



State-owned enterprises and economic growth in interaction models: Role of institutional quality

 **Dinh Cong Hoang**¹
Dinh Cong Tuan^{2*}

¹Department for Cooperation Development, Institute for Africa and Middle East Studies, Vietnam Academy of Social Sciences, Hanoi, Vietnam.

Email: hoang0108@gmail.com

²Dai Nam University, Hanoi, Vietnam.

Email: hoangtuan5258@yahoo.com.vn



(+ Corresponding author)

Article History

Received: 30 January 2023

Revised: 3 March 2023

Accepted: 24 March 2023

Published: 19 April 2023

Keywords

Economic growth and institutional quality
State-owned enterprises.

ABSTRACT

China's institutional quality and organizational structure have been altered as a result of the 4.0 industrial revolution. Because of this, the role of state-owned enterprises (SOEs) has become even more important since the arrival of the fourth industrial revolution. This study explores whether or not there is a complementarity between SOEs and the quality of institutions in terms of their influence on economic growth for selected regions in China. The data on SOEs is collected for 29 regions (provinces, autonomous regions, or municipalities) of China over the period of 2001 to 2020. The study uses the Cross-Sectional Autoregressive Distributive Lag model (CS-ARDL) approach to estimate the model. The findings indicate that the effect of SOEs is conditioned on the quality of institutions. Our analysis reveals that the quality of a nation's institutions is an important factor to consider when evaluating the effectiveness of SOEs in spurring economic growth.

Contribution/Originality: The contribution of this research paper is the examination of the relationship between state-owned enterprises (SOEs) and economic growth using interaction models with a focus on the role of institutional quality. This research paper provides original insights into the relationship between SOEs and economic growth, which can inform future research and policymaking.

1. INTRODUCTION

State-owned enterprises (SOEs) play an important role in affecting domestic productivity and growth. The issue of the importance of SOEs has received considerable attention from public policy experts and researchers, especially since the arrival of the 4th Industrial Revolution, which is characterized by the digital revolution, artificial intelligence, and technological transformations (Schwab, 2017). Due to the emergence of the 4th industrial revolution, China is shifting its economic structure from an export-driven to a knowledge-based and innovative driven economy. Both the institutional quality and the organizational structure have been altered as a result of the 4.0 industrial revolution. Because of this, the role of SOEs has become even more important since the arrival of the fourth industrial revolution. Historically, SOEs have assisted the government in reforms, despite the fact that the new economy, which is driven by innovation, requires a level of responsiveness that publicly owned bodies typically lack.

In the 1980s and 90s, the majority of researchers agreed on a stance that SOEs underperform privately owned enterprises, which result in massive privatization of SOEs in developed and emerging economies (Antonelli, Amidei, & Fassio, 2014; Bortolotti, Fantini, & Siniscalco, 2004; Kaldor, 1980; Zhu, 2005). However, the firm level experience in majority of developed and emerging economies has led the researchers to conclude a positive SOEs-growth nexus.

The literature is rich in highlighting the positive role of SOEs in promoting sustainable growth and addressing key problems related to free market economy. Several authors have emphasized the positive role of SOEs. According to [Vickers and Yarrow \(1991\)](#), SOEs play an important role in addressing the market failures by offering public goods and financing key infrastructure projects. Moreover, SOEs efficiently smoothen the fluctuations in the business cycle via investment ([Antonelli, 2015](#); [Castelnovo & Florio, 2020](#); [Chang & Singh, 1993](#); [Chen, Jian, & Xu, 2009](#); [Christiansen, 2013](#); [Cook & Uchida, 2003](#); [Estrin, Hanousek, Kočenda, & Svejnar, 2009](#); [Jalilian & Weiss, 1997](#); [Jefferson, 1998](#); [Matuszak & Szarzec, 2019](#); [Megginson & Netter, 2001](#); [Telegdy, 2016](#); [Wei, Xie, & Zhang, 2017](#)). Further, Governments often use SOEs to guarantee employment in sunset industries, which plays an important role in eradicating poverty ([Christiansen, 2013](#)). Moreover, SOEs offer public utilities at low cost ([Matuszak & Kabaciński, 2021](#); [Musacchio & Lazzarini, 2014](#); [Robinett, 2006](#)). Hence, SOEs play a crucial role in promoting employment opportunities, technological spin-offs, technological innovation, and, most importantly economic growth.

In the growth literature, the importance of SOEs in affecting the domestic productivity is evident ([Antonelli et al., 2014](#); [Matuszak & Kabaciński, 2021](#); [Robinett, 2006](#); [Telegdy, 2016](#)). Moreover, it is widely considered in the literature that SOEs are important for the “sustained” growth of an economy ([Castelnovo & Florio, 2020](#)). However, an adequate level of institutional development is necessary for SOEs to have a significant positive impact on domestic productivity ([Szarzec, Dombi, & Matuszak, 2021](#)). The main concern of this study, however, is whether the benefits of SOEs are distribution equally across the sectors and provinces of China. We argue that the growth effect of SOEs depends on the quality of the institutions, and that sectors and provinces with improved human capital get more advantages from SOEs.

Institutions, on the other hand, are “*integrated systems of rules that structure social interactions*” ([North & Weingast, 1989](#)). [North \(1990\)](#) explains that institutions are humanly formulated limitations which structure economic, political and social interactions. Institutions are devised from time to time to decrease uncertainty and bring uniformity. According to [North \(1990\)](#), history is a sequence of institutional evolution that shapes the direction of economies towards growth, stagnation, or decline. The same argument is supported by [Acemoglu and Robinson \(2012\)](#), who state that economies develop as a result of inclusive economic institutions, while those having extractive economic institutions experience stagnation or decline. The importance of institutional reforms for economic growth can be verified from the actions of countries that were once against these reforms, but now started to accept them and experiencing takeoffs ([Acemoglu, 2001, 2002](#); [Acemoglu & Robinson, 2000](#); [Acemoglu & Robinson, 2006](#); [Ali & Malik, 2021](#); [North & Weingast, 1989](#)).

