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# Economic stagnation and inequality: new theoretical and empirical perspective

Sung-Hee Jwa<sup>1\*</sup> and Taekyu Lee<sup>2</sup>

## Abstract

This paper argues that economic discrimination (ED) can promote shared and inclusive growth when instituted by the trinity of economic development, market, corporation, and government. In contrast, Economic Egalitarianism (EE) will work against it. ED means treating economic differences differently, while EE means treating economic differences equally or indifferently. As a pinnacle of ED institutions in the capitalist economy, corporate organizations play a crucial role in shared and inclusive growth. An empirical study utilizing cross-country panel data and time series data for the US and Korea shows: 1) Income grows with corporate growth but declines with the extent of the EE-based redistributive welfare state. 2) Income distribution improves with corporate growth but worsens with the extent of the EE-based redistributive welfare state. 3) Income distribution coevolves with income growth. These results imply that a polarized economic stagnation may be due to stagnation of corporate growth and an over-run redistributive welfare state lacking ED incentives. The sustainable redistributive welfare state in capitalism can be attainable only by strengthening the corporate sector's growth and introducing ED incentives into the welfare system.

**Keywords** Growth and distribution, Economic development, Economic discrimination, Economic egalitarianism, Corporate economy for shared growth, Welfare state for polarization

**JEL Classification** D31, O43, O47

## 1 Introduction

One of the biggest challenges facing economists and policymakers today is addressing the growing call from the public and elected officials to promote growth but also to ensure that growth is shared and inclusive. Since World War II, inclusive growth has been an implicit policy goal in Western economies. At the end of World War II, western capitalism faced its most significant challenge of confronting communism's global expansion. To prevent the expansion of the communist bloc led by the Soviet Union and win the ideological war, Western countries have

tried to alleviate inequality, which is considered a side effect of capitalism, through various redistributive policies. Such efforts have been implemented in the form of revised capitalism, mixed economy or social democracy that emphasizes economic egalitarianism. Even after acknowledging differences between countries, it can be said that Western developed economies have gravitated toward egalitarianism to promote economic equality.

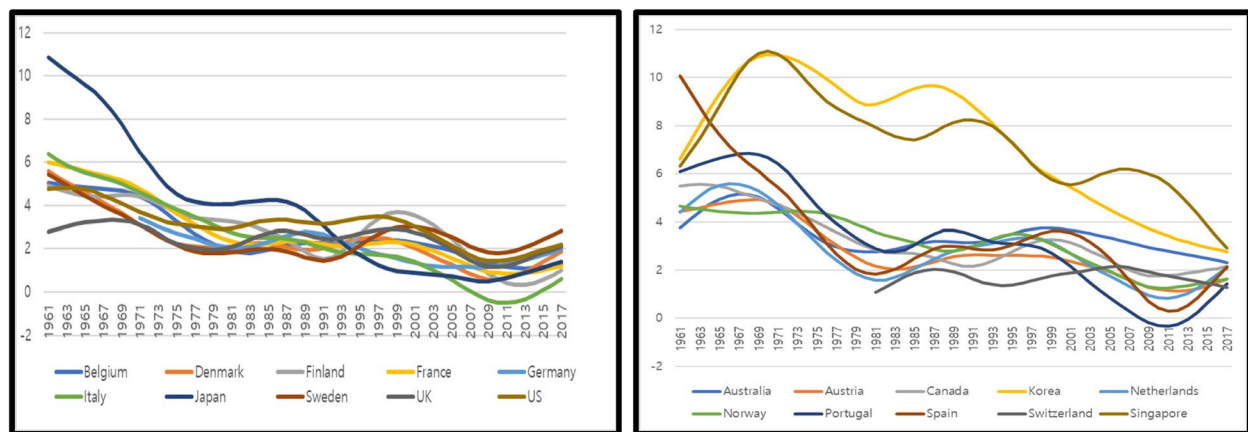
With the collapse of the Soviet Union, the expansion of communism was no longer a concern. However, except for a short-lived period of the Regan-Thatcher era in the 1980s, the spread of egalitarianism did not stop in Western countries. This begs the question of what the results of simultaneously pursuing growth and equality were. After all, what happened to Western economies was a simultaneous deterioration of growth and equality. In particular, the phenomenon of low growth and worsening income distribution has stood out globally in the last quarter of the twentieth century. We are now facing

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**Fig. 1** GDP growth trend of major economies. Note: Trends are generated through the Hodrick-Prescott filter. Source: GDP from World Bank

unexpected outcomes: growth stagnation and a worsening distribution, which no countries formally targeted and even anticipated. Quo Vadis!

The issue of growth and inequality (or equity) is a time-honored problem in economics. However, the economics profession has not paid enough attention to the fundamental causes of growth and distribution theoretically relative to the questions of their empirical interrelationship and how redistributive policies can be used to achieve good-quality or shared growth. Most studies on growth and distribution since Kuznets (1955) have concentrated on the issues of how growth affects distribution or vice versa. However, the fact that growth and distribution are both endogenous variables has not thus far been carefully considered theoretically or empirically in popular studies. While the evidence on their empirical relationships has not yet been conclusive theoretically and empirically, as observed by Helpman (2004), the political calls for stronger income redistribution have been growing. Moreover, the ideology of a welfare state has long been central in government policymaking. Indeed, striking a balance between growth and equality has remained a major issue in policymaking circles. However, in the meantime, the situation of growth and distribution has worsened since the late 1960s~1970s. The stagnation of growth and worsening income distribution has now become a common trend observed in most developed economies (Milanovic 2016).

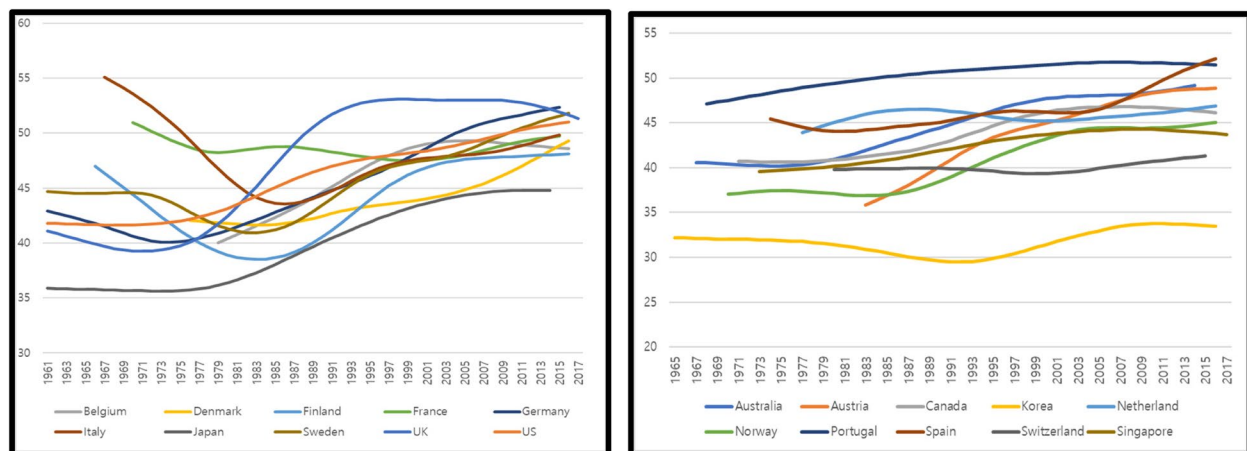
Strictly speaking, mainstream economics has yet to develop a theory that can adequately explain how some countries grow faster and more equally than others beyond their interrelationship. As a result of this gap in the literature, economists often emphasize growth in addressing worsening inequality yet have no panacea for stagnant growth, which has plagued many countries. For example, Banerjee and Duflo (2019) say, “although

growth has been key to reducing poverty, ‘grow faster’ or even ‘continue to grow fast’ are more expressions of hope than actionable policy recommendations.”

Now, we can confirm via Fig. 1 and Fig. 2 that major developed economies’ growth and distribution trends have worsened roughly from the late 60 s~early 70 s and the mid-70 s, respectively, although with some variations.<sup>1</sup> This paper uses the market-income Gini index before taxes and welfare transfers as the measure of the income distribution (unless otherwise mentioned) because we are concerned mainly with the market forces of determining the income distribution undisturbed by government intervention.

In particular, concerning the Gini index trends, there has still been a hot debate on when and how its worsening trend started. The critics of neoliberalism argue that the neoliberalism triggered by the Reagan and Thatcher reforms in the early 1980s is the most critical cause because it weakened the postwar welfare state philosophy and overturned into market fundamentalism the embedded liberalism in post-WWII, which is alleged to have contributed to the simultaneous improvement of growth and distribution from WWII to the 1970s. This view argues that the currently observed trend of deteriorating distribution is caused by neoliberal reforms featured by the small government with tax reduction and welfare cuts, privatization, anti-union regulation, corporate deregulations, globalization, etc., under the banner of the Washington Consensus (Harvey 2005; Milanovic 2016). For example, the quotation of Banerjee and Duflo’s argument in Chancel et al. (2022) may be enough to

<sup>1</sup> GDP growth and Gini index data come from World Bank, and from the SWIID (Standardized World Income Inequality Database) (Solt, 2016), respectively. However, the period of the Gini index data is relatively short and irregular among countries, so reading the overall trend may be somewhat imprecise compared to the growth trend



**Fig. 2** Market-income Gini trend of major economies. Note: Trends are generated through the Hodrick-Prescott filter. Source: Gini from the World Income Inequality Database (SWIID) by Solt (2016)

convey the general mood of the anti-neoliberalism critics as follows.

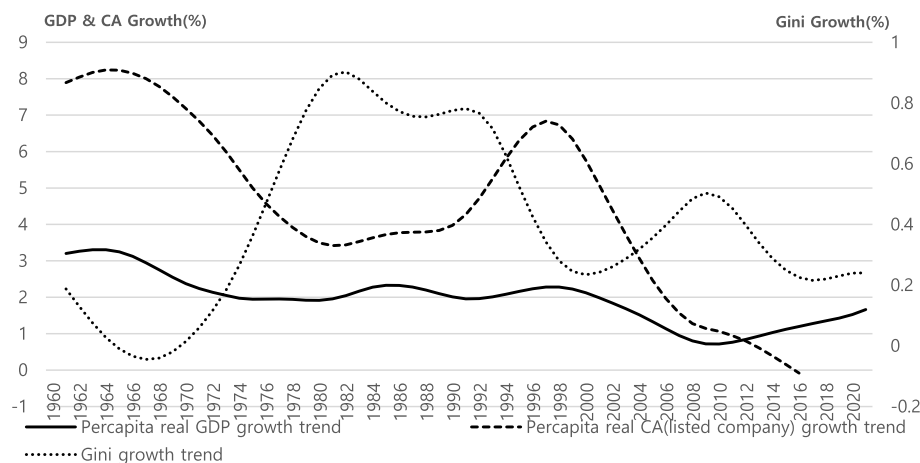
“However, for most of the world, the defining experience turned out to be the panicked reaction to the slow-down of growth in US and UK in the 1970s, that led to the conviction that a big part of the problem was that the institutions that kept inequality low (minimum wage, union, taxes, regulation, etc.) were to blame and that what we needed was to unleash an entrepreneurial culture that celebrates the unabashed accumulation of private wealth. We now know that as the Reagan-Thatcher revolution and it was the starting point of a dizzying rise in inequality within countries that continues to this day. When state control was (successfully) loosened in countries like China and India to allow private sector-led growth, the same ideology got trotted out to justify not worrying about inequality, with the consequence that India is now among the most unequal countries in the world and China risks getting there soon.”<sup>2</sup>

However, Cohen and Centeno (2006) discover a different empirical picture. They have shown that most of the so-called reform policies stated by neoliberalism and blamed by the critics as the causes for economic polarization in the post-1980s were not indeed implemented as intended. For example, for major economies, the welfare policy was sustained rather than reduced, with welfare expenditure even increasing, and the government's size in the budget deficit was not much changed. All these factors imply that neoliberalism may not be the main

cause of economic polarization in the post-1980s, as much blamed by critics.

