Killing the Goose that Lays the Golden Egg: A Time-Series Analysis of Institutional Change and Economic Growth in Hong Kong*

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Abstract
This paper examines how the rule of law and democratic accountability have affected Hong Kong's GDP growth rate in the past 20 years. We find that democratic accountability has deteriorated substantially since the changeover of sovereignty in 1997, while the rule of law has remained strong and stable. Empirical results from ARDL bounds tests show a strong positive long-run relationship between growth and democratic accountability, and Granger causality tests reveal that democratic accountability causes the growth rate of GDP in the short run. These conclusions are robust to controlling for the effects of investment and the Asian financial crisis in 1997. Our results suggest that the deterioration in democratic accountability following the handover in 1997 has come at the expense of a considerable decline in economic growth, and controverts popular arguments in Hong Kong that improving democratic accountability will harm economic growth.

Keywords: Institutions, Growth, Democratic Accountability, Rule of Law, Hong Kong.

JEL classifications: O18, O49, P17

1. Introduction

Hong Kong became a Special Administrative Region (SAR) after its sovereignty reverted to China in July 1997. Since then, the Basic Law, which is the SAR's mini-constitution, has functioned as the foundation of "one country, two systems" in the SAR. It is true that Hong Kong SAR has enjoyed a high degree of autonomy under this arrangement, but its sovereignty resides with non-democratic institutions ultimately chosen by the central government in Beijing. What are the effects, if any, of the rapid change of institutions from a colony to a SAR on the quality of governance in Hong Kong? More importantly, has the prosperity of Hong Kong been compromised by such a drastic change of its institutions? These are serious questions deserving a formal analysis.

As one of the Asian tigers, the rapid growth of Hong Kong's economy during the colonial period has been widely documented. With its real GDP per capita of US$26,699 in 2000, Hong Kong is now one of the five richest economies in the world, surpassing even industrialized countries such as Japan, Great Britain and France.[1] The precise factors that account for its miraculous growth have been the subject of considerable debate. However, a consensus seems to have emerged that a major part of Hong Kong's success is due to its reliance on market-oriented, laissez faire policies and the rule of law tradition. Moreover, it has been observed that Hong Kong's hands-off approach to development under colonial rule differed fundamentally from the more interventionist strategies adopted by Japan, Korea, Singapore, and Taiwan. The uniqueness of Hong Kong's past success coupled with its rapid but peaceful institutional change in 1997 provides a rare opportunity for a case study of the relationship between institutions and economic performance.

Since the changeover of sovereignty in July 1997, a series of government decisions and policies appear to have negatively affected the quality of institutions and confidence in the SAR. Most noticeably, the plan to introduce the national security legislation, Article 23, sparked off a massive but peaceful demonstration on 1 July 2003. Even before this huge public display of dissatisfaction with Chief Executive Tung Chee-hwa's administration, there were already widespread concerns and discontent with certain controversial government decisions. First, decisions by the Hong Kong executive in 1999

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[1] Figures are taken from real GDP per capita (chain series) in Penn World Table 6.1.

and in January 2001 to refer judgments of the Hong Kong Court of Final Appeal on individuals' right of abode to the Standing Committee of the National People's Congress raised serious concerns about the autonomy of the Hong Kong judiciary. Second, in his first Policy Address in 1997, Mr. Tung announced a target of supplying 85,000 public housing units a year, which has been blamed for the downward spiral of housing prices and the protracted economic recession.[2] Third, Mr. Tung was re-appointed by an 800-strong election committee for a second five-year term as the Chief Executive on 1 July 2002, despite his consistently poor popularity ratings. Fourth, in April 2004, the Standing Committee of the National People's Congress in China ruled out the possibility of introducing universal suffrage in electing the Chief Executive in 2007 and the Legislative Council in 2008. These were controversial decisions and policies that sparked opposition from a large segment of the population.[3]

In the empirical literature, researchers find strong evidence to indicate that institutional quality is one of the most important factors of long-run economic growth. The protection of property rights, efficiency of the bureaucracy, and effectiveness of the rule of law are the most widely-used aspects of institutions that have been found to significantly affect the long-run income level or growth rate in cross-country econometric studies (see, for example, North and Thomas, 1973; Jones, 1981; North, 1981; Knack and Keefer, 1995; Mauro, 1995; Hall and Jones, 1999). More recent studies have even gone beyond correlations to establish causation between the protection of property rights and higher income levels (see Acemoglu et al., 2001).

However, the effects of institutions on growth or income level are less clear when institutions are represented by the degree of democracy. Borner et al. (1995) report that out of sixteen empirical studies, three find a positive relationship between democracy and growth, three find a negative relationship and the remaining ten are inconclusive. Helliwell (1994) and Barro (1996), find a non-significant negative effect of democracy on growth once several growth-determining variables are held constant. Tavares and

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[2] See Ho and Wong (2003), who strongly argue that the weakness in Hong Kong's housing market and Hong Kong's protracted economic downturn after 1997 are homemade rather than imported.
[3] A report prepared by Standard and Poor's in March 2003 criticizes the inability of the SAR government to deal with the worsening structural deficit. It states that Tung's administration lacks the credibility and popular support to implement policies for reducing the increasing fiscal imbalance, and that the future of Hong Kong's credit ratings hinges on whether the SAR executive is able to muster enough political skill to reduce the structural fiscal imbalance.

Wacziarg (2001) find that democracy fosters growth by improving the accumulation of human capital and by lowering income inequality, but hinders growth by reducing the rate of physical accumulation and by raising the ratio of government consumption to GDP. They find that the net effect of democracy on growth is moderately negative. In contrast, Acemoglu et al. (2003) use the constraint on executive power as a measure of institutional quality and find that a higher degree of constraint on executive power causes a higher level of income, lesser volatile growth and fewer economic crises.

The question of how democratic institutions ultimately affect growth is still unresolved in the empirical literature. What we do know is that there can be a variety of channels through which democracy affects growth, including political stability, quality of governance, government size, human capital, income equality, trade openness and physical capital accumulation.[4] In addition, Rodrik (2000) emphasizes the importance of "local knowledge" that allows the market to perform adequately. He argues that participatory political systems are the most effective ones for processing and aggregating local knowledge. Thus, according to him, democracy is a meta-institution for building good institutions, and there is strong evidence to indicate that participatory democracies enable higher quality growth.

The present study contributes to the rich body of literature on growth and democracy by looking at the unique situation of Hong Kong, where the recent substantial change in institutions provides an ideal case for further study and also one in which we can use time-series rather than the more common cross-section or panel approaches. Moreover, there is an important unresolved debate in Hong Kong about the effect of the changeover on its growth. As a preview of the results, our time-series study finds that democratic accountability in Hong Kong has suffered a substantial deterioration since the changeover in 1997. The rule of law, however, has remained strong and stable for the past twenty years. More importantly, we find strong evidence of a causal relationship between democratic accountability and the growth rate of Hong Kong both in the long- and short-run. The evidence cannot be discounted by the advent of the Asian financial crisis of 1997 or changes in the investment rate. This paper reaches the conclusion that democratic accountability is an important factor determining output growth for Hong Kong both in

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[4] See Tavares and Wacziarg (2001) for a detailed discussion of these channels.

the long- and short-run. Therefore, the widely-accepted contention that democratic reforms retard Hong Kong's growth is unfounded. On the contrary, promoting a faster pace of democratic reform is likely to lead to more prosperity.

