

# Confucianism, growth and democracy

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Confucianism  
on growth

149

## Abstract

**Purpose** – The purpose of this article is to investigate the impact of Confucianism on growth under different political regimes.

**Design/methodology/approach** – The empirical specification adopts a two-regime panel threshold model proposed by Hansen (1999) to endogenously divide our country sample into two-regime-types – autocracy and democracy – according to a country's democratic stock or experiences.

**Findings** – The results show that the effect of Confucianism on growth exhibits an asymmetrical pattern depending on the status of a country's political democracy. Only when a moderate level of freedom has already been attained can Confucianism have a positive effect on growth. Conversely, for autocracies whose democratic institutions cannot pass a certain threshold, Confucianism has a very limited effect in terms of changing economic activity.

**Research limitations/implications** – If the data with different sample years and/or different sample countries are used, the research results may lack generalizability. Further tests of the two-regime model with different data sizes are encouraged.

**Originality/value** – The authors use the World Values Survey (WVS) map to identify the countries under the influence of Confucianism. The authors emphasize that focusing only on political geography may overlook the information from the spread of cultural traits that accompanied the migration of people. So, based on the Confucian countries suggested by the WVS and the migration matrix of Putterman and Weil (2010), an immigration-based Confucianism variable was constructed. To accommodate different effects of Confucianism on growth in different phases of political development, the empirical specification adopts an asymmetrical pattern to investigate the impact of Confucianism on economic performance.

**Keywords** Confucianism, Growth, Democracy, Two-regime panel threshold model

**Paper type** Research paper

Received 4 December 2019  
Revised 18 February 2020  
Accepted 19 February 2020

## 1. Introduction

Confucianism is alleged to both promote and inhibit economic development in the economics literature. All possible results – ranging from a significantly positive effect to a significantly negative influence – have been reported in the literature. Chronologically, Weber (1915) first proposed that Confucianism is inimical to modern capitalistic development. Until the 1960s, most researchers in both the East and West still shared Weber's view that the Confucian ethic is clearly an obstacle to democratization and modernization, since its emphasis on collectivism and deference might have a negative impact on growth [1]. For Asian societies to take off economically, traditional Confucianism has to be modified or even entirely abolished. However, in the early 1970s, this argument was considerably weakened by the economic success of East Asian countries which grew rapidly under Confucian culture and one-party dictatorships. To explain such changes, many researchers thus began to argue that

## JEL Classification — O43

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Journal of Economics and  
Development  
Vol. 22 No. 1, 2020  
pp. 149-166  
Emerald Publishing Limited  
e-ISSN: 2632-5330  
p-ISSN: 1859-0020  
DOI 10.1108/JED-11-2019-0066

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Confucian collectivism could create an external environment conducive to cooperation between government and business that could hence foster growth.

In our opinion, the earlier literature suffers from four limitations that need to be addressed. First, as indicated by [Kim \(1997\)](#), these studies have mostly focused only on the relationship between Confucianism and democracy or between Confucianism and growth and studies that have explicitly considered the interrelationships among Confucianism, democracy and growth are very few in number.

Second, these studies overemphasize the existence of a linear or nonlinear relationship between culture and growth. The researchers have invariably used a one-step synthetic procedure to test whether or not Confucianism can influence economic activities. With competing views on both sides of the dispute, if the coefficient of Confucianism is positive and significant, then they would claim that it spurs growth by creating a culture suitable for growth. Nevertheless, they have failed to consider other possible asymmetrical scenario possibilities, such as an asymmetrical correlation pattern among culture, democracy and growth. For instance, that Confucianism can enhance growth under a democratic regime does not necessarily mean that it can also accelerate growth under an autocratic regime. The impact of Confucianism on growth may be different depending on whether the political regime is autocratic or democratic.

Third, previous studies on Confucianism mostly focus their attention on the economic performance of China or Taiwan. However, the real truth is that Confucianism is embodied in the people whose culture is Confucian but not in a specific geographical location. As a result, these studies may disregard information from other East Asian countries that is relevant to explore the influence of Confucian values. For instance, [Kahn \(1979\)](#) and [Chen \(2008\)](#) unanimously indicate that Korea is the most Confucian society in the world today, and Koreans protect and respect Confucian culture to a greater extent than even Chinese or Taiwanese. Some Koreans even claim that Confucius was a Korean. Besides, it is also well known that Confucian beliefs have influenced all aspects of Japanese society [\[2\]](#). To reflect this cultural homogeneity, based on the global cultural map project conducted by the World Values Survey (WVS) [\[3\]](#), we categorize China, Taiwan, Hong Kong, South Korea, Japan and Singapore as the Confucian societies in our cross-country analysis.

Finally, and more importantly, we emphasize that focusing only on political geography may overlook the information from the spread of cultural traits that accompanied the migration of people. For instance, Confucianism had for long spread throughout Southeast Asia (since the 3rd century BC) over a period of many generations with the migration of Chinese. After many generations of cultural transmission, Confucian traits affecting growth naturally influenced the norms in today's society. [Putterman and Weil \(2010\)](#) thus argue that it is the culture of the inhabiting populations, rather than a local place or geographic location that matters most for economic and political performance. More importantly, such a finding inspires a series of research efforts in recent years to explore the deep roots of economic development, such as [Spolaore and Wacziarg \(2013\)](#); [Easterly and Levine \(2016\)](#); [Murphy and Nowrasteh \(2018\)](#). This "Deep Roots" literature extensively investigates and provides reliable information and data of the effects of ancient cultural variables on economic outcomes. To further this line of study and to accommodate the cultural spread through migration, we use the immigration matrix of [Putterman and Weil \(2010\)](#), which provides the share of the contemporary population of each country that was descended from East Asian people in the year 1500, to measure the impact of Confucianism across various countries in the world.

Based on these considerations, this paper places its focus on the relationship between Confucianism and growth from the perspective of political development. Besides, to accommodate different effects of Confucianism on growth in different phases of political development, our empirical specification adopts an asymmetrical pattern to investigate the impact of Confucianism on economic performance. In particular, we use a two-regime panel

threshold model proposed by Hansen (1999) to endogenously divide our country sample into two-regime-types – autocracy and democracy – according to a country’s democratic stock or experiences. Therefore, the direction and magnitude of the impact of Confucianism on growth depends on the political regime observed in a given country in a given year. That a Confucian heritage can promote growth in democratic countries does not necessarily mean that it should also have a positive effect for autocracies. We hope that this specification can avoid situations in which too much attention is paid to the direct effect of Confucianism on growth, but too little emphasis is placed on the indirect effects of Confucianism on growth through the channel of political regimes.