Moreover, our investigation found that the US corporate deregulation policy might not be genuinely implemented as argued or was not effective at most, even if implemented, because the total corporate asset growth rates (represented by the listed companies' total assets) have failed to recover the level of the 60 s after collapsing during the 1970s, as shown in Fig. 3. This figure shows the growth trends of per capita real GDP, per capita real corporate assets (CA), and the market-income Gini coefficient. It turns out that US corporate sector growth has continued to be caught in the low growth trap since the 1970s, except for a minor temporary rise in the late 1990s to the early 2000s due to the dot-com bubble. This may imply that neoliberalism has not lived up to its promise in reality regarding corporate deregulation. Furthermore, Fig. 3 shows that the US Gini growth trend began steeply rising from the early 1970s rather than the early 1980s. However, most critics of neoliberalism take the early 1980s for granted as the beginning of the neoliberalism-led worsening income distribution coinciding with the outset of the Reagan-Thatcher era. This result, however, implies that the seemingly forgone conclusion of the responsibility of neoliberalism for the worsening income distribution in the US (Harvey 2005; Milanovic 2016; Chancel et al. 2022; Banerjee and Duflo, 2022) may need to be reconsidered. More interestingly, the market-income Gini growth trend is negatively correlated with GDP and CA growth trends which are positively correlated with each other, implying that it could be the case that the stagnant corporate sector has been the driving force for the worsening trends of income growth and distribution in the US economy. This paper will later present

<sup>2</sup> This is quoted from Banerjee and Duflo (2022). They seem to ignore the positive role of the rapidly rising income for poverty alleviation which is necessary for improving distribution in both countries, while they said in another quotation above, “growth has been key to reducing the poverty”.



**Fig. 3** Growth Trend of GDP, CA (Corporate Asset) and Gini in the US Economy

Note: The correlation coefficient of the Gini growth trend with the listed company CA growth trend is  $-0.47$  and the correlation coefficient of GDP growth trend with the CA growth trend is  $0.91$ . Trends are generated through the Hodrick-Prescott filter. Source: GDP from World Bank; CA of listed companies from S&P Capital IQ database on financial statements; Gini coefficient from SWIID. Source: Jwa (2024)

whether the econometric analyses of the cross-section data and the time series data of the US and Korea systematically confirm similar outcomes, as a cursory look at the US time series data implies.

Indeed, it now seems to be the time to comprehensively examine the fundamental driving forces of growth and market income distribution before government taxes and transfers for redistribution both theoretically and empirically. This paper intends to explain the causes of growth and distribution in an integrated manner by applying a new economic development theory and empirical model fundamentally different from the literature on growth and distribution. Based on the empirical findings, it is hoped that this research will yield new insights and policy implications for promoting shared and inclusive growth. Jwa (2017a) offers a *general theory of economic development (GTED)*, a new comprehensive approach to dealing with growth and distribution, implying that both are driven critically by a common latent variable, the growth of corporations. We argue that corporate growth is the key to the economy's growth and distribution. In neoclassical growth theory, firms are decomposed into production factors such as labor, capital, and technology and analyzed from the perspective of growth accounting. However, in reality, a corporation is more than a simple combination of factors of a production function. In fact, it is a synthetic, synergistic, dynamic, and evolutionary entity that modern growth theory cannot capture in its theoretical framework.

With the new theoretical perspective in hand, we conjecture that the driving forces of the worsening trends of growth and distribution shown in Fig. 1 and Fig. 2 lie in the slow-down of corporate growth and

the extension rather than contraction of the egalitarian welfare state, which seems to be also supported by Fig. 3. This will be theoretically and empirically investigated by analyzing panel data across countries and time series data for the US and Korea.

The paper is organized as follows. Section 2 will briefly introduce the general theory of economic development (GTED) as the theoretical framework for analyzing growth and distribution in a corporate-driven capitalist economy and provide testable implications for corporate-led shared and inclusive growth and economically egalitarian welfare state-led economic polarization. Section 3 will provide a selective literature survey of empirical studies on growth and distribution and empirically test those implications by applying the new econometric models of corporate production and distribution functions to panel data for the World and time series data for the US and Korean economies. Finally, Section 4 will conclude the paper by discussing the implications of the empirical findings.

## 2 Theory of institutional requirements for economic development: a brief summary

This section will introduce the essence of GTED as a new analytical framework for assessing economic growth and distribution. The GTED extends the new institutional economics by incorporating the insight of complexity economics, such as nonlinear open interaction among economic agents leading to the subsequent emergence of economic development to a higher-order,



complex economy.<sup>3</sup> The GTED's main task is to discover what institutions can give rise to a new order or emergence given the imperfect information. The answer that the GTED finally arrives at turns out to be the institution of economic discrimination (ED), being an enabling institution for the emergence of economic development.

### 2.1 Development: order-transforming emergence of a complex economy

Following the logic of complexity, the GTED defines economic development as a nonlinear order transformation of the economy. For example, the economy transforms from a wagon economy to a railway, to an automobile, to an airplane, and to a spaceship economy with a necessary change in quality. This interpretation is also entirely consistent with the Schumpeterian perspective, which reads, 'Add successively as many mail coaches as you please, you will never get a railway thereby.'<sup>4</sup> This change is different from the quality (order) fixed, linear transformation as in neoclassical allocation economics and growth literature. However, given the difficult conceptual and empirical measurement problems with quality in the context of aggregate economic analysis such as this study, development may be approximated as close to a shared and inclusive growth meant to be a simultaneous improvement of quantitative growth and income distribution representing the quality of growth.

### 2.2 Free-riding: necessary for development but causes for development failure

According to the Second Law of Thermodynamics, the open interaction for sharing synergy by exchanging success know-how ('meme' or cultural DNA) among economic agents is the necessary and fundamental process of economic development, as any closed economic system is destined to fail due to the law of entropy increase.<sup>5</sup> This implies that *having prosperous neighbors is good for development*,<sup>6</sup> contrary to what socialists such

as Karl Marx have argued. However, open interaction can also necessarily involve free-riding (FR) on the success-knowhow of others among competing agents such as individuals and corporate firms. However, free-riding can eventually cause development failure by distorting incentives to create and innovate, as the real-world imperfect market cannot fix the free-riding problem due to positive transaction costs. The GTED emphasizes that corporate organizations can provide an institutional setting that protects innovation beyond the government.

In this regard, it is interesting to note that while neo-classical market-centric, endogenous growth theory implicitly or explicitly assumes the FR on the superstars as the necessary precondition for growth, the potential negative influence of FR seems to have been relatively neglected in theoretical and policy discussions. Romer (1990 and 1994), the prime originator of endogenous growth theory, does not see free-riding as a major issue by implicitly assuming outsized monopolized profits from innovation in the short-run outweigh the potential profit losses in the long-run since information is imperfect in the early days of innovation.<sup>7</sup> Therefore, the market can continue to generate endogenous growth even without positive feedback from corporations and the government, as the market is theoretically assumed not to be affected by market imperfections such as free-riding. Of course, the validity of this theory remains an empirical question.

However, the GTED assumes that free-riding by standing on the shoulders of superstars is a general and ubiquitous phenomenon with human development from the beginning of the complex world. In this context, humans invent organizations such as the state, the military, the private corporation, and others beyond the market. We now know all along the long history of economic development that the market by itself is not sufficient to promote development despite what we have learned about markets in the perfectly competitive economic model. From this perspective, the GTED suggests that markets need to be supported by enabling institutions and their enforcers to promote development.

### 2.3 Economic discrimination, enabling institution for development

Economic discrimination (ED), formally defined as treating the different differently by favoring high economic performance over low performance, can be a solution to the FR problem. The GTED argues that ED is a grand principle for the emergence of a complex economy by

<sup>3</sup> The GTED integrates the *new institutional economics* (NIE) (North, 1990, 1992a, 1992b and 1993; Eggertsson, 1990) and the insight of *complexity economics* (Beinhocker, 2006; Arthur et al., 1997; Colander, 2000; Corniing, 2002). See Jwa (2017a) for the full exposition of this theory and Jwa (2017b, 2020) for its theoretical and empirical application to Korean economic history. Additionally, see Stratieva (2018) for a brief summary of this theory.

<sup>4</sup> This quotation is from the first footnote on page 64 of Schumpeter (1974[1934]).

<sup>5</sup> See Beinhocker (2006) for the nature of the Second Law of Thermodynamics and its implications on economic analysis.

<sup>6</sup> Coincidentally, Chetty, R., Jackson, M.O., Kuchler, T. et al. (2022) has shown that the economic connectedness measured by the share of high-socioeconomic status (SES) friends among individuals with low SES is among the strongest predictors of upward income mobility identified to date, by investigating the data on 21 billion friendships from Facebook to study social capital. This may be a piece of indirect evidence to support the argument in the text.

<sup>7</sup> This argument implies that the FR phenomena will not be a critical barrier to growth; indeed, the market alone could take care of the problem with FR. See Warsh (2006) for this point and a very informative survey of the literature in this field.

dispensing economic justice by helping those who help themselves.<sup>8</sup> The ED principle is the motivational incentive mechanism to generate a shared, inclusive, and sustainable development by creating a fair and just economic reward system.<sup>9</sup> Regarding the policy implications, the GTED suggests that ED can be fair if economic systems are designed to reward discriminately based on actual market performance. It is also important to note that the ED principle should not be confused or associated with political and social discrimination. The market function of economic discrimination will help drive out political and social discrimination not based on economic performance from the marketplace.<sup>10</sup>

On the other hand, economic egalitarianism (EE) can be defined as treating the different indifferently or equally. The GTED argues that ED is a necessary condition for economic development by strengthening incentives, while EE is a sufficient condition for economic stagnation by distorting incentives.

Now, it is imperative to understand that *ED is a fundamental determinant of income distribution along with economic growth, as the growth incentive is given by the differential reward consistent with actual growth performance, that is, ED. Therefore, in principle, growth and distribution are simultaneously determined by the ED incentive system; the ED mechanism is necessary for shared, inclusive, and sustainable growth by providing justly differential incentives and working as an enabling institution.*

## 2.4 Market-led ED: indispensable but insufficient for development

The GTED argues that all market participants, such as consumers, suppliers, credit providers, financial investors, corporate firms, workers, and any other agents, have the propensity to choose the best-serving market performers, i.e., the tendency of ED. The ED has been established as the market's fundamental function through such selection instincts and the behavior of market participants.

ED is a simple but fundamental behavioral rule of market agents in a complex open interaction for nonlinear order transformative economic development. The GTED

emphasizes that the market is fundamentally a motivational discriminator, incentivizing all market participants to do their best. Therefore, if the market is allowed to work properly, such a market's ED function may promote shared, inclusive, and sustainable development even if the outcomes are unequal.

However, the GTED also notes that imperfect markets cannot escape from the possibility of failing to correctly differentiate, i.e., treating the sources of development fairly. The market alone is not sufficient to incentivize growth and development because of market imperfections, i.e., knowledge market imperfections and high transaction costs associated with FR. To enforce ED, the market needs to be supplemented by other organizations, such as corporate firms, to internalize externalities.

## 2.5 Corporation: invented to internalize market's developmental failure

Therefore, transaction cost-saving nonmarket organizations are critical to strengthening market incentives to promote development. A key lesson of the economic development process has been the critical role that transaction-cost saving organizations can play in reinforcing the market's ED function by internalizing FR behavior. The private solution to the FR is corporate organizations that can internalize high-transaction-cost activities such as learning knowledge from others' success know-how. This is a striking departure from mainstream neoclassical economic thought that market failures due to externalities or free-riding require government intervention as an almost exclusive resort without recognizing the alternative solution by private organizations.<sup>11</sup> In particular, the corporate firm's fundamental reason for existence beyond the market lies in its ED function by 'metering' productivity to fairly reward performance.<sup>12</sup> It turns out that the corporate firm and the market epitomize ED. In this regard, the corporate firm is an extension rather than a substitute of the market, as argued by Coase (1937).

