Does Rule of Law Matter For Firms? Evidence From Shifting Political Control in Hong Kong

Jonathan S. Hartley*

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Abstract

The relationship between economic growth and institutions like rule of law is well studied among only a handful of natural experiments. This paper analyzes Hong Kong's shift away from a British legal system toward political control by the Communist Party of China as a natural experiment in the rule of law. Using several data sets with event study designs, this paper presents evidence that key events in the political transition, chiefly the National Security Law, caused significant uncertainty about the rule of law, emigration of residents and foreign firms, and declines in the valuations of Hong Kong firms. Stock prices of firms in the real estate, air travel, and financial/banking sectors are most sensitive to key announcements related to the National Security Law. This evidence suggests that rule of law is important to internationally integrated firms and that a predictable British common law legal system is more favorable for shareholders and economic growth than autocratic legal rule.

Keywords: Firms, Rule of Law, Institutions, Migration, Growth.

JEL Codes: E00, E02, F22, F43, P48

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1 Introduction

Institutions have become a leading explanation for observed differences in economic growth across nations over time by shaping the incentives of economic agents ((North (1991), Grief (1993), Acemoglu and Robinson (2013)). However, there is a limited number of natural experiments to study changes institutions and legal origins, particularly those recent enough to have high quality data with a high degree of frequency.

This paper analyzes Hong Kong's 2020 National Security Law imposed by the Communist Party of China (CPC) as a natural experiment in creating uncertainty about Hong Kong's rule of law and its potential effect on firms and economic growth.

Acemoglu, Johnson and Robinson (2005) study South Korea versus North Korea after the Korean armistice in the 1950s. Abadie, Diamond, and Hainmueller (2015) study the 1990 reunification of West Germany. Almost all such natural experiments occurred before the widespread adoption of personal computers and more advanced data tracking (beyond national accounts statistics) became available.

The Hong Kong 2020 National Security Law also presents a unique natural experiment specifically regarding the effects of changing rule of law in a financial hub and a nation that engages in a significant amount of international trade. This regime change is a stark contrast from other historical repressive gains in control such as the USSR takeover of the Baltic states before World War 2 or the Japanese rule of Korea in the 20th century (while not trading outposts or financial centers at the time, these 20th century instances are examples of states imposing the adoption of the takeover state's currency).

The development of financial hubs and any causal relationship with institutions is relatively understudied although there exist some natural experiments. Acemoglu, Johnson, and Robinson (2001) analyzing colonies find that nations with more established property rights are more likely to have developed financial markets.

There have been several recent natural experiments in the domain of trade. Amidst the potential for "de-globalization" in part born by recent trends in ascendant populist politicians, there have been more nascent natural experiments in trade policy ranging from tariffs to Brexit. Bloom et al (2019) analyzes the impact of Brexit and associated trade uncertainty finding negative effects on firms and growth. Amiti, Redding and Weinstein (2020) find that recent U.S tariffs enacted during the Trump administration have been passed on entirely to U.S. importers and consumers.

However, these studies examine overt changes in trade policy rather than the more nascent institutional question of whether the state of the rule of law in a nation effects its level of trade.

There is a related question and well developed literature on what the consequences of legal and colonial origins are for economic growth (Glaeser and Shleifer (2002), Acemoglu, Simonson and Robinson (2001)). Until 1997, Hong Kong was a British territory after a 99 year lease signed between Qing China and the United Kingdom on June 9, 1898. As a result, Hong Kong adopted British law which continued after its handover in 1997 as part of the 1984 Sino-British Joint Declaration.

What happens when a country quickly transitions from British law to Mainland China rule? The National Security Law provides a natural experiment that can help to answer such a question. Razin and Sadka (2023) give an overview of economic consequences of a regime change when moving from a democratic to an autocratic regime.

As the long-term consequences for the rule of law of the 2020 National Security Law (NSL) were not immediately known but have some degree of uncertainty, this expands on a growing literature that economic policy uncertainty matters for growth (Baker, Bloom and Davis (2016), Luk, Cheng, Ng and Wong (2020)).

Few other papers have studied the effects of the NSL. He, Hu, Wang and Yao (2020) analyze the revaluation Hong Kong real estate in anticipation of regime change amid the timeline of the 1984 Sino-British Joint Declaration, 1997 transfer of power from the British to China's "one country, two systems" model, and the 2047 end where Hong Kong officially becomes part of Mainland China (according to the original 1984 Sino-British Joint Declaration).

This paper also contributes to the literature on politically connected firms. Which firms win or lose from Hong Kong ceding political control to China is an unclear question given evidence that politically connected firms often are enriched by political connections (Faccio (2006), Acemoglu et al (2016)). Wang, Zhena and Tu (2023) analyze

firms who gain corporate board members who are Communist Party of China (CPC) members, finding that CPC involvement can significantly increase enterprise value but only for state-owned enterprises.

This paper shows, using several administrative datasets and surveys, how the National Security Law triggered significant uncertainty about the rule of law in Hong Kong, emigration of nearly 10% of Hong Kong's population, significant emigration of foreign firms, and declines in the valuations of Hong Kong firms and residential real estate.

Using firm level stock price data and a high frequency event study design using key announcement dates and news surrounding the extradition bill, this paper shows that the National Security Law is associated with declines in the valuations of specific Hong Kong headquartered firms, particularly in air travel, finance and real estate.

The rest of the paper is structured as follows. Section 2 describes the institutional background. Section 3 documents the data and empirical strategy. Section 4 describes the results. Section 5 concludes.

2 Institutional Background

Rule of law can be defined as the restriction of the arbitrary exercise of power by subordinating it to well-defined and established laws. The shift in political control from British legal rule to autocratic control from the Communist Party of China in Beijing can be viewed as a shift in the rule of law.

Democratizations and the development of rule of law often go hand in hand which makes rule of law alone difficult to study in natural experiments. Acemoglu, Naidu, Restrepo and Robinson (2019) find that democratizations increase GDP per capita by about 20 percent in the long run with regressions using cross-country data and democracy measures such as those provided by Polity IV. Miller (2023) using a similar approach (but also incorporating asset prices) argues that democratization increases public spending as a fraction of GDP, the labor share of income, and increases risk premia (reduces asset prices) through a redistribution mechanism.

Building on recent interest in political economy and economic growth in China (Cantoni, Yang, Yuchtman, and Zhang (2019), Nakamura, Steinsson and Liu (2016), Martinez (2022), Fernández-Villaverde, Ohanian and Yao (2023)), the National Security Law, presents new quasi-experimental evidence on the effects of change in the rule of law.

The history of Hong Kong returning to Mainland China dates back to the Sino-British Joint Declaration of Dec 19 1984 where China agreed to maintain British structures of government and economy under a principle of "one country, two systems" for a period of 50 years starting in 1997 ending 2047. Indeed, on July 1, 1997, the handover from the United Kingdom to the People's Republic of China (PRC) took place.

While for some period of time, with China's economic growth in the late 20th century, many were led to believe well into the 21st century that China was on the path to developing Western institutions including rule of law, universal human rights, and even democratic principles.

However, Xi Jinping becoming the General Secretary of the Communist Party of China (CPC) on November 15 2012 represents a break in this trend, with a return to primacy of the Communist Party of China and political control above economic growth and the development of such institutions. In 2023, Xi Jinping broke the tradition of only serving two terms as China's President by beginning a third term.

Xi Jinping coming to power in China also marked human rights abuses towards the Ugyhur population of Xinjiang, as well as territorial aggression toward Tibet and Taiwan.

In addition, Xi Jinping also demonstrated substantial aggression toward Hong Kong and its existing institutions and legal framework.

In 2014, the CPC moved forward with a new policy of pre-screening of the candidates for electing the Chief Executive of Hong Kong, which triggered Hong Kong Democracy protests from September to December 2014.

In 2019, the the CPC introduced the Extradition Bill (later renamed the "National Security Law") which allows for mutual legal assistance that can be made between Hong Kong and any place outside Hong Kong, allowing anyone inside Hong Kong to be subject to prosecution from and extradition to mainland China.

This triggered some of the largest protests in Hong Kong's history which resulted in the Hong Kong government holding off on implementing the law. On September 4, 2019, Hong Kong Chief Executive Carrie Lam announced the

withdrawal of the Extradition Bill which coincided with the Hang Seng Index rising by 4%.

After COVID-19 spread to Hong Kong in January 2020 and the subsequent harsh lockdowns (often referred to as "zero COVID" policy), the Hong Kong Kong executive passed the Natural Security Law in June 2020. In December, 2022, the Hong Kong government ended its period of "zero COVID".

With the National Security Law passed, the newly established National Security Department of the Hong Kong Police Force along with the Hong Kong chief executive along with effectively gained the ability to supersede Hong Kong courts.

This has since led to a significant number of arrests and prosecutions under the National Security Law. As of 2023, approximately 259 individuals have been arrested and 155 have been charged under the National Security Law, many of whom remain in jail as of 2023. While the number of arrests per month under the National Security Law initially peaked in 2020 and 2021, arrests have continued at a steady pace through 2023 (Figure 3b). Often such arrests involve accusations of "inciting sedition", "secession", "collusion", and "terrorist activities" of individuals who are caught publicly promoting free and open elections in Hong Kong or those critical of the Beijing-based CPC.

Other arbitrary legal changes to the prior system have been made with the passage of the National Security Law such as denying defendants a right to their own preferred attorney as in the case of Hong Kong pro-democracy newspaper Apple Daily founder Jimmy Lai (in late 2022, Hong Kong Justice Minister Paul Lam and the Hong Kong Department of Justice made several appeals to the court system to disallow Lai from using a UK lawyer, Tim Owen).

The international community has also responded in an attempt to evacuate individuals and provide safe harbor to Hong Kong citizens, particularly the UK given Hong Kong's former British colony status. On January 31, 2021, the UK passed new laws allowing British Nationals Overseas (BN(O)s) and their dependent family members to apply for renewable five-year residence visas.

Since then, there have been increasingly repressive moves to disenfranchise Hong Kong residents in the political process. The 2019 Hong Kong elections (concurrent anti-extradition protests) drove record turnout of 71% of all registered voters produced major losses for pro-Beijing parties. In March 2021, Hong Kong Chief Executive (a position elected by Beijing dominated electors) imposed further electoral changes that only pro-Beijing "patriots" (individuals not associated with the pro-democracy camp) can be elected to HK legislative council and on December 10, 2023 held its first restricted Hong Kong District Council elections limited to pro-Beijing parties.

During the time since, there have been several news reports of firms leaving Hong Kong due to the National Security Law and related policy uncertainty surrounding arbitrary political control from the Communist Party of China.[1].

With Hong Kong being returned to China by 2047, there are questions about the future of Hong Kong's institutions such as its currency. While the Chinese yuan has not been adopted in Hong Kong as the country's official currency (in lieu of the Hong Kong dollar), beginning on July 18, 2023 Chinese tourists were allowed to use the digital (e-CNY) yuan to pay for goods and services across select stores in Hong Kong. The move follows the launch of a digital yuan shopping festival organized by the Bank of China (Hong Kong) Limited (BOCHK) to promote the international usage of the CBDC. According to the Basic Law of Hong Kong, the Hong Kong dollar is still set to remain the legal tender in the region until at least 2047 unless this is changed amid potential further integration of Hong Kong into mainland China.

3 Data and Empirical Strategy

3.1 Data

3.1.1 Uncertainty, Rule of Law and Political Economy Measures

There are several measures of uncertainty and rule of law which help to demonstrate that the passage of the 2020 Natural Security Law had a negative impact on the perceived rule of law in Hong Kong.

[1]Yu, Elaine. 2023. "The Corporate Retreat From Hong Kong Is Accelerating", *The Wall Street Journal*, October 24, 2023

In June 2020, AmCham conducted a survey of 180 U.S. companies: 53.5% were “very concerned” while 30.0% were “moderately concerned” about the new national security legislation.

Text-based economic policy uncertainty estimates from newspaper articles also paint another picture. Updated economic policy uncertainty data produced by Luk, Cheng, Ng and Wong (2020) and obtained from policyuncertainty.com shows that economic policy uncertainty rose during the 2019 Hong Kong extradition bill protests and subsequently fell after the National Security Law was passed in 2020 (Figure 1). Economic policy uncertainty in Hong Kong briefly rose again in late 2021 and fell following the end of Hong Kong’s "zero Covid" lockdown policies in December 2022.

Evidence from Google Trends (Figure 2) paints another picture that economic policy uncertainty with respect to the national security law may have persisted years after the National Security Law was passed in June 2020.

At the height of the 2019 Extradition Bill protests in 2019, Google searches for "Extradition Bill" peaked and then slow fell significantly to nearly zero searches after the HK Chief Executive Carrie Lam said the HK government was no longer considering such legislation.

However, after rebranding the legislation as the National Security Law and passing it in June 2020, Google searches for "National Security Law" peaked and then plateaued at a persistently meaningful level (at about 15% of the June 2020 peak) where it has remained through late 2023. This suggests that there is persistent interest in the legal implications of the National Security Law including the extent of its suppression toward individuals and businesses critical of the Communist Party of China and in favor of promoting democracy and the pre-National Security Law regime of rule of law.