The remaining part of this paper is divided into seven sections. In Section Two, we describe the dataset, and in Section Three we outline the time-series econometric methods used. Section Four presents the results of stationary tests. Sections Five and Six present the estimation results of the ARDL bounds tests and Granger causation tests, respectively. Robustness checks are conducted in Section Seven. Finally, we conclude and summarize in Section Eight.

2. Data

This paper argues that Hong Kong's robust protection of property rights, the rule of law, and a market-oriented, laissez-faire approach to governance are the pillars of its economic success. To test this, we choose from the International Country Risk Guide (ICRG) two indexes (the rule of law and democratic accountability) to represent those institutional qualities that have traditionally characterized Hong Kong. Moreover, we are interested in studying not only those institutional qualities that relate to the protection of private property rights such as the rule of law, but also those that relate to political risk and stability such as democratic accountability. By selecting both the rule of law and democratic accountability, our study of institutional change can encompass the multi-faceted nature of institutions.

The rule of law index "reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes."[5] The highest score of 6 indicates "sound political institutions, a strong court system, and provisions for an orderly succession of power." The lowest score of 0 indicates "a tradition of depending on physical force or illegal means to settle claims." Figure 1 shows the rule of law index from the first quarter of 1984, the earliest available data from ICRG, to the third quarter of 2003.[6] Hong Kong's rule of law index remains high and relatively constant, fluctuating within a band of 4 to 6. It shows no remarkable

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[5] From *Brief Guide to the Rating System*, ICRG, page A-6. (www.ICRGOnline.com)
[6] We aggregate the monthly rule of law and democratic accountability data to quarterly data by taking simple averages. This is done because monthly data for GDP are not available.

changes even after the reversion of sovereignty in July 1997, which indicates that the perception of the impartiality of the legal system in Hong Kong continues to be strong and that people continue to be law-abiding and respectful of the court system. Thus, the rule of law ratings indicate that institutional quality remains strong in the SAR.

Figure 1: Hong Kong's Rule of Law
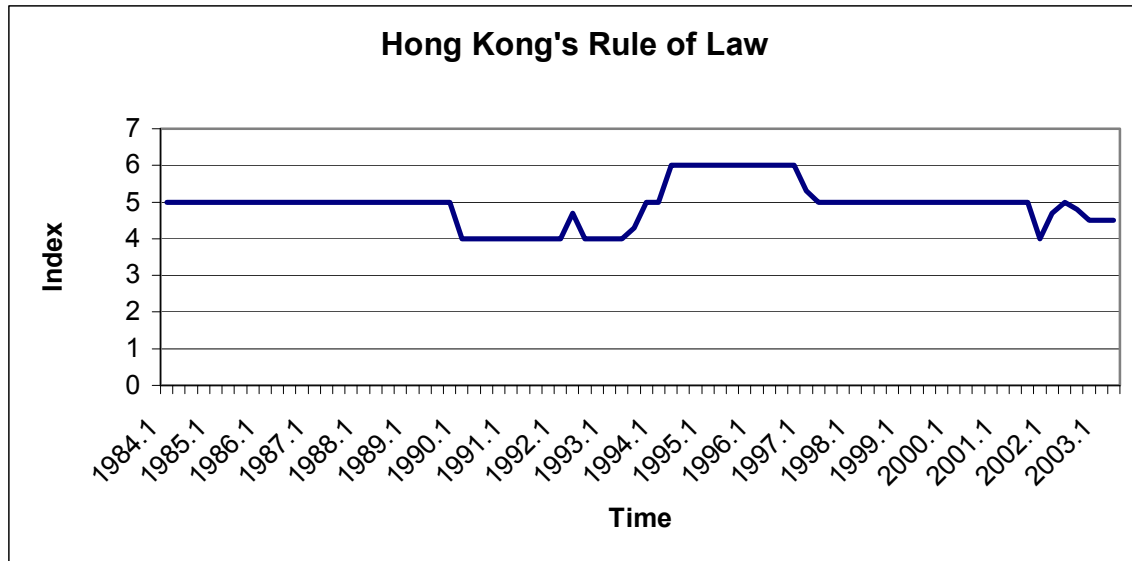
Source: International Country Risk Guide (ICRG).

The second index that we selected for measuring institutional quality from ICRG is democratic accountability, which measures "how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possible violently in a non-democratic one." The highest score of 5 indicates "free and fair elections for the legislature and executive as determined by constitution, viable opposition and independent judiciary." The lowest score of 0 indicates autarchy, as defined by "leadership of the state by a group or single person, without being subject to any franchise, either through military might or inherited right."[7]

Hong Kong's democratic accountability is shown in Figure 2. The series starts in the first quarter of 1984, the earliest available observation available from ICRG, and runs to the third quarter of 2003, the latest available observation. We observe that the series of

[7] From *Brief Guide to the Rating System*, ICRG, page A-7. (www.ICRGOnline.com)

democratic accountability has gone through two distinct troughs over the past 21 years: one in 1984-85 and the other in 1997-98. The trough in 1984-85 reflects the sentiments of people in Hong Kong at the time of negotiation of the Sino-British Joint Declaration. The second trough starts in the third quarter of 1997, falling close to 0.5 and remaining at 1 for the next three years. As discussed above, we argue that the sharp fall in scores of democratic accountability results from the increasingly insensitive government decisions and policies implemented after the changeover of sovereignty in July 1997.

Figure 2: Hong Kong's Democratic Accountability

Source: International Country Risk Guide (ICRG)

Figure 3 shows the year-on-year growth rate of Hong Kong's real GDP. As in the series for democratic accountability, there are two distinct troughs in the GDP growth series: one in 1985 and another in 1998. One could possibly explain the movement of Hong Kong's GDP growth rate by using traditional macroeconomic variables such as investment and exports. For example, the trough in 1985 was caused by a steep export slump, and that in 1998 was caused by the Asian financial crisis. However, such traditional macroeconomic variables may not tell the whole story. As will be demonstrated later in this paper, institutional quality, such as measured by democratic accountability, can offer a more convincing explanation of the growth rate in the long

run. This result seriously questions the validity of the widely accepted belief in a trade-off between democratic reform and economic growth.

Figure 3: Hong Kong's Real GDP Growth

Source: *Hong Kong Monthly Digest of Statistics* (various issues), Census and Statistics Department, Hong Kong SAR.