Human society eventually invented capitalist corporate organizations, notably the limited-liability joint-stock company, in the early nineteenth century after the long evolutionary history of small generic firms. The corporate organization's vertical hierarchical structure helps to internalize transaction costs that otherwise would have to be incurred by the market, which relies on the horizontal negotiation mechanism of the market

<sup>8</sup> ED is consistent with the 3-step formalization of the evolutionary mechanism via mutation, 'differentiation, selection, and amplification' as elaborated by Beinhocker (2006).

<sup>9</sup> Sustainable development here means the development process to be not short lived but to continue, and do not mean the so-called environmental sustainability which may also be significant on its own.

<sup>10</sup> Becker (1957), who initiates the "economics of discrimination," argues that the market forces of competition tend to eliminate discrimination in the marketplace. This paper can rephrase his point as the market function of economic discrimination based on economic performance will eliminate social discrimination disregarding it.

<sup>11</sup> One may argue another alternative could be the Coase Theorem (Coase, 1960) which can hold only if property rights are well-defined and transaction costs are none or low. Note that the text argument assumes the real-world economy is burdened with high transaction costs and not-well-defined property rights.

<sup>12</sup> This argument is consistent with Alchian and Demsetz (1972), who see the firm and the market both as the mechanism of such 'metering' of productivity to match performance with reward.

transactions, causing positive transaction costs.<sup>13</sup> Moreover, the joint-stock company is a more complex organization that can expand the capital base and take investment risks, in principle, to an unlimitedly large scale that cannot be borne or even imagined by the individually or family-owned firms in cottage industries prevalent during the preindustrial revolution. Thanks to the proliferation of joint-stock corporations, success know-how and technology have been more easily internalized by corporate organizations on a massive scale. As such, corporate organizations have significantly addressed the problem of FR. Moreover, most of the important innovations take place internally within corporate organizations without the risk of falling prey to free-riders. Interestingly, the role of corporate organizations as drivers of endogenous growth has recently been discovered and espoused by the new neoclassical growth theorists in promoting endogenous growth theory, even if they did not explicitly recognize such a critical role of corporations. Corporations can now be argued as playing a critical role in promoting endogenous growth in the capitalist economy. In this regard, the capitalist economy can be considered a corporate economy that is meant to be an organizational economy led by private corporate organizations.<sup>14</sup>

However, the private economy (including the market and corporate firms) alone is insufficient to generate development due to information imperfection and less than full enforcement of ED. Front-running, successful corporations, the source of success know-how, are unable to sustain their success, as they are under constant threat from free-riders. In particular, successful corporations are always under the threat of free-riding on their success know-how.

## 2.6 Government as a necessary part and parcel of development: theory of government policy

Now, the government needs to intervene by establishing ED institutions beyond the inherent ED functions of the market and the corporation. Thus, the government becomes a necessary part of the economic development process in addressing FR problems unresolved by the market and corporate firms.

This argument may seem similar to the traditional argument of resolving negative externalities to prevent market failure, such as protecting intellectual property rights. However, here, the government's role is far more general because FR is so widespread and a ubiquitous fact

of life in the real-world economy during the development process. In particular, government intervention is needed with the institution of ED to address FR problems that are hard for corporations to internalize, i.e., FR among corporations. This argument is a striking departure from laissez-faire market-centric mainstream economics, which minimizes the role of the government in the economy and, in particular, the necessity of industrial policy for economic development.

Some details of the ED institutions and policies that the government and the polity need to provide for economic development can briefly be illustrated, together with a warning against the anti-ED, i.e., EE institutions and policies. This amounts to introducing a new theory of government policy consistent with the ED perspective, i.e., a theory of enabling institutions for development.

First, the government needs to supplement and reinforce ED institutions to help those who help themselves, particularly with corporate growth-friendly institutions, together with traditional market-friendly institutions. Economic policies and industrial policy, particularly for promoting S&MEs as well as corporations in general, should be designed to provide differentiated incentives based on market performances, in line with the ED principle. This should serve as the basis for new theories on industrial policy for economic development.<sup>15</sup>

Second, social policies in general, including welfare policies and social empowerment policies, should be designed to be consistent with the ED principle and could thereby be transformed into developmental policy. Note that a social policy's ultimate purpose should be to break the vicious cycle of poverty by incentivizing and enabling relatively poor and needy economic agents by helping those who help themselves. On the other hand, the state should avoid employing EE policies at all costs, which are destined to work against the developmental spirit of self-help.

Third, for implementing the ED policy in practice, the incentive differentiation should be based on actual (market) performances rather than abstract, uncertain prospects of future performances as the prime indicator. The former criteria may be as imperfect as the latter, but they will still be much more transparent and objective than the latter. Hence, the corruption and rent-seeking behavior often associated with government support policies based on opaque and subjective criteria can be minimized. Therefore, while other information, including future prospects, could be referenced together, the actual performances must be the critical criteria in designing differentiated incentives.<sup>16</sup>

<sup>13</sup> Of course, the organizational costs for managing the corporate organization must be considered to come up with the saving of net costs.

<sup>14</sup> This argument is consistent with Simon's insight that the economy would rather be called an *organizational economy* than a market economy. See Simon (1991). A corporate economy is a private-economy version of an organizational economy.

<sup>15</sup> See Jwa and Lee (2019) for a new theory of industrial policy as a development policy based on the GTED.

<sup>16</sup> See Jwa (2017b) and Jwa and Lee (2019) for more details on the ED policy as the success factors of Government industrial policy.

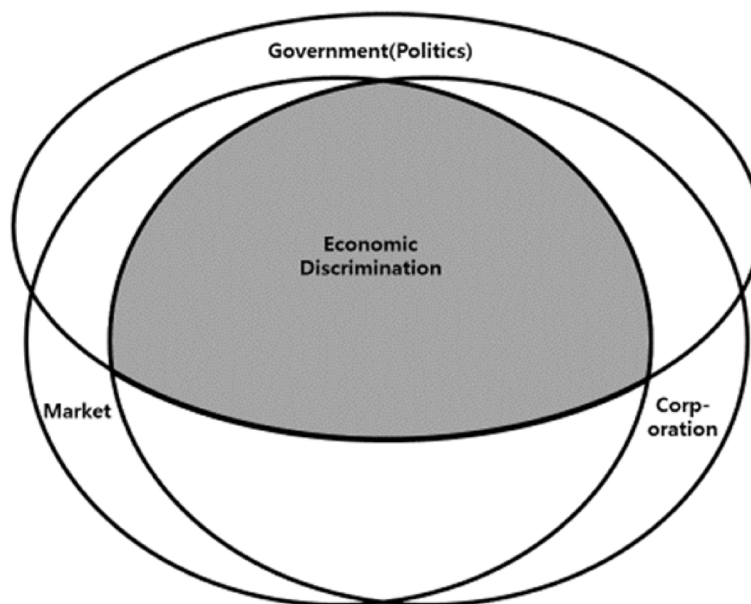
## 2.7 The GTED: ED union of development trinity, market, corporation and government

Now, the market, the corporation, and the government constitute the development trinity. Therefore, they must work together as the economic discriminator if an economy can have a chance to develop and transform itself.

The GTED can be summarized as in Fig. 4, which implies that development can be initiated and sustained only when the market, corporation, and government work together to enforce ED. If any of them are absent, it is hard to achieve economic development. Therefore, all three institutions are necessary for economic development under GTED. On the other hand, the GTED states that economic egalitarianism (EE), the antithesis of the ED, can result in economic stagnation. In particular, the government, as the provider of the enabling institutions for development, must work hard to provide and keep the ED institution for the market and the corporation and not disturb their intrinsic ED function. Suppose the government becomes careless in this responsibility. In that case, it weakens the function of ED. Therefore, the ED union of the development trinity shrinks, and the chance for the economy to grow and develop will decrease accordingly, as shown by Fig. 5.

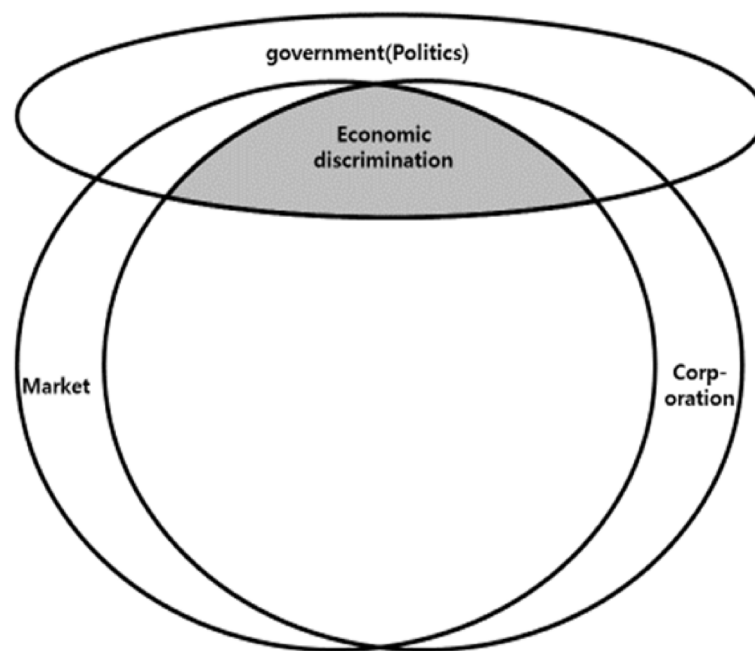
The GTED can be a general theory for the following reasons. First, it integrates diverse competing ideas, including neoclassical market-centric, government-centric, and corporate-centric (including management science) economic views, as well as institutional economics, into a holistic view in which the economic trinity of corporations, governments, and markets are all linked together with the ED function. Second, it can integrate the diverse economic and political perspectives of economic development and provide a *positive political economy theory* different from the normative political economy based on ideology such as the Marxian political economy. It argues that to be development-friendly, the choice of political ideologies and political institutions, including the types of democracies, must be made consistent with ED institutions rather than EE institutions.

This argument further implies that the ED principle needs to be the fundamental basis of national economic institutions, including the constitution, for economic progress. In contrast, suppose the constitutional concept of equality of human creation, which has become globally prevalent after the US constitution, encroaches on economic life beyond social and political life by negating the ED principle. Then, it may be inevitable that the chance



**Fig. 4** GTED with Strong ED union. Source: Jwa (2024)





**Fig. 5** GTED with Weak ED union. Source: Jwa (2024)

of economic progress diminishes.<sup>17</sup> From this perspective, the GTED could be claimed to lay the groundwork for *constitutional political economy theory*.

## 2.8 Testable implications for growth and distribution

### 2.8.1 Corporate-led shared and inclusive growth and preliminary empirical evidence

The GTED emphasizes the role of the corporate-led ED incentive system that fairly rewards the performance of production factors by supplementing the markets' weak ED function. Note that the ED system is the primary survival mechanism for corporations that must match production factors' productivity performance with rewards as a general rule. The ED incentive structure intrinsically built into the corporate management system is conducive to shared and inclusive growth by motivating most workers and business partners to improve their performance and productivity. Therefore, the corporate organization is equally or even more critical than the market for shared and inclusive growth. Thanks to its role in market expansion and ED function, the growing corporate sector has created a self-helping middle-income class ever since the industrial revolution by offering new sources of income substituting for agricultural land. It has become a natural source of shared and inclusive growth in a capitalist economy. As a corollary, the GTED implies that any

distribution or redistribution without consistency with the ED incentive system will make it hard to generate a lasting positive effect on income distribution, not to mention growth.

In this sense, the capitalist corporate economy can improve growth and distribution over an agrarian economy and the socialist economy, which lack capitalist corporate firms. Most recently, Greenspan and Wooldridge (2018) have strongly argued that capitalism in America has been led by business companies ever since its independence. Therefore, if corporate growth is halted for any reason, capitalism will be hurt in terms of lost income sources and economic polarization.