There is further evidence that the 2020 National Security Law reduced the perceived rule of law in Hong Kong. The Hong Kong Public Opinion Research Institute has conducted a survey among Hong Kong residents of the status of the rule of law since 1997 (Figure 3). The perceived rule of law declined significantly immediately after the 2019 Hong Kong extradition bill protests. After COVID-19 reached Hong Kong at the beginning of 2020, the rule of law measure was fairly changed, but then fell much further after the National Security Law was passed in June 2020. Since then, however, the perception of the rule of law has slowly improved but has not reached the peak prior to the 2019 Extradition Bill protests.

Figures 4a and 4b shows data from the 2023 Hong Kong survey conducted by World Bank Enterprise Surveys, the first time the World Bank conducted the surveys in Hong Kong. According to their survey of over 600 firms, political instability is rated as the top business environment constraint (Figure 4a). Political instability being rated as the top business environment constraint is also true amongst all firm sizes (Figure 4b).

3.1.2 Migration Data

Various migration measures were obtained to track Hong Kong migration at various frequencies.

The Hong Kong Census and Statistics Department provides semi-annual Hong Kong measures. Since the 2020 NSL was passed, approximately 200,000 Hong Kong residents have emigrated.

One can also look at higher frequency migration data from the Hong Kong Immigration Department Passenger Traffic Statistics which provide information on both gross and net migration.

Daily gross migration (departures and arrivals) among all individuals entering Hong Kong including Hong Kong residents fell to only a few thousand each day from the beginning of the pandemic toward the end of 2022 when the "zero-COVID" policy was lifted. Since then, daily departures and arrivals among Hong Kong residents has risen to between 150,000 and 500,000 individuals each day (Figure 6).

When analyzing net migration using daily data, there has been a cumulative exit of approximately 700,000 Hong Kong residents since the NSL was passed in June 2020 (Figure 7).

In addition, data on British National Overseas (BNO) migration was obtained from the British Home Office. British National (Overseas) visas to the UK started in January 2021 in response to the NSL (spouses with mainland People’s Republic of China citizenship were allowed to emigrate as well under the plan). BNO visa applications for Hong Kong nationals peaked at 18,000 the second quarter of 2021. Similarly, BNO visas granted to PRC citizens peaked in the second quarter at about 11,000. Since then, BNO visa applications have been on a decline (Figure 8).

Data on the number of foreign lawyers working in Hong Kong is obtained from The Law Society of Hong Kong (Figure 10). In 2019, the number of of foreign lawyers working in Hong Kong was approximately 1700 (after increases across several years prior). Since the National Security Law was passed in 2020, the number has steadily fallen to just above 1400 as of of 2022.

Similarly, data on employment in Hong Kong's Financing and Insurance Sectors (which often draws on foreign nationals) has declined significantly from approximately 280,000 just before the National Security Law was passed in June 2020 to just above 260,000 as of the end of 2022 (Figure 11).

3.1.3 Real Estate Prices

Data on residential real estate prices was obtained from FRED. Residential real estate prices have declined by more than 10% since the 2020 National Security Law was passed (Figure 12). While residential property prices increased in many advanced economies over several years in the aftermath of the COVID-19 pandemic in part due to innovations surrounding remote work and work from home (WFH) that increased the value of residential property relative to corporate property, residential property prices in Hong Kong declined after 2020, perhaps due to the passage of the 2020 National Security Law.

3.1.4 Data on Capital Flows

Mainland China imposes significant capital flow restrictions which in the recent decade began to shift.

Data on capital flows was obtained from several sources. Across countries, data was obtained from the IMF International Financial Statistics and Balance of Payments data including cross-country data on Foreign Direct Investment (FDI). FDI flows reflect longer term investments (more than 10% equity owners). Often FDI can be very sensitive and respond to policy events like changes in tax incentives.

Foreign direct investment as a percentage of GDP for Hong Kong (Figure 13a) fell both in 2014 (the year of the 2014 Umbrella movement democracy protests) and 2019-2020 (the years the Extradition Bill protests occurred and when the National Security Law was passed).

In November 2014, the Shanghai-Hong Kong Stock Connect, a cross-boundary investment channel that connects the Shanghai Stock Exchange and the Hong Kong Stock Exchange, was launched, allowing investors in each market to trade shares on the other market using local brokers and clearing houses. Similarly, the Shenzhen-Hong Kong Stock Connect was established in December 2016 which establishes a cross-boundary investment channel that connects the Shenzhen Stock Exchange and the Hong Kong Stock Exchange.

Data on Stock Connect buying and selling volumes in both northbound (from Hong Kong into mainland China) and southbound (from mainland China into Hong Kong) directions was obtained from CEIC which scrapes data from the Hong Kong Exchanges and Clearing Market Website (HKEX).

Other data on Hong Kong capital flows was obtained from the Hong Kong Census and Statistics Department which shows increasingly negative capital flows since the National Security Law was passed (Figure 13b).

3.1.5 Data on Trade

Trade data was obtained from the UN Comtrade database. The Hong Kong balance of trade has turned to increasingly larger deficits since 2020 (Figure 14) a sharp reversal from the increasingly smaller deficits seen in the late 2010s. This trend has largely been driven by declining exports. Overall trade (both imports and exports) has declined in gross terms since 2020 although similar trends in trade have been experienced by other Asian nations.

3.1.6 Data on Firms and Stock Markets

Data on the number of foreign registered firms in aggregate was obtained from the Hong Kong Census and Statistics Department (Figure 17a). Looking at the change in the number of foreign registered firms (Figure 17b), there has been an overall significant decline, particularly led by American, German, Japanese and French firms leaving.

Data on the returns of Hong Kong stock returns and various indices was obtained from Bloomberg. Further data on the financial characteristic data of Chinese listed firms was obtained from the China Stock Market & Accounting Research (CSMAR) Database.

The rate of increase in the total number of publicly Hong Kong listed companies in Hong Kong has declined from its rate prior to 2020 when the National Security Law was passed (Figure 9).

3.1.7 Wage Growth and Employment Data

Data on Hong Kong wages was obtained from the Hong Kong Census and Statistics Department. Year-over-year real wages peaked during COVID-19 much like for real wage growth in the US amid lower wage retail service workers, who were most impacted by COVID-19 lockdowns, temporarily left the work force, causing measures of real wage growth to go up due to measuring a greater fraction of high wage earners (Figure 18). Since the beginning of the COVID-19 pandemic real wage growth has gone negative for many quarters.

Real GDP per capita measures for both Hong Kong and control countries were obtained from the World Bank (Figure 21). GDP per capita levels for Hong Kong have plateaued roughly since 2018. Despite falling in 2020, GDP per capita in Hong Kong has not rebounded much, failing to grow above the pre-pandemic level unlike other Asian tigers such as Singapore.

3.2 Empirical Strategy

This section discusses the empirical strategy and methodology of both the firm-level event studies and synthetic control approach for various other outcomes.

3.2.1 Firm-Level Event Studies Around Key National Security Law Event Dates

To study the effect of key announcement dates on individual publicly traded Hong Kong firms in the cross-section, we use the standard event study approach of Fama, Fisher, Jensen and Roll (1969). Over the pre-event period (which we measure to be 1000 trading days before the event), we estimate a regression of an individual company's Hong Kong stock returns on the developed stock market factors from the Ken French website, which originate from Fama and French (1993):

$$r_{i,t} = \alpha + \beta_m r_{m,t} + \epsilon_t$$

With these estimated coefficients from the pre-period, we then calculate the calculate the abnormal return (AR) over the post-event period:

$$AR_{i,t} = r_{i,t} - \hat{r_{i,t}}$$

$$AR_{i,t} = r_{i,t} - \hat{\alpha} - \hat{\beta_m} r_{m,t}$$

The cumulative abnormal return can then be calculated by compounding the abnormal return over time.

Key dates that we use to measure the effects of the extradition bill's withdrawal include September 4, 2019 where Hong Kong Chief Executive Carrie Lam announced the withdrawal of the 2019 extradition bill after significant public backlash and popular protest. The announcement coincided with a near 4% rally in the Hang Seng Index (a near 3 standard deviation daily move for the index) while on the same day the SSE Composite Index (a Mainland China stock index) gained only 0.93%, the S&P 500 Total Return Index (a U.S. stock index) gained only 1.09% and the MSCI World Index (a global stock index) gained only 1.08%.

3.2.2 Country Level Difference-In-Differences With Synthetic Controls Methods

This paper estimates the impact of the National Security Law on various outcomes in Hong Kong following the Synthetic Control Method (SCM) approach of Abadie and Gardeazabal (2003), Abadie, Diamond, and Hainmueller (2010), and Abadie, Diamond, and Hainmueller (2015), the latter who similarly analyzes the effects of the 1990 German reunification of West Germany.

We use methods described in Doudchenko and Imbens (2016) and Ben-Michael, Feller and Rothstein (2018), generalizing the classic SCM to allow non-convex weights and a permanent additive difference between the treated and control units showing that such a generalization nests existing approaches as special cases such as difference-in-differences and matching methods.

The following example can illustrate the advantage of using more general models (with possibly non-convex weights and an intercept) over traditional synthetic control methods.

Suppose we have data $y_{i,t}$ for three countries $i \in \{A, B, C\}$. If country A's data is in the convex hull of B and C, for example $y_{A,t} = \frac{1}{2}y_{B,t} + \frac{1}{2}y_{C,t}$, then country B's data cannot be in the convex hull of A and C, $y_{B,t} = 2y_{A,t} - y_{C,t}$. A model such as the elastic nets model of Zou and Hastie (2005) does not assume a treated location is in the convex hull of the donors, but rather lets the data speak for itself.

Let $Y_{z,t}$ denote the outcome variable for the treated location z in year t and $Y_{j,t}$ the outcome variable for untreated location j. Let $Y_{z,pre}$ and $Y_{j,pre}$ be vectors of the outcome variables in the pre-treatment years. Let $Y_{C,pre}$ be a matrix of covariates whose columns consist of $Y_{j,pre}$ (outcome variables for all control location in the pre-treatment years) as well as other control variables (an intercept, linear, and quadratic time trends). The Doudchenko and Imbens (2016) estimator minimizes the distance between the treated outcome and an affine combination of the untreated outcome for the pre-treatment period, regularized (note that the intercept μ is not regularized) by the elastic-nets model of Zou and Hastie (2005):

$$(\hat{\mu}^{en}, \hat{\omega}^{en}) = \underset{\mu,\omega}{} Y_{z,pre} - \mu - Y_{C,pre} \cdot \omega_2^2 + \lambda \cdot (\alpha\omega_1 + (1-\alpha)\omega_2)$$

The parameter $\lambda \geq 0$ establishes the level of regularization while $\alpha \in [0, 1]$ determines the type. The case where $\alpha = 1$ corresponds to a LASSO penalty function, which has a preference for a small number of nonzero weights. The case where $\alpha = 0$ corresponds to a Ridge penalty function, which has a preference for smaller weights. **?** propose a cross-validation procedure to tune the regularization parameters λ and α that minimize the average mean squared prediction error for all untreated units.

In general, elastic-net cross-validation techniques tune the hyperparameters λ and α in ways that favor parsimonious and sparse models. These methods split the pre-treatment data into training and testing samples, and provide validation by maximizing the fit on unseen test data not used for training. Synthetic Control Method (SCM) techniques are often motivated by the idea that there are common unobserved factors which can explain the treated and untreated outcomes. Regularized and cross-validated techniques provide a data-driven approach to recover the optimal control group, based on out-of-sample fit.

These estimates give the counterfactual outcome for the treated location z if it did not receive the treatment as a function of the control locations:

$$\hat{Y}_{z,t}(0) = \hat{\mu}^{en} + Y_{C,t}\hat{\omega}^{en},$$

where $Y_{C,t}$ is a row vector consisting of outcomes for the control locations and potentially other controls (linear and quadratic time trends etc) in year t. The identifying assumption is that the relationship between the treated and control outcome variables, given by $\hat{\mu}^{en}$ and $\hat{\omega}^{en}$, would have remained the same in absence of the treatment.

The estimated treatment effect for location z is the gap (i.e., difference) between the observed and counterfactual outcome:

$$\hat{\eta}_{z,t} = Y_{z,t} - \hat{Y}_{z,t}(0).$$

This paper estimates 95% confidence intervals (for the ATT) using the Jackknife+ method of Barber et al (2021) and Ben-Michael, Feller and Rothstein (2018).

The idea behind this approach is that the absolute residual during pre-treatment periods can be used to estimate the unobserved residual post-treatment. Barber et al (2021) explain a naive approach is to use in-sample prediction errors $R_t^{Naive} = Y_{z,t} - \hat{Y}_{z,t}$ for $t \in \{1, \ldots, T_0\}$ where T_0 is the last pre-treatment period. R_t^{Naive} is likely a bad estimator for $R_{T_0+1} = Y_{z,T_0+1} - \hat{Y}_{z,T_0+1}$ to the extent that in-sample errors tend to be smaller than out-of-sample errors.

