Brain Drain, Brain Gain, and The Future of Hong Kong: Evidence from LinkedIn Profiles

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Credit: DALL-E3: Watercolor painting of a serene Hong Kong harbor scene. Emerging from the waters, a jade Chinese dragon carries professionals towards the city, representing incoming talent. Flying above the city, a crimson dragon soars into the sky, with professionals behind it heading towards the horizon, illustrating the brain drain. The contrasting movements of the dragons bring attention to the labor market shifts in Hong Kong.

In recent years, Hong Kong's government, business community, and media have become alarmed about the negative socioeconomic impact of a brain drain. Former Chief Executive Carrie Lam acknowledged the "unarguable" brain drain triggered by stringent coronavirus measures. Political unrest and new pathways to British citizenship for Hong Kong residents have exacerbated this exodus. This migration may indicate a loss of human capital, and also broader societal and policy issues that could undermine future growth in Hong Kong.

But first, some questions: Is the brain drain real or overstated? Are workers with the highest human capital leaving? Are individuals migrating from Hong Kong primarily relocating to regional competitors like Singapore? Is the migration occurring through multinationals? Has the brain drain been offset by talent in-flows? How are talent flows affecting Hong Kong's competitive edge?

In this article, we draw on publicly available individual profiles from the professional networking platform LinkedIn and Government data to assess shifts in Hong Kong's population structure and economic prospects. We find that Hong Kong is experiencing brain drain, but is also seeing considerable in-flow of talent. The arriving population is older and better-educated, but less globally connected and less ethnically diverse than the departing population. A large fraction are highly educated populations from Mainland China, but there is also talent in-flow from other regions, including the United States. Overall, the narrative of a brain drain belies the more nuanced picture that Hong Kong remains a powerful magnet comparable to other major metropolitan cities.

Brain Drain and Brain Gain Since 2019, According to LinkedIn Data

To assess talent flows, we focus on LinkedIn users with identifiable locations and positions both pre- and post-pandemic. Our sample consists of anyone who has ever been in Hong Kong pre- or post-pandemic (see appendix).

Surprisingly, we find that the arriving population as measured using LinkedIn profiles exceeded the departing population. Overall, 255,911 LinkedIn users remained in Hong Kong throughout the pandemic; 31,835 entered; and 26,836 departed. In other words, there has been both a brain *drain* and *gain* in the past few years.

Recent emigration of LinkedIn users from Hong Kong is dominated by the young. Figure 1 (left panel) plots the net migration rate by age group into Hong Kong in the LinkedIn data, while the right panel plots the net migration rate for those whose occupation/seniority are modeled by Revelio as being potentially high salary positions *relative* to one's estimated age.[1] Both overall and in the subset of relatively talented individuals, we find that among more experienced and senior people, there has been a net inflow of talent into the city.

The arriving LinkedIn users are better educated but less internationalized. As shown in Table 1, the alma mater of the average arriving resident with LinkedIn profiles has a higher Times Higher Education (THE) ranking than that of the average departing resident, and the difference appears statistically significant. Compositionally, however, the talent pool has become less

1 Within 5 year age buckets (25-29, 30-34, etc) we use Revelio's estimated model and pick individuals in the top 3 deciles based on estimated salary.

diverse and more insular. The probability that they are non-Asian has halved. Holding fixed diversity, the number of connections – or connections-per-age, to account for the overall size of one's network which grows as one gets older – is lower among the joiners than the leavers. These differences are statistically significant.

Table 2 shows where the joiners on LinkedIn come from and where leavers go. There is significant net migration from the United States, Mainland China, and India, in addition to net migration to Singapore, Canada, and Australia. Strikingly, the net arrival from the United States appears to be not only positive but also the largest. It is likely that the actual arrivals from Mainland China are much larger, since the Chinese are less likely to be LinkedIn users.[2]

There is also a loss of highly qualified workers with PhDs, a top 50 bachelor's, MBA or master's, to places such as Singapore and the UK. However, this loss was in total terms offset by the gains from Mainland China and the United States. Overall, there was a net increase in the total number of highly qualified individuals.