In sum, the growth of the corporate-led economy will help improve both economic growth and income distribution, which is one of the central hypotheses to be tested empirically later. Jwa (2017a and 2018), one of the authors, has once done empirical testing of this hypothesis, which is summarily reported here in Table 1 as a precursor for full-scale testing later. This result implies that the corporate sector in the economy is a critical improving factor in determining growth and distribution. Therefore, income growth and distribution improvement coevolve via corporate growth. Also, the corporate sector's economic power concentration positively influences GDP growth, probably reflecting an agglomeration effect while having an insignificant but negative impact on distribution(plus(+) sign in the Gini equation). This result provides preliminary support for a corporate-led shared and inclusive growth

<sup>17</sup> See Jwa and Yoon (2004) for the detailed discussion of this insight.

**Table 1** Fixed effects panel estimation results (with time dummies)

| Dependent variable<br>Explanatory Variables          | Production function: Ln GDP/L | Distribution function: GINI( Market<br>income Gini) | Distribution function:<br>GINI( Market income<br>Gini) |
|------------------------------------------------------|-------------------------------|-----------------------------------------------------|--------------------------------------------------------|
| Ln CA/L                                              | 0.390***<br>(17.27)           | −1.452***<br>(−3.63)                                |                                                        |
| Ln GDP/L                                             |                               |                                                     | −4.385***<br>(−6.21)                                   |
| CHHI                                                 | 0.00002*<br>(1.74)            | 0.0002<br>(0.97)                                    |                                                        |
| constant                                             | 5.500***<br>(27.43)           | 49.448***<br>(13.52)                                | 77.650***<br>(11.67)                                   |
| Adjusted R <sup>2</sup>                              | 0.753                         | 0.191                                               | 0.258                                                  |
| Number of observations (time<br>period: 2005 ~ 2013) | 639 for 71 countries          | 363 for 66 countries                                | 363 for 66 countries                                   |

1. Ordinary least squares model was estimated with fixed effect panel estimation method by EViews package; Ln GDP/L is the natural log of per capita nominal GDP; Ln CA/L is the natural log of per capita nominal corporate asset in the economy; GINI is income GINI coefficient in percentage terms; CHHI is corporate sector concentration by HHI (Herfindal-Hirschman index) method; CA is from Capital IQ and Gini is from the World Development Indicators database

2. () are robust t-values, where \*\*\*, \*\*, and \* indicate 1%, 5%, and 10% levels of significance, respectively

Source: Jwa (2017a and 2018)

hypothesis and can be seen as a forerunner for the following primary empirical analysis.

### 2.8.2 New political economy: Economically Egalitarian (EE) welfare state and economic polarization

The GTED implies that government policy can be development-friendly only if it incorporates the ED policy regime and promotes corporate growth, whether the political regime is a liberal democracy, social democracy, authoritarian rule, or dictatorship. In contrast, government policy can be development-unfriendly if it adopts the EE policy regime and hurts corporate growth, regardless of specific types of political regimes. The former regime can contribute to shared and inclusive growth, while the latter can produce the opposite result of stagnant and polarized growth. These implications are theorized as a positive political economy model in Jwa (Chapter 8, 2017a), which espouses four-regime political economies: on the one hand, democratic political economy has two regimes, Market Democracy under ED policy regime vs. Egalitarian Democracy under EE policy regime, and on the other hand, non-democratic political economy also has two types of regimes, Market Authoritarianism under ED policy regime vs. Egalitarian Dictatorship under EE policy regime. Ultimately, the model produces conclusions consistent with the above implications; the ED-friendly political economy regimes can be development-promoting, while the EE-friendly regimes will harm development.

From this perspective, it's important to note that an EE-based income redistribution policy, often associated with the welfare state, can potentially lead to growth

stagnation and polarization. However, there is a potential solution. The welfare state can become development-friendly by adopting an ED-based welfare system, where welfare subsidies are tailored to individual performance and self-development. This new political-economy insight warrants further empirical testing, requiring an expanded version of the model in Table 1.

## 3 Empirical analysis

### 3.1 A brief survey of empirical literature on growth and distribution

In this Section, we will present an empirical analysis of corporate-led shared and inclusive growth implied by GTED. Before the econometric analysis, we will briefly review the empirical literature on growth and distribution. However, this will be very selective and not a full-dress review. This paper takes a theoretical approach fundamentally different from the existing literature on growth and distribution. Therefore, the literature review works as a critical reference for showing the necessity of introducing a new perspective for empirical analysis rather than a path-finder or a precursor for the paper's empirical work.

Since Kuznets (1955) empirically observed the well-known inverted U-shaped curve between economic growth and inequality during the process of economic development, proposing the so-called Kuznets hypothesis that as an economy develops and income increases, income inequality first rises and then declines, a great deal of research has been conducted on this topic. Kuznets' hypothesis has since been reconfirmed by Ahluwalia (1976), while Anand and Kanbur (1986) found, on the contrary, a simple U-shaped curve. Moreover, Fields

(1991) found a positive correlation between growth and inequality. Banerjee and Dufo (2003) find an inverted U-shape curve in analyzing the relationship between growth and inequality. In the end, Helpman (2004) stated that thanks to Deininger and Squire (1996), the economics profession has concluded that Kuznets' inverted U-shaped curve hypothesis is no longer valid. However, Milanovic (2016) recently revived the Kuznets' inverted U shape curve as "Kuznets Waves", interpreted as the Kuznets curve recurring cyclically over a long period led by new economic shocks such as globalization and technological innovation. This sounds very interesting, but he did not address the issue of growth and development interacting with distribution via corporate activities, which is this paper's concern.

On the contrary, the other strand of studies has sought to assess whether income inequality positively or negatively affects economic growth. Nonetheless, recent studies still need to thoroughly examine the fundamental sources of economic inequality and growth. For example, Alesina and Rodrik (1994), Persson and Tabellini (1994), and Perotti (1996) find a negative relationship between inequality and growth in analyzing cross-section data, while Forbes (2000) finds the opposite result using panel data. Barro (2000) finds that the effect of inequality on growth is ambiguous, depending on the country's income level. Marrero and Servén (2018) find that the direct impact of inequality on growth is ambiguous, but the indirect effect of inequality on growth via its positive impact on poverty is negative.

It is worth recalling the tentative conclusion by Helpman (2004) on the effects of growth on inequality and vice-versa. Helpman writes, "Income inequality evolves in response to a host of forces, economic growth being only one of them. And even when growth changes the distribution of income, how it affects the distribution depends on the sources of growth. For this reason, it is difficult to isolate the effects of growth on inequality, and this relationship needs to be examined in specific contexts rather than in general terms" (p. 94). For the latter issue, "My tentative conclusion is that inequality slows growth. The research in this area has however, not been able to identify the mechanisms through which this happens. Therefore, although we can argue with limited confidence that inequality within a country slows its growth, we cannot say much about the channels through which this influence plays out" (pp. 93–94).

While the verdict on the relationships between growth and inequality has not been reached theoretically and empirically yet, political calls for stronger income redistribution have been growing. Moreover, the ideology of a welfare state has been central in government policymaking for a long time. Indeed, striking a balance between

growth and equality has remained a major issue in policymaking circles.

Long ago, Lewis (1954) argued that economic inequality might be necessary for promoting economic development by allowing for income savings and capital accumulation. Okun (1975) has argued that there is a trade-off between efficiency and equity, implying a negative relationship between growth and distribution, thereby emphasizing the need for redistribution to support the welfare state. Rawls (1971) has argued that distributive justice is substantive equality beyond the equality before the law or the equality of opportunity, which tolerates economic inequality. However, Hayek (1982; Chapter 3, *The Mirage of Social Justice*) has argued that distributive justice (another expression of social justice or economic justice) is subject to abuse, eventually implying equal distribution. He sees distribution as the spontaneous market outcome, reflecting an individual's talent and even chance, which cannot be judged indiscriminately by the yardstick of anything like justice.

However, Putterman et al. (1998) foresaw a bright future of Egalitarianism even amid the collapse of socialist countries. They seem to argue, "Egalitarianism does not harm economic efficiency in the perfectly competitive market and has not been so, even if equity and efficiency are usually claimed as subject to a trade-off relationship. The failed socialist experiment had been misguided and imperfect and, therefore, should not be seen as critical evidence to show that Egalitarianism is bad for economic efficiency. Moreover, today's market economy has developed close enough towards a perfectly competitive economy to pursue Egalitarianism without harming economic efficiency. Therefore, the argument that there will be no economic efficiency without inequality will have no more grounds."<sup>18</sup> Despite such an optimistic view of Egalitarianism, the situation has worsened since the late 1960s~1970s. The stagnation of growth and worsening income distribution have now become a common trend observed in most developed economies.<sup>19</sup>

However, this type of literature focuses on the seemingly causal relationship between growth and distribution, which are both endogenous. It misses the fundamental issue of what theoretically and empirically determines growth and distribution. This paper seeks to fill the knowledge gap found in the existing literature. First, growth and distribution are endogenous variables; therefore, finding their empirical relationship may not be very useful in assessing the impact of welfare policy. Second, growth and distribution have been greatly

<sup>18</sup> This is the author's rephrasing of the main conclusion of Putterman et al. (1998).

<sup>19</sup> See Milanovic(2016) and Galasso(2014) for further discussions of the similar development in recent decades.

influenced by public policy and especially by political ideology since the post-war era. However, most research lacks institutional perspectives. Finally, corporate firms have become more independent decision-makers, becoming a key driver of capitalist economic growth and distribution. However, the impact of corporations still needs to be adequately incorporated into the theoretical and empirical analysis, as argued in the previous Section.

In this regard, new institutional economics (North 1990, 1992a, 1992b and 1993; Eggertsson 1990) has opened the possibility of a positive political economy different from the normative political economy by recognizing the importance of economic institutions as an incentive system for economic behavior and encompassing the formal and informal institutions, including polity, into economic analysis. More recently, Acemoglu and Robinson (2012 and 2019) argued that inclusive political and economic institutions, as opposed to extractive institutions, are necessary for inclusive growth. However, it turns out that the new institutional approach falls short of recognizing the corporation's role in economic development as well as distribution.

More interestingly, works on complexity economics (Binhocker, 2006; Arthur et al. 1997; Colander 2000; Corning 2002) have radically expanded the economic frontier beyond mainstream equilibrium economics by adopting complexity science and an evolutionary perspective. Jwa (2017a) consolidates new institutional economics and complexity economics. Based on this insight, this paper argues that private corporate organizations can play the most critical role in growth and distribution in the capitalist economy. The following empirical analysis will incorporate these new perspectives.

### 3.2 A new empirical framework

This section will empirically test the impacts of the corporate economy and redistributive welfare state on growth and distribution by utilizing a new concept of the corporate production function. From the perspective of the GTED emphasizing the corporation's role as the source of growth and distribution, we need to explain aggregate production (or income) and income distribution as the function of a corporate economy measured by corporate activities.<sup>20</sup> In this regard, the existing traditional production function approach is not appropriate because it dissolves corporate activities into individual production factors following reductionism, disregarding the holistic nature of a corporate organization larger than the linear sum of individual factors according to the complexity economics perspective.

In the empirical analysis, we report two sets of results by utilizing two types of data sets, one is the primary cross-country panel data set and another is the auxiliary time series data set of the US and Korean economies, to cross-check the reliability of empirical results. The choice of the two economies for empirical study is not random but reflects a consideration of data availability and their being the representatives of the already developed economy and the newly emerging developed economy, respectively.

#### 3.2.1 Corporate production function

This section provides an alternative framework called the *corporate production function* suitable for analyzing the *corporate economy* by explicitly recognizing the corporation's role in production. We will define the corporate production function as a tool for empirical testing as follows:

$$Y/L = \alpha + \beta \cdot (CA/L) + \gamma \cdot X + \varepsilon \quad (1)$$

where  $Y$  is aggregate income,  $CA$  is the total sum of all the corporate assets in the economy by assuming the corporate sector as the grand aggregator of the economy's total productive, tangible, and intangible assets, and  $L$  is the quantity of labor. Thus,  $CA$  includes tangible capital stock, intangible intellectual capital such as intellectual properties and trademarks, and any other useful physical resources in the corporate sector. Here, per capita income ( $Y/L$ ) is expressed as a function of per capita corporate assets ( $CA/L$ ). Thus,  $\beta$  can be interpreted as the macro marginal productivity of corporate assets.  $X$  is a set of institutional variables affecting income growth with  $\gamma$  as a coefficient. Here,  $\alpha$  is a constant term that can now be interpreted as per capita income of the purely agrarian economy void of any corporate production.  $\varepsilon$  is the residual term that is now not confounded by technology, which is different from the traditional production function model, as explained below. Equation (1) can be utilized to test the hypothesis on the relationship between corporate growth and aggregate income growth.