3.   Econometric Method

We divide our quantitative analysis into two main parts, addressing long-run and short-run questions in turn. Starting with the long run, we adopt the autoregressive distributed lag (ARDL) bounds test methodology of Pesaran et al. (2001) to test for the existence of a long-run relationship among institutional quality and GDP growth using Hong Kong data from 1984 to 2003. This technique does not require the researcher to assume that the underlying institutional quality and economic growth series are $I(0)$ or $I(1)$. In particular, we find difficulty in ascertaining whether the indexes of institutional quality are stationary. On the one hand, these indexes can be labeled as stationary because they can only take on a limited range of discrete values. On the other hand, they clearly exhibit patterns of non-stationarity in formal unit root tests, as will be demonstrated later. Thus, using the ARDL bounds test approach is especially appealing

in this context to avoid confronting the problem of identifying the order of integration of the indexes of institutional quality.

The ARDL regression yields a test statistic that can be compared to two asymptotic critical values. If the test statistic is above the upper critical value, then the null hypothesis of no long-run equilibrium relationship between institutional quality and economic growth can be rejected regardless of whether the series are integrated of order of zero or one. Alternatively, if the test statistic falls below the lower critical value, then the null hypothesis cannot be rejected, again regardless of whether the series are $I(0)$ or $I(1)$. If the test statistic falls between the bounds of the two critical values, then the result is inconclusive. We expect from the theory that the results will show a long-run equilibrium relationship between the underlying institutional quality and GDP growth.

The ARDL bounds test approach begins with an unrestricted VAR in levels:[8]

$$(1) \qquad \mathbf{x}_t = \mathbf{\mu} + \sum_{j=1}^{p} \mathbf{\varphi}_j \mathbf{x}_{t-j} + \mathbf{\varepsilon}_t \,,$$

where $\mathbf{x}_t = \left(G\dot{D}P_t \quad IQ_t \right)'$. Here $G\dot{D}P_t$ and IQ_t are the growth rate of GDP and the index of institutional quality at time t. As noted earlier, the two series $G\dot{D}P_t$ and IQ_t can be either $I(0)$ or $I(1)$. $\mathbf{\mu}$ is a vector of constant terms, $\mathbf{\mu} = \left[\mu_{G\dot{D}P} \quad \mu_{IQ} \right]'$, and $\mathbf{\varphi}_j$ is a matrix of VAR parameters for lag j. The vector of error terms $\mathbf{\varepsilon}_t = \left[\varepsilon_{G\dot{D}P,t} \quad \varepsilon_{IQ,t} \right]' \sim \mathbf{IN}[\mathbf{0}, \mathbf{\Omega}]$, where $\mathbf{\Omega}$ is positive definite and given by

$$(2) \qquad \mathbf{\Omega} = \begin{bmatrix} \omega_{G\dot{D}P,G\dot{D}P} & \omega_{G\dot{D}P,IQ} \\ \omega_{G\dot{D}P,IQ} & \omega_{IQ,IQ} \end{bmatrix}.$$

Given (2), $\varepsilon_{G\dot{D}P,t}$ can be expressed in terms of $\varepsilon_{IQ,t}$ as

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[8] The discussion on ARDL bounds test approach here follows closely the exposition by Atkins and Coe (2002).

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$$(3) \qquad \varepsilon_{G\dot{D}P,t} = \frac{\omega_{G\dot{D}P,IQ}}{\omega_{IQ,IQ}} \varepsilon_{IQ,t} + \mu_t,$$

where $\mu_t \sim \text{IN}(0, \omega_{G\dot{D}P,G\dot{D}P})$.

We manipulate the VAR model of (1) to obtain a vector error correction model (VECM) such as:

$$(4) \qquad \Delta \mathbf{x}_t = \mathbf{c} + \boldsymbol{\lambda} \, \mathbf{x}_{t-1} + \sum_{j=1}^{p-1} \boldsymbol{\gamma}_j \Delta \mathbf{x}_{t-j} + \boldsymbol{\varepsilon}_t,$$

where $\Delta = 1 - L$, L is the lag operator, and

$$(5) \qquad \boldsymbol{\gamma}_j = \begin{bmatrix} \gamma_{G\dot{D}P,G\dot{D}P,j} & \gamma_{G\dot{D}P,IQ,j} \\ \gamma_{IQ,G\dot{D}P,j} & \gamma_{IQ,IQ,j} \end{bmatrix} = -\sum_{k=j+1}^{p} \boldsymbol{\varphi}_k.$$

$\boldsymbol{\lambda}$ in (4) is the long-run multiplier matrix and is given by

$$(6) \qquad \boldsymbol{\lambda} = \begin{bmatrix} \lambda_{G\dot{D}P,G\dot{D}P} & \lambda_{G\dot{D}P,IQ} \\ \lambda_{IQ,G\dot{D}P} & \lambda_{G\dot{D}P,G\dot{D}P} \end{bmatrix} = -\left(\mathbf{I} - \sum_{j=1}^{p} \boldsymbol{\varphi}_j \right),$$

where $\mathbf{I}$ is a 2 x 2 identity matrix. As each of the series can be $I(0)$ or $I(1)$, the diagonal elements of the $\boldsymbol{\lambda}$ matrix are left unrestricted. Moreover, we can only test at most one long-run relationship under this procedure. Hence, a zero restriction on one of the off-diagonals of the $\boldsymbol{\lambda}$ matrix is required. We impose $\lambda_{IQ,G\dot{D}P} = 0$, which implies that there is no feedback from the level of $G\dot{D}P_t$ to IQ_t. Using the terminology of Pesaran et al. (2001), institutional quality is long-run forcing for the growth rate of GDP. The justification of this assumption comes from the observation that institutional changes in Hong Kong originated from Sino-British treaties signed in the last century and were influenced by the political climates in Beijing and London before 1997. Economic performance was never a crucial factor determining institutional change and reform in

Hong Kong. Nevertheless, we can assess the validity of the forcing variable assumption by testing for the exclusion of the lagged GDP growth in the institutional quality equation of the vector error correction model (VECM) described by (4). We expect that institutional quality is long-run forcing for GDP growth.

Given the assumption of $\lambda_{IQ,G\dot{D}P} = 0$ and (3), the equation for the growth rate of GDP from the VECM of (4) can be written as:

$$(7) \quad \Delta G\dot{D}P_t = \alpha + \theta\, G\dot{D}P_{t-1} + \sigma\, IQ_{t-1} + \sum_{j=1}^{p-1} \beta_{G\dot{D}P,j} \Delta G\dot{D}P_{t-j} + \sum_{j=1}^{q-1} \beta_{IQ,j} \Delta IQ_{t-j} + \omega\, \Delta IQ_t + \mu_t$$

where $\alpha = \mu_{G\dot{D}P} - \omega\mu_{IQ}$, $\theta = \lambda_{G\dot{D}P,G\dot{D}P}$, $\sigma = \lambda_{G\dot{D}P,IQ} - \omega\lambda_{IQ,IQ}$, $\beta_{G\dot{D}P,j} = \gamma_{G\dot{D}P,j} - \omega\gamma_{IQ,G\dot{D}P,j}$,

$\beta_{IQ,j} = \gamma_{G\dot{D}P,IQ,j} - \omega\gamma_{IQ,IQ,j}$ and $\omega = \dfrac{\omega_{G\dot{D}P,IQ}}{\varpi_{IQ,IQ}}$. We can interpret (7) as an ARDL(p, q)

model, where p is the number of lagged differences of the growth of GDP and q is the number of lagged differences of institutional quality as measured by either the rule of law or democratic accountability. In practice, p and q do not have to be the same and our search for optimal orders of p and q is based on two considerations. The optimal ARDL(p, q) model must be parsimonious and it must be free of serial-correlation.