Barber et al (2021) propose using leave-one-out (LOO) pre-treatment residuals instead. For example, fit the model on all pre-treatment data except observation t, and use this model to predict the outcome for the omitted observation $\hat{Y}_{z,t}^{-t}$. Then compute LOO residuals during the pre-treatment period $R_t^{LOO} = Y_{z,t} - \hat{Y}_{z,t}^{-t}$ for $t \in \{1, \ldots, T_0\}$. In addition to using LOO residuals (as in the Jackknife), the Jackknife+ method also uses LOO predictions for $Y_{z,T_0+1}(0)$, denoted $\hat{Y}_{z,T_0+1}^{-t}(0)$, to construct prediction intervals that account for potential regression algorithm instability.[2] This gives us T_0 estimates of the upper/lower bounds of the prediction interval $\left\{\hat{Y}_{z,T_0+1}^{-t}(0) \pm R_t^{LOO}\right\}_{t=1}^{T_0}$. The Jackknife+ prediction interval, for $Y_{z,T_0+1}(0)$, at a given target level $1-\alpha$, is given by:

$$\hat{C}_{T_0,\alpha}^{\text{jackknife+}}\left(Y_{z,T_0+1}(0)\right) = \left[\hat{q}_{T_0,\alpha}^{-}\left\{\hat{Y}_{z,T_0+1}^{-t}(0) - R_t^{LOO}\right\}, \hat{q}_{T_0,\alpha}^{+}\left\{\hat{Y}_{z,T_0+1}^{-t}(0) + R_t^{LOO}\right\}\right]$$

where $\hat{q}_{T_0,\alpha}^{-}\{x\}$ is the α empirical quantile of the vector x, and $\hat{q}_{T_0,\alpha}^{+}$ is the $1-\alpha$ empirical quantile. $\hat{C}_{T_0,\alpha}^{\text{jackknife+}}$ can guarantee finite sample predictive coverage under no assumptions other than exchangeability of the training and test data.

Following Abadie and Gardeazabal (2003), the SCM can be used to study the impact of multiple sequential treatments. The only caveat is that in these cases $\hat{\eta}_{z,t}$ should be interpreted as the cumulative effect of all treatments, in location z, up to time t.

This paper calculates the counterfactual synthetic Hong Kong outcome using Doudchenko and Imbens (2016) estimator which minimizes the distance between the treated outcome and an affine combination of the untreated outcome for the pre-treatment period, regularized by the elastic-net (en)penalty (Zou and Hastie, 2005):

The parameter ≥ 0 determines the amount of regularization, and $\alpha \in (0, 1)$ determines the type. The case $\alpha = 1$ corresponds to a LASSO penalty function, which captures a preference for parsimony via a small number of nonzero weights. The case $\alpha = 0$ corresponds to a Ridge penalty function, which captures a preference for smaller weights.

4 Results

4.1 Macro Country Level Synthetic Control Difference-In-Difference Results

Figure 19 shows the event study results of Hong Kong stock market returns vs. counterfactual Hong Kong returns using the passage of the 2020 National Security Law as the beginning of the event period. Over the period from 2020 to 2023, the cumulative abnormal return is -65.0 percent (with a standard error of 19.3 percent, implying a statistic of -2.29 which is statistically significant at the 5% level).

Similarly, Figure 20 shows the event study results of Hong Kong stock market returns vs. counterfactual Hong Kong returns using the 2012 ascend of Xi Jinping to Communist Party of China General Secretary as the beginning of the event period.

Over the period from 2020 to 2023, the cumulative abnormal return is -228.7 percent (with a standard error of 36.1 percent, implying a t-statistic of -6.34 which is statistically significant at the 1% level).

[2] Assuming stability, $\hat{Y}_{z,T_0+1}^{-t}(0) \approx \hat{Y}_{z,T_0+1}(0)$.

All this evidence taken together suggests that the ascension of Xi Jinping to power along with the 2020 Hong Kong National Security Law has had significantly negative effects on Hong Kong equity valuations.

Figure 22 shows the difference-in-difference synthetic control method results following the passage of the 2020 National Security Law for Hong Kong GDP per capita growth compared to synthetic Hong Kong GDP per capita growth. Synthetic counterfactual Hong Kong GDP per capita reaches approximately $60,000 USD by 2022, while actual Hong Kong GDP per capita remains below $50,000 USD, suggesting that the NSL has had significantly negative effects on economic growth relative to counterfactual growth. More simply, the continued significant post-pandemic rises in GDP per capita of other so called "Asian Tiger" economies like Singapore and Taiwan, which share similar attributes of acting as Asian hubs for trade and finance, is further evidence that the National Security Law has held back economic growth in Hong Kong, perhaps through channel such as less foreign direct investment (FDI) and less individuals contributing ideas and innovation amid emigration from the country and emigration on the part of foreign firms (a mechanism). Such an endogenous economic growth mechanism (of Romer (1990) and Aghion and Howitt (1992)) would give further credence to the the idea that institutions shape incentives and the ability to innovate.

4.2 Firm-Level Event Study Results

The central key date that we use to measure the effects of the extradition bill's withdrawal include September 4, 2019 when Hong Kong Chief Executive Carrie Lam announced the withdrawal of the 2019 extradition bill after significant public backlash and popular protest. As many analysts still expected the Hong Kong government to potentially reverse course on the extradition bill in the future, estimates from an event study analyzing abnormal returns of company stocks on September 4, 2019 can be viewed as a lower bound on the effects of the extradition bill measures.

The announcement coincided with a near 4% rally in the Hang Seng Index (a near 3 standard deviation daily move for the index) while on the same day the SSE Composite Index (a Mainland China stock index) gained only 0.93%, the S&P 500 Total Return Index (a U.S. stock index) gained only 1.09% and the MSCI World Index (a global stock index) gained only 1.08%.

We present firm-level results from the extradition bill withdrawal event study in Figure 23. We display results for the top 20 firms ranked by market capitalization prior to the event, organized by industry.

The "Total Return" column displays the raw total return of each firm's common stock price on the event date. The adjacent t-statistic subtracts this event date return from the average daily return on the stock in the prior 1000 trading days divided by the standard deviation of the daily returns of the prior 1000 trading days.

The "Abnormal Return" column displays the abnormal return of each firm's stock price on the event date as described in section 3.2.1. The adjacent t-statistic subtracts this event date return from the average abnormal return on the stock in the prior 1000 trading days divided by the standard deviation of the abnormal returns of the prior 1000 trading days.

Total returns on the event date were highest for real estate firms such as Sung Hung Kai Properties and New World Development which each experienced returns on the magnitude of 10%. Cathay Pacific (airliner) experienced an approximate 7% gain. Financial companies on average experienced a 4.5% total return gain on the event date.

Abnormal returns on the event date were similarly highest for real estate firms, airlines and banks/financials. Firms in the power and utility, hospital/gaming, and multinational/other industry categories experienced lower but still on average positive abnormal returns. This sectoral evidence suggests that rule of law is perhaps more important to firms from more internationally integrated industries and that a predictable British common law legal system is more favorable for shareholders and economic growth than autocratic legal rule.

One mechanism is expectations around competition in a unified Hong Kong-China regime. Perhaps investors are concerned about the expropriation of Hong Kong firm real estate holdings or government favor toward other real estate firms with greater China state ownership. Would firms with a greater share of state ownership such as Air China get preference from the state over Hong Kong-based competitors like Cathay Pacific?

One other mechanism for significant swings in the stock prices of real estate firms may be due to expectations surrounding the value underlying real estate holdings which may be affected due to the macroeconomic effects of extradition bill. Indeed, Figure 12 shows that after the National Security Law was ultimately passed in 2020, Hong Kong real residential property prices declined significantly.

5 Conclusion

This paper analyzes Hong Kong's 2020 National Security Law as introduced and imposed by the Communist Party of China as a natural experiment in diminishing the rule of law in a trade-financial hub to examine its potential effect on firms in addition to migration, capital flows, trade, and overall economic growth. Using several data sets with event study and synthetic control method designs, this paper presents evidence that the National Security Law caused significant uncertainty in the rule of law, emigration of residents and foreign firms, and declines in the valuations of Hong Kong firms and residential real estate as well as a decline in real GDP per capita.

In the cross section of firms, using a high frequency event study analyzing the stock market response to key National Security Law related announcements, stock prices were most particularly sensitive in the real estate, air travel, and financial/banking sectors while less sensitive in the power and utility, hospital/gaming, and multinational/other industry categories.

Building on the past work of North (1991), Grief (1993), Acemoglu and Robinson (2013) on the role of institutions in economic growth as well as Glaeser and Shleifer (2002), Acemoglu, Simonson and Robinson (2001) on the effects of different legal origins on economic growth, this paper provides further evidence that rule of law is important to sustaining economic growth and that the English common law legal system is more favorable to economic growth than autocratic rule.

There are several further questions around how firms in Hong Kong will be shaped by Communist Party of China political control going forward. An analysis by Nikkei Asia has found that as of 2023, more than two-thirds of the mainland-listed companies whose shares can be traded by international investors in Hong Kong (1,029 of 1,526 companies) have articles of association that formalize the role of in-house Communist Party cells. Most have been rewritten during the Xi era.

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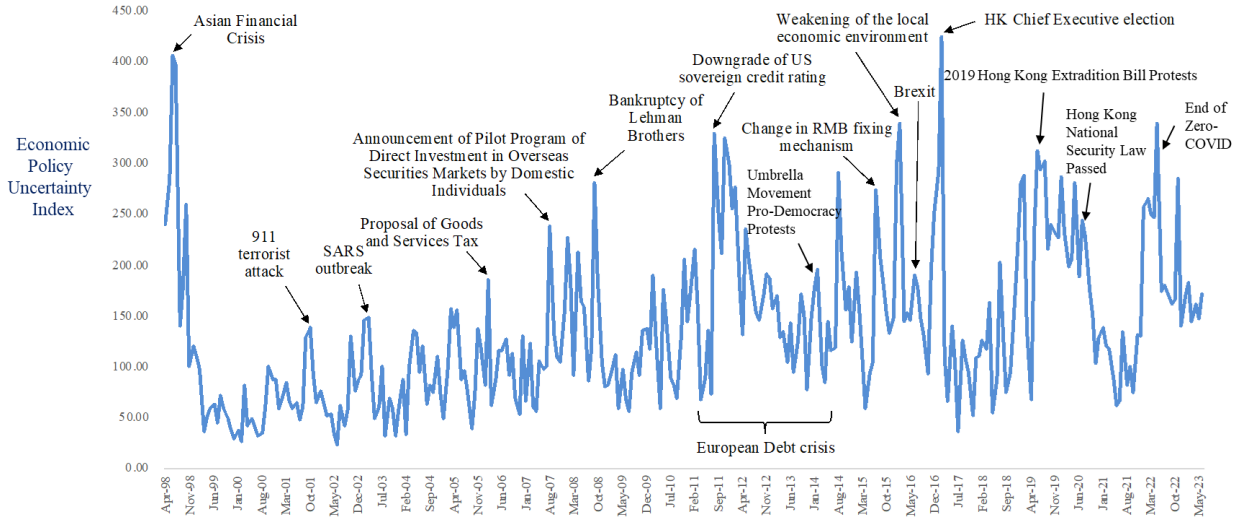
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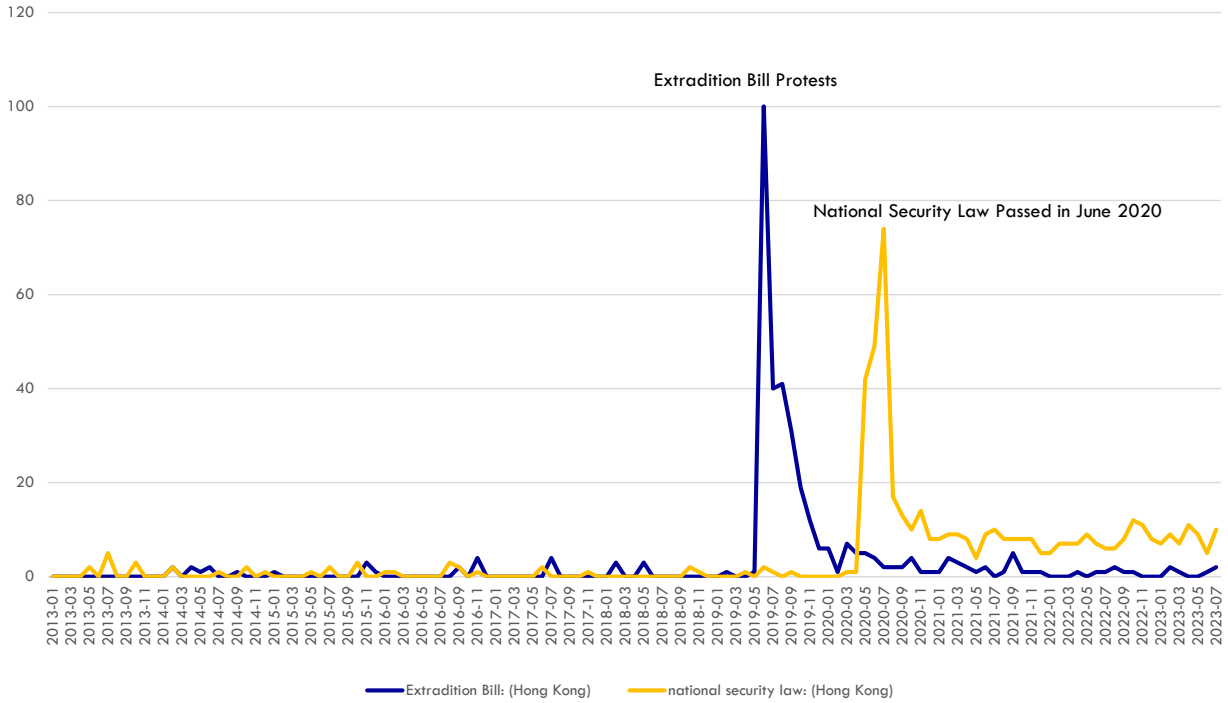
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Figure 1. Economic Policy Uncertainty Index For Hong Kong