Interestingly, Eq. (1) can be interpreted theoretically as the relationship between the stock of productive resources and the flow of income. The stock of national productive assets ( $CA/L$ ) can be expressed as the sum of the present values of the permanent annuity income flows ( $Y/L$ ) deflated by the discount rate of  $\beta$ , such as the equation  $(CA/L) = (Y/L)/\beta$ . Rearranging this equation with  $Y/L$  as the dependent variable, one can obtain Eq. (1). In other words, the stock of national productive assets ( $CA/L$ ) creates permanent income flows ( $Y/L$ ) at the rate of  $\beta$ , the nation's marginal productivity.<sup>21</sup>

<sup>20</sup> Defining the production and distribution functions as a function of a corporation and setting the framework of hypothesis testing follow the same approach as Jwa (2024), but various modifications will be made depending on the choice of explanatory variables if necessary.

<sup>21</sup> The stock of corporate assets,  $CA/L$  as the present value of permanent flows of incomes,  $Y/L$  can be expressed as follows:  $(CA/L) = (Y/L)[(1/(1+\beta)) + (1/(1+\beta))^2 + (1/(1+\beta))^3 + \dots + (1/(1+\beta))^\infty] = (Y/L)[(1/(1+\beta)) / (1 - 1/(1+\beta))] = (Y/L)[(1/(1+\beta)) / (\beta/(1+\beta))] = (Y/L)/\beta$ . See Jwa (Appendix, 2017a) for further details on this model.



Furthermore, Eq. (1) can be seen as transforming the traditional production function,  $Y=A \cdot f(K, L)$ , where  $Y$  is aggregate output,  $A$  is an efficiency parameter,  $K$  is capital stock, and  $L$  is labor input. Here,  $A$  reflects technology, quality of labor, institutional efficiency, and all the other efficiency-related factors. Suppose  $CA$  is assumed to be aggregate national productive assets, as explained above. In that case,  $CA$  can be argued to internalize  $K$ , technology, and quality of labor in  $A$  except for labor and institutional efficiency factors, which can easily be ascertained from the standard corporate balance sheet's assets items.<sup>22</sup> Then,  $Y=A \cdot f(K, L)$  can be transformed into  $Y=B \cdot g(CA, L)$ , where  $B$  is defined as an efficiency parameter representing only institutional efficiency. Assuming  $Y=B \cdot g(CA, L)$  is linear homogeneous function with respect to  $L$ , this equation can further be transformed into  $Y/L=B \cdot g(CA/L)$ , which can again be transformed into the regression equation as Eq. (1).  $CA$ 's empirical counterpart is measured by the total sum of the corporate balance sheet's assets, which is very consistent with  $CA$ 's concept defined above.  $B$  is now represented by  $X$ , the institutional factors that are now not confounded by  $\varepsilon$ , residuals. Therefore, Eq. (1) can be a helpful alternative or complement to the traditional production function by avoiding its critical theoretical and empirical weaknesses. The weaknesses with the conventional production function are well known, such as the problems of definition and measurement of capital raised by the famous Cambridge capital controversies (Harcourt 1972), the difficulties with measurement of labour quality and technology factors, and the issue of confounding of total factor productivity (TFP) denoted by  $A$  and the residuals, which now Eq. (1) can solve.

### 3.2.2 Corporate distribution function

To test the implications for the relationship between corporate growth and income distribution, we utilize a slightly transformed version of Eq. (1) as follows:

$$\begin{aligned} \text{Income Gini (or any other measure of income inequality)} \\ = a + b \cdot (CA/L) + c \cdot X + e \end{aligned} \quad (2)$$

where  $a$ ,  $b$ , and  $c$  are parameters to be estimated. The income distribution in terms of income Gini or any other measures is expressed as a function of per capita corporate assets and other institutional variables. Equation (2)

can be called the *corporate distribution function* and can be utilized to test the hypothesis on the relationship between corporate growth and income distribution.

In addition, one can test the coevolution of growth and distribution, which has been popular in the literature, by using per capita income ( $Y/L$ ) as a proxy for  $(CA/L)$  in Eq. 2 as follows.

$$\begin{aligned} \text{Income Gini (or any other measure of income inequality)} \\ = a + b \cdot (Y/L) + c \cdot X + e \end{aligned} \quad (3)$$

While Eq. (3) may be subject to the same criticisms, such as the cause-effect issue raised above, it can be one way to see a coevolution of growth and distribution. Now,  $b$  becomes a parameter for directly testing their correlation rather than causation.

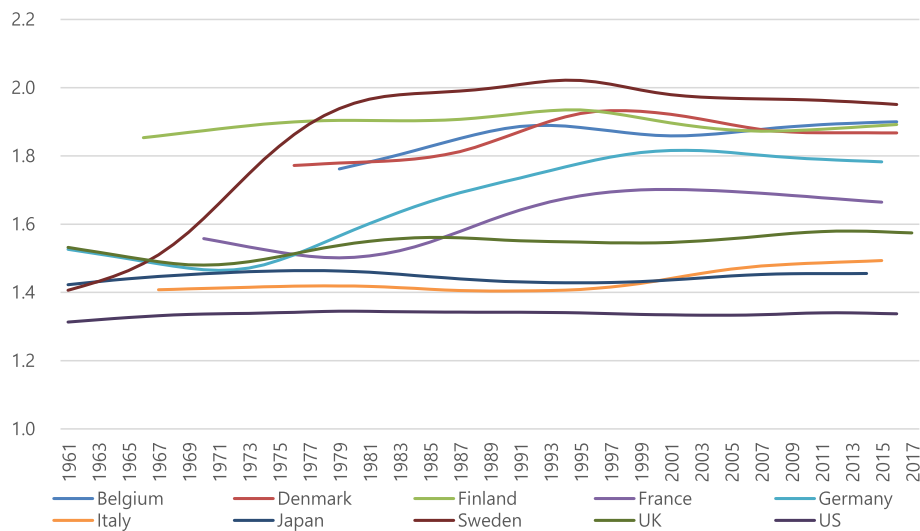
### 3.2.3 Measurement of institutional policy regime: giniratio

In addition, concerning the empirical analysis, one of the critical issues is how to measure the extent of the redistributive welfare state. The theoretical discussions imply that if the extent of the redistributive welfare state is measured as a continuous variable, it will improve or worsen income growth and distribution, whether under the ED regime or the EE regime, respectively. In the empirical analysis, we utilize the ratio of the market-income Gini to the disposable income Gini (named *Giniratio*) to measure the intensity of the redistributive welfare state. The sign of the *Giniratio* in Eqs. (1), (2), and (3) will help discriminate the nature of the welfare state being led by the ED or EE policy regime.

It may be natural to conjecture that as the country's political-economy system relies more (less) on an income redistribution system, the gap between market-income Gini and disposable income Gini would widen (narrow), and *Giniratio* would be getting higher (lower). This can be confirmed quickly by comparing the data of *Giniratio* for selected countries in the context of cross-country panel data. Let us take three countries, Sweden, France, and the United States, for comparison. One can safely say that Sweden is a more egalitarian society than France, which is more so than the United States, which is quickly confirmed by Fig. 6, and a similar fact could be demonstrated for other countries. Therefore, the choice of *Giniratio* as the proxy variable for the extent of the welfare state may not be unreasonable.

Moreover, as another way to check the usefulness of the *Giniratio* as the proxy for the extent of the redistributive welfare state, one can examine the correlation between the *Giniratio* and the state's government welfare expenditures, including entitlements. For example, in the case of the United States and Korea, which are two sample countries for the empirical study with the time series data followed up, we find that the correlation

<sup>22</sup> The values of  $K$ , technology, and intellectual properties are the standard items of the corporate B/S. If the human capital ( $HK$ ) is expressed as  $HK=L \cdot Q$ , where  $L$  is the number (quantity) of labor, and  $Q$  is the quality of labor in terms of knowledge embodied as usual in the literature, then  $CA$  can also be assumed to internalize  $Q$  by considering the corporate intangible intellectual assets capture  $Q$ .



**Fig. 6** Giniratio of selected countries. Source: Author's calculations

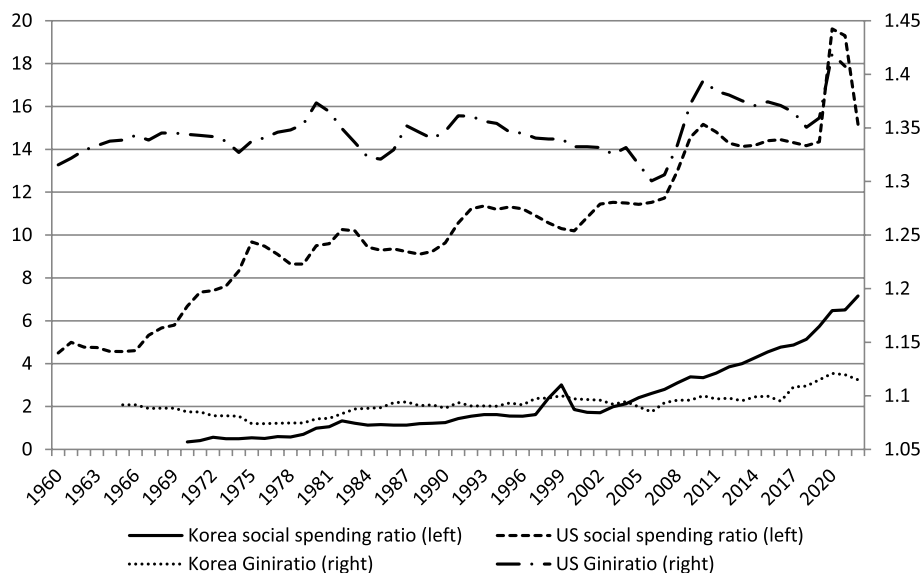
coefficients between the Giniratio and the social spending ratio to GDP are 0.67 for 1969–2020 for the US and 0.88 for 1969–2021 for Korea, as shown in Fig. 7, respectively which seem pretty high, considering the long-time data span and the possibility that the Giniratio may not precisely match the actual welfare expenditure due to the potential leakages of its welfare effects stemming from the welfare programs' incentive distortion effects and various management inefficiencies.

### 3.2.4 Hypotheses to be tested with Eqs. (1), (2) and (3)

Having Giniratio as the proxy variable for the extent of the redistributive welfare state as a significant institutional

variable belonging to X, the hypotheses to be tested will now be stated as follows:

- ① <Hypothesis 1>: Corporate-led shared and inclusive growth: If  $\beta > 0$  in Eq. (1), implying the positive effects of corporate growth on economic growth, and  $b < 0$  in Eq. (2), implying the inequality-reducing effect of corporate growth, the hypothesis will be supported. This hypothesis is expected to hold in the capitalist economy in general because the capitalist economy is argued to be a corporate economy embodying a shared growth nature. However, if the political economy regime is strongly unfriendly to a



**Fig. 7** Giniratio and social spending ratio to GDP for the US (1969 to 2020) and Korea (1969 to 2021)

corporate economy, such as the egalitarian dictatorship, including socialism, the situation of  $\beta \leq 0$  and/or  $b \geq 0$  may also be possible.