In (7), the null hypothesis of no long-run relationship between the growth rate of GDP and institutional quality is $H_0 : \theta = \sigma = 0$. We first estimate (7) by OLS and then calculate the F-statistic for the null of $\theta = \sigma = 0$ against the alternative that $\theta \neq 0$ and $\sigma \neq 0$. The distribution of the test statistic depends on the order of integration of the two underlying series, and Pesaran et al. (2001) provide the critical values for the test statistic under the null hypothesis. We accept the null hypothesis of no long-run relationship between the growth rate of GDP and institutional quality if the test statistic falls below the lower critical value. We reject the null hypothesis in favor of the alternative hypothesis if the test statistic exceeds the upper critical value, regardless of whether the growth rate of GDP or institutional quality is $I(0)$ or $I(1)$. If the test statistic falls between the lower and upper critical values, then the result is inconclusive.

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Under the alternative hypothesis that both $\theta \neq 0$ and $\sigma \neq 0$ in (7), there is a stable long-run relationship between the growth rate of GDP and institutional quality, which is described by

$$(8) \qquad \dot{GDP_t} = \pi_0 + \pi \; IQ_t + v_t,$$

where $t = 1, 2, ...$, $\pi_0 \equiv (\sigma * \mu)/\theta$, $\pi \equiv -\sigma/\theta$ and v_t is a mean-zero stationary process. Once (7) is estimated and a long-run stable relationship is detected, we can then use (8) to calculate the long-run equilibrium relationship.

The second part of our analysis examines short-run Granger causation between institutional quality and GDP growth. Granger causation tests require that the underlying institutional quality and GDP growth series are stationary or, alternatively, that there is a long-run equilibrium relationship among them. Using the ARDL bounds test methodology in the first part to test for a long-run equilibrium relationship between the underlying series will allow us to assess the validity of Granger causation tests. From the theory, we expect that institutional quality Granger causes GDP growth in Hong Kong.

The widely-used Granger (1969) causality test is specified by a bivariate vector autoregression (VAR) as

$$(9) \qquad \begin{aligned} x_t &= \delta_0 + \sum_{i=1}^{m} \delta_i x_{t-i} + \sum_{i=1}^{n} \lambda_i y_{t-i} + \varepsilon_{1t} \\ y_t &= \gamma_0 + \sum_{i=1}^{m} \gamma_i x_{t-i} + \sum_{i=1}^{n} \beta_i y_{t-i} + \varepsilon_{2t} \end{aligned},$$

where x_t and y_t are the growth rate of GDP and institutional quality at time t. The bivariate VAR in (9) tests causality by implementing the propositions that 1) the future cannot cause the present or the past, 2) an event x can cause y only if it occurs before y, and 3) the prediction of y can be made more accurate given the occurrence of x. These basic intuitions underlie the widely-used Granger causality test. Formally, x Granger-causes y if the mean square error associated with the prediction of y_t given the

information set I_{t-i}, $\sigma^2\left(y_t \middle| I_{t-i}\right)$, is smaller than the mean square error associated with the prediction of y_t given the information set that does not include past x, $\sigma^2\left(y_t \middle| I_{t-i} - x_{t-i}\right)$. In the framework set out above we use an information set consisting of only past x and past y. Thus, in the first line of (9), if the joint effect of the y_{t-i} is significant in predicting x_t, then we can say that y Granger-causes x. An *F*-test with the null hypothesis that all of the λ_i are jointly equal to zero is appropriate in this context. Similarly, to test whether x Granger-causes y, we can conduct an *F*-test with the null hypothesis that all of the γ_i jointly equal zero in the second line of (9). In case of a rejection resulting from both *F*-tests in (9), we have a bi-directional causality or a feedback relationship between x and y.

4.   Tests of Stationarity

Before discussing the results of our ARDL bounds tests and Granger causality tests, we show the results of stationary tests. These preliminary tests are useful to illustrate the difficulty in assessing the stationarity of the institutional quality series and, consequently, the appropriateness of adopting the ARDL bounds test approach. Table 1 shows the results of Dickey-Fuller (DF) and augmented Dickey-Fuller (ADF) tests for the underlying series of GDP growth, investment growth, rule of law, and democratic accountability for the sample period from the first quarter of 1984 to the third quarter of 2003. As expected, both the growth rates of real GDP and investment generate ADF test statistics that are almost all larger in magnitude than their respective critical values for no trend and with trend, which leads to the rejection of the null hypothesis of a unit root in these series. However, the same cannot be said for the indexes of the rule of law and democratic accountability. Both series generate ADF test statistics that are far smaller in magnitude than the critical values in all lags, which leads to a non-rejection of the null hypothesis of a unit root. Thus, there is strong evidence that both the growth rates of GDP and investment are stationary, whereas the rule of law and democratic accountability appear to be non-stationary in the full sample period.

Table 1: Unit root tests for stationarity: GDP growth, investment growth, the rule of law, and democratic accountability

Lag	$G\dot{D}P$		$I\dot{N}V$	
	No Trend	Trend	No Trend	Trend
DF	-2.7343	-3.3218	-3.3366	-3.7297
ADF(1)	-3.9268	-4.4849	-2.7954	-3.1898
ADF(2)	-3.6397	-4.3123	-3.1114	-3.5560
ADF(3)	-5.0667	-6.2114	-4.5007	-5.1614
ADF(4)	-3.6616	-4.7413	-3.7178	-4.3978
ADF(5)	-3.4170	-4.6965	-2.8413	-3.5058
ADF(6)	-2.5185	-3.6785	-2.5080	-3.1654
5% C.V.	-2.9017	-3.4721	-2.9017	-3.4721
	RL		DA	
DF	-1.9762	-1.9472	-1.8960	-1.9388
ADF(1)	-1.8180	-1.7857	-2.0850	-2.1592
ADF(2)	-1.8980	-1.8663	-2.1121	-2.1911
ADF(3)	-2.0673	-2.0390	-2.1725	-2.2582
ADF(4)	-2.1835	-2.1567	-2.2357	-2.3293
ADF(5)	-2.1375	-2.1116	-2.6420	-2.7436
ADF(6)	-2.3925	-2.3713	-2.5477	-2.6698
5% C.V.	-2.9017	-3.4721	-2.9017	-3.4721

Note: DF and ADF denote Dickey-Fuller and Augmented Dickey-Fuller. $G\dot{D}P$ = growth rate of real GDP, $I\dot{N}V$ = growth rate of real investment, RL = rule of law, DA = democratic accountability. Tests conducted for the sample period from 1st quarter 1984 to 3rd quarter 2003. 5% C.V. stands for critical value at the 5 percent significance level.