Our results show that the effect of Confucianism on growth exhibits an asymmetrical pattern that depends on the status of a country’s political democracy. Only when a moderate level of freedom has already been attained can Confucianism have a positive effect on growth. Conversely, for autocracies whose democratic institutions cannot pass a certain threshold, Confucianism has a very limited effect in terms of changing economic activity.

The remainder of this paper is organized in the following manner. Section 2 discusses the relationships among Confucianism, democracy and growth. Section 3 describes the empirical strategy. Section 4 presents the empirical results. Section 5 investigates the robustness of the empirical results. Finally, Section 6 concludes the paper.

## 2. Confucianism, political institutions and economic growth

### 2.1 *Confucianism, democracy and growth*

With the economic miracles of East Asia and, in particular, the rise of China, some researchers became more confident in the tradition of Confucianism than had previously been the case. Confucianism was suddenly resurrected from the ashes of traditional relics and was treated equally or as even more important than the Weberian Protestant ethic. This belief is related in some way to the theory of Huntington (1987), according to which successful economic growth requires an authoritarian regime that can suppress individuals’ freedom and property rights since these freedoms might subvert the national development project. His argument is further supported by a body of the literature, such as Chirot (1977) and Rao (1984), which proposes that an autocratic system is usually better able to implement economic policies that are critical for rapid growth.

Since Confucianism emphasizes obedience to authority, this inevitably makes it a political philosophy that could create a political environment necessary to support autocracy. As a matter of fact, the miraculous economic growth in China, South Korea and Taiwan was mostly achieved under the authoritarian rule of the military regimes. Hence, this line of argument emphasizes that Confucian authoritarian leadership is the best political regime for East Asian countries. Nevertheless, this raises an internal contradiction in considering causality: if Confucianism can promote growth through an authoritarian regime, then why is it that China, which has remained the most autocratic regime for thousands of years, has lagged behind the Western countries in terms of economic development and modern science over the last century?

We argue that the previous changes in attitude toward Confucianism can be quite misleading in regard to getting a better understanding of the role played by Confucianism in East Asia’s economic performance. As indicated by Kim (1997), these studies mostly focus only on the relationship between Confucianism and democracy or between Confucianism and growth. Only occasionally some attention has been given to possible connections among the three. In a departure from the previous approach, this paper emphasizes that the impact of Confucianism on growth varies across different political regimes. In particular, we propose that Confucianism can promote growth only under democratic regimes, but it fails to account for economic growth under autocracy. This can be explained as follows.

### *2.2 Confucianism does not necessarily conflict with democracy*

Many studies argue that Confucian collectivism can create an external environment that is conducive to cooperation between the government and the private sector, and between the employer and the employee (Hofstede, 1980, 2001; Hofstede and Bond, 1988). However, we emphasize that the positive impact of Confucian collectivism on growth only occurs under a democratic regime, in which democratic institutions have passed a threshold level, and hence the society has reasonably broad power to regulate oppressive or inappropriate government regulations. In other words, the core elements of Confucianism, such as the emphasis on deference, responsibility and loyalty, are only compatible with democratic norms (Cheng, 1998; O'Dwyer, 2003; Chen, 2007). This argument is supported by a series of studies, such as O'Dwyer (2003) and Nuyen (2000), which propose that philosophical Confucianism is not only not an obstacle to democracy but could also be the foundation thereof. For instance, Mencius, the greatest successor of Confucius, said, "The people come first, the governmental sovereignty ranks next, and the ruler is the least important." Based on this, Mencius further argued that people are entitled to overthrow an incompetent monarch. Evidently, his argument implies that Confucian collectivism does indeed conform to the spirit of democracy or at least does not contradict the spirit of democracy.

### *2.3 Collectivism can only promote growth under democracy*

The fundamental reason why Confucianism promotes growth under democracy is that it can be seen as a principle of moral politics to deny the trade of politics, to remedy the extreme excesses of individualism, and finally to improve the quality of the democratic regime (Chan, 2000). This can be further explained in several respects.

First, Confucianism emphasizes education and uses it as a catalyst to maintain social harmony and order. This facilitates the formation of an educated mass of population and a social plurality that, in turn, provides a politically and economically educated and participating public with the ability to develop and review policies in ways that a paternalistic system or an anti-intellectual form of populism fails to do. As a matter of fact, the educated members of the general public who can be in communication with each other and with the policy-makers are key to achieving rapid growth without paying undue attention to interest-group demands (Fincher, 1989; He, 2016). However, it is difficult for these advantages to be realized under autocracy, since such a system lacks political competition, transparency and freedom of expression. Most intellectuals are symbolically gagged from speaking out and may even be placed under arrest.

Second, Confucian political philosophy can also be transformed into high-performing institutions to support growth under democratic regimes. For instance, the Confucian tradition of scholarly criticism could be transformed into a democratic, independent opposition party, which does not viably exist under a dictatorship (O'Dwyer, 2003). Besides, Confucian tolerance of plural religions could also promote social diversity and intergroup interactions, which contribute to economic performance at the national level (He, 2016).

Finally, Cressey (1929) argues that the Confucian "Ke-Ju (科舉)" culture not only encourages the elite to aspire to government service but also helps to create a civil examination system that operates competitively. More importantly, its democratic character enables the government to recruit its officials from the best intellectual material in the country. Still, only under a democratic regime can this civil examination system be developed into a system with equal access to public office and as a way of maintaining political stability and economic growth. Otherwise, under an autocracy, dictators will simply hand out important government positions to their close associates, and hence the civil service system will not function well.

### *2.4 Collectivism hinders growth under autocracy*

This subsection emphasizes that Confucian collectivism is a multifaceted phenomenon that can often be utilized by a dictatorship as a set of moral principles to discipline opposition forces. Under autocratic regimes, Confucian chivalry, such as the individual's responsibility to the group and deference to power, could easily be used by the monarch as a tool to promote totalitarian collectivism, since deference would produce a paternalistic society which refrains from questioning or critiquing those in power and would result in the sacrificing of human rights (Stout, 2004). Government authority becomes virtually the only institution responsible for the welfare of the people, and hence the power of the state is overwhelming. Even though there are free and fair elections, under centralized collectivism, political parties are still formed and operated around a political boss, in whose hand the power to nominate political candidates for elective positions is extremely concentrated. Such collectivism unsurprisingly could result in difficulties in economic development.