- ② <Hypothesis 2>: The ED-based welfare state vs. EE-based welfare state: On the one hand, if  $\gamma > 0$  in Eq. (1), implying the positive effect of the welfare state on economic growth, and  $c < 0$  in Eq. 2, indicating the inequality-reducing impact of the welfare state, the ED-based welfare state is confirmed. On the other hand, if  $\gamma < 0$  in Eq. (1), implying the negative effect of the welfare state on economic growth, and  $c > 0$  in Eq. 2, suggesting the inequality-increasing impact of the welfare state, the EE-based welfare state is confirmed.
- ③ <Hypothesis 3>: Coevolution of growth and distribution. If  $b < 0$  and  $c < 0$  in Eq. (3), it will imply a shared and inclusive growth, coevolution of growth and distribution, and the ED-based welfare state, respectively. Conversely,  $b > 0$  and  $c > 0$  will mean the distribution-worsening growth and the EE-based welfare state, respectively.

### 3.3 Results of econometric analysis with cross-country panel data

#### 3.3.1 Cross-section data explanation

To estimate Eqs. (1), (2) and (3), we build a panel dataset covering 69 countries for 2006~2013, where the choice of country and time period is absolutely constrained by the data availability and their costs.<sup>23</sup> For the key explanatory variable, per capita corporate assets ( $CA/L$ ), we extract each country's total corporate asset data from the S&P Capital IQ database on financial statements and turn them into per capita terms using population data.<sup>24</sup> Due to limited coverage of the database, we only use listed companies' total assets. The per capita  $GDP$  ( $GDP/L$ ) is used for the per capita aggregate output ( $Y/L$ ), and its data are obtained from WDI (World Bank). Here, both  $CA$  and  $GDP$  data are utilized in the nominal term for mutual consistency since each country's total corporate assets are measured only in the nominal term. Its transformation into a real value is deemed to be not

reasonable.<sup>25</sup> Moreover, for the distribution variable as a dependent variable in Eqs. (2) and (3), we use the market-income Gini ( $mkt\_Gini$ ) from the SWIID.

In addition, as explained already,  $Giniratio$  is calculated as the ratio of market income Gini to disposal income Gini, but its one-period lagged one,  $Giniratio(-1)$ , is utilized in actual regression. Here, we assumed that individual economic agents, including corporations, would respond to government-determined redistributive policies in a lagged manner by adjusting their behavior to the policy changes in the previous period.

In addition to  $Giniratio$ , we also consider two more control variables that measure countries' openness and average education level. For these measures, we use the ratio (%) of the sum of exports and imports to  $GDP$  and the gross secondary school enrollment ratio<sup>26</sup> (%), respectively, and the data are also obtained from the World Bank. These variables are commonly employed in this strand of literature. Four variables –  $\ln(GDP/L)$  (log of per capita  $GDP$ ),  $\ln(CA/L)$  (log of per capita  $CA$ ),  $mkt\_Gini$  (market-income Gini),  $Giniratio$  (market-income Gini/disposable income Gini) – are the critical variables for our analysis. Moreover, the combinations of the other two control variables – *openness* and *school* – are added to the regressions to see if the main results are affected by these variables.

While our panel dataset covers 69 countries from 2006 to 2013, the Gini data are missing for some countries in specific periods. Therefore, for each estimation, the number of observations varies within the range of 472~541. The correlation matrix for the variables used in the regression is shown in Table 2.

#### 3.3.2 Main estimation results with Table 3 and Table 4

Estimation results of Eqs. (1), (2), and (3) are shown in Table 3 and Table 4. These results show that for <hypothesis 1>, corporate-led shared and inclusive growth is strongly confirmed and that for <hypothesis 2>, the EE-based redistributive welfare state is implied. Moreover, Eq. (3) confirms the coevolution of growth and distribution and the EE-based welfare state. The results also show that the main results with critical variables of  $\ln(GDP/L)$ ,

<sup>23</sup> Our country coverage ranges from underdeveloped to developing and developed countries. The complete list of 69 countries is provided in the Appendix.

<sup>24</sup> S&P Capital IQ provides a standardized dataset, meaning data from different countries with different reporting requirements are all collected consistently with a single set of standardization rules. The rules also closely follow the international accounting boards' guidelines, such as FASB (Financing Accounting Standards Board) and IASB (International Accounting Standards Board).

<sup>25</sup> We choose not to transform nominal values into real ones in this analysis since the concept of corporate 'real' total assets is not well defined in the fair value accounting applied to asset valuation recommended by FASB and IASB. Moreover, price adjustments may not be an issue for our panel dataset, which does not have an extended period. In addition, it is common that income inequality is measured based on the household's nominal income. Therefore, choosing nominal values for our estimation is not an unreasonable decision.

<sup>26</sup> Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the official age group corresponding to the same level of education.

**Table 2** Correlation matrix of data set

|                  | <i>ln(GDP/L)</i> | <i>ln(CA/L)</i> | <i>mkt_Gini</i> | <i>Giniratio</i> | <i>openness</i> | <i>school</i> |
|------------------|------------------|-----------------|-----------------|------------------|-----------------|---------------|
| <i>ln(GDP/L)</i> | 1.000            | 0.900           | 0.016           | 0.724            | 0.320           | 0.823         |
| <i>ln(CA/L)</i>  | 0.900            | 1.000           | 0.032           | 0.614            | 0.283           | 0.703         |
| <i>mkt_Gini</i>  | 0.016            | 0.032           | 1.000           | 0.080            | −0.116          | 0.115         |
| <i>Giniratio</i> | 0.724            | 0.614           | 0.080           | 1.000            | 0.403           | 0.627         |
| <i>openness</i>  | 0.320            | 0.283           | −0.116          | 0.403            | 1.000           | 0.254         |
| <i>school</i>    | 0.823            | 0.703           | 0.115           | 0.627            | 0.254           | 1.000         |

**Table 3** Panel estimation results: the corporate production function

| Explanatory Variables  | Equation (1): Dependent variable: <i>ln(GDP/L)</i> |                    |                    |                    |
|------------------------|----------------------------------------------------|--------------------|--------------------|--------------------|
| <i>ln(CA/L)</i>        | 0.394*** (17.130)                                  | 0.361*** (15.696)  | 0.375*** (15.000)  | 0.344*** (13.760)  |
| <i>Giniratio</i> (−1)  | −1.069*** (−3.144)                                 | −0.795** (−2.402)  | −0.909*** (−2.575) | −0.680** (1.971)   |
| <i>openness</i>        |                                                    | −0.003*** (−3.000) |                    | −0.003*** (−3.000) |
| <i>school</i>          |                                                    |                    | 0.0025** (2.500)   | 0.002* (1.846)     |
| Constant               | 7.116*** (13.529)                                  | 7.343*** (14.455)  | 6.890*** (12.665)  | 7.176*** (13.540)  |
| Adj. R <sup>2</sup>    | 0.994                                              | 0.995              | 0.995              | 0.995              |
| Number of observations | 541                                                | 541                | 479                | 479                |

1) The parentheses are Robust t-values, and \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% levels, respectively

2) *Giniratio*(−1) is the one-year lagged *Giniratio*

*ln(CA/L)*, *Gini*, and *Giniratio* are robust to the different combinations of the added control variables.

Our results imply that the better-performing corporate sector generally tends to positively influence growth and distribution. Simultaneously, the overrun welfare state, which lacks the ED policy regime, harms economic growth and distribution. The world economy seems to be under an EE-based welfare state paradigm.

However, the variable of *openness* is significant, but with the wrong sign (−) in the GDP equation, while it is insignificant in the *Gini* equation. The variable of *school* is significant with the correct sign (+) in the GDP equation but insignificant in the *Gini* equation. These results imply a few interesting points. Concerning the GDP equation, the wrong sign of *openness*, although significant, could be interpreted to imply that the positive effect

usually observed in the literature<sup>27</sup> without the *CA* variable could have reflected the positive effect of the omitted *CA* variable because any positive effect due to market opening should come from the growth of corporations taking advantage of an open economy. Once the positive effect of corporate growth is taken into account, such as here, the sign of *openness* may turn negative. Note that an economy lacking a solid corporate sector tends to lose with the market opening.

The positive effect of the variable *school* in the GDP equation, while its size and statistical significance seem marginal, may be of some concern in this model because *CA* is assumed to capture all this effect by encompassing most of the quality part of human capital, such as the value of intellectual property. However, it is interesting that the variable *school* becomes insignificant when the corporate production function is corrected for the endogeneity problem with the variable *CA*, as reported in Table 5 below.

On the other hand, the results of insignificant effects of *openness* and *school* variables in the *Gini* equation may imply that most of the distributional effect of economic growth stems from the growth of the corporation, dominating other individual effects of *openness* and *school* so that the latter's effects become insignificant. These findings may sound counter to the widespread assertion that globalization and technological innovation since the 1980s have negatively impacted the income distribution in developed countries by putting the middle- and low-income groups at a competitive disadvantage relative to the working class in less developed economies. (Milanovic 2016). These results can be read instead as suggesting that the effects on income distribution and growth of such economic shocks would eventually be determined by how the corporate sector can absorb and minimize their adverse impacts on employment and wages. All in all, the empirical results with added traditional variables seem to imply further that corporate-led growth and distribution hypotheses of the *GTED* are statistically supported robustly to different specifications.

### 3.3.3 Robustness check for unit root and endogeneity

It is known that the unit root problem might exist in panel estimation. As a robustness check, therefore, we perform a couple of unit root tests on our primary

<sup>27</sup> The references that support the positive effects of openness on economic growth include Frankel and Romer (1999), Sachs and Warner (1995), Keller (2001), Irwin and Tervio (2002), OECD (2003), Noguer and Siscart (2005) and many more.



**Table 4** Panel estimation results: the corporate distribution function

| Explanatory Variables   | Equation (2):<br>Dependent Variable: <i>mkt_Gini</i> |                      |                      |                      | Equation (3):<br>Dependent Variable: <i>mkt_Gini</i> |                       |                       |                       |
|-------------------------|------------------------------------------------------|----------------------|----------------------|----------------------|------------------------------------------------------|-----------------------|-----------------------|-----------------------|
| <i>ln(CA/L)</i>         | −0.512***<br>(−2.783)                                | −0.457**<br>(−2.418) | −0.501**<br>(−2.374) | −0.445**<br>(−2.051) | –                                                    |                       |                       |                       |
| <i>ln(GDP/L)</i>        |                                                      |                      |                      |                      | −2.011***<br>(−7.182)                                | −2.086***<br>(−6.953) | −2.378***<br>(−7.408) | −2.450***<br>(−7.164) |
| <i>Giniratio</i> (−1)   | 11.133***<br>(4.139)                                 | 10.666***<br>(3.930) | 11.267***<br>(3.831) | 10.768***<br>(3.635) | 8.889***<br>(3.430)                                  | 9.069***<br>(3.479)   | 8.567***<br>(3.064)   | 9.125***<br>(3.246)   |
| <i>openness</i>         |                                                      | 0.005<br>(1.250)     |                      | 0.007<br>(1.400)     |                                                      | −0.003<br>(−0.750)    |                       | −0.003<br>(−0.600)    |
| <i>school</i>           |                                                      |                      | 0.001<br>(0.100)     | 0.0001<br>(0.012)    |                                                      |                       | 0.010<br>(1.000)      | 0.009<br>(0.900)      |
| Constant                | 36.857***<br>(8.828)                                 | 36.476***<br>(8.720) | 36.333***<br>(7.985) | 35.707***<br>(7.813) | 54.018***<br>(11.428)                                | 54.757***<br>(11.297) | 56.205***<br>(11.012) | 56.961***<br>(10.846) |
| Adjusted R <sup>2</sup> | 0.984                                                | 0.984                | 0.979                | 0.979                | 0.985                                                | 0.985                 | 0.982                 | 0.982                 |
| Number of observations  | 533                                                  | 533                  | 472                  | 472                  | 533                                                  | 533                   | 472                   | 472                   |

1) The parentheses are Robust t-values, and \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% levels, respectively