Based on the ADF test results for the full sample in Table 1, the rule of law and democratic accountability appear to be non-stationary. However, when we split the full sample and conduct ADF tests for the sub-sample of 1997:3 to 2003:3, the results suggest that both the rule of law and democratic accountability are stationary, leading us to believe that the two series may be $I(0)$ if we allow a one-time change in the level and/or the slope of the trend function of the series.[9] We use the Zivot and Andrews (1992) test of stationarity with an endogenous break in level and/or trend to test this. The advantage of the Zivot and Andrews test is that it does not require the researcher to assume a break point in the series a priori, which is particularly appropriate in our case because various possible break dates suggest themselves and it is not clear a priori which is the most important.

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[9] We do not show the ADF test results for the two sub-samples to save space, but they are available upon request.

Table 2 shows the results of the Zivot and Andrews test. In Panel A, test statistics at various lags for a break in mean and a break in mean and trend are larger in magnitude than their respective critical values. Thus, the results clearly show that the rule of law series is trend-stationary after allowing for a one-time change in the level of the series, as well as in the level and the slope of the trend function of the series. The break point identified by the test is the fourth quarter of 1993. For the democratic accountability series in Panel B, only the test statistics at the fourth lag for a break in mean and a break in mean and trend are larger in magnitude than their respective critical values. Thus, there is some evidence that the democratic accountability series is trend-stationary after allowing for a one-time change in the level of the series, as well as in the level and the slope of the trend function of the series. However, such a conclusion is sensitive to the number of lags that are included in the test. The break point is estimated to be the third quarter of 1997, which coincides with the reversion of Hong Kong's sovereignty to China.

Table 2: Zivot and Andrews (1992) Test for Rule of Law and Democratic Accountability

Lag	Break in mean		Break in trend		Break in mean and trend	
	Statistic	Break	Statistic	Break	Statistic	Break
Panel A: Rule of Law						
1	-5.372	1993:4	-3.567	1993:3	-5.249	1993:4
2	-5.356	1993:4	-3.677	1993:3	-5.195	1993:4
3	-5.398	1993:4	-3.877	1993:3	-5.210	1993:4
4	-5.425	1993:4	-4.274	1993:3	-5.218	1993:4
5	-5.596	1993:4	-4.287	1993:3	-5.372	1993:4
6	-5.777	1993:4	-4.581	1993:3	-5.577	1993:4
Panel B: Democratic Accountability						
1	-3.983	1997:3	-3.391	1997:3	-4.507	1997:3
2	-4.150	1997:3	-3.546	1997:3	-4.639	1997:3
3	-4.447	1997:3	-3.822	1997:3	-4.911	1997:3
4	-4.862	1997:3	-4.192	1997:3	-5.325	1997:3
5	-4.553	1997:3	-3.998	1997:3	-4.825	1997:3
6	-4.286	1997:3	-3.772	1997:3	-4.389	1997:3
5% C.V.	-4.80		-4.42		-5.08	

Note: 5% C.V. stands for critical value at the 5 percent significance level.

We interpret the results of the stationary tests as suggesting that there is considerable uncertainty over whether the rule of law and the democratic accountability series contain a unit root, and therefore a degree of uncertainty over whether a long-run equilibrium

relationship can exist between the series of institutional quality and the growth rate of GDP. We therefore use the ARDL bounds test approach of Pesaran et al. (2001) to assess the existence of such a long-run relationship because, in contrast to more traditional cointegration tests, this method does not require all of the variables to be integrated of the same order.

5.   The ARDL Bounds Test for the Existence of a Long-run Relationship

The results of the ARDL bounds tests are presented in Table 3. We show the results from using the rule of law and democratic accountability as a measure of institutional quality in Panels A and B respectively. The results of estimating (7) using the rule of law as a measure of institutional quality are shown in the first row of Panel A. They indicate that ARDL(6,1) is an appropriate model because it is parsimonious and its error terms are not serially correlated, as indicated by the value of the Lagrange Multiplier test statistic of 3.745 with a P-value of 0.442. The test for the presence of a long-run relationship between the rule of law and the growth rate of GDP results in a *F*-statistic of 3.005, which is below the lower critical value bound of 4.94, thus indicating that the null hypothesis of no long-run relationship between the rule of law and growth rate of GDP cannot be rejected at the 5 percent level of significance. The last column in Table 3 shows the long-run effect of the forcing variable, x_t, on y_t as indicated by the calculated coefficient, π, of (8). We calculated π to be –0.591 between the rule of law and the growth rate of GDP with a P-value of 0.383. As the *F*-statistic indicates that there is no evidence of a long-run relationship between the rule of law and the growth rate of GDP, we can ignore its calculated π.

The results of estimating (7) using democratic accountability as a measure of institutional quality are shown in the first row of Panel B. We find that ARDL(3,1) is an appropriate model in this case. The value of the χ^2 statistic of 5.981 indicates that there is no evidence of serial correlation, and the *F*-statistic of 15.677 allows us to convincingly reject the null hypothesis of no long-run relationship between democratic accountability and the growth rate of GDP. Moreover, the calculated π indicates that, on average, for every one point increase in the rating of democratic accountability, the growth rate of GDP in Hong Kong increases by approximately 1.53 percentage points in

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the long run. This estimated long-run coefficient is statistically significant at the 4 percent level, as indicated by its P-value.

Table 3: ARDL Bounds Test for a Long-run Relationship

Equation	y_t	x_t	p	q	χ^2 (P-value)	F-statistic (P-value)	π (P-value)
Panel A: Rule of law (RL)							
(7)	GDP growth	RL	6	1	3.745 (0.442)	3.005 (not reject)	-0.591 (0.383)
(10)	RL	GDP growth	1	1	1.908 (0.753)	1.860 (not reject)	0.040 (0.303)
(11)	Investment growth	RL	3	1	3.634 (0.458)	9.675 (reject)	1.765 (0.284)
Panel B: Democratic accountability (DA)							
(7)	GDP growth	DA	3	1	5.981 (0.201)	15.677 (reject)	1.525 (0.040)
(10)	DA	GDP growth	1	1	4.411 (0.353)	2.755 (not reject)	0.019 (0.417)
(11)	Investment growth	DA	3	1	4.520 (0.340)	15.229 (reject)	4.822 (0.004)

Note: The upper and lower critical value bounds for *F*-statistics are 5.73 and 4.94 for the 5% significance level. The P-value for π is calculated using the delta method. y_t is the explained variable and x_t is the explanatory variable. p and q are the number of lagged differences of the explained and explanatory variables. The χ^2 statistic tests for the presence of serial correlation. The *F*-statistic tests for the presence of a long-run equilibrium relationship between the explained and explanatory variables. π is an estimate of the long-run marginal effect of the explanatory variable on the explained variable (see (8)).