### *2.5 Summary*

As indicated by Sen (1999), democracy is a universal value, however, the magnitude of its positive effects in promoting economic development still depends on many other factors, such as the differences in culture as we emphasized in this article. Similarly, Confucianism has a positive impact on growth, but it had better come under the democratic framework. Hence, our temporary conclusion is that Confucianism is complementary with democracy so much that its advantage can only exist with democracy.

## **3. Empirical specification**

### *3.1 Two-stage phases*

Although Confucianism can enhance growth under a democratic regime, it can also be easily abused and used to justify an authoritarian regime which makes economic growth unsustainable. We thus propose that the effect of Confucianism on growth exhibits an asymmetrical pattern depending on a country's status in relation to political democracy. For autocratic countries whose political traditions fail to meet the threshold of democratic standards, Confucianism may have exerted negative effects on economic growth. Only for countries whose institutional frameworks have passed the threshold level can Confucian culture have a positive effect on growth.

### *3.2 Identification of democracy*

With regard to the choice of indicator to assess the degree of democracy, most democracy indicators, such as the International Country Risk Guide, Worldwide Governance Indicators and the Polity IV data are constructed to measure the flow (or current level) of democracy, but not the stock of democracy. Therefore, democracy is treated as an immediate cause of economic growth: this year's level of democracy is supposed to have an instantaneous influence on the growth for this year or the following year. However, as indicated by North (1990) and Glaeser *et al.* (2004), democracy should be defined as an institution designed to constrain executive power. More importantly, the constraint should be "permanent or durable", and hence the permanency or depth of institutions can be relied on to justify using history as an instrument for institutional quality today. Therefore, if democracy really matters for growth, then its influence should stem from a country's regime history, democratic experiences and long-lasting political institutions, but not from its current status.

The rationale is that most democracy indicators are flow measures, and hence focus too much attention on whether or not free elections have been held in the country in a given year. However, in terms of practical politics, there are too many political barriers, such as expensive

elections, vote buying, populism and unfair regulation, for politicians wanting to access state power. More often than not, these barriers exist in spite of democratic elections. Hence, the outcomes of the recent elections should not be overemphasized as a criterion of democracy. In particular, for most of the developing countries, this measure is extremely volatile and cannot be plausibly interpreted as reflecting the durable rules or procedures that the term “institutions” refers to.

Based on this, [Gerring \*et al.\* \(2005\)](#) indicates that it is the democracy stock (PSTOCK), rather than the democracy flow that has an influence on growth. In their opinion, the PSTOCK refers to a heritage which is accumulated over time through social interaction and citizenship learning, and hence is more pertinently used to investigate the relationship between democracy and economic performance.

### *3.3 Measurement of democracy stock*

Based on the previous argument, we define the PSTOCK as the accumulated flows of democracy level (POLITY), while a commonly used “polity score,” the Polity2 variable of the Polity IV database, is used as a proxy for POLITY. Polity2 captures the regime authority spectrum on a 21-point scale ranging from  $-10$  to  $+10$ . We use the same methodology as that of [Gerring \*et al.\* \(2005\)](#), in which each country’s PSTOCK is constructed by adding up its Polity2 scores from 1900 to the present year, with a 2% annual depreciation rate. This means that a country’s PSTOCK stretches back over many years, and hence can ensure that what we have is a long-term, persistent and stable indicator – the PSTOCK. For several nation–states that have missing values in Polity2 for some years, we impute values following their coding methodology.

Another advantage of PSTOCK is that it is exogenous to economic growth and hence can address potential endogeneity concerns. This is because a reverse causality might exist between growth and democracy, and hence the level of political democracy might adjust to a level that is optimal for a country’s economic development. Therefore, the causality might run from growth to democracy and might constitute an endogeneity problem. However, under the concept of the PSTOCK, it seems very unlikely that a country’s growth performance at time  $t$  would have had any effect whatsoever on its PSTOCK at time  $t-1$ , not to mention that our PSTOCK variable is a measure that extends back at least several decades.

### *3.4 Immigration matrix*

The literature on Confucianism mostly focuses its research target on Chinese geography rather than Chinese people or culture. However, recently, a vast body of the literature has emphasized that current economic performance is influenced by the early development of a country’s people, rather than of the place itself, by explicitly taking into account the ancestral composition of current populations [4]. These arguments propose that the key human characteristics (such as Confucianism) affecting growth are transmitted from generation to generation, explaining why deep historical legacies still affect outcomes today. For instance, [Putterman and Weil \(2010\)](#) use the heterogeneity of population origins to explicitly examine whether it is the historical legacy of the “places” or the historical legacy of the “populations” currently inhabiting these locations that matters more for contemporary economic performance. They construct a matrix showing the share of the contemporary population of each country descended from people in different source countries in the year 1500. [Table 1](#) is constructed by using their immigration matrix and the population data of Penn World Tables 8.0. Column (2) of [Table 1](#) shows that 100% of the people inhabiting China (denoted as WCFCN) are the descendants of their Chinese ancestors who lived in the 16th century, with the corresponding figures being 98% for Taiwan, 97% for Hong Kong, 77% for Singapore and 26% for Malaysia.

Country	(1) 2010 population, in millions	(2) WCFCN Chinese Descendants % of (1)	(3) WCF Confucian Descendants, % of (1)
Australia*	22.16	2.30	2.70
Belize	0.32	0.50	0.50
Brazil*	198.61	0.00	0.80
Cambodia	14.36	1.00	1.00
Canada*	34.13	3.59	4.09
China*	1340.97	100	100.00
Costa Rica*	4.55	1.00	1.00
Cuba	NA	1.00	1.00
Fiji	0.86	0.70	0.70
Guyana	NA	0.70	0.70
Hong Kong	6.99	97.00	97.10
Indonesia	241.61	2.00	2.00
Jamaica*	2.74	0.50	0.50
Japan*	127.32	0.00	100.00
Kazakhstan	16.31	1.40	2.10
Korea (South)*	49.09	0.00	100.00
Kyrgyzstan	5.46	2.00	2.00
Laos	6.26	9.00	9.00
Malaysia*	28.12	26.00	26.00%
Mauritius*	1.25	3.00	3.00
Mongolia	2.71	1.50	1.50
Netherlands*	16.63	0.50	0.50
New Zealand*	4.37	2.20	2.70
Panama*	3.62	1.50	1.50
Peru*	29.37	1.00	2.00
Portugal*	10.58	0.90	0.90
Saudi Arab	28.09	0.00	0.20%
Singapore*	5.08	77.00	77.5
Sweden*	9.38	0.00	0.70
Taiwan*	23.14	98.00	100.00
Thailand*	66.69	14.00	14.00