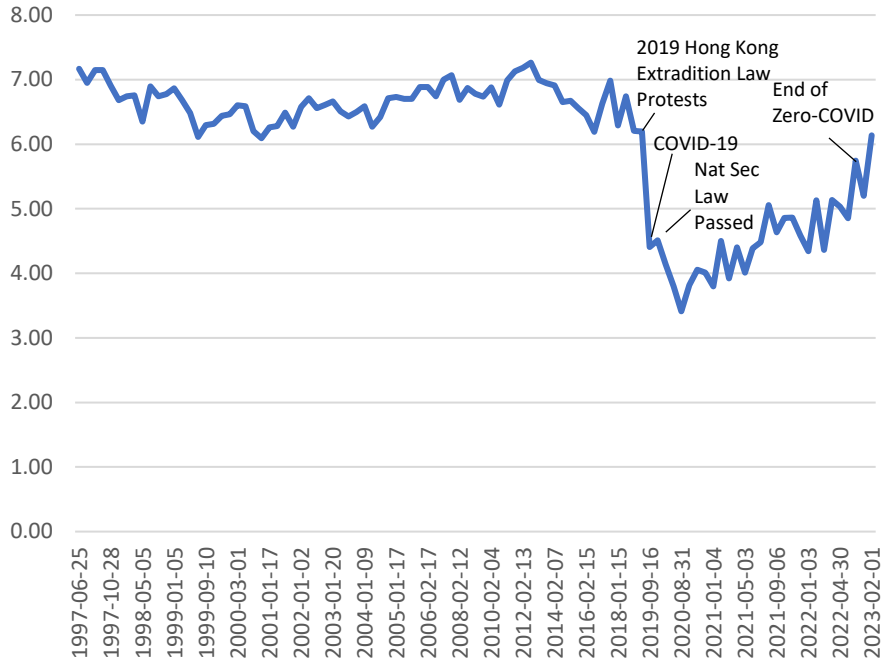
Notes: Data on the Economic Policy Uncertainty Index For Hong Kong is obtained from PolicyUncertainty.com, which was created by Luk, Cheng, Ng and Wong (2020) and originated by the economic policy uncertainty index created by Baker, Bloom and Davis (2016).

Figure 2. Google Search Volume For "Extradition Bill" and "National Security Law" in Hong Kong



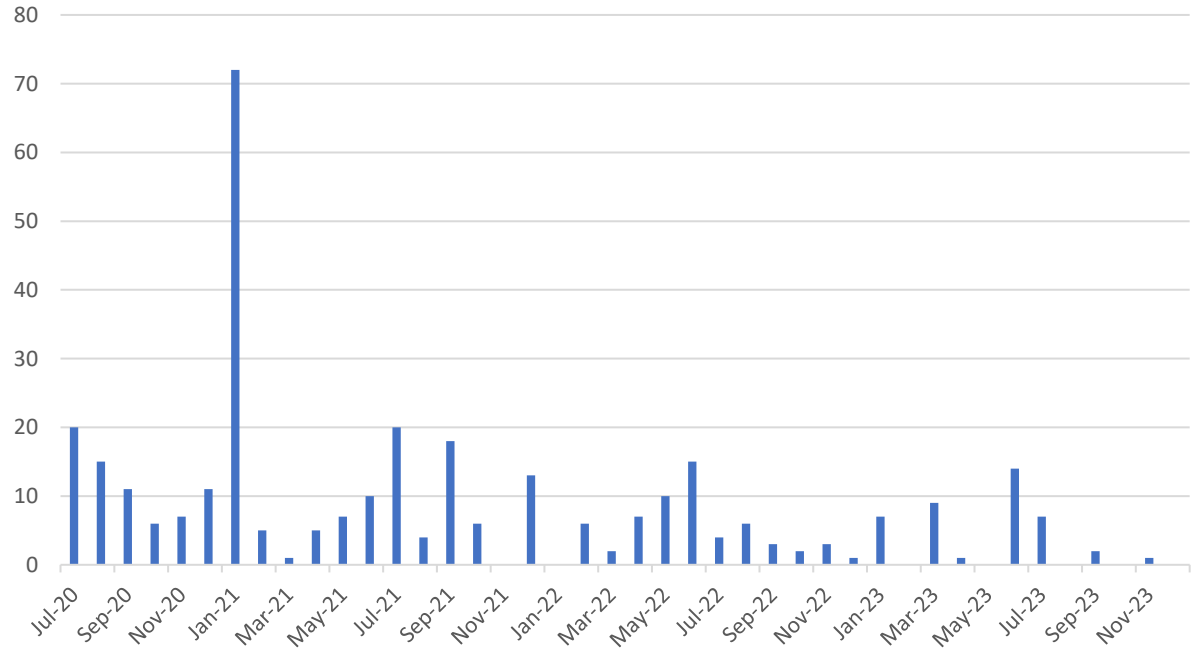
Notes: Google Search Volume For "Extradition Bill" and "National Security Law" in Hong Kong were obtained from Google Trends. Searches for "Extradition Bill" peak in 2019 at the height of the 2019 extradition bill protests. Later the bill was rebranded as the National Security Law and passed in June 2020 at which time searches for "National Security Law" peaked and have since declined but remain elevated over three years later.

Figure 3a. Hong Kong Public Opinion Research Institute Rule of Law Survey



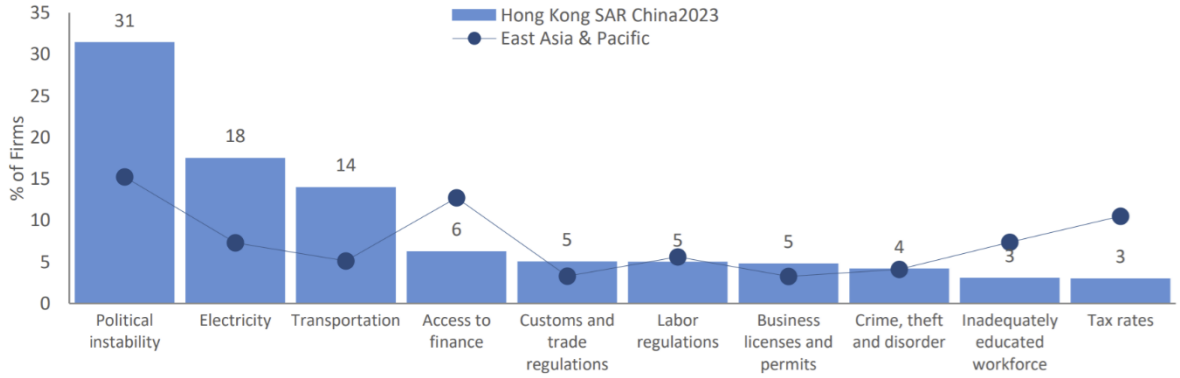
Notes: Hong Kong Public Opinion Research Institute (HKPORI) survey of the rule of law. Hong Kong residents are asked to rank their perception of the rule of law on a scale of 0 to 10.

Figure 3b. Number of National Security Law Arrests Made in Hong Kong By Month



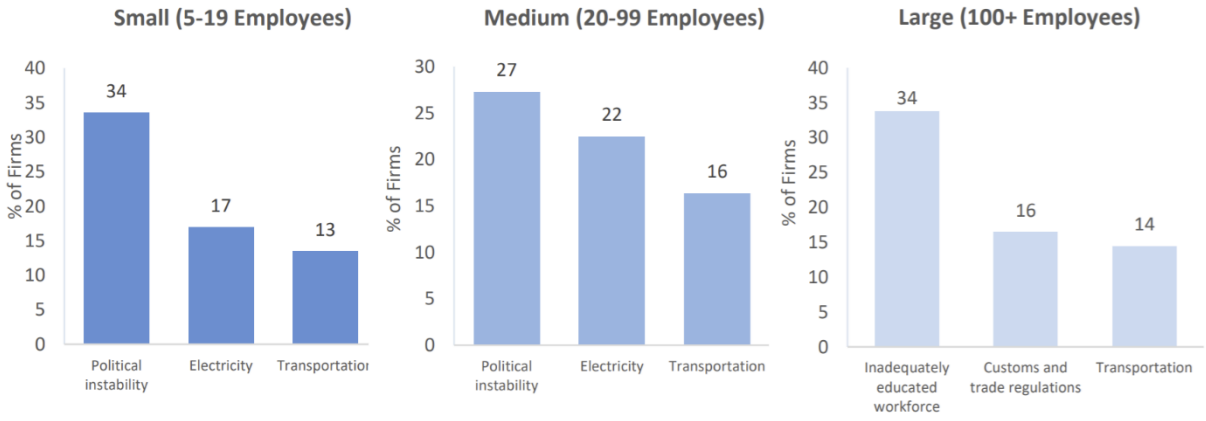
Notes: National Security Law arrest data is obtained from ChinaFile, a project of the Asia Society.

Figure 4a. 2023 Hong Kong World Bank Enterprise Surveys Top Ten Business Environment Constraints



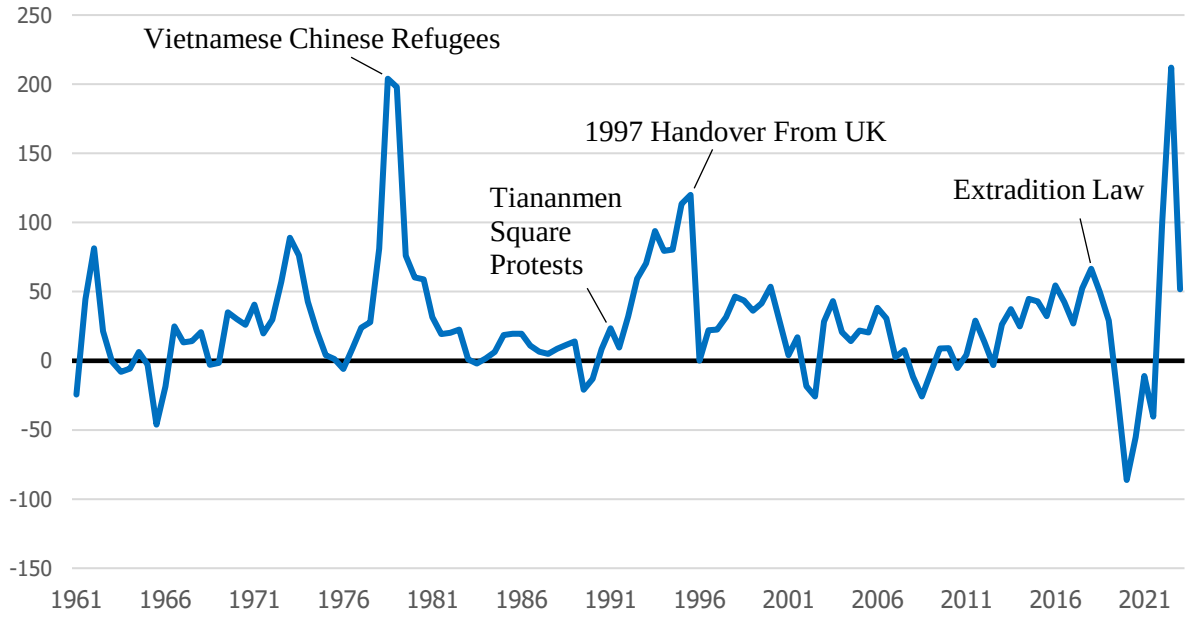
Source: World Bank Enterprise Surveys, Hong Kong SAR, 2023 Survey. Political instability is rated as the top business environment constraint.