Population Size and Immigration, According to Government Data

Since the LinkedIn users are a selected sample, we supplement the above analysis with Government data. We first confirm that there has been substantial population in-flows. According to the latest numbers, there has been a post-pandemic surge in population. Even though Hong Kong's population dropped from its peak of 7.52 million at 2019 year-end to 7.35 million at 2022 mid-year, it has since almost fully recovered. As of 2023 mid-year, the population now stands at 7.50 million, as shown in Figure 2.

The data also strongly suggest that the in-flows from Mainland China are larger than implied by LinkedIn data. From January to September 2023, the Hong Kong Government granted roughly 100,000 working visas, significantly more than the previous year's 38,559. One contributor to this surge in immigration is the Top Talent Pass Scheme (TTPS), which was implemented in response to the brain drain and offers fast-track work permits to graduates from top universities and high-earning professionals. Of the 30,183 people who had received visas through TTPS as of July 31, 2023, 94.6 percent came from mainland China.

There has also been a substantial expansion of the Quality Migrants Admission Scheme (QMAS). According to the Immigration Department, 7,022 people obtained visas under QMAS in the first half of 2023, of which 98.3 per cent came from mainland China. In 2022, only 2,845 people were granted the QMAS visas.

2 See the appendix for a discussion. Interestingly, conditioning on surnames of HK or other Chinese origin does not alter the picture that the largest source of inflows is from the United States.

Have Multinational Firms Left?

Contrary to popular belief, there has not been a massive exodus of multinational firms from Hong Kong. The headcount of multinational companies in Hong Kong, as revealed by LinkedIn data, has not diminished. In Figure 3, we focus on firms that employed people in at least three countries pre-pandemic. Surprisingly, we find that the average multinational increased their LinkedIn headcount in Hong Kong.

Table 3 shows that within-firm transitions are facilitating migration to Hong Kong, since leavers have predominantly changed firms, while many arrivals are due to transitions within firms.

The importance of non-local firms in Hong Kong's labor market has not diminished, either, according to government data. In 2018, roughly 16.9 percent of employed persons in Hong Kong worked for non-local companies. In 2022, it is 17.3 percent.

However, there is a shift in the composition of multinational firms, as shown in Figure 4. Between 2018 and 2022, the numbers of US and Japanese regional headquarters in Hong Kong have fallen, by about 17 percent and 13 percent, respectively. This decline is offset by the rise of Mainland regional headquarters, which has grown by about 27 percent during the same period.

Does Hong Kong Remain Internationalized and Skilled?

Hong Kong's talent pool remains very strong and internationally competitive, especially relative to other Chinese cities. In Table 4, we measure city-level human capital using education attainment and average THE school rank of LinkedIn users in that city. We then use these measures to rank a set of 16 selected cities and regions. We find that Hong Kong is competitive with top cities around the world and has a significantly stronger talent pool than Mainland Chinese cities such as Beijing, Shanghai, and Shenzhen.

There has not been a reduction in the number of foreigners in Hong Kong, either. According to Population Census data, Hong Kong's foreign population grew from 485,000 to 593,000 between 2011 and 2021. Excluding foreign domestic workers, the foreign population in Hong Kong grew from 185,000 in 2011 to 254,000 in 2021.

By contrast, Mainland Chinese cities witnessed a large long-term reduction of foreigners over the past decade. The combined number of foreign nationals and Hong Kong, Macao and Taiwan residents living in Beijing declined from 107,000 in 2010 to 63,000 in 2020, a whopping 42 percent. The analogous number in Shanghai fell from 209,000 to 164,000, or about 18 percent.

Hong Kong therefore remains, by a very large margin, the most internationalized Chinese city. Since there were only 846,000 foreign nationals in Mainland China in 2020, the total population

of foreign nationals in Hong Kong alone is equal to roughly 70 percent of the total foreign population in the whole of Mainland China. By comparison, Hong Kong's total population is only 0.5 percent of the total population of Mainland China.

What Drives Observed Talent Flows?