**Note(s):** \*Denotes the sample countries in this study

**Source(s):** Population figures in Column (1) are from Penn World Tables 8.0. Figures in Column (2) are calculated using the immigration matrix from Putterman and Weil (2010). WCF in Column (3) is the percent of people descended from six Confucian societies

**Table 1.**  
Chinese and Confucian  
descendants in 2010  
around the World

Still, on the issue of “places” and “populations”, Confucian culture is not limited in the area of China, Taiwan and Hong Kong, where ethnic Chinese are the majority. In fact, the cultures most strongly influenced by Confucianism also include those of Japan and Korea. To address this concern, we use the WVS map to identify the countries under the influence of Confucianism. More specifically, the WVS cultural map divides countries into nine clusters, namely, the English-speaking, Latin American, Catholic European, Protestant European, African, Islamic, South Asian, Orthodox and Confucian ones. Countries with similar cultural values are grouped into the same cluster. These cultural values include the importance of religion, parent–child ties, deference to authority, traditional family values, etc. In particular, each country is positioned according to its people’s values, but not its geographical location. This allows the map to measure cultural proximity rather than geographical proximity. Accordingly, it shows that China, Taiwan, Hong Kong, South Korea and Japan share the same cultural identity, reflecting their similar values in relation to Confucianism, despite their

geographical dispersion. Besides, although Singapore is not included in this map, we still include it in the Confucian group in our subsequent empirical study, since it is a society with a Chinese majority.

Finally, based on the Confucian countries suggested by the WVS and the migration matrix of Putterman and Weil (2010), we construct an immigration-based Confucianism variable and refer to it as WCF. This variable is used to measure the percent of people today who are descended from six Confucian countries, that is, China, Taiwan, Hong Kong, South Korea, Japan and Singapore. As shown in Column (3) of Table 1, the values of WCF are 100% for China, Taiwan, South Korea and Japan and are 97.1% and 77.5% for Hong Kong and Singapore, respectively. The WCF lies between 0 and 26% (Malaysia) for the remaining countries.

### 3.5 Two-regime panel threshold model and data sources

Following the rationale given above, we let the data endogenously divide countries into autocracies and democracies by using Hansen's two-regime panel threshold model. The two regimes are first defined as follows:

Autocratic regime if and only if  $I_A(-\infty, \gamma) = I_A(-\infty < \text{PSTOCKL}_{it} < \gamma)$

Democratic regime if and only if  $I_D[\gamma, \infty) = I_D(\gamma \leq \text{PSTOCKL}_{it} < \infty)$ , where the indicator function  $I_j(\cdot)$ ,  $j \in \{A, D\}$  takes the value 1 if the country's one-year lagged PSTOCK (PSTOCKL) meets the inequality expression and 0 otherwise.  $\gamma$  is an unknown threshold parameter to be estimated. Using the indicator functions,  $I_j(\cdot)$ ,  $j \in \{A, H, D\}$  and allowing all parameters apart from  $\gamma$  to vary across different regimes, we can specify the two-regime panel threshold model as a single equation. For the observations in any one of the two regimes, the Confucianism-growth nexus is established as the Mankiw *et al.* (1992, MRW) growth model augmented by the Confucian variables:

$\text{GROWTH}_{it}$

$$\begin{aligned} &= (\beta_{AI} \ln I_{it} + \beta_{AL} \ln L_{it} + \beta_{AE} \ln ED_{it} + \beta_{AY} \ln Y_{0i} + \beta_{At} YR_t + \beta_{Aw} \text{WCF}_{it} + \beta_{AP} \text{POLITY}_{it-1} \\ &\quad + X\delta_A) \times I_A(-\infty, \gamma) + (\beta_{DI} \ln I_{it} + \beta_{DL} \ln L_{it} + \beta_{DE} \ln ED_{it} + \beta_{DY} \ln Y_{0i} + \beta_{Dt} YR_t \\ &\quad + \beta_{Dw} \text{WCF}_{it} + \beta_{DP} \text{POLITY}_{it-1} + X\delta_D) \times I_D[\gamma, \infty) + \varepsilon_{it}. \end{aligned} \tag{1}$$

or, in matrix form

$$G = (ZB_A + X\Gamma_A) \times I_A(-\infty, \gamma) + (ZB_D + X\Gamma_D) \times I_D[\gamma, \infty) + \varepsilon, \tag{2}$$

in which  $\text{GROWTH}_{it}$  is the annual growth rate of real gross domestic product (GDP) per capita of country  $i$  in year  $t$ .  $I_{it}$ ,  $L_{it}$  and  $Y_{i0}$  are the investment share of GDP, effective labor growth rate and initial real GDP per capita, respectively. All these data are taken from the Penn World Tables dataset.  $ED_{it}$  refers to educational attainment and is taken from the Educational Attainment Dataset in Barro and Lee (2013). Besides, we also include the one-period lagged variable of democracy ( $\text{POLITY}_{it-1}$ ), a proxy for the democratic flow, to control for the impact of current political status on growth. This is because economic growth might have a feedback effect on polity, and hence we lag  $\text{POLITY}$  by one period to avoid possible simultaneity problems. Likewise, the threshold variable (PSTOCK), the sum of discounted polity scores from 1900 till the present year, is lagged one year (denoted as  $\text{PSTOCKL}$ ) to avoid the endogeneity problem. Besides,  $YR$  is the current year which is included to provide further controls for time-specific effects [5]. These variables are denoted by the vector  $Z$  in Eqn (2).

The vector  $X$  includes variables fixed over time to control for possible heterogeneous effects of country-specific determinants on growth. These country-specific variables

comprise geographical predisposition to external trade (TRADE), ethnolinguistic fractionalization (ETHNOLIG), fractionalizations of PROTESTANT, Catholic, MUSLIM and OTHER religions, geographical location (LATITUDE), early development advantages (AGYEAR) [6], and if English is one of the official languages (ENGLISH). Please refer to Table 2 for details. Note that LATITUDE is perfectly collinear with the country-specific intercept, while PROTESTANT, Catholic, MUSLIM and OTHER are perfectly collinear with the common intercept. Hence, neither the country-specific intercept nor common intercept is included.