This study investigates whether SOEs interact with institutional quality to affect growth rates in 30 provinces across China from 2001 to 2020, covering the entire country. The primary purpose of this research is to investigate the impact that SOEs have on economic development in various Chinese provinces and municipalities. In addition, this study explores whether there is complementarity between SOEs and the quality of institutions in terms of their influence on economic growth for selected regions in China. Furthermore, this research investigates the most recent changes made to China's SOEs and the consequences they have for economic growth and employment. China is a significant business hub with 109 corporations listed on the Fortune Global 500, of which, 85% are state owned. The number of SOEs decreased from 262,000 in 1997 to 110,000 in 2008. However, since 2008, there has been an increasing trend in the SOEs, and total number reached 173,000 in 2016. In 2015, the total profit of Chinese SOEs reached 2.3 trillion yuan, equivalent to 13.2 percent of the economy's total operating surplus ([Bureau of Economic Analysis \(BEA\), 2017](#)). The total assets of the SOEs are estimated as 154,914.2 billion. The role of SOEs has become even more important in raising taxes. In 2015, SOEs contributed 30.9 percent to total tax revenues ([OECD, 2017](#)).

2. LITERATURE REVIEW

The past three decades have seen a significant surge in the amount of research conducted on state-owned businesses, which may be attributed to two primary motivating forces. The first motivating force is the changing

economic landscape, with state-owned businesses becoming more important than ever in providing goods and services to the public. Beginning in the 1980s and continuing into the early 2000s, wealthy countries as well as those in transition implemented large privatization projects (Estrin, Meyer, Nielsen, & Nielsen, 2016; Megginson, 2017; Mickiewicz, 2010; Millward, 2005; Nelson, 1993; Plane, 1992; Ramasamy, Yeung, & Laforet, 2012; Roland, 2008; Shaheer, Yi, Li, & Chen, 2019). This surge of privatization, combined with increasing global competition for markets and resources, necessitated the need for more in-depth research into state-owned businesses to understand their competitive advantages and disadvantages. The conviction that only private ownership could ensure effective corporate governance was a driving force behind these extensive privatizations of public companies.

Second, SOEs have been an important element of the economies of the emerging nations, and these nations clearly see their SOEs as vehicles of national development strategies (Musacchio & Lazzarini, 2014). This increased focus on understanding SOEs has resulted in much research exploring their performance, governance, and ownership structures. In recent years, the concept of privatization has grown in prevalence across many countries. Thus, while the trend of privatization was widespread in many countries, some maintained their state-owned companies to take advantage of their competitive advantages and to use them as a tool for economic development. In addition, during the past few years, SOEs from China and Russia have been increasingly aggressive in their appearances on the international capital markets. This has meant that while private companies may have initially been seen as superior in terms of corporate governance, SOEs have increasingly become a viable alternative for many nations. As a result, the role of SOEs in the modern economy is complex, and it remains unclear as to which model (private or state-owned) is better suited for economic growth and development. Therefore, it is clear that the role of SOEs in the modern economy is complex and varies from country to country. In order to better understand the effects of SOEs on economic growth and development, it is necessary to look beyond corporate governance and consider the various factors that influence their role in each particular nation (Doamekpor, 2003). In recent years, a greater focus has been placed on corporate governance as a means of assessing the efficacy of SOEs and their role in modern economic development. They are considered to be national champions, and as such, they must continue to be owned by the state. Not only have Chinese and Russian SOEs pursued economic purposes, but they have also followed political ambitions, which have been influenced by the priorities of each country's respective foreign policy (Fowler & Richards, 1995; Mickiewicz, 2010; Millward, 2005; Nelson, 1993; Plane, 1992; Robinett, 2006). These ambitions have been seen in the pursuit of foreign markets, resources and technology, as well as through their engagements with regional blocs such as the Shanghai Cooperation Organization.

The theoretical literature is still rather unclear about the overall impact that SOEs have on productivity. Despite the theoretical uncertainty surrounding their impact, it is generally agreed that corporate governance enhances the efficiency of SOEs and the returns they generate for the country. As a result, there is no way around the fact that the question addressing the equilibrium of the effects of SOEs on productivity is of an empirical nature. Governments and policy makers around the world have long been motivated by ambitions to strengthen their domestic economies and enhance their international competitiveness and this is why the impact of SOEs has been given so much attention in recent years. Nevertheless, empirical studies on the growth impact of SOEs have been uncommon so far, despite the fact that the topic's centrality has been widely recognized. Furthermore, those studies that do exist tend to focus on distant times (Cahen, 2015; Gylfason, Herbertsson, & Zoega, 2001; Robinett, 2006). The absence of comprehensive data that compares different countries about the degree of state proprietorship in the 2000s is at the root of the latter problem. While the potential of SOEs has been widely recognized, there is still much more to be done to understand their real impact on growth. Consequently, the task to understand how SOEs can foster economic development is still ongoing. In order to properly understand the extent of state ownership in the 21st century and its implications for economic growth, further research is needed to analyze the available data and to develop comprehensive studies that examine the impact of SOEs on economic growth. Such research must analyze not only the ownership structures of different countries, but also the different types of SOEs and how they interact with each other in order to gain a

deeper understanding of their real impact on economic growth. As part of this effort, it is also important to identify potential areas of conflict and address them in order to avoid any potential pitfalls that may hinder the success of SOEs.