There are three likely drivers of the observed migration patterns. The first contributor to talent in-flow is reduced political resistance in Hong Kong to economic integration with the Mainland. Since the events of 2019-2020, Hong Kong has become much more open to skilled talent from the Mainland. The Hong Kong government has announced ambitious plans to develop housing in the New Territories to increase connectivity with firms in Shenzhen.[3] Hong Kong will soon double the quota of university spots for non-local students.[4]

The second driver is slower economic growth in Mainland China. Due to geopolitical realignment and macroeconomic cyclical forces, capital flows to China from abroad have significantly diminished. Mainland China's middle class increasingly desires to deploy their capital and talent in international markets instead, where rates and wages of return are higher.

The final driver is the increasingly testy geopolitical and race relations ethnic Chinese face abroad, particularly in the United States. This is likely to have encouraged some populations to migrate from overseas to Hong Kong.

Another driver may be Hong Kong's relatively strict COVID-19 policy. The effect is unclear. Stricter policies increasing safety may draw in those more concerned about health risk or disruption from public service closures, or may have driven away those who wished to avoid restrictions. Hong Kong over this period was less strict than the mainland, but stricter than many Western countries. Without rigorous additional analysis, it is difficult to ascertain the effect.

How will Talent In-Flows affect Hong Kong's Economy?

The in-flow of talent to Hong Kong is likely to benefit the local economy. There are signs that the in-flow will create new demand for local businesses. Already, there is rising enrollment of Mainland students in local schools. This influx has contributed to higher rents in university-adjacent neighborhoods such as Kennedy Town. Local primary and secondary schools have also seen significant uptick in enrollment by the arriving Mainland children. There is also a

3 https://www.policyaddress.gov.hk/2021/eng/pdf/publications/Northern/Northern-Metropolis-Development-Strategy-Report.pdf

4 https://www.universityworldnews.com/post.php?story=20231025122118185

significant uptick in demand for banking and insurance products in Hong Kong, driven in part by higher interest rates.

The brain gain may also increase business dynamism and innovation in Hong Kong. For example, leading Chinese food delivery platform Meituan has laid out ambitious plans to expand in Hong Kong.[5] Historically it had not been profitable for Chinese firms to develop their presence in Hong Kong due to the market's limited size. However, market saturation and weak growth in the Mainland are leading Chinese companies to expand their investments and operations in Hong Kong, as a stepping stone towards international expansion.

Policy Recommendations

In conclusion, the data reveal that Hong Kong is not only experiencing talent out-flow, but also significant and offsetting talent in-flow. Unlike the low-skilled Mainland immigrants of the past two decades, the arriving population consists primarily of skilled workers with global ambitions. These immigrants will help power economic growth in Hong Kong and enhance the city's role as a gateway for Mainland Chinese households and companies seeking to participate in global markets. Given their importance to the future economic growth, Hong Kong should redouble its efforts to retain and attract talent now that the pandemic has eased.

First, Hong Kong can utilize and integrate a wider range of administrative and company datasets to better monitor the health of the city's labor force, improve policy design, and counter factually questionable narratives. As we've shown, the available data is inconsistent with the widespread and pessimistic narrative that Hong Kong is experiencing a long-term decline in talent. While the data does suggest that Hong Kong's population is increasingly Asian, they also show that Hong Kong continues to draw a wide range of people internationally, and the overall talent pool has likely become more skilled in recent years.

Second, Hong Kong can consider labor policies to retain younger residents. In the data, we find that young people are the group most likely to emigrate. This is because they are less established and have the longest career trajectory to consider. To reduce these departures, the Government may implement policies targeted at retaining these groups over a longer horizon, such as subsidies for continuing education or overseas scholarships that require recipients to return for work.

5 https://pandaily.com/meituan-delivery-takes-four-months-to-expand-from-kowloon-to-hong-kong-island/