To perform the empirical analysis, the regression takes the observations every fifth year beginning in 1960 and ending in 2010 [7]. As indicated by Acemoglu *et al.* (2008), this procedure is more satisfactory than trying to average the five-year data, since the averaging might create spurious serial correlation, thereby making inference and estimation more difficult. While each of the data sources provides data on relevant variables for sizeable subsamples of the countries, the overlapping gives us a final sample of useable data for 693 observations in a balanced panel including 63 countries for every fifth year beginning in 1960 and ending in 2010. Table 2 provides variable definition and data sources. Descriptive statistics of research variables and the list of samples country are presented in Tables 3 and 4, respectively.

Variable	Definition	Source
GROWTH <sub>it</sub>	per capita GDP growth rate (%) = $\ln\left(\frac{\text{rgdpch}_t}{\text{rgdpch}_{t-1}}\right) \times 100$	PWT (rgdpch: PPP Converted GDP Per Capita, Chain Series, at 2005 constant prices)
POLITY <sub>it</sub>	Polity2 scores	Marshall <i>et al.</i> (2011)
PSTOCK <sub>it</sub>	democracy stock = $\sum_{s=1900}^t 0.98^{t-s} \text{POLITY}_{i,s}$	Polity IV project: dataset
Y <sub>it0</sub>	initial per capita income	PWT (rgdpch in 1960)
I <sub>it</sub>	real physical capital rate	PWT (ki, investment share of PPP converted GDP per capita at 2005 constant prices, %)
L <sub>it</sub>	$\ln\left(\frac{\text{pop}_t}{\text{pop}_{t-1}}\right) + 0.05$	PWT (POP: population, in thousands)
ED <sub>it</sub>	percentage of the population aged 25 and over with secondary	Barro and Lee (2013) <a href="http://www.barrolee.com">http://www.barrolee.com</a>
ETHNOLIG <sub>i</sub>	ethnolinguistic fractionalization	La Porta <i>et al.</i> (1999)
ENGLISH <sub>i</sub>	dummy, = 1 if English or French is official language	La Porta <i>et al.</i> (1999)
PROTESTANT <sub>i</sub>	Protestant fractionalization	La Porta <i>et al.</i> (1999)
CATHOLIC <sub>i</sub>	Catholic fractionalization	La Porta <i>et al.</i> (1999)
MUSLIM <sub>i</sub>	Muslim fractionalization	La Porta <i>et al.</i> (1999)
OTHER <sub>i</sub>	other religious fractionalization	La Porta <i>et al.</i> (1999)
LATITUDE <sub>i</sub>	generalized geographical proxy for climate	La Porta <i>et al.</i> (1999)
TRADE <sub>i</sub>	proxy for geographical isolation	Frankel and Romer (1999)
YR <sub>t</sub>	year	
AGYEAR <sub>it</sub>	the years (in hundreds) passed since a country transitioned from hunting and gathering to agriculture	Putterman and Weil (2010) <a href="http://www.brown.edu/Departments/Economics/Faculty/Louis_Putterman/">http://www.brown.edu/Departments/Economics/Faculty/Louis_Putterman/</a>
WCF <sub>i</sub>	the percent of people today who are descended from the six countries strongly influenced by Confucianism, that is, China, Taiwan, Hong Kong, South Korea, Japan and Singapore	Constructed based on Putterman and Weil's (2010) migration matrix
WCFCN <sub>i</sub>	the percent of people today who are descended from China	Constructed based on Putterman and Weil's (2010) migration matrix

**Table 2.** Variable definition and data sources

4. Empirical results

4.1 Main results

Table 5 reports the estimation results of the linear model in Column (1) and the results of the two-regime panel threshold model in Columns (2) and (3). In the linear model, the variable of interest WCF is positive and significant, supporting the positive relationship between

Variable	Mean	CV	Min	Max
GROWTH <sub>it</sub>	2.59(%)	1.80	-18.37	26.75
POLITY <sub>it</sub>	4.42	1.50	-10	10
PSTOCK <sub>it</sub>	121.96	2.34	-446.53	672.28
Y <sub>it</sub>	5231.38	0.91	284.50	21,005.31
I <sub>it</sub>	23.50(%)	0.38	2.01	66.77
L <sub>it</sub>	1.66(%)	0.67	-4.72	7.73
D <sub>it</sub>	14.4(%)	0.82	0.10	52.30
ETHNOLIG <sub>i</sub>	0.28(%)	0.93	0	0.84
ENGLISH <sub>i</sub>	0.35(%)	1.37	0	1
PROTESTANT <sub>i</sub>	14.01(%)	1.71	0	97.8
CATHOLIC <sub>i</sub>	43.32(%)	0.93	0	96.90
MUSLIM <sub>i</sub>	12.20(%)	2.24	0	99.4
OTHER <sub>i</sub>	30.63(%)	1.07	0.40	98.50
LATITUDE <sub>i</sub>	0.31	0.62	0.01	0.71
TRADE <sub>i</sub>	18.82	0.76	2.30	68.18
YR <sub>t</sub>	1985	0.01	1960	2010
AGYEAR <sub>it</sub>	46.94	0.52	3.22	105.10
WCF <sub>i</sub>	8.57(%)	3.03	0	100
WCFCN <sub>i</sub>	5.29(%)	3.75	0	100

Table 3. Descriptive statistics of research variables

Note(s): The number of observations is 693 (63 countries over 11 periods). Since the means and the units are different, coefficient variation (CV for short) is a better measure of dispersion than the standard deviation is

Asia and Pacific	America	Europe	Africa
Australia	Argentina	Austria	Benin
Bangladesh	Bolivia	Belgium	Egypt
China	Brazil	Denmark	Kenya
Cyprus	Canada	Finland	Malawi
India	Chile	France	Mauritius
Israel	Colombia	Greece	Morocco
Japan	Costa Rica	Ireland	South Africa
Jordan	Ecuador	Italy	Uganda
Malaysia	El Salvador	Netherlands	Zambia
New Zealand	Guatemala	Norway	Zimbabwe
Pakistan	Honduras	Portugal	
Philippines	Jamaica	Spain	
Singapore	Mexico	Sweden	
South Korea	Nicaragua	Switzerland	
Sri Lanka	Panama	United Kingdom	
Taiwan	Paraguay		
Thailand	Peru		
Turkey	USA		
	Uruguay		
	Venezuela		

Table 4. List of samples country (N = 69)

Confucianism and growth. However, as previously indicated, there is a potential risk of model specification bias in this result, since differences in political regimes for various countries and over time periods may influence economic growth. This can be seen by the smaller log likelihood of the linear model (Column 1) compared with that of the two-regime panel threshold model (Columns (2) and (3)). As a matter of fact, the likelihood ratio test statistic for the one-regime vs two-regime model is 43.69 with  $df = 16$  and a  $p$ -value of 0.00 ( $p(\chi^2_{16} \geq 43.69)$ ), indicating a significantly better fit for the data using the threshold model. In what follows, we thus place our emphasis on the threshold model.