In the growth literature, the question of whether or not institutional quality has effects on growth, particularly in developing countries, has been the subject of extensive debate. After accounting for a number of other factors that play a significant role in determining economic growth, the empirical growth literature seems to have reached a consensus that INS has a significant effect on growth. It has been argued that higher levels of institutional quality create a more favorable climate for investment, which in turn attracts more investment, particularly direct foreign investment, and ultimately results in increased economic growth. Therefore, research should be conducted to determine whether China's institutional quality is sufficient to support SOE growth and the subsequent economic growth that it can bring. [Acemoglu \(2001\)](#) and [Acemoglu \(2002\)](#) adopt a broader viewpoint that takes into consideration both de jure and de facto power. In other words, a study of the interactions between SOEs and institutional quality should take into account not just formal institutions (laws, regulations, procedures) but also informal ones (cultural norms and values). They do not focus as much on de jure executive power as they do on de facto power. In addition, a differentiation is established not only between formal and informal forms of power, but also between political and economic forms of power. This is why the interactions between SOEs and institutional quality should take into account not only formal institutions, such as laws, regulations, and procedures but also informal ones. This protection can take the form of either a formal or an informal power structure. The perceived danger of expropriation is used as a crucial indication of institutional quality by [Acemoglu \(2001\)](#) who bases their findings on empirical research. While there is a need for both formal and informal institutional structures in order to create an effective balance of power, it is crucial to also ensure that these institutions do not become too oppressive or intrusive. The difference between this institutional view and [North \(1990\)](#) may appear to be negligible; however, it is of the utmost importance in contexts in which de jure political power is concentrated in groups that are distinct from those that hold de facto economic power, thereby restricting the ability of de jure political power to be exercised. The difference is significant, as this institutional view emphasizes the importance of institutions that protect individuals from expropriation, rather than simply protecting the economic interests of those in power. This nontrivial divergence also plays a considerable role in the continuing dispute concerning the direction of causality between institutions and economic advancement, as we are going to see in the following section of this article. It is for these reasons that it is essential to ensure that the formal and informal institutional structures are designed and implemented in a way that does not lead to further entrenchment of existing power dynamics but instead creates an environment in which it is possible for all to benefit from economic prosperity, regardless of the existing power dynamics. This is the view that, in order for individuals to have access to economic opportunities, there must be structures and institutions in place that provide them with protection from expropriation or exploitation. [Knack and Keefer \(1995\)](#) came to the conclusion that the rule of law is a better indicator of the strength of institutions than democracy and political violence indicators. Numerous researches provide support for the hypothesis that democratic governments are conducive to economic expansion ([Bardhan, 1997](#); [Calderón & Fuentes, 2006](#); [Durham, 1999](#); [Levine & Renelt, 1992](#); [Przeworski & Limongi, 1993](#); [Rodrik, 2000](#); [Tavares & Wacziarg, 2001](#)). According to [Rodrik \(2000\)](#), participative and decentralized political systems are more conducive to higher-quality growth. On the subject of the role that INS plays in influencing economic growth, there is a wealth of literature ([Ali & Malik, 2021](#); [Easterly, 1999](#); [Levine & Easterly, 2001](#); [Samimi & Jenatabadi, 2014](#)). On the contrary, [Dollar and Kraay \(2002\)](#), indicate that democracy does not have a significant impact on real per capita income or the income of the poor. In spite of this, it is necessary to acknowledge, as has been underlined in a great number of other studies, that democracy offers nonmaterial benefits in addition to the possible economic implications it may have.

There has not been a lot of research done on how institutional quality (INS) plays into SOEs – growth nexus. Only [Szarzec et al. \(2021\)](#) have investigated the significance of INS in this nexus, concluding that the nexus between

SOEs and growth is dependent on the INS in the host country. Using data from 30 countries between 2010 and 2016, the authors demonstrate that for countries to benefit from SOEs, they must have sound institutions in place. However, there is still a need for more research to be done on this subject in order to gain a fuller understanding of the impact that SOEs have on economic growth. This research provides important insight into the potential effects of SOEs on economic growth.

Regarding China, no research has been carried out to investigate this matter. To examine the potential effects of SOEs on growth in China, further research should be conducted to determine whether China's institutional quality is sufficient to support SOE growth. It is absolutely necessary to investigate the role that institutional quality plays as a conditioning factor in the connection between SOEs and economic growth.

In the light of the above discussion, it is clear that research into the potential effects of SOEs on economic growth in China must be conducted in order to understand the role that institutional quality plays in this connection. According to the findings of this study, INS is a necessary prerequisite for SOEs to have a sizeable and beneficial effect on the expansion of the economy. Countries with high-grade INS systems benefit significantly from having SOEs. Researchers have not emphasized the beneficial impact that INS can play in influencing growth. To the best of my knowledge, no previous research has been conducted on the conditioning function that INS plays in influencing the SOEs-growth nexus. As a result, the results of this study provide a significant contribution to the body of previously published research.

The primary inquiry addressed by this study is "to what extent does the quality of the institutions contribute to the observed variation in the link between SOEs and economic growth?"