Figure 4b. 2023 Hong Kong World Bank Enterprise Surveys Top Three Business Environment Constraints By Size



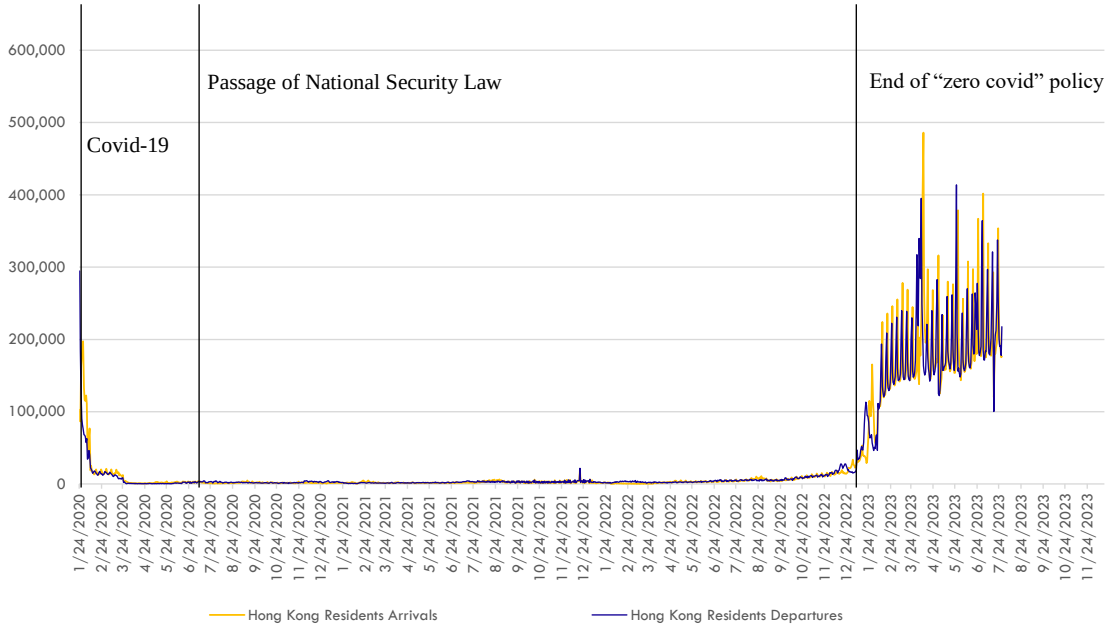
Source: World Bank Enterprise Surveys, Hong Kong SAR, 2023 Survey. Political instability is rated as the top business environment constraint across firm sizes.

Figure 5. Hong Kong Net Migration (Thousands)



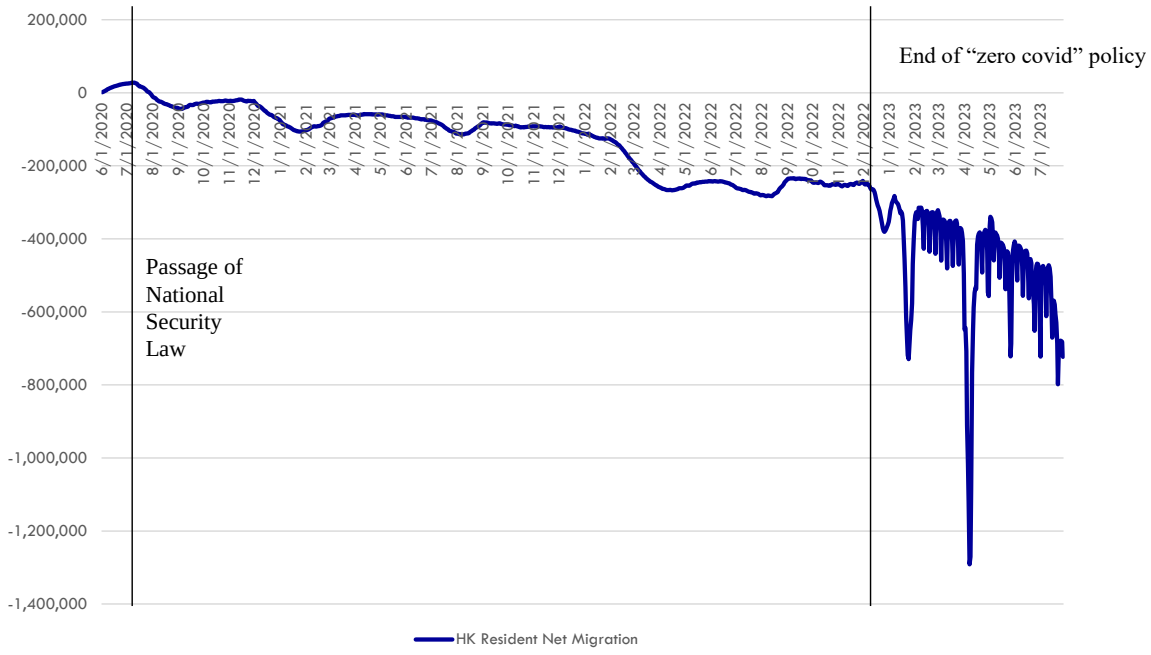
Notes: Semi-annual net migration data from 1961 to 2023 is obtained from the Hong Kong Census and Statistics Department.

Figure 6. Hong Kong Resident Gross Migration (Thousands)



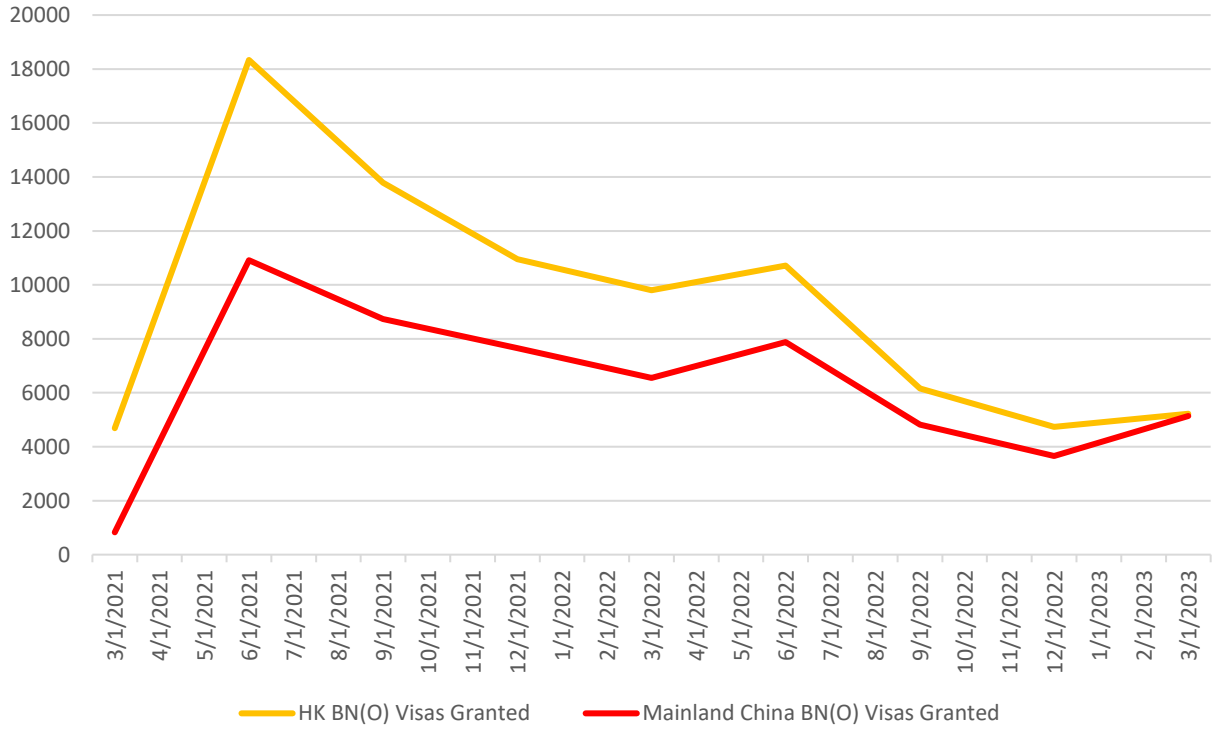
Notes: Daily gross migration data from January 2020 to August 2023 is obtained from the Hong Kong Immigration Department Passenger Traffic Statistics.

Figure 7. Hong Kong Resident Net Migration (Thousands)



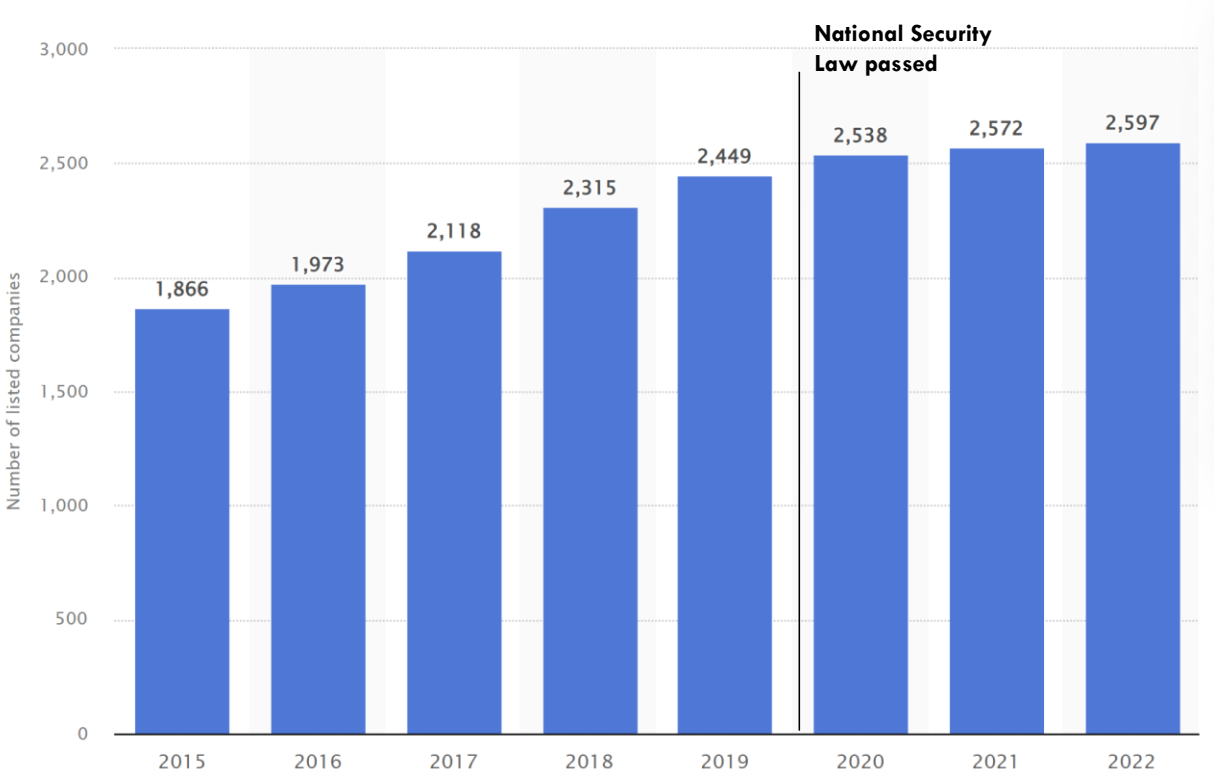
Notes: Daily net migration data from January 2020 to August 2023 is obtained from the Hong Kong Immigration Department Passenger Traffic Statistics.

Figure 8. Hong Kong Emigration to the UK: British National (Overseas) Visas To The UK



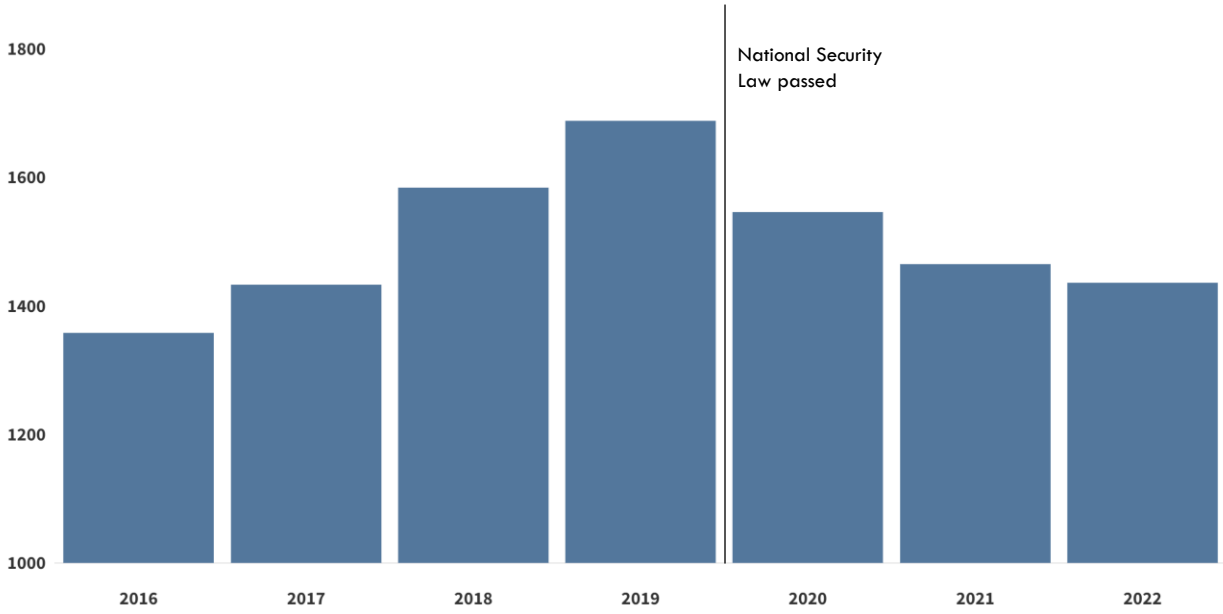
Notes: Data on the number of Hong Kong British National (Overseas) visas obtained to establish UK residence is obtained from the UK Home Office Immigration Statistics. The British National (Overseas) visa program for Hong Kong started in January 2021. Spouses who are citizens of the People's Republic of China (mainland China) qualify for the visa as well.