In our opinion, the impact of Confucianism on growth should depend on the political regime of a country, in which Confucianism (WCF) is statistically positive in a democratic regime (Column (3)) and negative in an autocratic regime (Column (2)). The positive marginal effect of WCF on growth in a democratic regime supports our assertion that Confucian culture accelerates economic growth only if a country has accumulated enough democratic experiences to pass the threshold of political development. Besides, the estimated threshold value ( $PSTOCKL = -55.55$ ) divides our sample into two regimes, in which 176 observations (country/year) fall into the autocratic regime corresponding more or less to the autocracy classification of Epstein *et al.* (2006, p. 555) and 517 observations into the democratic regime corresponding to partial democracy plus their democracy.

We also try to inspect the two-way relationship between GROWTH and POLITY to examine the feedback of economic development on political regime. However, the result is unsatisfactory, either for the significance of explanatory variable or for the goodness-of-fit test. We suspect that this might be due to the fact that STOCK (the accumulation of POLITY) acts as a threshold variable, and there would be no effect of the causal variable [8].

#### 4.2 Marginal effect of Confucianism

In Column (3) of Table 5, the size effect of the WCF on GROWTH shows that a one percent increase in the weight of a country's ancestors related to the six Confucian countries results in a 0.02 percent point increase in GROWTH in the democratic regime. On the other hand, Confucian collectivism significantly impedes growth in the autocratic regime. GDP growth is, on average, 0.06 percent points lower for each one percent point increase in WCF. The estimation results strongly support the view that an asymmetric Confucianism-growth nexus depends on the PSTOCK.

Dep. var.: GROWTH	(1)	(2)	(3)
Variable	Linear model	Autocracy PSTOCKL <sub>it</sub> ∈ (-∞, -55.55)	Democracy PSTOCKL <sub>it</sub> ∈ [-55.55, ∞)
$YR_t$	0.01 [0.90]	-0.12* [-1.82]	0.01 [0.66]
$POLITY_{it-1}$	0.03 [0.81]	-0.10 [-0.78]	0.12*** [2.07]
$\ln Y_{Oit}$	-0.89*** [-3.02]	-1.74** [-2.05]	-1.14*** [-3.15]
$\ln I_{it}$	2.85*** [6.58]	2.08* [1.95]	3.58*** [5.70]
$\ln L_{it}$	2.61** [2.44]	-5.77 [-1.20]	3.68* [1.94]
$\ln ED_{it}$	0.01 [0.07]	1.72** [2.20]	-0.06 [-0.27]
WCF <sub>it</sub>	0.02** [2.34]	-0.06** [-2.42]	0.02** [2.07]
$X$ in Eqn (2) $F$ -statistic	1.32	3.15***	2.03**
Observations	693	176	517
Log likelihood	-2009		-1987

**Note(s):** \*, \*\* and \*\*\* denote the rejection of the null hypothesis at the 10%, 5% and 1% levels, respectively. The values in the brackets are the  $t$ -statistics. For the sake of brevity, Table 4 reports only the estimated values of variables collected in the vector  $B$  in (2). The estimated coefficients of other exogenous controls  $X$  will be provided to interested readers upon request

**Table 5.** Estimation results of linear and two-regime panel threshold models

4.3 Marginal effect of other variables

Inspecting the coefficients of other variables in Columns (2)–(3) of Table 5 shows that more investment (lnI), more labor (lnL) or more democracy could accelerate economic growth under the democratic regime. For autocracies, more investment (lnI) could increase growth, but more democracy fails to influence growth. Finally, the joint *F*-tests of other variables in X are significant for both regimes. For the sake of brevity, Table 5 reports only the estimated values of the Barro variables (i.e. vector B in Eqn (2)).

One thing worth mentioning is that one percent increase in human capital (*ED*, measured by the complete secondary-education ratio) could boost the growth of autocratic nations by 0.017 percent points. This evidence implies that the main contributor to China’s (or the whole of East Asia’s) rapid growth is her continuous improvements in education rather than the Confucian tradition. This result is not surprising, as observed by Bardhan (1999), in that China’s vibrant growth most likely arises from China’s far better performance in the provision of education. As indicated by Barro’s dataset, China’s secondary-education ratio increases by leaps and bounds from 1.4% in 1960 to 40.2% in 2010. This performance is remarkable compared to 6.08–24.76% for the world average and the 0.1–1% for India. The same scenario also applies to Korea and Taiwan [9]. The political regime or Confucianism at most only has a second-order effect on economic performance for autocratic nations. As for the rapid growth in East Asia, the first-order effect arises from investment in human capital that shapes the productive capacities of a society. Our result hence provides solid support in favor of Bardhan’s argument.

This evidence also conforms to the estimated coefficient of POLITY. Table 5 shows that POLITY has a statistically insignificant effect on growth under an autocratic regime, although it could significantly boost growth under democracy. Again, this provides support for our argument that the positive impact of Confucian collectivism or even a democracy flow on growth only occurs in a society in which democratic institutions have passed a threshold level. This is because these societies have reasonably broad power to regulate oppressive or inappropriate government regulations.

Turning to the comparison, we perform several coefficient equality tests to investigate if the growth impacts of variables are different under democracy and autocracy. As presented in Rows (1) and (2) of Table 6, the growth impacts are jointly and significantly different across two regimes for country-specification variables and for Confucianism as well. A single-regime model undoubtedly leads to misspecification. On the other hand, the joint test of Barro variables (population growth (*L*), human capital (*ED*), initial income (*Y*<sub>0</sub>) and capital investment (*I*) in Row (3) of Table 6 shows that the equality relationships across this subset of variables are not collectively significant at the 10% significance level. This result implies that more investment and better education are key elements to the growth whether the political regime is democratic or autocratic. Therefore, although the MRW framework can be universally applicable to different political regimes, there still exist substantial variations in the Confucianism-growth nexus between democracy and autocracy.