Figure 1: Distribution of Net Joining/Leaving by Age Group, LinkedIn

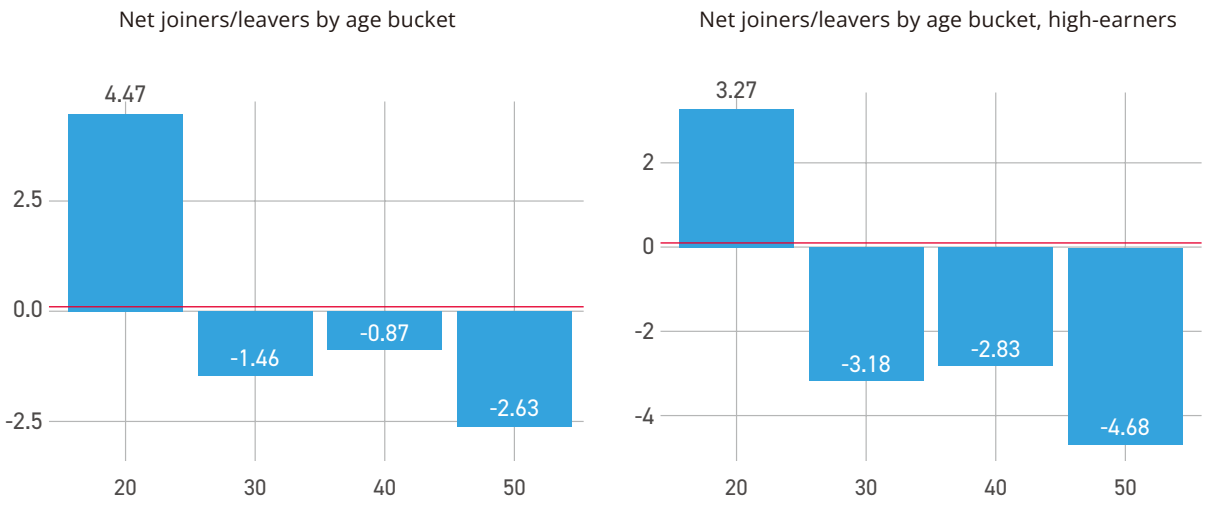

Figure 2: Population in Hong Kong, 2017-2022

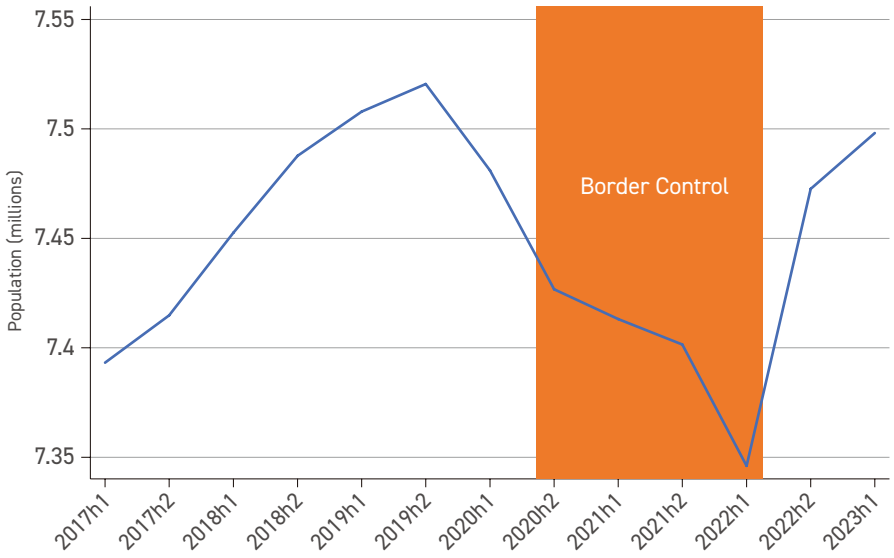

Figure 3: Distribution of Headcount Growth by Multinational, LinkedIn

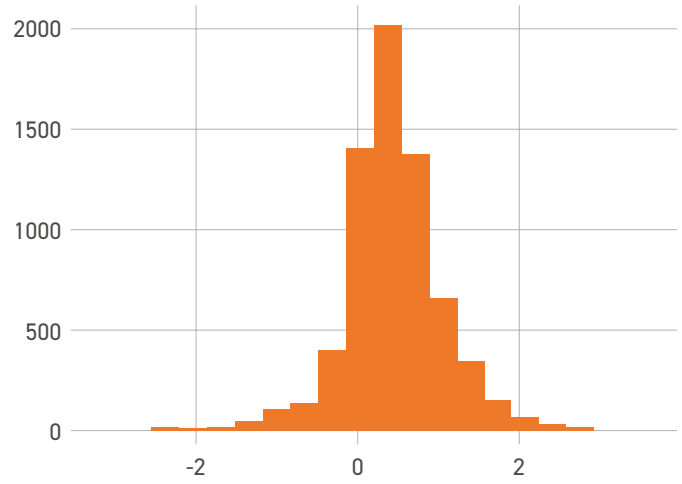

Figure 4: Number of Regional Headquarters in Hong Kong, 2018-2022

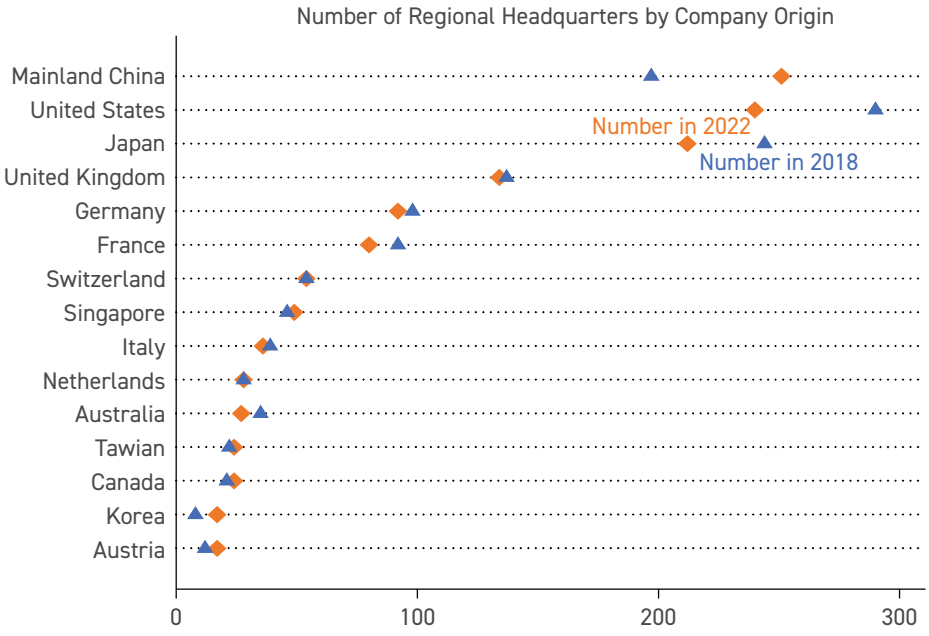

Table 1: Joiners and Leavers – Average characteristics, LinkedIn

	Joiner 來港者	Leaver 離港者	t-test t檢驗
Average Times Higher Education Rank (lower →more elite) 泰晤士高等教育世界大學排名平均數(較低→較高)			
Master's 碩士	163.48	191.84	-4.29
Bachelor's 學士	211.54	263.24	-16.11
MBAs 工商管理碩士	229.35	284.26	-2.86
PhDs 哲學博士	137.79	172.17	-1.97
Other statistics 其他統計資料			
Age 年齡	33.59	32.28	17.61
Estimated Salary[6] 估計薪金[6]	59545	53624	31.01
Asian 亞裔	0.79	0.58	
Connections (LinkedIn) 聯繫人數目(LinkedIn用戶)	200	339.04	-15.83
Connections/Age 聯繫人數目/年齡	6.55	10.63	-11.45