3. DATA AND METHODOLOGY

3.1. Data and Model Specification

This study obtains the SOEs data from (National Bureau of Statistics, 2018). The data of SOEs is collected for 29 regions (provinces, autonomous regions, or municipalities) of China over the period of 2001 to 2020. Since, the study uses the fluctuation in economic cycles, the five-year averages of variables used in the model to deal with the problem. The five periods are: 2001-4, 2005-8, 2009-12, 2013-16, and 2017-20. The shares of SOEs in total assets is used as measure of SOE. The study uses twelve indicators to capture the institutional quality. The data on these indicators is collected from World Bank (2021). The study uses the following empirical model:

$$Y_{it} = \alpha_0 + \alpha_1 SOE_{it} + \alpha_2 INS_{it} + \sum_j^p \alpha_j X_{jit} + v_{it} + \varepsilon_{it} \quad [1]$$

Where Y is the real output growth rate. SOE represent State owned enterprises. X is the set of control variables (other growth determinants), such as government expenditures, money supply, investment. Where, i and t represent region (total 29 regions) and time period (from 2001-20), respectively. v and λ represent cross section and year-fixed effects. In the next step, we add the institutional quality variable in the model. Moreover, to capture the complementarity between SOE and institutional quality, an interactive term of SOE and INS is added in the model.

$$Y_{it} = \alpha_0 + \alpha_1 SOE_{it} + \alpha_4 INS_{it} + \alpha_5 (SOE * INS_{it}) + \sum_j^p \alpha_j X_{jit} + v_i + \lambda_t + \varepsilon_{it} \quad [2]$$

Equations 2 is used to capture the impact of explanatory variables on economic growth of China.

3.2. Analytical Technique

A variety of econometric methods are utilized in the process of estimating the nature of the connection that exists between the components of model 1. In addition, because there is a large amount of bias and size distortions that occur when cross-section dependency is ignored, this research makes use of the C.S.D test that was developed by Pesaran (2015). In this investigation, the cross-sectional dependence (CSD) test, which was designed and developed by Pesaran (2004) is utilized. CSD is a crucial component of panel data econometrics and has the potential to cause

major concerns such as dimensional distortion and mistake in the unit root test. These issues have the potential to affect the conclusions of the research. The slope homogeneity test, which was made famous by, is utilised in this study in order to ascertain whether or not the gradients of the slopes are consistent with one another (Pesaran & Yamagata, 2008). Moreover, the cross-sectionally Augmented Im, Pesaran and Shin (CIPS) unit root test developed by Pesaran (2007) is utilized in this investigation. Lastly, the Westerlund (2007) test is utilized in this investigation in order to ascertain the cointegration link that exists between the various variables. The following information is presented on the test general form:

$$G_t = \frac{1}{N} \sum_{i=1}^N \frac{\hat{\alpha}_i}{SE(\hat{\alpha}_i)} \quad [3]$$

$$G_\alpha = \frac{1}{N} \sum_{i=1}^N \frac{T\hat{\alpha}_i}{\hat{\alpha}_i(1)} \quad [4]$$

$$P_T = \frac{\hat{\alpha}}{SE(\hat{\alpha})} \quad [5]$$

$$P_\alpha = T\hat{\alpha} \quad [6]$$

Equations 3 and 4 are used to express the group mean statistics, which in this instance include the values Ga and Gt. Equations 5 and 6 provide a graphical representation of the panel statistics, which include Pa and Pt.

In this study, the coefficients of model 1 are estimated using the CS-ARDL approach. This technique is used because of the potential endogeneity concern. The CS-ARDL technique estimates the model in a way that takes into consideration and manages the correlations that exist among the residuals. The model includes both the explanatory variables and their lags. Estimating the long run coefficients using the CS-ARDL approach is the primary focus of this research. This is because the data in question are non-stationary, and there is cointegration among the variables being considered. The CS-ARDL's Equation 7 is given as:

$$\Delta Y_{i,t} = \varphi_i + \sum_{l=1}^p \varphi_{il} \Delta Y_{i,t-l} + \sum_{l=0}^1 \varphi'_{il} X_{s,i,t-l} + \sum_{l=0}^1 \varphi''_{il} \bar{Z}_{i,t-l} + \varepsilon_{i,t} \quad [7]$$

Where, Z represents cross-sectional averages and is given as: $\bar{Z}_t = (\Delta \bar{Y}_{it}, \bar{X}'_{it})'$, the variables on the right-hand side are denoted by X_i 's.

Table 1. Results of cross-section dependence and slope heterogeneity tests.

Variable	CD-test
Y	11.524***
SOE	21.238***
MS	25.881***
GE	27.731***
INV	17.148***
INS	19.421***
SOE*INS	21.119***
Slope heterogeneity test	Statistics
$\tilde{\Delta}$	15.118***
$\tilde{\Delta}$ Adjusted	16.063***

Note: *** Represent significant at 1% level.

4. RESULTS AND DISCUSSIONS

In the estimation section, the first and most important step is to ensure that the correctness of C.S.D and S.H in the model. As reported in Table 1, the findings support the suspicion of C.S.D., indicated by the statistically significant test obtained from CSD test. In addition, the large delta tide values as well as the adjusted delta tide values provide further evidence that the model contains slope heterogeneity. This can be observed by comparing the two sets of numbers.

This study makes use of recently developed unit root tests like CIPS because such problems are more likely to arise in panel data. These problems can be found more easily in panel data. Based on the results of the CIPS test,

which are provided in Table 2, it appears that all variables are integrated of order 1. Therefore, we are able to use of Westerlund's methods.

Table 2. Unit root test.

Variable	I(0)	I(1)
Y	-1.991	-4.983***
SOE	-1.892	-4.847***
MS	-2.018	-5.994***
GE	-1.914	-5.742***
INV	-2.004	-5.959***
INS	-1.817	-5.642***
SOE*INS	-2.071	-5.998***

Note: *** mean significant at 10%.

The Westerlund (2007) cointegration test is utilized in this study in order to carry out the data analysis. In these tests, the heterogeneity that exists between the various panels is taken into consideration. The findings, which are presented in Table 3, suggest that there is a reliable long-run link between the factors that are accounted for in both models. This association can be observed between the variables in both models. The fact that the values of in the model are negative as well as substantial offers evidence that there has been a fair convergence to the long-run equilibrium.

Table 3. Cointegration results.