2) *Giniratio*(−1) is the one-year lagged *Giniratio*

**Table 5** 2SLS Panel Estimation Results: The Corporate Production Function

| Explanatory Variables  | Equation (3): Dependent variable:<br><i>ln(GDP/L)</i> |                      |                      |                      |
|------------------------|-------------------------------------------------------|----------------------|----------------------|----------------------|
| <i>ln(CA/L)</i>        | 0.468***<br>(14.625)                                  | 0.437***<br>(13.656) | 0.447***<br>(12.771) | 0.419***<br>(11.639) |
| <i>Giniratio</i> (−1)  | −1.028***<br>(−2.989)                                 | −0.790**<br>(−2.365) | −0.865**<br>(−2.430) | −0.668*<br>(−1.920)  |
| <i>openness</i>        |                                                       | −0.003***<br>(−3.00) |                      | −0.003***<br>(−3.00) |
| <i>school</i>          |                                                       |                      | 0.001<br>(1.359)     | 0.001<br>(1.00)      |
| Constant               | 6.356***<br>(11.054)                                  | 6.557***<br>(11.709) | 6.211***<br>(10.439) | 6.475***<br>(11.068) |
| Adj. R <sup>2</sup>    | 0.995                                                 | 0.996                | 0.995                | 0.996                |
| Number of observations | 541                                                   | 541                  | 479                  | 479                  |

1) The parentheses are Robust t-values, and \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% levels, respectively

2) *Giniratio*(−1) is the one-year lagged *Giniratio*

variables – *ln(GDP/L)*, *ln(CA/L)* and *Giniratio* – of the models. The test results show that we do not find strong evidence of a unit root in our estimation.<sup>28</sup> Another issue might be the endogeneity problem. Especially in the production function, one can suspect that the key variable *lnCA* might be endogenous, causing simultaneity

<sup>28</sup> In our tests, we use EViews, a statistical software that conveniently provides a tool for unit root tests based on the works of Levin, Lin & Chu (2002), Im, Pesaran and Shin (2003), Maddala and Wu (1999), Choi (2001), and Hadri (2000). We do not report the test results here to save space; however, the results are available upon request. As a rule of thumb, in addition, it has been said that when we have a dataset in which the number of cross-sections *N* is considerably larger than that of period *T*, like our dataset in this paper, the unit root problem might not be an issue.

bias. We perform a Wu-Hausman endogeneity test to see whether variable *ln(CA/L)* is endogenous in our production and distribution functions. We detect the endogeneity of *ln(CA/L)* in the production function, but there is no evidence of endogeneity in the distribution function. Therefore, we run 2SLS (two-stage least squares) estimation using the one-period lagged variable of *ln(CA/L)*, *ln(CA/L)*(−1) as an instrumental variable for *ln(CA/L)* to avoid the endogeneity problem.<sup>29</sup>

We present the estimation results of 2SLS in Table 5 which are not very different from the original ones as shown in Table 3, except that the size of *ln(CA/L)*'s coefficient, the macro marginal productivity of corporations, gets a little bigger and the variable *school* that is marginally significant previously now turns insignificant, implying the endogeneity problem in our estimation is not very serious. To summarize the discussion in this section, we can safely say that our empirical findings in Table 3 and Table 4 are quite robust to the issues that might arise from the unit root and endogeneity problems.

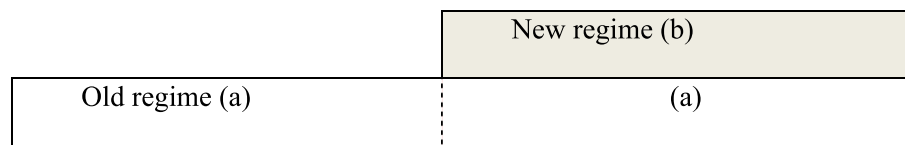
### 3.4 Results of econometric analysis with time series data

#### 3.4.1 The model specification for time series analysis

Here, we will present the empirical results of time series data analysis for the US and Korea. An introduction about special features to be considered for the specification of times series analysis is in order.

First, given the fact that the span of the data may be long enough, such as a half-century, one needs to consider the

<sup>29</sup> The F-statistics in the first-stage regression is large enough to indicate our choice of IV is statistically relevant for our production function estimation. The first-stage estimation result is presented below.



**Fig. 8** Conceptual Scheme of Structural Break

possibility of political economy regime change in the sample period. The econometric analysis must address potential structural breaks in the sample. For example, the US political economy regime had changed from Keynesian dominance during the 1960s to 1970s to Neoliberalism in the 1980s. Korea's political economy regime went from so-called authoritarianism in the 1960s to the 1980s to a politically democratized era in the 1990s (Jwa, 2017b). To handle these episodes of regime changes, we adopt the dummy variable approach for checking structural breaks by adding the explanatory variable multiplied by the dummy variable, which takes zero (0) for the old regime era and one (1) for the new regime era, whose coefficient reflects the impact of the new regime only (b), and the coefficient of non-dummy-multiplied variable represents the old regime effect (a). This concept can be described in Fig. 8. The sum of (a) and (b) is a total effect for the post-regime change representing the post-change economic structure. Note that this is different from the method of the dummy variable applied to the constant term, in that this strategy checks the structural break in the slope parameters. The old regime structure is taken as the underlying economic structure (a), on top of which the new regime effect (b) is imposed, where  $(a+b)$  becomes the post-change structure.<sup>30</sup>

For the US case, the paper picked the 1981 as the beginning year of the neoliberalism led by monetarism overriding the embedded liberalism era under Keynesianism, and so the US dummy variable takes 0 up to 1980 and 1 from 1981. For Korea, the paper assumes that the democratization era began by the new Constitution passed in 1987 with direct election of the President and so the Korean democratization dummy variable takes 0 up to 1987 and 1 from 1988.

Second, the time series data often exhibit a common problem of non-stationarity due to underlying time trends. To address this issue, robust regressions were conducted using growth terms for both countries.

### 3.4.2 Empirical results with the time series data

Empirical results of the US and Korea are reported in Table 6 and Table 7. Most of all, both countries show remarkably similar results, regardless of many differences

in background and history of economic development, all consistent with the cross-section analysis. The only difference is observed with the results concerning the effect of redistributive welfare policy in the distribution function: strong negative effect (positive sign, +) for the US, but strong positive effect (negative sign, -) in developmental era turned to negative effect (positive sign, +) in democratization era for Korea, approaching to the US pattern. This probably reflects that the late-coming Korea's welfare system is yet too early to be assimilated into the US, providing new evidence that the nature of the political economy regime, adopting either the ED or EE policy regime, will generate a different economic structure. Korea's developmental era based on the ED policy regime turned out to be different from her democratization era on the EE policy regime, which is becoming analogous to the US regime. However, concerning corporate-led shared growth, both countries strongly support it, as does the world cross-section data, probably because it is capitalism's built-in nature. We will briefly review them in order.

**3.4.2.1 The US economy** Since the results don't seem to support the restriction of no regime change by showing some significant parametric changes in neoliberalism, the discussion will be mainly on the results from the regime change model in Table 6.

The US corporate sector's contribution to growth has been strong regardless of regime changes, but its shared growth nature has shown signs of weakening since neoliberalism, though not significant. On the other hand, the redistributive welfare policy also contributed to growth in pre-neoliberalism but turned to the growth worsening factor since it. The welfare policy was not distribution-worsening in pre-neoliberalism but became a solid worsening factor since neoliberalism. The results also confirm a coevolution of income growth and distribution, though it is weakening in neoliberalism. Now, one can see the US economy exactly resembles the world results, implying the US political economy is led by the Egalitarian Democracy based on the EE policy regime according to our classification.

At this juncture, the intriguing question is, "Is this the outcome which the neoliberalism proponents intended to establish by arguing for the pro-market, pro-business, less welfare intervention and anti-labor union?" These

<sup>30</sup> See Maddala (1977) for the dummy variable approach for the coefficient structural break.

**Table 6** Estimation results of the US production and distribution functions

| Dependent variable<br>Independent variable | Production Function: Equation (1) |                                  |                                     |                                          | Distribution Function: Equation (2) |                                  |                                      |                                          | Distribution Function: Equation (3) |                                  |                                      |                                          |
|--------------------------------------------|-----------------------------------|----------------------------------|-------------------------------------|------------------------------------------|-------------------------------------|----------------------------------|--------------------------------------|------------------------------------------|-------------------------------------|----------------------------------|--------------------------------------|------------------------------------------|
|                                            | Per capita real GDP               |                                  |                                     |                                          | Market Income Gini                  |                                  |                                      |                                          | Market Income Gini                  |                                  |                                      |                                          |
|                                            | Whole period                      | Pre-neoliberalism(a) for 1962~80 | Neoliberalism only(b) for 1981~2016 | Post-neoliberalism (a)+(b) for 1981~2016 | Whole period                        | Pre-neoliberalism(a) for 1962~80 | Neoliberalism only (b) for 1981~2016 | Post-neoliberalism (a)+(b) for 1981~2016 | Whole period                        | Pre-neoliberalism(a) for 1962~80 | Neoliberalism only (b) for 1981~2016 | Post-neoliberalism (a)+(b) for 1981~2016 |
| Nominal CA/L                               | 0.161***<br>(4.381)               | 0.129**<br>(3.217)               | 0.040<br>(1.007)                    | 0.169***<br>(5.201)                      | -0.040**<br>(-2.589)                | -0.045**<br>(-2.710)             | 0.018<br>(0.821)                     | -0.027<br>(-0.984)                       |                                     |                                  |                                      |                                          |
| Nominal GDP/L                              |                                   |                                  |                                     |                                          |                                     |                                  |                                      |                                          | -0.068*<br>(-1.754)                 | -0.048**<br>(-1.489)             | 0.022<br>(0.686)                     | -0.026<br>(-0.644)                       |
| Giniratio (-1)                             | -0.246<br>(-0.746)                | 2.657**<br>(2.413)               | -3.317***<br>(-2.724)               | -0.660***<br>(-2.803)                    | 0.309***<br>(3.353)                 | 0.157<br>(0.911)                 | 0.176<br>(0.887)                     | 0.333***<br>(3.421)                      | 0.151<br>(1.286)                    | 0.105<br>(0.477)                 | 0.244<br>(1.030)                     | 0.349***<br>(3.316)                      |
| constant                                   | 0.755**<br>(2.268)                | 0.709**<br>(2.296)               |                                     |                                          | 0.712***<br>(3.921)                 | 0.687***<br>(3.790)              |                                      |                                          | 0.751***<br>(3.183)                 | 0.604***<br>(2.920)              |                                      |                                          |
| Adjusted R <sup>2</sup>                    | 0.149                             | 0.230                            |                                     |                                          | 0.155                               | 0.141                            |                                      |                                          | 0.073                               | 0.108                            |                                      |                                          |
| Estimation Period                          | 1962~2016                         | 1962~2016                        | 1981~2016                           | 1962~2016                                | 1962~2016                           | 1962~2016                        | 1981~2016                            | 1962~2016                                | 1962~2016                           | 1962~2016                        | 1981~2016                            | 1981~2016                                |

1) All variables are in growth terms to avoid the unit-root problem. No endogeneity problem is detected via diagnostic check

2) Regression is run by the EViews package. ( ): Robust t-values, and \*\*\*, \*\*, \*, +, and + indicate statistical significance at the 1%, 5%, 10%, 15%, and 20% levels, respectively

3) Results of columns (a) and (b) are obtained by running the one regression equation using a dummy variable method for testing structural breaks. See Maddala (1977) for this method

4) The t-value of (a + b) is an asymptotic t-value where the asymptotic standard errors are calculated by the asymptotic variance formula,  $V(a + b) = V(a) + V(b) + 2 \times \text{Cov}(a, b)$

5) Source and explanation of data: GDP is from the World Bank; the Gini coefficient is from SWIID (Solt, 2022); CA, the total assets in the balance sheets of US companies listed on the NY Stock Exchange with headquarters in the US, is from the S&P Capital IQ database on financial statements. The US has publicly available CA data only for the manufacturing sector since 1960 and for all industries excluding the service industry only since 1974. These data are too narrow or short for regression purposes. Therefore, we use the listed companies' CA in the empirical study

results are almost the opposite of the anticipation with their market-centric ideology except for the corporate-led growth. Which of the ideologies of neoliberalism or the government's inactive policy implementation will be blamed for the unexpected outcomes? The paper is inclined to stand by the latter hypothesis because their ideology is closer to the Market Democracy, though the ED policy regime seemed not fully understood and sincerely implemented as shown by Cohen and Centeno (2006). However, we think the conclusion on this issue may need further research and scrutiny.