In (7), we assume that institutional quality is long-run forcing for the growth of GDP. If, instead, we assume that the growth rate of GDP is forcing for institutional quality as in (10) below, then can we still detect a long-run relationship between the same two variables?

$$(10)\ \Delta IQ_t = \alpha + \theta\ G\dot{D}P_{t-1} + \sigma\ IQ_{t-1} + \sum_{j=1}^{p-1} \beta_{G\dot{D}P,j}\Delta G\dot{D}P_{t-j} + \sum_{j=1}^{q-1} \beta_{IQ,j}\Delta IQ_{t-j} + \varpi\ \Delta G\dot{D}P_t + \mu_t$$

The estimation results for (10) in Table 3 indicate that there is no evidence of a long-run relationship between institutional quality and the growth rate of GDP when institutional quality is assumed to be forcing for the growth of GDP. For both measures of institutional quality, the optimal model is ARDL(1, 1), and both measures show *F*-statistics that fall below the lower critical value bound, which leads to the non-rejection

of the null hypothesis of no long-run relationship between the growth rate of GDP and institutional quality. Thus, the results of (10) show strong evidence that the growth rate of GDP has little impact on institutional quality as measured by the rule of law or democratic accountability in the long run. Our assumption of institutional quality as long-run forcing for the growth rate of GDP is thus validated.

Since we argue that one of the main channels through which institutional quality affects the growth rate of GDP is investment, we should then observe a long-run relationship between institutional quality and the growth rate of investment, as specified by (11) below.

$$(11) \quad \Delta I\dot{N}V_t = \alpha + \theta \, I\dot{N}V_{t-1} + \sigma \, IQ_{t-1} + \sum_{j=1}^{p-1} \beta_{I\dot{N}V,j} \Delta I\dot{N}V_{t-j} + \sum_{j=1}^{q-1} \beta_{IQ,j} \Delta IQ_{t-j} + \varpi \, \Delta IQ_t + \mu_t$$

The estimation results of (11) in Table 3 show that there is a long-run relationship between the growth rate of investment and institutional quality. Both measures of institutional quality in Table 3 indicate an optimal model of ARDL(3, 1) with an F-statistic that is greater than the critical value upper bound at the 5 percent significance level, which leads to a rejection of the null hypothesis of no long-run relationship. It should be noted, however, that the long-run relationship between the growth rate of investment and the rule of law is degenerate, which is shown by the statistically insignificant calculated π for (11) in Panel A of Table 3 (P-value = 0.284). A degenerate long-run relationship means that the growth of investment depends on its own lagged values and not on the lagged value of the rule of law. However, the long-run relationship between the growth rate of investment and democratic accountability is not degenerate, because the calculated π is 4.822 with a P-value of 0.004. That is, for every one point increase in the rating of democratic accountability, the growth rate of investment, on average, increases by roughly 4.8 percentage points in the long-run.

In sum, this section discusses the ARDL bounds test approach and its application to finding a long-run relationship between measures of institutional quality and the growth rate of GDP, and between measures of institutional quality and the growth rate of investment. We find the existence of a long-run relationship between the growth rate of

GDP and democratic accountability, but not between the growth rate of GDP and the rule of law. The absence of a relationship between growth and the rule of law might be explained by the observation that the rule of law remained very stable over the sample period, so that if a relationship does exist it is not discernible in our data set. These results were dependent on the assumption that institutional quality is long-run forcing for the growth rate of GDP, an assumption which was supported by tests of its validity. We also find a long-run relationship between the growth rate of investment and each measure of institutional quality, although that for the rule of law is degenerate. Thus, on the whole, the evidence is supportive of the claim that the growth rate of GDP in Hong Kong over the full sample period depended directly and indirectly on institutional quality as measured by democratic accountability.

6. Granger Causality Tests

The results of the Granger causality tests are presented in Panel A (for the rule of law) and Panel B (for democratic accountability) of Table 4. The columns for m and n give the optimal number of lags for the explained and explanatory variables. The choice of optimal lags was based on the criteria of parsimony and absence of serial correlation, which can be tested by using the χ^2 statistic. The F-statistic tests the null hypothesis of $\lambda_1 = \lambda_2 = \cdots = \lambda_n = 0$ or $\gamma_1 = \gamma_2 = \cdots = \gamma_m = 0$ in (9). The rejection of the null hypothesis based on the F-statistic indicates that the explanatory variable Granger causes the explained variable. The last column of Table 4 shows the estimated coefficient of y_{t-1}, $\hat{\lambda}_i$, or x_{t-1}, $\hat{\gamma}_i$, in (9). From these estimated coefficients, we can roughly see the magnitude and direction of the causal relationship between the explained and explanatory variables.

First, Panel A indicates that using the rule of law as a measure of institutional quality does not give rise to any significant dynamic short-run causal relationship, as indicated by the insignificant F-statistics. For example, in Row 1 when the current growth rate of GDP is regressed on its own lagged values and the lagged values of the rule of law, the F-statistic for testing $\lambda_1 = \lambda_2 = \cdots = \lambda_n = 0$ is 0.035 with a P-value of 0.852. Thus, the rule of law does not contribute to predicting the growth rate of GDP at all. The second

line in Row 1 gives the results when the current rule of law is explained by its own lagged values and the lagged values of the growth rate of GDP. Again, we see no evidence that the growth rate of GDP contributes to predicting the rule of law, as reflected by the insignificant F-statistic.

Table 4: Granger Causality Test

Row	Explained variable	Explanatory variable	m	n	χ^2 (P-value)	F-statistic (P-value)	$\hat{\lambda}_i$ or $\hat{\gamma}_i$ (P-value)
Panel A: Rule of law (RL)							
1	GDP growth	RL	7	1	3.977 (0.409)	0.035 (0.852)	$\hat{\lambda}_1 = -0.078$ (0.426)
	RL	GDP growth	1	1	1.937 (0.747)	0.440 (0.509)	$\hat{\gamma}_1 = 0.004$ (0.255)
2	Investment growth	RL	4	1	3.284 (0.511)	0.740 (0.393)	$\hat{\lambda}_1 = 0.987$ (0.197)
	RL	Investment growth	1	1	2.182 (0.702)	0.010 (.919)	$\hat{\gamma}_1 = 0.000$ (0.460)
Panel B: Democratic accountability (DA)							
3	GDP growth	DA	4	2	6.511 (0.164)	3.000 (0.056)	$\hat{\lambda}_1 = 1.262$ (0.041)
	DA	GDP growth	1	1	3.399 (0.493)	0.008 (0.929)	$\hat{\gamma}_1 = 0.001$ (0.465)
4	Investment growth	DA	4	1	6.654 (0.155)	6.793 (0.011)	$\hat{\lambda}_1 = 2.190$ (0.006)
	DA	Investment growth	1	1	4.273 (0.370)	0.750 (0.389)	$\hat{\gamma}_1 = 0.005$ (0.195)

Note: m and n give the optimal number of lags for the explained and the explanatory variables, the χ^2 statistic tests the presence of serial correlation, and the F-statistic tests the significance of $\lambda_1 = \lambda_2 = \cdots = \lambda_n = 0$ or $\gamma_1 = \gamma_2 = \cdots = \gamma_m = 0$ in (9). $\hat{\lambda}_i$ and $\hat{\gamma}_i$ are the estimated coefficients of y_{t-1} and x_{t-1} in (9).

In Row 2 of Table 4, we report the results of tests of the short-run dynamic causal relationship between the growth rate of investment and the rule of law. The χ^2 statistic confirms the absence of serial correlation because the P-values are all larger than 0.05. For Row 2, the F-statistics are insignificant, which reflects an absence of causation between the rule of law and investment growth in either direction.