Model	Gt	Ga	Pt	Pa
$Y_{it} = f(\text{SOE, GE, MS, INV, DUM, INS})$	-8.73***	-16.72***	-9.32***	-20.16***
$Y_{it} = f(\text{SOE, GE, MS, INV, DUM, INS, SOE*INS})$	-7.62***	-19.33***	-10.51***	-17.54***

Note: *** means significance at 1%.

Y means economic growth, SOE represents state owned enterprises, GE stands for government expenditures, MS means money supply, INV means investment, DUM is dummy variables, and INS represent institutional quality. The subscript i and t represent cross sections and time period respectively. Table 4 presents the results of the estimates taken over the long term. Model 1 presents the estimates of the baseline model, while Model 2 includes an interaction between the INS and the SOE. In this study, the coefficients are estimated using the CS-ARDL approach because the data are not steady. The findings indicate that factors such as GE, MS, INV, and INS have a positive impact on economic growth. The fact that the error correction mechanism (ECM) term was substantial and had a negative value suggests that the variables are cointegrated. That is to say, in the long run, the economic growth and its determinants—namely, SOE, GE, MS, INV, and INS have a common cointegrate. The fact that the computed coefficient is significant and positive, provides support for the concept that the general upkeep of the INS encourages growth. The general upkeep of the INS generates a better investment climate, which attracts more investment, particularly direct foreign investment. This is one conceivable way in which the INS fosters economic growth.

The unconditioned proportion of SOEs is not a key growth predictor in any scenario, according to results of model. However, when the INS is introduced into the model, the situation changes a significant way. We observe that SOEs, when subjected to higher standards of accountability and transparency through institutions such as the rule of law, are associated with increased economic growth. In other words, SOEs are not a driving force for economic growth by themselves but rather, they can potentially play a crucial role in delivering economic growth when they are embedded in an environment that allows them to operate efficiently and be held accountable for their actions. As can be seen in model 2, the interaction term continues to have a steady positive value and is significant at the threshold of 5% for SOE. The direct impact of the SOE is shown to be detrimental in these models, despite the fact that it is small at ordinary values. Based on this result, it appears that the marginal influence that SOEs have on EG progresses as the quality of the institutions in which they operate does as well. As a result, we can draw the conclusion that the quality of a nation's institutions has a substantial impact on the growth effect that SOEs have. When there are strong

institutions in place, the positive externalities that come from SOEs may be able to exceed whatever potential inefficiencies they have. Therefore, SOEs can play an important role in a country's economic development, provided that strong institutions are present to ensure that their benefits are maximized and their negative impacts are minimized. These findings provide support for our hypothesis that the quality of institutions contributes positively to the growth effect of SOEs. Our analysis reveals that the quality of a nation's institutions is an important factor to consider when evaluating the effectiveness of SOEs in spurring economic growth. This can be seen in the fact that SOEs have an overall positive effect on economic growth when there are strong institutions in place to monitor and regulate their activities. In spite of the fact that the earlier publications do not take into account the INS, the results of those papers are consistent with this fundamental conclusion. Our results thus confirm the hypothesis that in order for SOEs to spur economic growth, the quality of institutions must be taken into consideration. To be more specific, when the sample includes of emerging nations, these studies show that SOEs have a significant negative effect on the growth of the economy. The finding supports the results of Antonelli et al. (2014); Telegdy (2016); Matuszak and Kabaciński (2021); Robinett (2006); Robinett (2006); Castelnovo and Florio (2020); Szarzec et al. (2021).

According to the findings, GE, MS, and INV are all useful elements that can contribute to the expansion of the economy. A rise in aggregate demand, which in turn leads to an increase in production and, eventually, economic growth, is the economic mechanism that underlies the beneficial influence that GE has on the rate of economic growth. The finding supports the findings of Ali and Malik (2021). The economic mechanism that underlies the positive impact that INV has on the growth of the economy is that an increase in INV leads to a greater circulation of money and a greater number of economic activities, both of which, in turn, lead to an increase in production and, ultimately, economic growth. The finding supports the findings of Cahen (2015); Ramasamy et al. (2012); Ali and Malik (2021).

Additionally, a rise in GLOB leads to a rise in economic growth in Chinese provinces, which demonstrates that a rise in GLOB boosts EG. This is because an increase in GLOB leads to an increase in economic growth. An increase in aggregate demand leads to an increase in production and economic growth, which is the economic mechanism that underlies the beneficial influence that General Electric has on the rate of economic growth. Given that the GLOB coefficient is positive, it seems likely that the increased economic activity brought about by globalization will lead to an increase in EG. This implies that economic growth is largely driven by the increased economic activity associated with globalization, and that policies should focus on promoting globalization in order to boost economic growth.

Table 4. CS-ARDL's estimates.

Variables	Long run		Short-run	
	Model without interaction term	Model with interaction term	Model without interaction term	Model with interaction term
	Coefficients	Coefficients	Coefficients	Coefficients
SOE	0.387 [0.521]	1.107 [0.473]	0.727 [0.628]	0.022 [0.116]
GLOB	0.283*** [0.007]	0.231* [0.009]	0.233*** [0.008]	0.274*** [0.022]
GE	0.088** [0.017]	0.221** [0.329]	0.032* [0.020]	0.282** [0.117]
INV	0.171*** [0.009]	0.171*** [0.010]	0.172*** [0.010]	0.142*** [0.012]
INS	0.401*** [0.102]	0.022** [0.043]	0.362*** [0.106]	0.270** [0.120]
SOE*INS	-	0.387*** [0.117]	-	0.419*** [0.109]
ECM	-	-	-0.72*** [0.117]	-0.69*** [0.102]

Note: Values in [] are Std. errors. Significance level of 1%, 5% and 10% are represented by ***, ** and *.

