Yes	No	Yes	Yes

Notes: Standard errors clustered at block level 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 4.

Table A.15: Balance check for Bartik regressions

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

Notes: Standard errors clustered at voting district level 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.

Table A.16: Characteristics of fire-sale buyers

	Purchasing a unit from an emigrant			
Panel A: New homeowners vs. others				
New homeowners	0.028***	0.027***	0.023***	0.023***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Panel B: Hong Kong residents vs. outlanders				
Mainlanders	-0.025***	-0.012***	-0.005***	-0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
# of obs.	2,381,311	2,378,711	2,378,050	2,378,041
Mean of DV	0.132	0.132	0.132	0.132
Building FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes
Control for price	No	No	No	Yes

Notes: Robust standard errors are reported below the estimates. New homeowners are defined as anyone who did not participate in any transaction in Hong Kong before they made a purchase. Mainlanders' names are identified with an RNN-name-classifier ((github). New homeowners participated in 43% of all the transactions in Hong Kong over our sample period, and mainland buyers accounted for 5%.)

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-envelop 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.