In Rows 3 and 4 of Table 4 we show the results of dynamic short-run causal relationships between the growth rate of GDP and democratic accountability, and between the growth rate of investment and democratic accountability. The results in the first line of Row 3 show that the growth rate of GDP is significantly predicted by the lagged values of democratic accountability at the 5.6 percent level. In the last column, the estimated effect of last quarter's democratic accountability on the current growth rate of GDP, $\hat{\lambda}_1$, is 1.262 with a marginal significance level of 4.1 percent. Thus, on the average, for every one-point increase in the rating of democratic accountability, next quarter's GDP will increase by 1.26 percent. The second line in Row 4 shows the results of using the growth rate of GDP to explain democratic accountability. As expected, there is no evidence that, even in the short-run, the growth of GDP has any significant effect on democratic accountability.

In Row 4, the results of using democratic accountability to predict the growth of investment and vice versa are shown. The F-statistic of 6.793 indicates that democratic accountability is a highly significant predictor of the growth of investment. The effect of last quarter's democratic accountability on the current growth rate of investment is estimated to be 2.190, which suggests that for every one-point increase in the rating of democratic accountability, investment will grow by roughly 2.2 percentage points in the current quarter. The estimated effect is statistically significant at the 0.6 percent level. Does the growth of investment help increase democratic accountability? The answer is no, as indicated by the results in the second line of Row 5. The F-statistic of 0.750 reflects that the growth rate of investment has no predictive power for democratic accountability.

In sum, the Granger causality tests show that democratic accountability is a good predictor of the growth rates of GDP and investment in the short-run. However, none of these causal relationships involving democratic accountability are bi-directional, meaning that the causality only runs from democratic accountability to either the growth of GDP or investment, and not in the opposite direction. Moreover, tests in this section show no significant dynamic causal relationships involving the rule of law.

7. Robustness Tests

We have so far addressed the existence of long- and short-run causal relationships between the growth rate of GDP and institutional quality. However, in a more realistic setting, the growth rate of GDP is affected not only by institutional quality, but also by other important macroeconomic variables. The literature on institutions and growth suggests that an important additional macro variable is investment. Therefore, we check whether there is a long-run equilibrium relationship among institutional quality, the growth rate of investment, and the growth rate of GDP as specified by (12) below.

$$\Delta G\dot{D}P_t = \alpha + \theta \ G\dot{D}P_{t-1} + \omega \ I\dot{N}V_{t-1} + \sigma \ IQ_{t-1} + \sum_{j=1}^{p-1} \beta_{G\dot{D}P,j}\Delta G\dot{D}P_{t-j} + \sum_{j=1}^{q-1} \beta_{I\dot{N}V,j}\Delta I\dot{N}V_{t-j}$$

$$(12)$$

$$+ \sum_{j=1}^{n-1} \beta_{IQ,j}\Delta IQ_{t-j} + \lambda \ \Delta I\dot{N}V_t + \varpi \ \Delta IQ_t + \mu_t$$

(12) assumes that both institutional quality and the growth rate of investment are long-run forcing for the growth rate of GDP. It allows institutional quality to affect the growth rate of GDP directly through efficiency and indirectly through the channel of investment growth in physical capital. In this section, we drop the use of rule of law as a measure of institutional quality and use only democratic accountability in the robustness checks because we could not detect long- and short-run causal relationships between the rule of law and the growth rate of GDP in previous analysis.

The ARDL bounds test results that are shown in Panel A of Table 5 confirm that there is a long-run relationship among the growth rate of GDP, democratic accountability, and investment growth. Moreover, the relationship is not degenerate because the calculated π is highly significant with a P-value of 0.043. Thus, the growth rate of GDP depends not only on its own lagged values, but also on the lagged values of democratic accountability even after controlling for the effect of the growth of investment on the growth of GDP. This finding indicates that, in addition to its indirect effect through investment, democratic accountability has an independent effect on the growth rate of GDP in Hong Kong.

Table 5: Robustness Checks for the Effects of Investment Growth and the Asian Financial Crisis

Explained variable	Explanatory variables	p	q	n	χ^2 (P-value)	F-statistic (P-value)	π (P-value)	Estimate (P-value)
Panel A: ARDL bounds test								
GDP growth	Investment growth, DA	1	1	1	8.974 (0.062)	10.044 (reject)	4.576 (0.043)	N/A
Panel B: Granger causality test								
GDP growth	Investment growth, DA	1	1	1	8.212 (0.084)	10.477 (0.002)	N/A	$\widehat{\lambda}_1 = 1.1144$ (0.001)
DA	Investment growth, GDP growth	1	1	1	5.061 (0.281)	0.201 (0.655)	N/A	$\widehat{\gamma}_1 = -0.005$ (0.328)
Panel C: The Asian Financial Crisis								
GDP growth	DA, DAFC	3	1	N/A	8.440 (0.077)	15.805 (0.000)	1.250 (0.075)	$\rho_D = -1.764$ (0.082)
Investment growth	DA, DAFC	3	1	N/A	4.641 (0.326)	13.150 (0.000)	4.800 (0.006)	$\rho_D = -0.368$ (0.940)
GDP growth	Investment growth, DA, DAFC	5	1	1	8.049 (0.090)	6.293 (0.001)	3.087 (0.050)	$\rho_D = -2.1827$ (0.211)

Note: Institutional quality is measured by democratic accountability (DA). DAFC is a dummy with a value of 1 for the last quarter of 1997 and the first quarter of 1998, and 0 otherwise. p is the number of lagged differences of the explained variable and q and n are the numbers of lagged differences of the explanatory variables as listed in Column 2. The χ^2 statistic tests for the presence of serial correlation. The F-statistic tests for the presence of a long-run equilibrium relationship between the explained and explanatory variables, and π gives an estimate of the long-run margin effect of DA on the explained variable. $\hat{\lambda}_i$ and $\widehat{\gamma}_i$ are the estimated coefficients of y_{t-1} and x_{t-1} in (9). ρ_D is the estimated coefficient for the dummy DAFC. The upper and lower critical value bounds for the F-statistic are 4.85 and 3.79 for the 5% significance level. The P-value for π is calculated using the delta method.

We report the results of the Granger causality test for GDP growth using democratic accountability and investment growth as explanatory variables in Panel B, Table 5. Here, we intend to check whether the short-run causal relationship between GDP growth and democratic accountability still holds if we control for the effect of investment growth. The results in the first row of Panel B, Table 5, show that democratic accountability, in the presence of the growth rate of investment, is a highly significant predictor of the growth rate of GDP, as shown by the F-statistic of 10.477 or P-value of 0.002. It is also estimated that for every one-point increase in the rating of last quarter's democratic accountability, the growth rate of GDP increases by 1.14 percentage points in the presence of the growth rate of investment. The second row of Panel B presents results in the opposite direction: democratic accountability is explained by the growth rate of GDP

in the presence of the growth of investment. The results, as expected, show no sign of a feedback relationship running from the growth rate of GDP to democratic accountability.