	Null hypothesis	Corresponding variables	<i>F</i> -stat	<i>p</i> -value
(1)	$\begin{cases} \delta_D - \delta_A = 0 \\ \beta_{D,YR} - \beta_{A,YR} = 0 \\ \beta_{D,PO} - \beta_{A,PO} = 0 \end{cases}$	<i>X</i> (ETHNOLIG, ENGLISH, TRADE PROTESTANT, CATHOLIC, MUSLIM, OTHER, LATITUDE, AGYEAR), <i>YR</i> , POLITY	2.89	0.00
(2)	$\beta_{Aw} - \beta_{Dw} = 0$	WCF	8.67	0.00
(3)	$\begin{cases} \beta_{DL} - \beta_{AL} = 0 \\ \beta_{AE} - \beta_{DE} = 0 \\ \beta_{DY} - \beta_{AY} = 0 \\ \beta_{DI} - \beta_{AI} = 0 \end{cases}$	<i>Barro variables</i> ln <i>L</i> , ln <i>ED</i> , ln <i>Y</i> <sub>0</sub> , ln <i>I</i>	1.79	0.13

**Table 6.** Equality tests on coefficients across two regimes

For a better understanding of the interactions among Confucianism, growth and democracy, we now examine the Confucianism-growth nexus in China and Taiwan, since the Confucian descendants make up an overwhelming majority of the population in these two countries. China is classified as an autocracy over the entire period under our model. Taiwan is also an autocracy (1960–2000) over most of the sample period (1960–2010) [10].

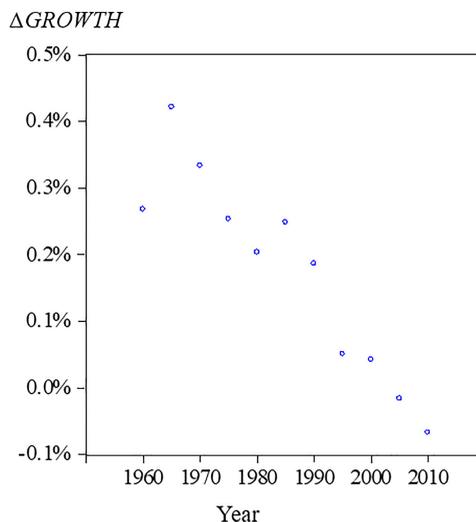
#### 4.4 China and Taiwan

We now use an old-fashioned method of comparative institutional analysis to understand whether or not Confucianism may help or hinder the process of development under different political regimes. This is done by taking the differences between the growth forecasts between the model without WCF and that with WCF (denoted by  $\Delta\text{GROWTH} = \text{GROWTH}_{NO} - \text{GROWTH}_F$ ).  $\text{GROWTH}_{NO}$  and  $\text{GROWTH}_F$  are measured as the growth fitted values based on the model without WCF and that with WCF (Columns (2) and (3) of Table 5), respectively, conditional on  $\text{PSTOCKL} = -55.55$  [11].

**4.4.1 China.** China remains an autocracy across the entire sample period. A time-series plot of  $\Delta\text{GROWTH}$  in Figure 1 shows positive growth differences ( $\Delta\text{GROWTH}$ ) for almost all observations, suggesting that GDP growth is overvalued if Confucianism is not controlled for and the overvaluation weakens over time. Hence, at the initial stage of economic modernization, China would have been better off without Confucianism, especially at the beginning of the last century. This implies that Confucianism would have been an obstacle to China's modernization as argued by Weber.

**4.4.2 Taiwan.** For most of the sample period, Taiwan was ruled by a military dictatorship and was classified as an autocratic regime from 1960 to 2000. As indicated by Figure 2, the positive growth differences ( $\Delta\text{GROWTH}$ ) show that Confucianism is inimical to economic growth. Yet, the boost to growth from increasing investment in physical capital ( $I$ , from 14.96% in 1960 to 31.94% in 2000) and human capital ( $ED$ , from 8.2% in 1960 to 27.5% in 2000) offsets the negative economic growth of Confucianism and so the growth differences are only around 1%.

Taiwan held her first direct presidential election in 2000 and Taiwan's polity score jumped from 9 in 2000 to 10 in 2005 and 2010. With more political freedom, Confucianism hence



Source(s): Estimation results based on the threshold model

Figure 1.  
Time-series plot of  
 $\Delta\text{GROWTH}$  for China

becomes significantly conducive to economic growth as predicted by our argument. As shown by the right panel of [Figure 2](#), Confucianism contributes to the growth of the Taiwan economy by 1.27% in 2005 and by 1.36% in 2010. Thus, if Taiwan had been under a democracy during 1960–2000, the rate of economic growth might have been higher.

Finally, as to the other Asian countries, the interactions among Confucianism, growth and democracy, also exhibit the same patterns as those of China and Taiwan.

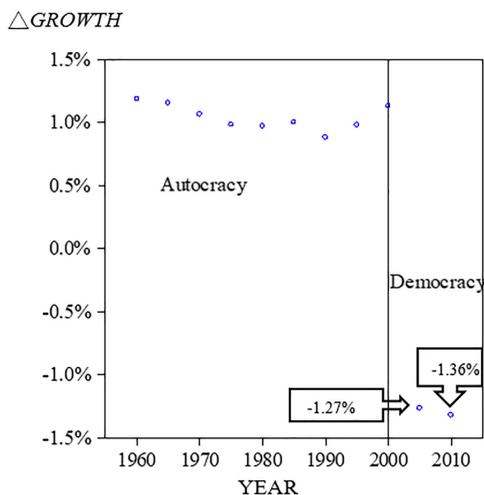
### 5. Robustness

This section assesses the robustness of our results. For the convenience of readers, Columns (1) and (2) of [Table 7](#) duplicate the results of Columns (2) and (3) of [Table 5](#) as a benchmark specification.

#### 5.1 Interaction between Confucianism and education

As previously indicated, Confucianism countries tend to emphasize education, and hence achieve high growth rates. This involves an issue that concerns the identification of channels through which Confucianism has an impact on economic growth. That is, could Confucianism influence growth through the channel of education? In other words, could there be a significantly positive coefficient of the interaction between Confucianism (WCF) and a mediator (ED)?