These findings are comparable to those that were discovered by Ali and Malik (2021); Calderón and Fuentes (2006) who discovered that the increased production of goods and the creation of employment opportunities are two

direct results of globalization that contribute to rising levels of EG. Furthermore, they found that these two factors are directly responsible for the rising levels of EG. In spite of this, globalization has the potential to improve EG through the dissemination of cutting-edge technologies. Ali and Malik (2021) argued that globalization also has the potential to reduce inequality by enabling a wider range of citizens to participate in the economy. In addition, the expansion of the market for exports that has resulted from globalization may make it possible for them to shift their focus to the production of more complex goods destined for export. As a result, we think it's possible that globalization may lead to increased economic growth. In other words, globalization provides an opportunity to create a new type of economy, one that is both more inclusive and economically dynamic that is more sustainable in the long run.

5. CONCLUSIONS AND POLICY IMPLICATIONS

China is undergoing a transition from an economy that is driven by investments in exports toward an economy that is driven by innovations and dependent on domestic consumption. This transition is occurring due to the changing global landscape and the Fourth Industrial Revolution. As a result of these developments, the traditionally helpful role that SOEs play in assisting the government in its reform has become even more significance. This is despite the fact that the new consumption-oriented economy necessitates a degree of adaptability and responsiveness that is typically lacking in publicly owned entities. The emergence of 4th industrial revolution has led to a shift in China's economic structure from an export driven economy to knowledge based and innovative-driven economy. Both the institutional quality and organizational structure have been altered as a result of the 4.0 industrial revolution. Because of this, the role of SOEs has become even more important since the arrival of the fourth industrial revolution. The past three decades have seen a significant surge in the amount of research conducted on state-owned businesses. There has not been a lot of research done on how the quality of institutions plays into the relationship between SOEs and growth. Numerous studies provide support for the hypothesis that democratic governments are conducive to economic expansion. To examine the potential effects of SOEs on economic growth in China, further research should be conducted to determine whether China's institutional quality is sufficient to support SOE growth.

The primary inquiry that is addressed by this study is "to what extent does the quality of the institutions contribute to the observed variation in the link between SOEs and economic growth?" This study investigates whether SOEs interact with institutional quality to effect growth rates in 30 provinces across China from the years 2001 to 2020. These provinces cover the entire country of China. The primary purpose of this research is to investigate the impact that SOEs have on economic development in various Chinese provinces and municipalities. In addition, this study explores whether or not there is a complementarity between SOEs and the quality of institutions in terms of their influence on economic growth for selected regions in China. Lastly, this research investigates the most recent changes made to China's SOEs and the consequences those changes have for economic growth and employment. The data of SOEs is collected for 29 regions (provinces, autonomous regions, or municipalities) of China over the period of 2001 to 2020. Since, the study uses the fluctuation in economic cycles, hence, the five-year averages of variables used in the model are calculated to address this problem. The shares of SOEs in total assets is used as measure of SOE. To capture, the complementarity between SOE and institutional quality, an interactive term of SOE and INS is also added in the model. Estimating the long-run coefficients using the CS-ARDL approach is the primary focus of this research because the data in question are non-stationary and there is cointegration among the variables being considered. The findings indicate that factors such as GE, MS, INV, and INS all have a beneficial influence on economic growth. The fact that the ECM term was substantial and had a negative value suggests that the variables are cointegrated. That is to say, in the long run, the EG and its determinants (namely, INS, GE, INV and GLOB) have a common cointegrate. The computed coefficient being significant and positive supports the concept that general upkeep of the INS encourages growth. The general upkeep of the INS generates a better investment climate, which attracts more investment, particularly direct foreign investment, and is one conceivable way in which the INS fosters economic growth. We conclude that the SOEs have neither a positive nor a negative impact on growth in and of

themselves. However, when the effect of SOEs is conditioned on the quality of institutions, the picture completely shifts in a significant way. We observe that SOEs, when held to a higher standard of accountability and transparency through institutions such as the rule of law, are associated with increased economic growth. In other words, SOEs are not a driving force for economic growth by themselves but rather, they are able to deliver economic growth when they are embedded in an environment that allows them to operate efficiently and be held accountable for their actions. Our analysis reveals that the quality of a nation's institutions is an important factor to consider when evaluating the effectiveness of SOEs in spurring economic growth. This can be seen in the fact that SOEs have an overall positive effect on economic growth when there are strong institutions in place to monitor and regulate their activities.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: Both authors contributed equally to the conception and design of the study.