Figure 9. Number of listed companies at the Hong Kong Stock Exchange (HKEX) from 2015 to 2022



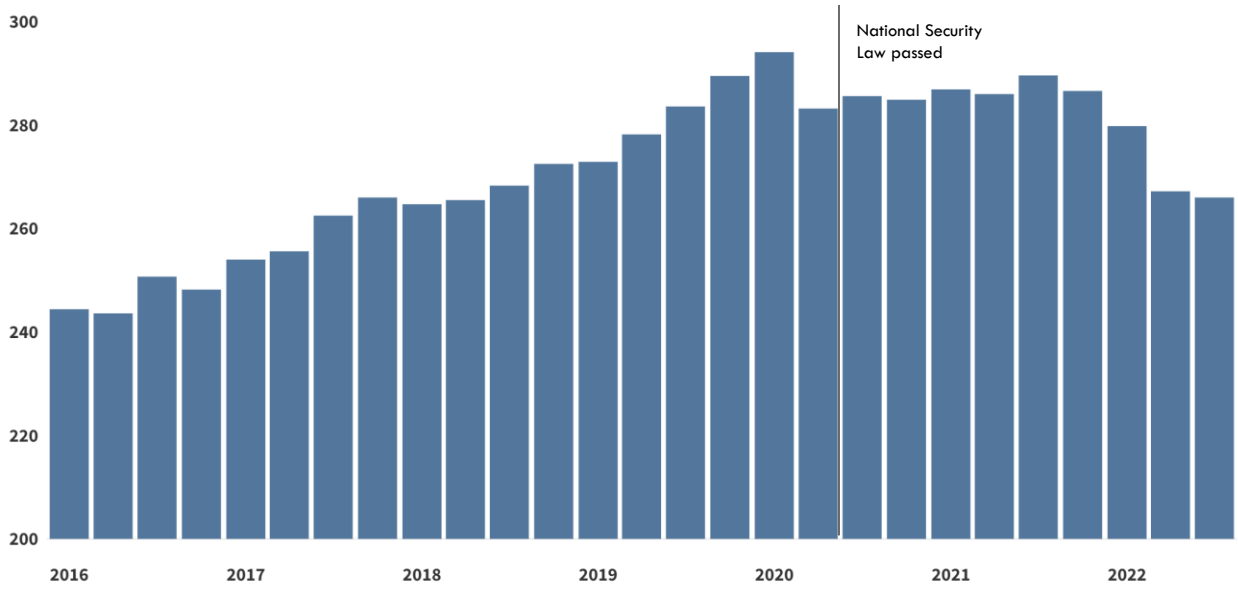
Notes: Number of listed companies at the Hong Kong Stock Exchange (HKEX) from 2015 to 2022 is obtained from Statista.

Figure 10. Number of Foreign Lawyers Working in Hong Kong



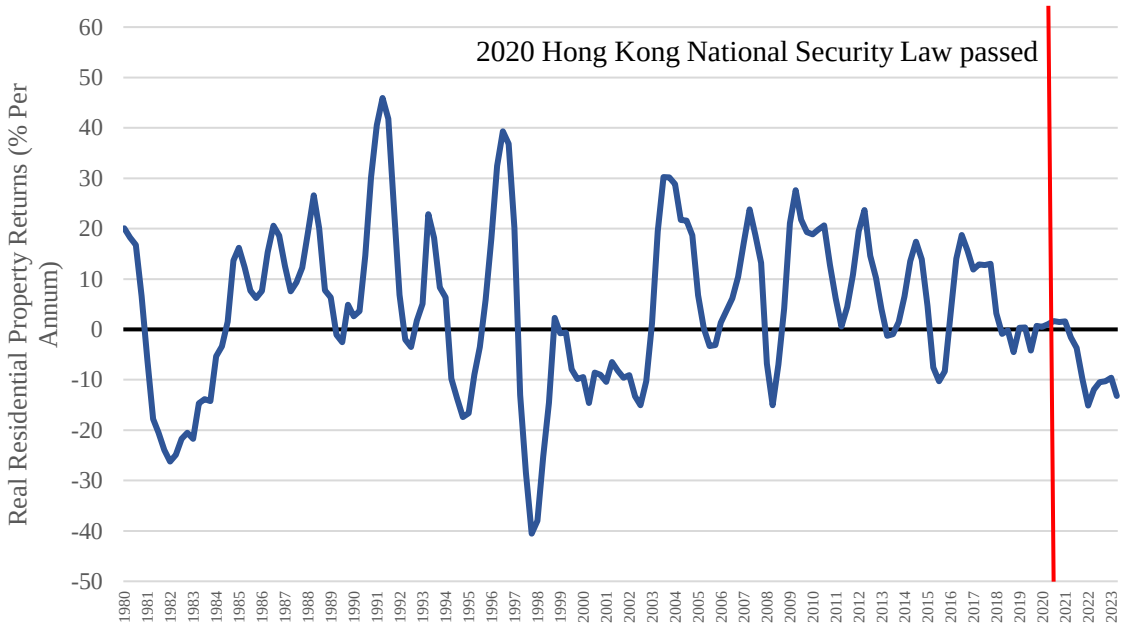
Notes: Data on the number of foreign lawyers working in Hong Kong is obtained from The Law Society of Hong Kong. Graph obtained from Wright (2023).

Figure 11. Employment in Hong Kong's Financing and Insurance Sectors (1000s)



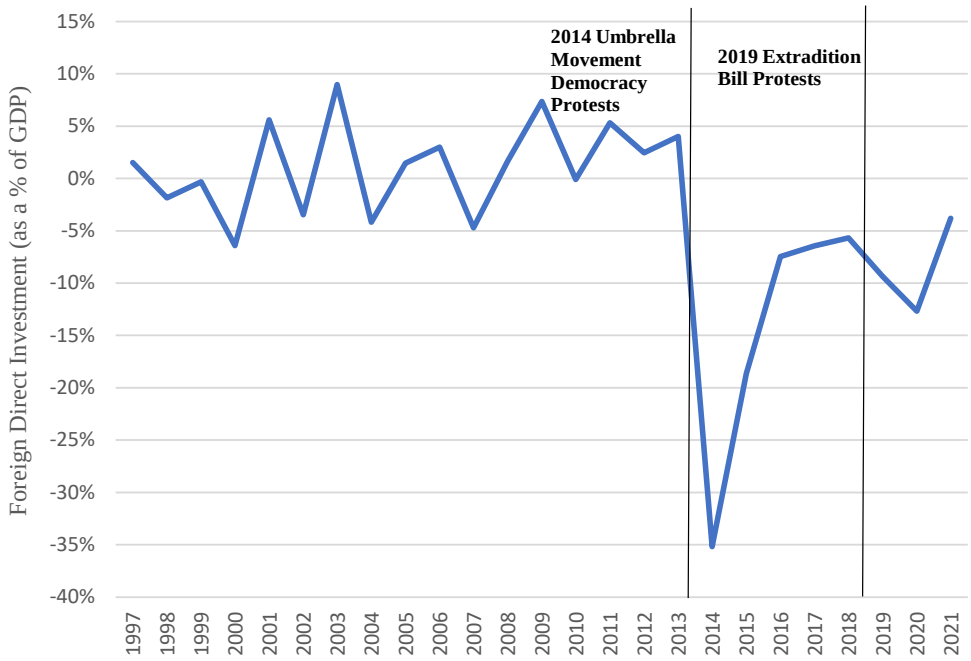
Notes: Employment in Hong Kong's financing and insurance sectors is from the Hong Kong Census and Statistics Department, Graph obtained from Wright (2023).

Figure 12. Hong Kong Real Residential Property Price Growth



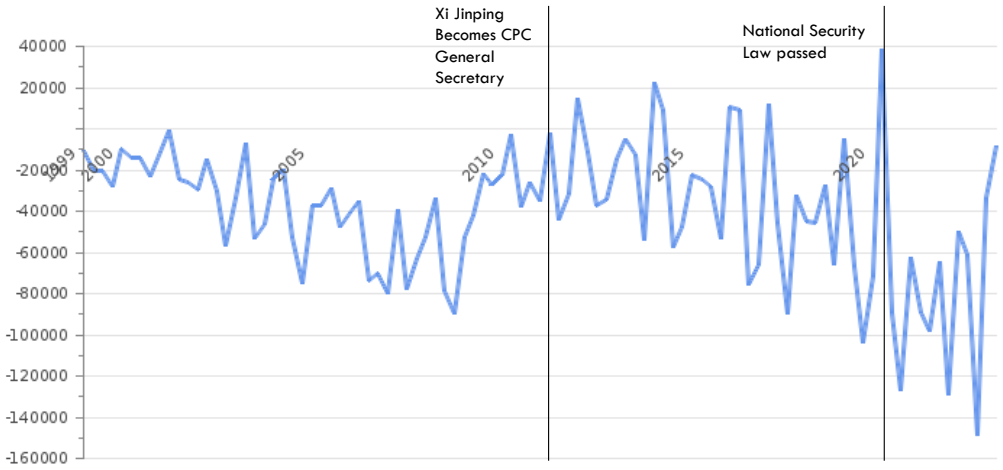
Notes: Data on Hong Kong real residential property price growth is obtained from the Bank for International Settlements (BIS) Residential Property Price database. While residential property prices increased in many advanced economies over several years in the aftermath of the COVID-19 pandemic in part due to innovations surrounding remote work and work from home (WFH) that increased the value of residential property relative to corporate property, residential property prices in Hong Kong declined after 2020, perhaps due to the passage of the 2020 National Security Law.

Figure 13a. Hong Kong Foreign Direct Investment (As A % of GDP)



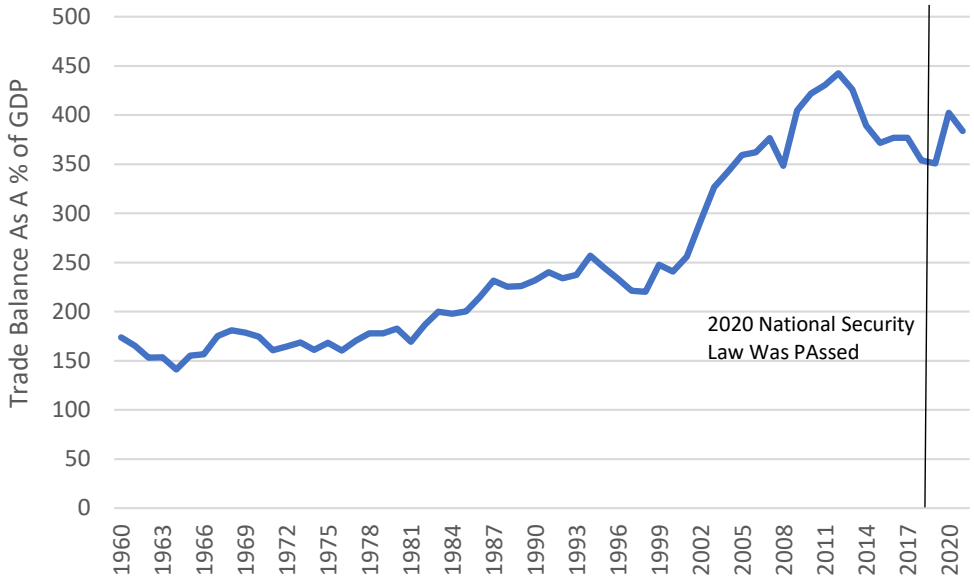
Notes: Data on Hong Kong foreign direct investment is obtained from the World Bank. Foreign direct investment as a percentage of GDP fell both in 2014 (the year of the 2014 Umbrella movement democracy protests) and 2019-2020 (the years the Extradition Bill protests occurred and when the National Security Law was passed).