To address this concern, we include an interaction term ( $WCF * \ln ED$ ) in the two-regime panel threshold regression. The results presented in Columns (3) and (4) of [Table 7](#) show that the estimated coefficient of  $WCF * \ln ED$  is insignificant under both autocracy and democracy. Such evidence indicates that indirect effects of Confucianism on growth via education do not exist. Besides, in the threshold regression of education on Confucianism and other controls, we also find that Confucianism has an insignificant impact on education under autocracy, but has a significant but small impact under democracy, whether or not lagged GROWTH is included in the model to give further control [12]. This implies that the positive impact of education on growth accrued by Confucianism must be maintained under democracy as we previously argued. This result is not surprising. If the better education really arises from Confucianism, then how can we explain the fact that the average education level continues to increase in the western world?



**Figure 2.** Scatter plot of  $\Delta GROWTH$  and PSTOCKL for Taiwan

Source(s): Estimation results based on the threshold model

Dep. Var. GROWTH	Autocracy (1)	Democracy (2)	Autocracy (3)	Democracy (4)	Autocracy (5)	Democracy (6)
$YR_{it}$	-0.12* [-1.82]	0.01 [0.66]	-0.12* [-1.93]	0.01 [0.68]	-0.12* [-1.85]	0.01 [0.90]
$POLITY_{it-1}$	-0.10 [-0.78]	0.12** [2.07]	-0.09 [-0.66]	0.12** [2.13]	-0.08 [-0.66]	0.13** [2.30]
$\ln Y_{it}$	-1.74** [-2.05]	-1.14*** [-3.15]	-1.86** [-2.19]	-1.17*** [-3.23]	-1.78** [-2.11]	-1.41*** [-3.86]
$\ln I_{it}$	2.08* [1.95]	3.58*** [5.70]	2.08* [1.94]	3.60*** [5.67]	1.96* [1.73]	3.58*** [5.87]
$\ln L_{it}$	-5.77 [-1.20]	3.68* [1.94]	-5.67 [-1.19]	3.66* [1.93]	-5.78 [-1.19]	3.98** [2.51]
$\ln ED_{it}$	1.72** [2.20]	-0.06 [-0.27]	1.66** [2.07]	-0.05 [-0.22]	1.65** [2.15]	-0.07 [-0.32]
$WCF_{it}$	-0.06** [-2.42]	0.02** [2.07]	-0.08 [-1.62]	0.04** [1.13]		
$WCFCN_{it}$					-0.04** [-2.21]	0.06*** [3.17]
$WCF_{it} * \ln ED_{it}$			0.01 [0.48]	-0.01 [-0.49]		
$X$ in (2)						
$F$ -statistic	3.15***	2.03**	3.16***	2.07**	3.95***	2.99***
Obs.	176	517	176	517	176	517
Log likelihood		-1987		-1987		-1984

**Note(s):** \*, \*\* and \*\*\* denote the rejection of the null hypothesis at the 10%, 5% and 1% levels, respectively. Values in brackets are  $t$ -statistics

**Table 7.**  
Robustness check

### 5.2 Chinese society vs East Asia

This subsection tests how different the results would be if only Chinese society were considered to be specifically committed to Confucian ideals. Here, the variable WCFCN is constructed as the percent of people today who are descended from China only. Under democracy, Column (6) of Table 7 shows that a 1% point increase in the share of Chinese ancestors (WCFCN) could boost economic growth by 0.06% points, which is 0.04% points more than that contributed by a 1% point increase in the share of ancestors from East Asia (WCF, Column (2) of Table 7).

Under autocracy, Column (5) of Table 7 shows that the size of the negative impact of Confucianism on growth is reduced from 0.06% points (Column (1) of Table 7) to 0.04% points. The above results consistently show that Confucianism (from Chinese ancestors) boosts growth under democracy and hinders growth under autocracy.

## 6. Conclusion

This study applies a set of panel data to Hansen's two-regime panel threshold model to examine how Confucian culture affects economic growth. The empirical findings are robust to alternative specifications. The effect of Confucian culture on economic growth exhibits an asymmetrical pattern depending on a country's accumulated democracy stock. For countries whose democratic experience cannot exceed a threshold level, Confucian collectivism has a negative effect in terms of improving economic performance. Only in democratic countries with prolonged experiences of democratic rule can Confucian collectivism promote economic growth. Therefore, it is necessary to segregate Confucianism as a thought system from the historical regime changes in the course of political development. Our conclusion is that the

core theme of the story is not that of a country's Confucian heritage *per se*, but that of its political culture.

### Notes

1. See the survey by Kim (1997).
2. See the website of the Stanford Encyclopedia of Philosophy, Stanford University (Sep 20, 2016). <http://plato.stanford.edu/entries/japanese-confucian/>.
3. The WVS has collected data on representative samples of people in 95 countries every six years since the early 1980s. The survey asks more than 100 questions on issues such as religion, democracy, beliefs and social norms. The data are available at [http://www.worldvaluessurvey.org/WVSContents.jsp?CMSID = Findings \(2016/9/30\)](http://www.worldvaluessurvey.org/WVSContents.jsp?CMSID = Findings (2016/9/30)).
4. See the survey by Spolaore and Wacziarg (2013).
5. Time dummies are not used because of severe multicollinearity.
6. AGYEAR measures the years that have passed since a country transitioned from hunting and gathering to agriculture and is associated with learning-by-doing from intensive agriculture. Please refer to Putterman and Weil (2010) for the details.
7. The Barro–Lee educational attainment dataset provides educational attainment data in five-years intervals from 1950 to 2010.
8. See Baron and Kenny (1986).
9. Korea's secondary-education ratio increases from 5.8% in 1960 to 34.5% in 2010, while Taiwan's lies between 8.2% and 30.9%.
10. In the year 2000, Taiwan held its first direct presidential election.
11. GROWTHF is the fitted values of Columns (2)–(3) of Table 5. As for the measure of GROWTHNO, we first remove WCF from Eqn (1). GROWTHNO is the fitted values of the model without WCF, conditional on the same threshold value (PSTOCKL = -55.55). The growth difference is defined as  $\Delta\text{GROWTH} = \text{GROWTHNO} - \text{GROWTHF}$ .
12. The result is available upon request.

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