REFERENCES

- Acemoglu, D. (2001). Credit market imperfections and persistent unemployment. *European Economic Review*, 45(4-6), 665-679. [https://doi.org/10.1016/s0014-2921\(01\)00107-6](https://doi.org/10.1016/s0014-2921(01)00107-6)
- Acemoglu, D. (2002). Directed technical change. *The Review of Economic Studies*, 69(4), 781-809.
- Acemoglu, D., & Robinson, J. A. (2000). Why did the West extend the franchise? Democracy, inequality, and growth in historical perspective. *The Quarterly Journal of Economics*, 115(4), 1167-1199. <https://doi.org/10.1162/003355300555042>
- Acemoglu, D., & Robinson, J. A. (2006). *Economic origins of dictatorship and democracy*. New York: Cambridge University Press.
- Acemoglu, D., & Robinson, J. A. (2012). *Why nations fail*. New York: Crown Publishers.
- Ali, S., & Malik, Z. K. (2021). Revisiting economic globalization-led growth: The role of economic opportunities. *Journal of Public Affairs*, 21(2), e2193. <https://doi.org/10.1002/pa.2193>
- Antonelli, C. (2015). *The dynamics of knowledge governance*. In: Antonelli, C., Link, A.N. (Eds.), *routledge handbook of the economics of knowledge*. London & New York: Routledge.
- Antonelli, C., Amidei, F. B., & Fassio, C. (2014). The mechanisms of knowledge governance: State owned enterprises and Italian economic growth, 1950-1994. *Structural Change and Economic Dynamics*, 31, 43-63. <https://doi.org/10.1016/j.strueco.2014.08.004>
- Bardhan, P. (1997). Corruption and development: A review of issues. *Journal of Economic Literature*, 35, 1320-1346.
- Bortolotti, B., Fantini, M., & Siniscalco, D. (2004). Privatisation around the world: Evidence from panel data. *Journal of Public Economics*, 88(1-2), 305-332. [https://doi.org/10.1016/s0047-2727\(02\)00161-5](https://doi.org/10.1016/s0047-2727(02)00161-5)
- Bureau of Economic Analysis (BEA). (2017). *National income and product accounts*. Retrieved from <https://www.bea.gov>
- Cahen, F. R. (2015). Internationalization of state-owned enterprises through foreign direct investment. *RAE-Business Administration Magazine*, 55(6), 645-659. <https://doi.org/10.1590/s0034-759020150604>
- Calderón, C., & Fuentes, J. R. (2006). *Why some reformers grow faster, while others don't?* Mimeo: Central Bank of Chile.
- Castelnovo, P., & Florio, M. (2020). *Mission-oriented public organizations for knowledge creation*. In: Bernier, L., Florio, M., Bance, P. (Eds.), *the routledge handbook of State-Owned enterprises*. London & New York: Routledge.
- Chang, H.-J., & Singh, A. (1993). Public enterprises in developing countries and economic efficiency: A critical examination of analytical, empirical, and policy issues. *UNCTAD Review*, 4, 45-82.
- Chen, D., Jian, M., & Xu, M. (2009). Dividends for tunneling in a regulated economy: The case of China. *Pacific-Basin Finance Journal*, 17(2), 209-223. <https://doi.org/10.1016/j.pacfin.2008.05.002>
- Christiansen, H. (2013). *Balancing commercial and non-commercial priorities of State-Owned enterprises*. Retrieved from OECD Corporate Governance Working Papers No.6. OECD Publishing, Paris.
- Cook, P., & Uchida, Y. (2003). Privatisation and economic growth in developing countries. *The Journal of Development Studies*, 39(6), 121-154. <https://doi.org/10.1080/00220380312331293607>
- Doamekpor, F. K. (2003). A structural analysis of the value-added effects of enterprises: A re-assessment. *International Journal of Comparative Sociology*, 44(2), 129-154. <https://doi.org/10.1177/002071520304400202>

- Dollar, D., & Kraay, A. (2002). Growth is good for the poor. *Journal of Economic Growth*, 7, 195–225.
- Durham, E. J. (1999). Economic growth and political regimes. *Journal of Economic Growth*, 4, 81–111.
- Easterly, W. (1999). Life during growth. *Journal of Economic Growth*, 4, 239–276.
- Estrin, S., Hanousek, J., Kočenda, E., & Svejnar, J. (2009). The effects of privatization and ownership in transition economies. *Journal of Economic Literature*, 47(3), 699–728. <https://doi.org/10.1257/jel.47.3.699>
- Estrin, S., Meyer, K. E., Nielsen, B. B., & Nielsen, S. (2016). Home country institutions and the internationalization of state owned enterprises: A cross-country analysis. *Journal of World Business*, 51(2), 294–307. <https://doi.org/10.1016/j.jwb.2015.11.002>
- Fowler, P. C., & Richards, D. G. (1995). Test evidence for the OECD countries, 1965–85: The relationship between the size of the public enterprise sector and economic growth. *International Journal of Social Economics*, 22(3), 11–23. <https://doi.org/10.1108/03068299510079821>
- Gylfason, T., Herbertsson, T. T., & Zoega, G. (2001). Ownership and growth. *The World Bank Economic Review*, 15(3), 431–449.
- Jalilian, H., & Weiss, J. (1997). Policy arena: Bureaucrats, business and economic growth. *Journal of International Development: The Journal of the Development Studies Association*, 9(6), 877–885. [https://doi.org/10.1002/\(sici\)1099-1328\(199709\)9:6%3C877::aid-jid490%3E3.0.co;2-a](https://doi.org/10.1002/(sici)1099-1328(199709)9:6%3C877::aid-jid490%3E3.0.co;2-a)
- Jefferson, G. H. (1998). China's state enterprises: Public goods, externalities, and Coase. *The American Economic Review*, 88(2), 428–432.
- Kaldor, N. (1980). *Public or private enterprise—the issues to be considered*. Paper presented at the Public and Private Enterprise in a Mixed Economy: Proceedings of a Conference held by the International Economic Association in Mexico City. Palgrave Macmillan UK.
- Knack, S., & Keefer, P. (1995). Institutions and economic performance: Cross-country tests using alternative measures. *Economics and Politics*, 7(3), 207–227.
- Levine, R., & Easterly, W. (2001). It's not factor accumulation: Stylized facts and growth models. *World Bank Economic Review*, 15(2), 177–219.
- Levine, R., & Renelt, D. (1992). A sensitivity analysis of cross-country growth regressions. *The American Economic Review*, 82(4), 942–963.
- Matuszak, P., & Kabaciński, B. (2021). Non-commercial goals and financial performance of state-owned enterprises—some evidence from the electricity sector in the EU countries. *Journal of Comparative Economics*, 49(4), 1068–1087. <https://doi.org/10.1016/j.jce.2021.03.002>
- Matuszak, P., & Szarzec, K. (2019). The scale and financial performance of state-owned enterprises in the CEE region. *Economic Journal*, 69(4), 549–570. <https://doi.org/10.1556/032.2019.69.4.4>
- Meggison, W. L. (2017). Privatization, state capitalism, and state ownership of business in the 21st century. *Foundations and Trends in Finance*, 11(1–2), 1–153. <https://doi.org/10.1561/05000000053>
- Meggison, W. L., & Netter, J. M. (2001). From state to market: A survey of empirical studies on privatization. *Journal of Economic Literature*, 39(2), 321–389. <https://doi.org/10.1257/jel.39.2.321>
- Mickiewicz, T. (2010). *Economics of institutional change: Central and Eastern Europe revisited* (2nd ed.). New York: Palgrave Macmillan.
- Millward, R. (2005). *Private and public enterprise in Europe: Energy, telecommunications and transport, 1830–1990*. Cambridge: Cambridge University Press.
- Musacchio, A., & Lazzarini, S. G. (2014). *Reinventing State capitalism: Leviathan in business, Brazil and beyond*. Cambridge, MA: Harvard University Press.
- National Bureau of Statistics. (2018). *National data*. Retrieved from <http://data.stats.gov.cn>
- Nelson, R. R. (1993). *National systems of innovation*. Oxford: Oxford University Press.
- North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.
- North, D. C., & Weingast, B. R. (1989). Constitutions and commitment: The evolution of institutions governing public choice in seventeenth-century England. *The Journal of Economic History*, 49(4), 803–832.
- OECD. (2017). *The size and sectoral distribution of State-Owned enterprises*. Paris: OECD Publishing.
- Pesaran, H. M. (2015). Testing weak cross-sectional dependence in large panels. *Econometric Reviews*, 34, 1089–1117. <https://doi.org/10.1080/07474938.2014.956623>