6 Estimated salary is based on Revelio's model, which considers various factors one of which is the location of the person. Although location is only one small determinant (and the occupation, industry, firm, education could be dominant factors), one must take into account this may be a slightly confounded measure if LinkedIn members are coming from areas with a higher cost-of-living or average salary than Hong Kong.

Table 2: Talent Flows by Region, LinkedIn

Region 地域	Leave HK 離港	Join HK 來港	Join – Leave 流入–外流	Turnover 更替
United States 美國	5654 (242)	10186 (302)	4532 (60)	15840 (544)
Mainland China 中國內地	3421 (141)	5032 (210)	1611 (69)	8453 (351)
United Kingdom 英國	3010 (151)	3126 (129)	116 (-22)	6136 (280)
Singapore 新加坡	2173 (138)	1497 (115)	-676 (-23)	3670 (253)
Australia 澳洲	1725 (46)	1321 (25)	-404 (-21)	3046 (71)
Canada 加拿大	1297 (81)	684 (48)	-613 (-33)	1981 (129)
India 印度	516 (5)	1275 (6)	759 (1)	1791 (11)
France 法國	984 (12)	725 (4)	-259 (-8)	1709 (16)
Taiwan 台灣	449 (15)	564 (26)	115 (11)	1013 (41)
Japan 日本	548 (18)	462 (20)	-86 (2)	1010 (38)