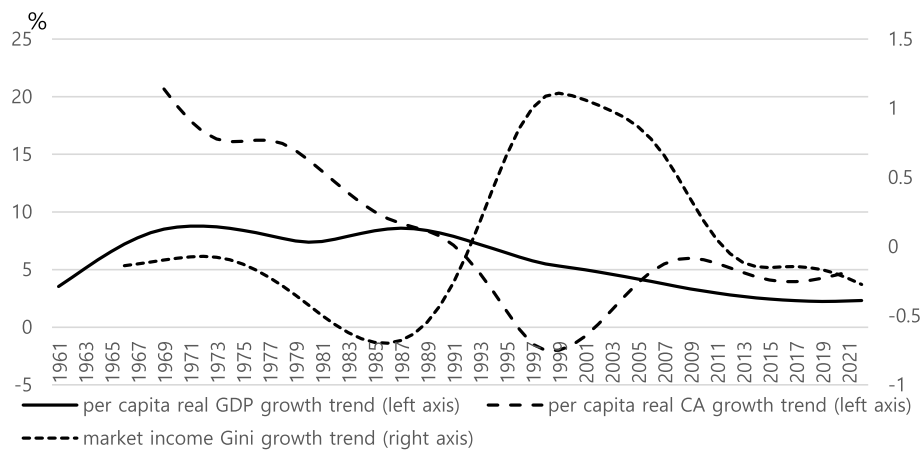
**3.4.2.2 The Korean economy** Now, the results of the Korean economy will be reviewed. Figure 9 shows that the Korean economy had a structural break around the late 1980s and early 1990s when the trend of real per capita GDP growth began declining, the trend of market income Gini growth steeply rising, and the corporate sector growth trend steeply falling. This was combined with the political democratization launched with the new constitution in 1987. We picked 1988 as the starting year of new democratization with the direct election of the President.

The Korean results in Table 7 show a very similar pattern of parameters of growth and distribution functions

to the US as well as the world results shown above. Here, we will also concentrate mainly on the regime change models. Concerning corporate-led shared growth, Korea is a strong case of corporate-led shared growth regardless of regime change despite some signs of interruption by democratization. The redistributive welfare policy in the 60 s ~ 70 s, to begin with, was neutral to the growth and even promoting distribution, while the democratization turned all these into harming growth and distribution, implying Korea's strong Market Authoritarian political economy having adopted the ED policy regime was taken over by the Egalitarian Democracy favouring the EE policy regime ever since the 1988 democratization.<sup>31</sup> However, note that Korea's distribution-worsening effect of the welfare policy is less malicious than the US, probably because Korea's welfare system is still relatively early. The nature of coevolution of growth and distribution is weakly kept but more robust than in the US.

The Korean Economy seems to be in a slightly better structural position than the US, but the latecomer

<sup>31</sup> See Jwa (2017b and 2020) for nontechnical detailed discussions of this transformation.



**Fig. 9** Growth trends of Per capita Real GDP, Per capita Real Corporate Asset (CA), and Market Income Gini in Korea (%). 1) Trends are generated through the Hodrick-Prescott filter. 2) Source of data: See the note of Table 7. 3) The correlation between CA and GDP is 0.650, between CA and Market Gini is  $-0.654$ , and between GDP and Market Gini is  $-0.372$ , respectively. Source: Jwa (2024)

democracy seems to be learning very fast the nature of American Egalitarian Democracy.

#### 4 Concluding remarks

The GTED, which forms the theoretical backbone of this paper, posits that the trinity of economic development, market, corporation, and government when they embrace an ED institution, can foster shared and inclusive growth by promoting both growth and distribution. In contrast, the EE institution, by its very nature, hampers this process, leading to a simultaneous deterioration of growth and distribution. The GTED further asserts that corporations, as a prime example of ED institutions in a capitalist economy, serve as a crucial latent variable in the determination of growth and distribution.

The empirical results with the panel dataset covering 69 countries for 2006~2013 and the time series datasets for the US and Korean economy all support those theoretical arguments in general as follows. 1) The income grows with corporate growth but declines with the extent of the EE-based redistributive welfare state (measured by the ratio of market-income Gini to disposable income Gini as a proxy for the redistributive welfare state). 2) Income distribution improves with corporate growth but worsens with the extent of the EE-based redistributive welfare state. 3) Income distribution coevolves with income growth. These results imply that the growth of the corporate economy may help improve shared and inclusive economic development. However, expanding the redistributive welfare state, which lacks the ED policy regime, may worsen economic polarization.

Our empirical study has yielded important evidence that the choice of the political economy regime, ED or EE friendly, has profound implications for economic structure. Korea in its developmental era under Market Authoritarianism adopting the ED policy regime, stands as a robust case of corporate-led shared growth, where the growth of the corporate sector and welfare policies have contributed to growth and distribution. In contrast, the democratization era, marked by the adoption of the EE policy regime, has begun to erode the shared growth nature of the Korean economy, making it more akin to the current US Egalitarian democracy regime.

Turning to the policy implications, the first and foremost is the question of the sustainability of capitalism under the distributive welfare state ideology. Our empirical evidence suggests that a sustainable redistributive welfare state within a capitalist framework may be achievable by bolstering the growth of the corporate sector and introducing the Economic Discrimination incentive into the welfare system.

Second, as a corollary, the corporate promotion policy could be considered the most vital part of a country's economic development and welfare policy. Without considering corporations' role in promoting growth and distribution by creating jobs, expanding the middle-income class, and generating tax revenue to fund welfare policies, a government-led redistribution-centered welfare system may not be sustainable. Therefore, policies to improve growth and distribution may need to focus on enhancing economic institutions for corporate growth by reinforcing ED institutions beyond the usual overreliance



**Table 7** Estimation Results of Korea's Production and Distribution Functions

| Dependent variable      | Production Function: Equation (1) |                                   |                                       |                                           | Distribution Function: Equation (2) |                                   |                                       |                                           | Distribution Function: Equation (3) |                                   |                                       |                                           |
|-------------------------|-----------------------------------|-----------------------------------|---------------------------------------|-------------------------------------------|-------------------------------------|-----------------------------------|---------------------------------------|-------------------------------------------|-------------------------------------|-----------------------------------|---------------------------------------|-------------------------------------------|
|                         | Per capita real GDP               |                                   |                                       |                                           | Market Income Gini                  |                                   |                                       |                                           | Market Income Gini                  |                                   |                                       |                                           |
|                         | Whole period                      | Developmental era (a) for 1969~87 | Democratization only (b) for 1988~021 | Post-democratization (a)+(b) for 1988~021 | Whole period                        | Developmental era (a) for 1969~87 | Democratization only (b) for 1988~021 | Post-democratization (a)+(b) for 1988~021 | Whole period                        | Developmental era (a) for 1969~87 | Democratization only (b) for 1988~021 | Post-democratization (a)+(b) for 1988~021 |
| Nominal CA/L            | 0.070**<br>(2.503)                | 0.082**<br>(2.495)                | -0.036<br>(-0.956)                    | 0.046**<br>(1.565)                        | -0.017**<br>(-2.672)                | -0.017**<br>(-2.554)              | -0.006<br>(-0.449)                    | -0.023**<br>(-1.897)                      |                                     |                                   |                                       |                                           |
| Nominal GDP/L           |                                   |                                   |                                       |                                           |                                     |                                   |                                       |                                           | -0.029*<br>(-1.750)                 | -0.031*<br>(-1.717)               | -0.007<br>(-0.237)                    | -0.038**<br>(-1.483)                      |
| Giniratio(-1)           | -2.590*<br>(-1.773)               | 1.092<br>(0.242)                  | -4.499<br>(-0.970)                    | -3.407**<br>(-2.611)                      | -0.341<br>(-1.054)                  | -1.214**<br>(-2.433)              | 1.124**<br>(1.583)                    | -0.090<br>(-0.193)                        | -0.422*<br>(-1.452)                 | -1.165**<br>(-2.988)              | 0.921*<br>(1.736)                     | -0.255<br>(-0.655)                        |
| constant                | 4.921***<br>(5.916)               | 4.917***<br>(6.639)               |                                       |                                           | 0.376**<br>(1.463)                  | 0.395**<br>(1.653)                |                                       |                                           | 0.480<br>(1.269)                    | 0.537<br>(1.205)                  |                                       |                                           |
| Adjusted R <sup>2</sup> | 0.136                             | 0.138                             |                                       |                                           | 0.078                               | 0.074                             |                                       |                                           | 0.061                               | 0.047                             |                                       |                                           |
| Estimation Period       | 1969~2021                         | 1969~2021                         | 1988~2021                             | 1969~2021                                 | 1969~2021                           | 1969~2021                         | 1988~2021                             | 1969~2021                                 | 1969~2021                           | 1969~2021                         | 1988~2021                             | 1988~2021                                 |

1) All variables are in growth terms to avoid the unit-root problem. No endogeneity problem is detected via diagnostic check.

2) Regression is run by the EViews package. ( ): Robust t-values, and \*\*\*, \*\*, \*, +, and + indicate statistical significance at the 1%, 5%, 10%, 15%, and 20% levels, respectively.

3) Results of columns (a) and (b) are obtained by running the one regression equation using a dummy variable method for testing structural breaks. See Maddala (1977) for this method.

4) The t-value of (a + b) is an asymptotic t-value where the asymptotic standard errors are calculated by the asymptotic variance formula,  $V(a + b) = V(a) + V(b) + 2 \times \text{Cov}(a, b)$

5) Source of data: GDP is from the Bank of Korea; CA is from *the Analysis of Corporate Management* by the Bank of Korea; Korea's income Gini combines the SWIID series by Solt (2016) up to 2016 and its extended series (2017–22) forecasted using the Household Financial Welfare Survey Gini (2011–22) that Korea has formally published.

on EE redistribution. In this regard, Greenspan and Wooldridge's (2018) characterization of American capitalism as "the business of America is business" is very insightful.<sup>32</sup>

Third, as another corollary, our findings underscore that social policies, particularly redistribution policies, may need to be reformed to become more development-oriented. Introducing an ED incentive system will be crucial to avoid or minimize the disincentive effect of the currently prevailing EE-based social policies.

Finally, as an implication for future research, we hope the concerned political economy profession further scrutinizes the empirical findings by improving the related database. The limitation of the data on CA is particularly critical, so we hope that world economic organizations like the World Bank and IMF pay attention to the issues, such as improving standardization and availability of CA.

## Appendix

### The Country List for the Empirical analysis (69 countries)

Argentina, Australia, Austria, Bangladesh, Belgium, Botswana, Brazil, Canada, Chile, China, Colombia, Croatia,

Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, Ghana, Greece, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Korea, Latvia, Lebanon, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Morocco, Namibia, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Poland, Portugal, Romania, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Tunisia, Turkey, UK, US, Vietnam

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The author(Jwa) appreciates the late Professor Gary Becker at the University of Chicago for conceding and encouraging the idea of interpreting economic discrimination(ED) as the market's primary function during a personal encounter in 2009. He initiated the "economics of (social) discrimination" by arguing that the market forces of competition tend to eliminate discrimination in the marketplace (Becker, 1957). This paper can rephrase his point: the market function of economic discrimination will reinforce competition, thereby helping eliminate social discrimination. Social discrimination needs to be distinguished from economic discrimination based on economic performance. One caveat is necessary: this paper is a precursor to the recent work by one of the authors (Jwa, 2024) but has been published late due to the usual time lag involved in the peer review process. Therefore, readers will be advised to read together, from this paper to Jwa (2024), despite minor, inevitable overlaps, if they are interested in growth and distribution issues.

<sup>32</sup> This quotation is the title of Chapter 6 of Greenspan and Wooldridge (2018).

## Authors' contributions

The corresponding author developed the research plan, theoretical framework, and empirical model, while the second author primarily handled the empirical section, including data management and regression analysis.

## Declarations

### Competing interests

I have no conflict of interest regarding this research, as I received no financial or other support from outside sources.

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