We now consider the effects of the 1997 Asian financial crisis on the Hong Kong economy, which some critics believe explains the economic downturn and recession after the institutional changeover in July 1997. On October 23, 1997, the Hong Kong dollar came under speculative attack, but Hong Kong maintained its currency link with the US dollar at 7.75 HKD/USD. This brought about a sudden and substantial loss of competitiveness in relation to its neighbors in competing goods and services, and put considerable downward pressure on the rate of GDP growth.[10] It is possible that it was this shock rather than changes in democratic accountability that explains the subsequent slowdown in economic activity. We address this issue by controlling for the onset of the Asian financial crisis in our analysis of the growth/institutional quality relationship. A dummy variable, *DAFC*, which takes the value of 1 for the last quarter of 1997 and the first quarter of 1998, and 0 otherwise, is added to the ARDL model of (7) as follows.

$$(13) \quad \Delta G\dot{D}P_t = \alpha + \rho_D DAFC + \theta \ G\dot{D}P_{t-1} + \sigma \ IQ_{t-1} + \sum_{j=1}^{p-1} \beta_{G\dot{D}P,j} \Delta G\dot{D}P_{t-j} + \sum_{j=1}^{q-1} \beta_{IQ,j} \Delta IQ_{t-j} + \varpi \ \Delta IQ_t + \mu_t$$

The results of estimating the extended model of (13) are shown in the first row of Panel C, Table 5. We see that *DAFC* has an expected negative sign in the growth equation, although it is only marginally significant ($\hat{\rho}_D = -1.764$ with a P-value = 0.082). Moreover, and most importantly, we see that when the Asian financial crisis dummy is added to the model, democratic accountability still has a stable long-run relationship with the growth rate of GDP (*F*-statistic = 15.805 with a P-value = 0.000). We also see that the estimated long-run marginal effect of democratic accountability on GDP growth, π, is not substantially reduced by the introduction of the Asian financial crisis control variable (from 1.525 to 1.250). Thus, although the Asian financial crisis negatively affected the growth rate of GDP, it cannot explain away the stable long-run relationship between the

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[10] See Groenewold and Tang (2004) for a discussion of the effects of the 1997 Asian financial crisis on the newly industrializing economies of Asia.

growth rate of GDP and democratic accountability and the negative effects of the institutional change in 1997 on Hong Kong's growth rate.

The results in the second row of Panel C of Table 5 show that the long-run relationship between democratic accountability and the growth rate of investment remains relatively unchanged despite adding the *DAFC* dummy (*F*-statistic = 13.150 with a P-value = 0.000). This reflects the fact that the onset of the Asian financial crisis had little effect on the growth of investment, as also shown by the insignificant estimate of *DAFC* of −0.368 (with a P-value of 0.940) and the negligible change in the long-run marginal effect of investment coefficient (π changes from 4.822 to 4.800). Finally, if we add the dummy variable *DAFC* with the growth rate of investment and democratic accountability to explain the growth rate of GDP in the last row of Panel C, the long-run relationship again survives the control for the effects of the onset of Asian financial crisis. The effect of democratic accountability on the growth rate of GDP is statistically significant at the 5 percent level (*F*-statistic = 6.293 with a P-value of 0.001). The dummy variable *DAFC* that represents the effects of the onset of Asian financial crisis is again insignificant ($\hat{\rho}_D$ = −2.1827 with a P-value = 0.211).

The robustness tests strongly confirm that institutional quality as measured by democratic accountability has a stable long-run relationship with the growth rate of GDP and the growth rate of investment. The test results show that we can observe stable long- and short-run causal relationships between the two series even after accounting for the effects of important macroeconomic variables such as investment growth and temporary events such as the Asian financial crisis.

8. Conclusion

This paper empirically investigates how changes in institutions in Hong Kong over the past two decades, and in particular since the changeover of sovereignty in 1997, have affected Hong Kong's economic growth. A number of government policies, including the proposed national security law, the referral of judgments of the Hong Kong Court of Final Appeal to the Standing Committee of the National People's Congress, the decision to supply 85,000 public housing units a year, and the rejection of universal suffrage in 2008 for the legislative council and the chief executive by the Standing Committee of the

National People's Congress, have all reduced the responsiveness of the Hong Kong SAR government to its people, as reflected by its worsening rating of democratic accountability. In contrast to democratic accountability, the rule of law in Hong Kong has remained strong and stable over the course of institutional change.

Our empirical evidence shows a significant stable long-run relationship between democratic accountability and the growth rate of GDP for the sample period from 1984 to 2003. Using the ARDL bounds test approach, we establish that institutional quality, as measured by democratic accountability, is a statistically significant contributor to Hong Kong's real GDP growth and real investment growth. Thus, among other things, both real GDP growth and investment growth depend on the development of democratic accountability in the long run. Moreover, Granger causality tests reveal that democratic accountability Granger causes real GDP growth and investment growth in Hong Kong in the short run. This finding adds further weight to the argument that democratic accountability is important for economic growth in Hong Kong not only in the long run, but also in the short run.

We do not detect a stable long-run relationship between the rule of law and the real growth rates of GDP and investment in Hong Kong. We explain this result by noting that Hong Kong's rule of law has remained remarkably strong and stable over the sample period, as illustrated in Figure 1. Thus, it is not possible to account for the variations in GDP and investment growth rates using a series that is close to invariant through time.

Another finding that deserves mention here is that the stable long-run relationship between democratic accountability and the growth rates of GDP and investment is uni-directional. That is, we detect a stable long-run relationship only when we assume that democratic accountability is the long-run forcing variable for the growth rates of GDP and investment. The same holds true for the Granger causation tests: the direction of causation runs only from democratic accountability to the growth rates of GDP and investment, and not the other way. Thus, there is no evidence to support the argument that higher growth rates of GDP and investment in Hong Kong in the sample period influenced the development of democratic accountability.

We subject our empirical results to robust testing using variables that control for the effects of investment growth and the onset of Asian financial crisis. We find that

democratic accountability has an independent effect on GDP growth in addition to its indirect effect through the investment channel. We also find that controlling for the onset of the Asian financial crisis has little effect on our results. The crisis, which hit Hong Kong in October 1997, cannot completely explain Hong Kong's protracted economic downturn in recent years. The results suggest that what is driving the long-run relationship between democratic accountability and the growth rates of GDP or investment is relatively unaffected by temporary events such as the 1997 Asian financial crisis.

The policy implications of our findings are clear. Institutional change in 1997 has had a negative effect on democratic accountability in Hong Kong, which in turn directly or indirectly slows down the growth rate of GDP. It is not the Asian financial crisis, but the worsening democratic accountability and investment climate that should be blamed for most of the Hong Kong's experience of prolonged economic downturn. Moreover, the results of this paper imply that policy makers should not view improving democratic accountability as involving a cost in terms of lower economic growth, as has been argued in the Hong Kong press. On the contrary, improving democratic accountability is a source of faster growth of GDP and investment both in the long and short run, and any impediments to democratic reform are likely to be detrimental to Hong Kong's continuing prosperity.

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