Table 3: Transitions, Within vs Across Firm, LinkedIn

Transition 調職	Move company 跳槽	Counts 人數	Proportion 比例
Leave HK 離港	Different company 跳槽	21690	6.83
Leave HK 離港	Same company 調職	5206	1.64
Join HK 來港	Different company 跳槽	21136	6.65
Join HK 來港	Same company 調職	11775	3.71
Stayed in HK 留港	Different company 跳槽	72659	22.86
Stayed in HK 留港	Same company 調職	185317	58.32

Table 4: Human Capital Rankings based on Linked Profiles, Selected major cities

Bachelor, PhD, MBA rates refer to the rates of attaining those degrees as reported by LinkedIn users. Bachelor rank, Master rank, and PhD rank refer to the THE rank of the overall institution (not conditioned on degree) of the institution.

Location 地域	LinkedIn users LinkedIn 用戶	Bachelor rate 學士比率	MBA rate 工商管理碩士比率	PhD rate 哲學博士比率	Founder rate 創辦人比率	Bachelor Rank 學士排名	Master Rank 碩士排名	PhD Rank 哲學博士排名
San Francisco 三藩市	1052372	2	2	1	2	2	3	3
Los Angeles 洛杉磯	1396690	10	13	8	1	4	1	2
New York 紐約	4531237	6	6	5	7	6	5	7
Hong Kong 香港	636742	9	7	10	12	1	2	1
Sydney 悉尼	1116363	3	10	12	5	3	7	4
Chicago 芝加哥	1307694	5	3	6	11	7	4	8
Melbourne 墨爾本	1052652	1	12	7	6	5	8	6
Switzerland 瑞士	778234	12	4	3	4	9	6	9
Toronto 多倫多	1372302	4	5	11	9	10	10	10
Singapore 新加坡	1289905	7	8	14	15	8	9	5
London 倫敦	3503532	8	14	13	3	11	13	11
Tokyo 東京	307889	13	11	4	10	15	15	15
Shanghai 上海	712040	14	9	9	14	13	12	13
Beijing 北京	508173	15	15	2	13	14	14	14
Dubai 杜拜	2209764	11	1	15	16	16	16	16
Shenzhen 深圳	375386	16	16	16	8	12	11	12

Appendix: Data and Sample Construction

The LinkedIn profiles that we study are captured by Revelio Labs, a company that specializes in collecting and aggregating publicly available workforce data to create a comprehensive database of employment records. Previous papers that have used the Revelio dataset include (Baker et al., 2022; Cai et al., 2022; Charoenwong et al., 2022; Liang et al., 2022). For our main sample, we construct a person-quarter panel and extract all users who have ever been in Hong Kong either through their profile or point-in-time position location (e.g. user A works at company B, listed as being in Hong Kong). Oftentimes, users do not associate locations with positions but have one associated with their profile. To identify the location of users, we presume the location position is more accurate, if available, than the profile location.

These data provide highly detailed information about the demographic characteristics of migrants, but a few biases of the data are worth noting. First, the data is not updated in real-time. While our snapshot of the data was from October 2023, there are delays as to when people update their profiles. The typical delay is unknown, but Revelio provided an informal estimate of up to several months. Second, the data is scraped at intervals and may not always capture all profiles on LinkedIn. Third, users may update their profiles with false information or information that is updated with a delay. Revelio Labs has machine learning models to try to remove spam profiles but as with all machine learning models these may not be fully accurate. Fourth, Chinese users are less likely to use LinkedIn due to censorship rules and the emergence of local competitors. This makes benchmark comparisons against Chinese cities somewhat fraught. Fifth, workers in high-skilled occupations are more likely to use LinkedIn, so our sample disproportionately captures skilled workers. We supplement these data with various Government data sources.

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