Figure 13b. Hong Kong Capital Flows (HKD Million)



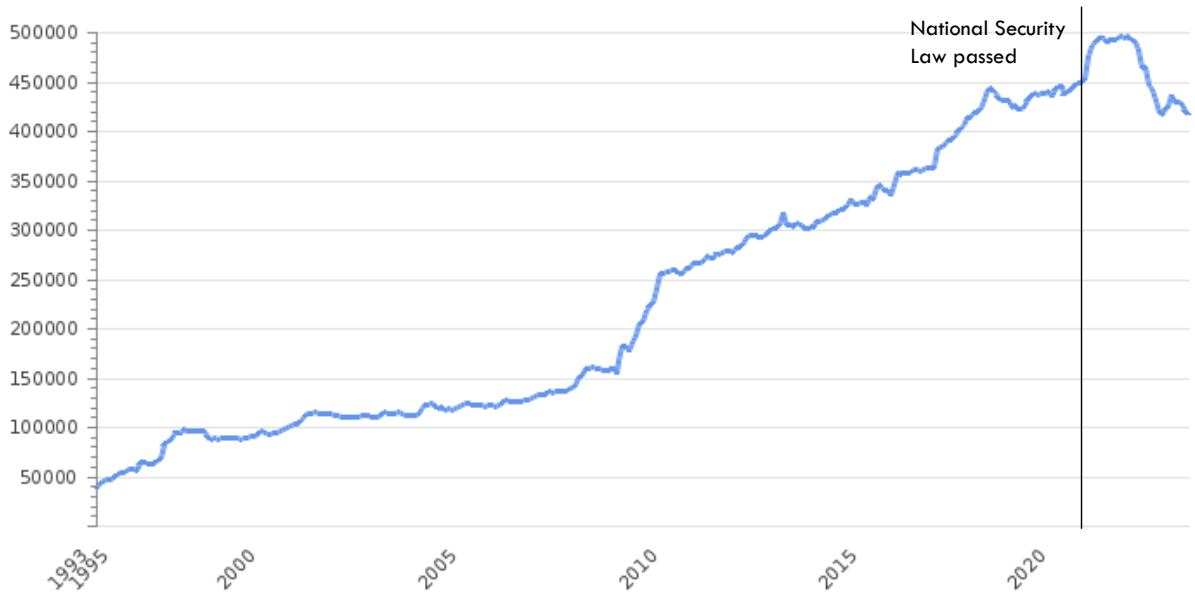
Notes: Data on Hong Kong capital flows is obtained from the Hong Kong Census and Statistics Department. Hong Kong has experienced increased capital outflows since 2020 when the National Security Law was passed.

Figure 14. Hong Kong Trade Balance (As A % of GDP)



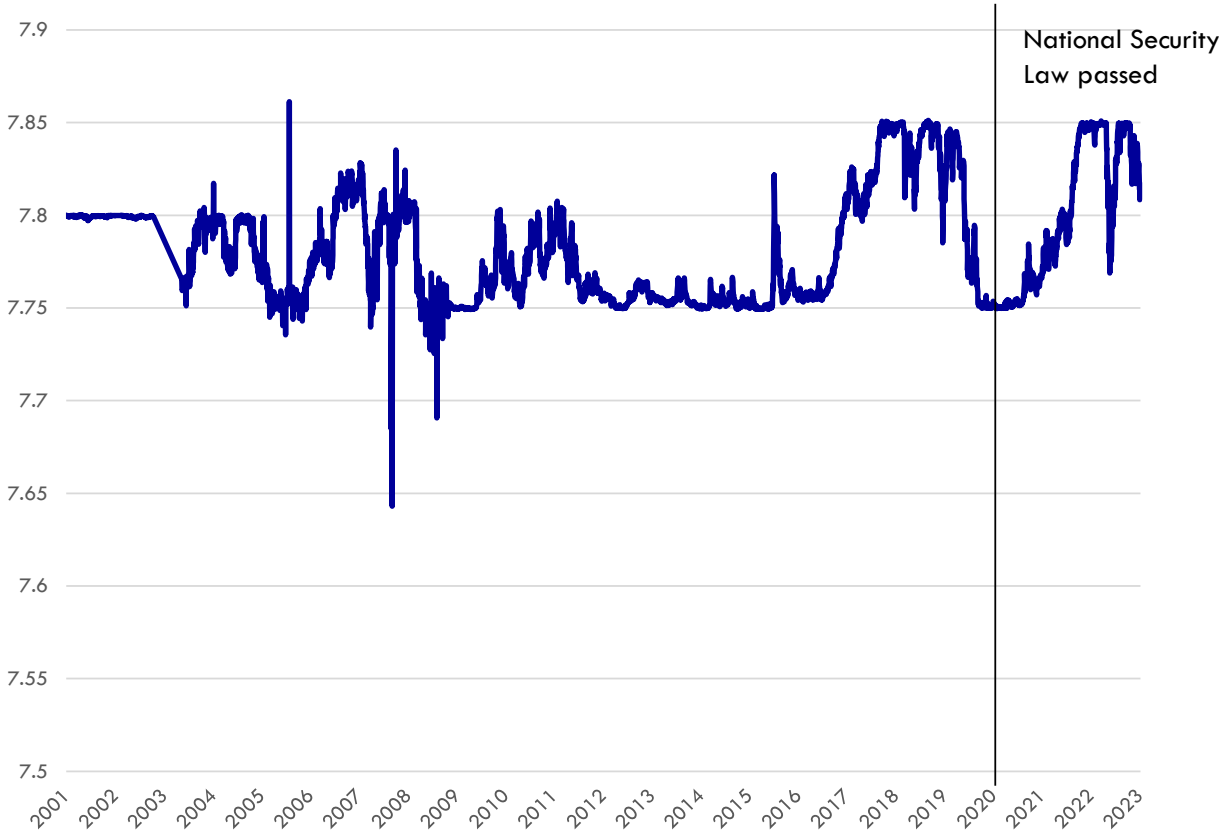
Notes: Data on Hong Kong trade balance is obtained from the World Bank. Hong Kong net trade deficit has increased since 2020 when the National Security Law was passed.

Figure 15. Hong Kong Foreign Exchange Reserves



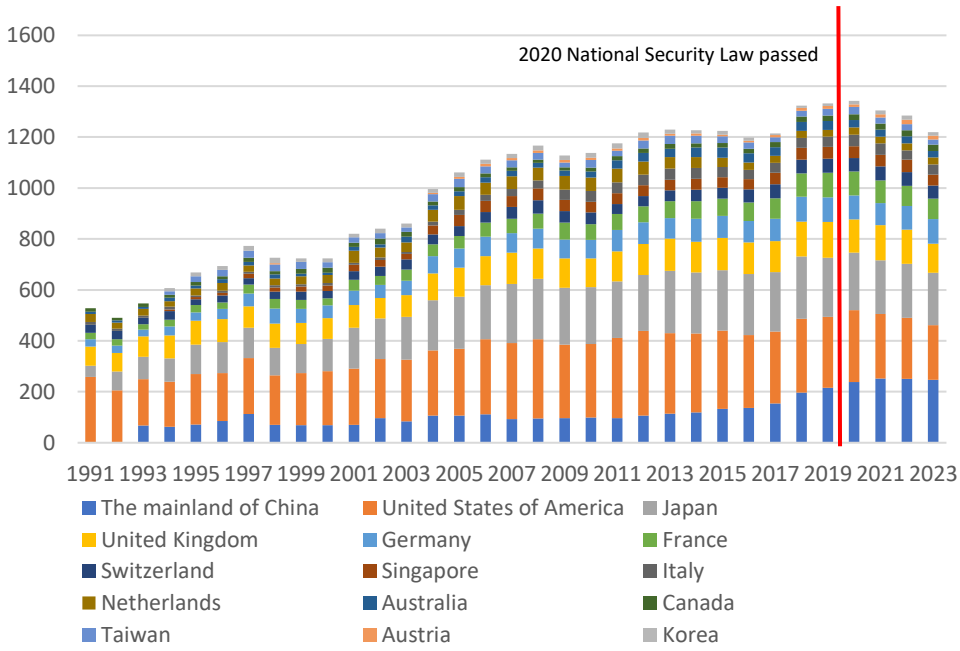
Notes: Data on Hong Kong foreign exchange reserves is obtained from the Hong Kong Census and Statistics Department.

Figure 16. Hong Kong Dollar vs US Dollar Exchange Rate (HKD/USD)



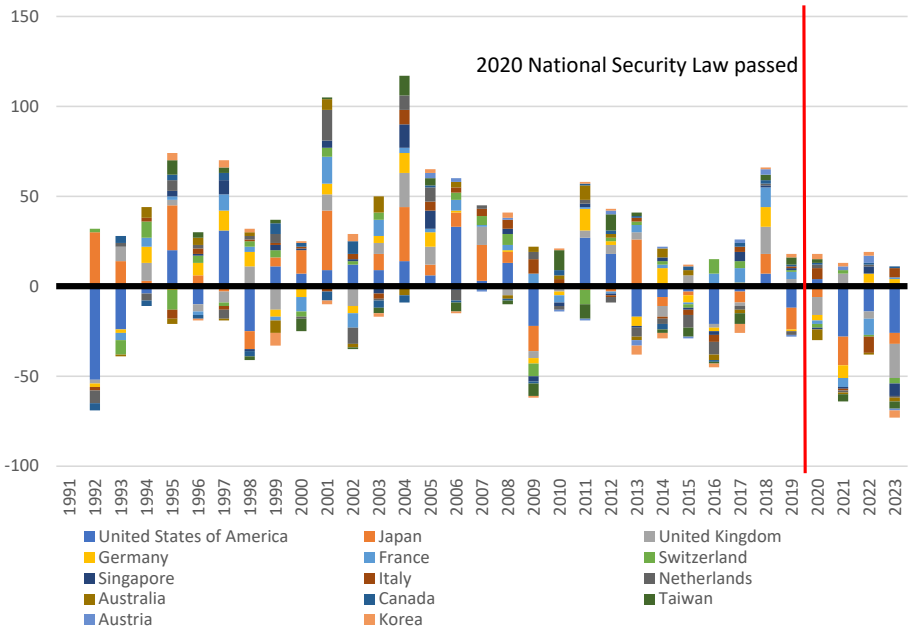
Notes: Data on the Hong Kong Dollar-U.S. dollar (HKD/USD) exchange rate was obtained from the Federal Reserve Bank of St. Louis (FRED)

Figure 17a. Number of Foreign Registered Firms In Hong Kong



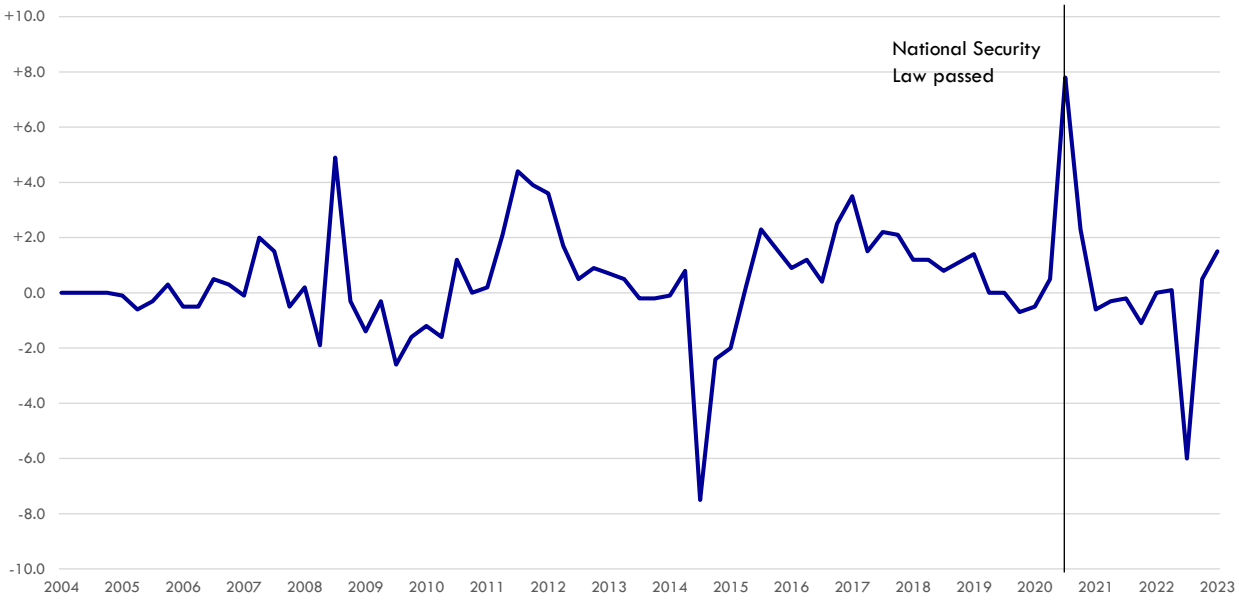
Notes: Data on the number of foreign registered firms from 1991 to 2023 in Hong Kong is obtained from the Hong Kong Census and Statistics Department.