- Pesaran, M. H. (2004). *General diagnostic tests for cross section dependence in panels*. Retrieved from CESifo Working Papers, No.1233:
- Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22(2), 265-312. <https://doi.org/10.1002/jae.951>
- Pesaran, M. H., & Yamagata, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics*, 142(1), 50-93. <https://doi.org/10.1016/j.jeconom.2007.05.010>
- Plane, P. (1992). Productive efficiency of public enterprises: A macroeconomic analysis based on cross-section estimation of a neoclassical production function. *Applied Economics*, 24(8), 833-844. <https://doi.org/10.1080/00036849200000052>
- Przeworski, A., & Limongi, F. (1993). Political regimes and economic growth. *Journal of Economic Perspectives*, 7(3), 51-69. <https://doi.org/10.1257/jep.7.3.51>
- Ramasamy, B., Yeung, M., & Laforet, S. (2012). China's outward foreign direct investment: Location choice and firm ownership. *Journal of World Business*, 47(1), 17-25. <https://doi.org/10.1016/j.jwb.2010.10.016>
- Robinet, D. (2006). *Held by the visible hand: The challenge of State-owned enterprise corporate governance for emerging markets*. Washington, DC: World Bank.
- Rodrik, D. (2000). Institutions for high-quality growth: What they are and how to acquire them. *Studies in Comparative International Development*, 35, 3-31.
- Roland, R. (2008). *Privatization. successes and failures* (Vol. 98). New York: Columbia University Press.
- Samimi, P., & Jenatabadi, H. S. (2014). Globalization and economic growth: Empirical evidence on the role of complementarities. *PLoS One*, 9(4), e87824. <https://doi.org/10.1371/journal.pone.0087824>
- Schwab, K. (2017). *The fourth industrial revolution*. New York: Crown Publishing Group.
- Shaheer, N., Yi, J., Li, S., & Chen, L. (2019). State-Owned enterprises as bribe payers: The role of institutional environment. *Journal of Business Ethics*, 159(1), 221-238. <https://doi.org/10.1007/s10551-017-3768-z>
- Szarzec, K., Dombi, Á., & Matuszak, P. (2021). State-owned enterprises and economic growth: Evidence from the post-Lehman period. *Economic Modelling*, 99, 105490. <https://doi.org/10.1016/j.econmod.2021.03.009>
- Tavares, J., & Wacziarg, R. (2001). How democracy affects growth. *European Economic Review*, 45(8), 1341-1378. [https://doi.org/10.1016/s0014-2921\(00\)00093-3](https://doi.org/10.1016/s0014-2921(00)00093-3)
- Telegdy, Á. (2016). Employment adjustment in the global crisis: Differences between domestic, foreign and state-owned enterprises. *Economics of Transition*, 24(4), 683-703. <https://doi.org/10.1111/ecot.12103>
- Vickers, J., & Yarrow, G. (1991). Economic perspectives on privatization. *Journal of Economic Perspectives*, 5(2), 111-132. <https://doi.org/10.1257/jep.5.2.111>
- Wei, S.-J., Xie, Z., & Zhang, X. (2017). From “made in China” to “innovated in China”: Necessity, prospect, and challenges. *Journal of Economic Perspectives*, 31(1), 49-70. <https://doi.org/10.1257/jep.31.1.49>
- Westerlund, J. (2007). Testing for error correction in panel data. *Oxford Bulletin of Economics and statistics*, 69(6), 709-748. <https://doi.org/10.1111/j.1468-0084.2007.00477.x>
- World Bank. (2021). *Worldwide governance indicators*. Retrieved from <https://data.worldbank.org/data-catalog/worldwide-governance-indicators>
- Zhu, A. (2005). *Public enterprises in mixed economies: Their impact on economic growth and social equity*. PhD Thesis, Economics Department, University of Massachusetts-Amherst.

Views and opinions expressed in this article are the views and opinions of the author(s), International Journal of Management and Sustainability shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.