Figure 17b. Change In The Number of Foreign Registered Firms In Hong Kong



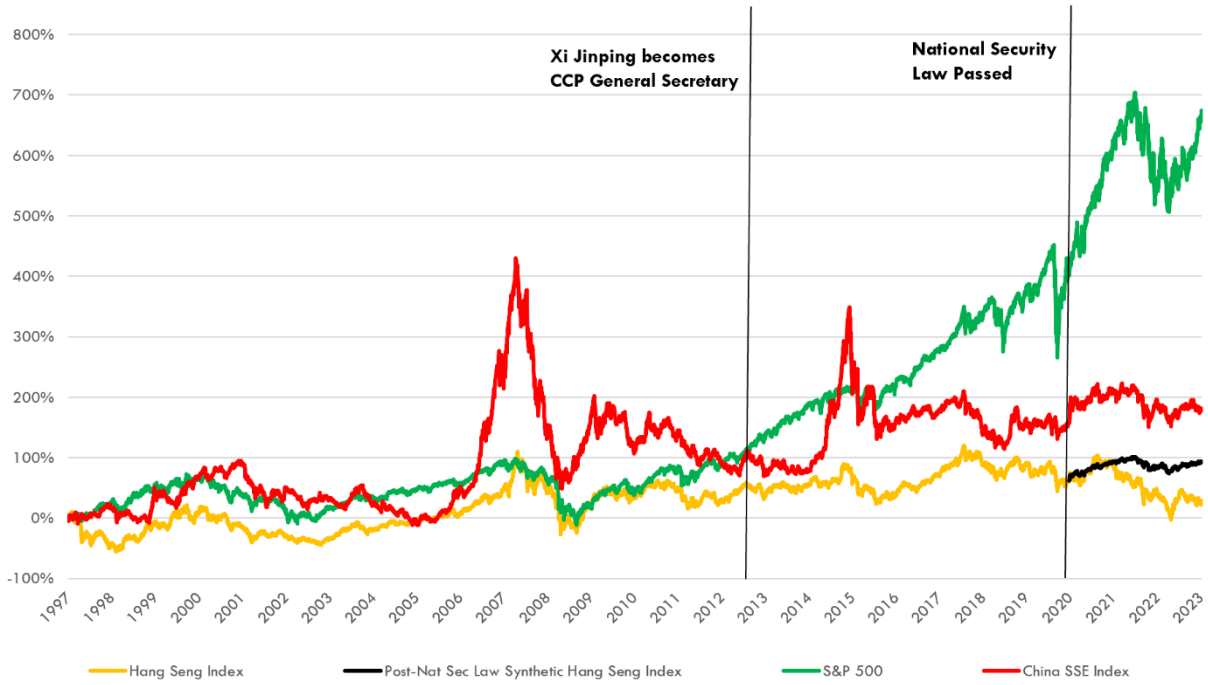
Notes: Data on the number of foreign registered firms from 1991 to 2023 in Hong Kong is obtained from the Hong Kong Census and Statistics Department. This chart shows the year to year change in the number of foreign registered firms in Hong Kong.

Figure 18. Hong Kong Wage Real Wage Growth



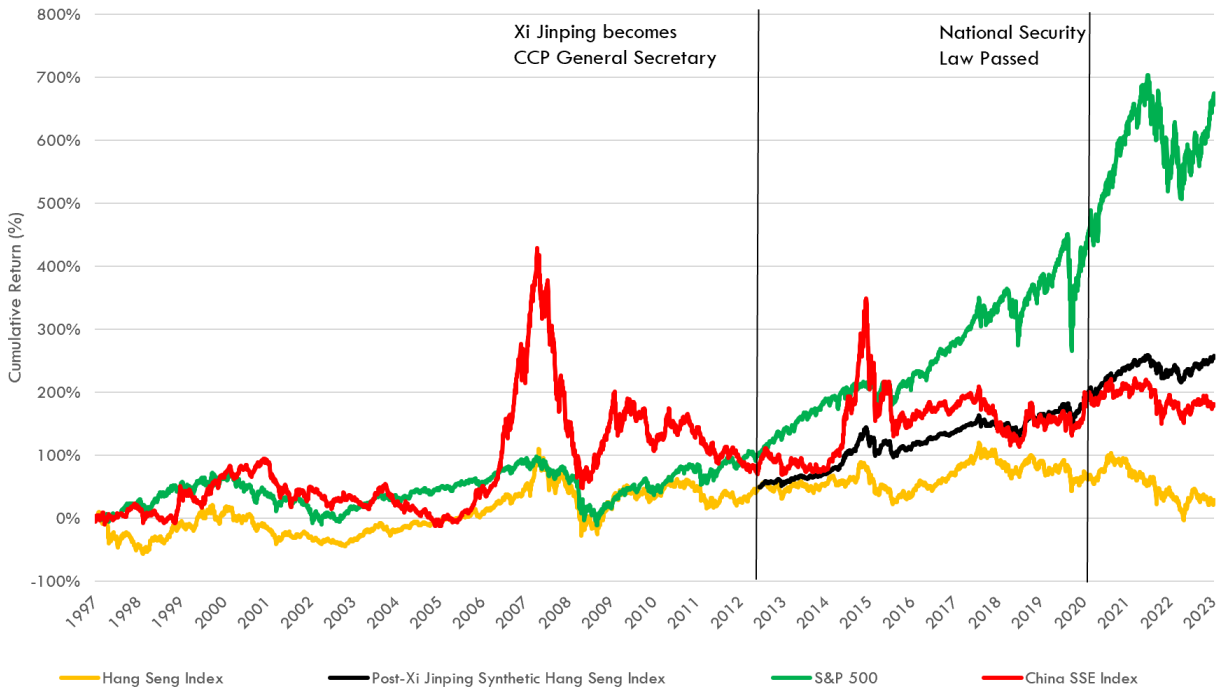
Notes: Real wage growth data is obtained from the Hong Kong Census and Statistics Department.

Figure 19. Hong Kong Stock Market Returns vs. Counterfactual Post-National Security Law



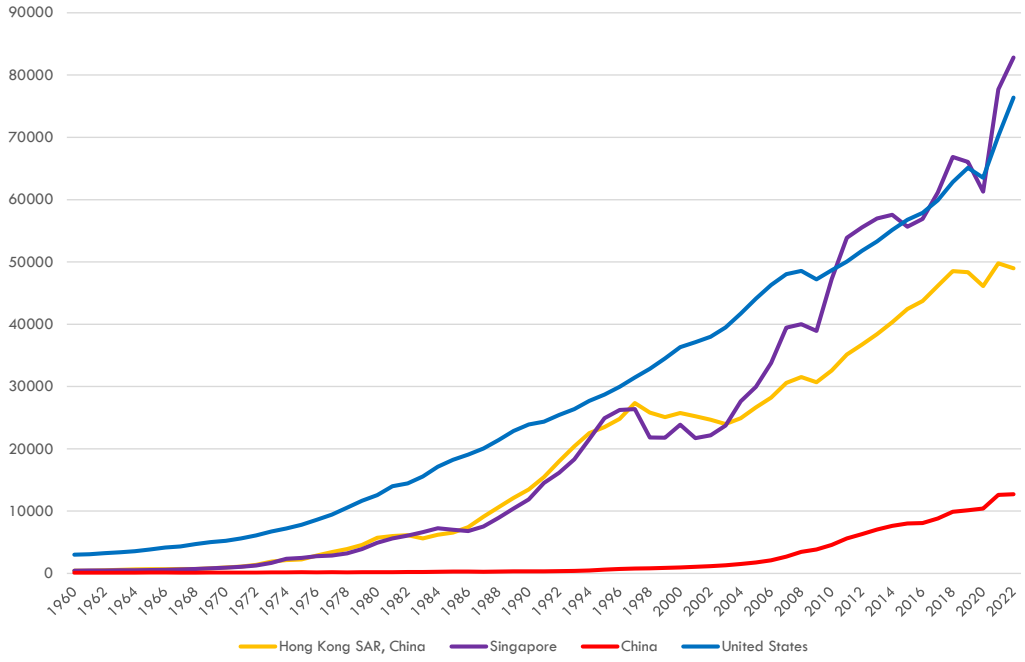
Notes: Financial return data is obtained from Bloomberg. The Post-National Security Law synthetic Hang Seng index is constructed from an OLS regression of Hang Seng Index returns on daily returns for the S&P 500 and China SSE Index for all years leading up to 2020, when the National Security Law was passed.

Figure 20. Hong Kong Stock Market Returns vs. Counterfactual Post-Xi Jinping Becoming General Secretary



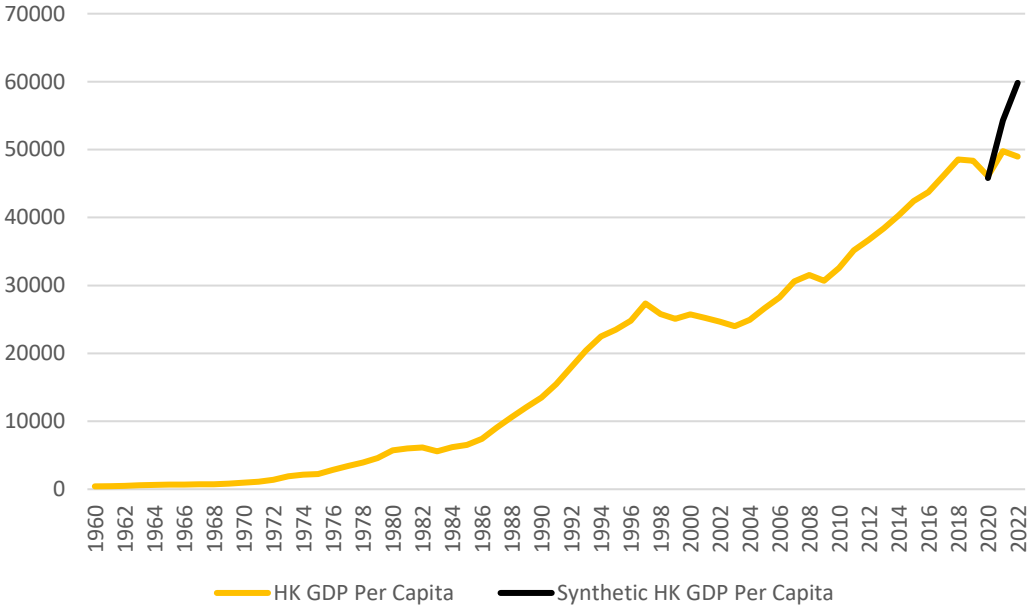
Notes: Financial return data is obtained from Bloomberg. The Post-Xi Jinping synthetic Hang Seng index is constructed from an OLS regression of Hang Seng Index returns on daily returns for the S&P 500 and China SSE Index for all years leading up to November 2012, when Xi Jinping became the General Secretary of the Communist Party of China.

Figure 21. GDP Per Capita of Hong Kong, Singapore, China and the United States (1960-2022)



Notes: Cross-country GDP Per Capita data is obtained from the World Bank.

Figure 22. GDP Per Capita of Hong Kong Versus Synthetic Hong Kong



Notes: Synthetic Hong Kong GDP Per Capita is constructed from an elastic nets regression of Hong Kong GDP Per Capita data all countries reported in the World Bank for all years leading up to 2020, when the National Security Law was passed.

Figure 23. Firm Level Total Returns and Abnormal Returns on Day of Extradition Bill Withdrawal Announcement (September 4, 2019)

Sector		9/4/2019 Total Return	t-statistic	9/4/2019 Abnormal Return	t-statistic
Total Market	SSE Composite Index (Mainland China)	0.93%	0.70	-	-
Total Market	Hang Seng Index (Hong Kong)	3.96%	3.67	-	-
Total Market	S&P 500 (United States)	1.09%	1.05	-	-
Total Market	MSCI World (Developed Countries)	1.08%	1.53	-	-
Airlines	Cathay Pacific Airways	6.97%	3.41	6.39%	4.25
Banks/Financials	HSBC	2.34%	1.39	3.21%	3.35
	Hang Seng Bank	4.73%	2.06	3.87%	2.73
	CITIC Securities	4.95%	1.97	4.95%	2.26
	AIA Group Limited	5.87%	3.35	5.01%	3.39
Real Estate	Sung Hung Kai Properties	9.82%	6.69	9.14%	7.24
	New World Development	10.07%	5.21	9.37%	6.64
	Link REIT	5.90%	4.84	5.49%	4.66
	Henderson Land Development	8.71%	6.34	8.08%	6.18
Power and Utilities	CLP Holdings Ltd	3.80%	4.02	3.45%	3.82
	Hong Kong and China Gas Company	0.00%	0.00	-0.69%	-0.39
	PowerAssets	2.64%	2.57	2.20%	2.25
Hospitality/Gaming	Galaxy Entertainment Group	5.71%	1.05	4.44%	1.93
Multinational/Other	First Pacific	-0.31%	-0.14	-0.67%	-0.42
	CK Hutchison Holdings Limited	3.45%	3.12	2.86%	2.77
	Jardine Matheson Holdings	4.81%	3.75	4.29%	3.48

Notes: This figure presents total return and abnormal of each firm's common stock price on the event date, September 4, 2019, when Hong Kong Chief Executive Carrie Lam announced the withdrawal of the 2019 extradition bill after significant public backlash and popular protest. The adjacent t-statistic subtracts this event date return from the average daily return on the stock in the prior 1000 trading days divided by the standard deviation of the daily returns of the prior 1000 trading days. The abnormal return of each firm's stock price on the event date is derived from a firm specific regression on the developed market factor from the Fama and French database on Ken French's website. The adjacent t-statistic subtracts this event date return from the average abnormal return on the stock in the prior 1000 trading days divided by the standard deviation of the abnormal returns of the prior 1000 trading days.