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# Inequality and Economic Growth: Kuznets Curve and the Case of South Korea

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**Abstract**
*This paper examines Simon Kuznets' hypothesis of economic growth, which states that in the early stages of a country's economic growth, the distribution of income gets worse; only at later stages will it improve. This hypothesis is charted using Kuznets inverted-U shaped curve, which tracks the income distribution of a country over time. Also explored are the Gini coefficient and Lorenz curve, which are the primary ways of measuring and graphing inequality levels. Kuznets gives six characteristics that are said to define economic growth. Kuznets inverted-U curve hypothesis is tested in the case of South Korea's economic growth and inequality levels since the 1950s. Alternatively, Piketty offers counter arguments to Kuznets' hypothesis, stating that inequality actually increases as a country becomes more developed. Empirical data such as South Korea's historical GDP per capita, Gini coefficient, and share of production figures are used to evaluate Kuznets hypothesis. Ultimately, the question to be answered is: Does South Korea follow Kuznets' hypothesis of economic growth from the 1950s to the present?*

**Keywords**: Economic growth, Kuznets hypothesis, inequality of income, South Korea

## Introduction

Inequality continues to become a more prominent reality for many countries worldwide, with developing countries often characterized by extreme income gaps between the richest of the rich and the poorest of the poor. Based on 2009 data (with indications that the figures are only growing more statistically significant) the poorest 20% of people receive just 1.5% of the world's income. This population bracket is equivalent to the roughly 1.3 billion people who live on less than $1.25 per day (Todaro & Smith, 2015). In the case of South Korea, inequality is worth examining at the national level, and not just at a global level, in order to properly draw conclusions

about how economic growth affects inequality levels. First, we will examine the historical methodology used to measure income inequality, focusing specifically on Kuznets inverted-U shaped curve, the Lorenz curve, and the Gini coefficient. Kuznets' hypothesis suggests that as economic growth occurs, income inequality will first increase in the short run, but decrease over time in the long-run. The Lorenz curve is used to visually display income inequality in a particular country, and the Gini coefficient is calculated from this Lorenz curve. Kuznets uses his own inverted-U shaped curve to measure the Gini coefficient over time for a particular country.

South Korea has made remarkable strides of economic growth since rising from the ashes of the Korean War in the 1950s. Up until World War II, Korea was a unified country living under Japanese imperialist rule, and following the Korean War, was divided in to North and South Korea (for simplicity, we only focus on South Korea). What were some of the factors that sparked this growth, and what was the resulting distribution of incomes? Has South Korea followed the Kuznets curve by starting its growth with high inequality which gradually reduced, or has it charted its own course? What differentiating factors set South Korea's economic growth patterns apart from other similar countries? These questions are addressed through a literature review and empirical data examination as inequality is attempted to be understood in the historical context of South Korea's accelerated economic growth.

**Literature Survey**

Simon Kuznets, in his groundbreaking work "Economic Growth and Income Inequality" (1955) posed the question "Does inequality in the distribution of income increase or decrease in the course of a country's economic growth?" (Kuznets, 1955, p. 1). Through testing this theory and examining income patterns across countries, he theorized that in the early stages of economic growth, the distribution of income will get worse and only at later stages will it improve. This distribution is displayed using an inverted-U model, otherwise known as Kuznets curve. The curve displays changes in the income distribution of countries over time as measured by the Gini coefficient. These points trace out an inverted-U, with inequality rising initially, stabilizing for a time, and then falling later on. This chart is designed to measure short and long-term outcomes of inequality in a specific country. This curve is highly respected among academicians and institutions world-wide (Todaro & Smith, 2015).

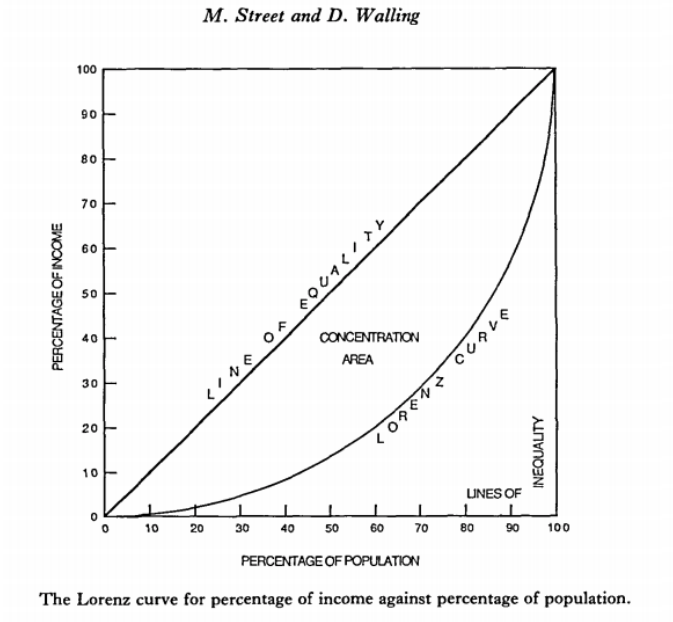
There are many explanations as to why this inequality gets worse in the short-term. The primary argument is that growth is concentrated in the modern industrial sector early on, and employment is limited but wages and productivity are high. Kuznets curve displays the way a country grows over time from a traditional to a modern society. With one or two sectors leading the way, it is not possible for everyone to benefit from this growth, and inequality increases as a result. Kuznets believed that as economic growth continued for a long time, a middle class would emerge and income inequality would decline. In the long-run, the curve would have a downward trend as the supply of educated workers increased, the number of unskilled workers fell, and the economy generated financial benefits and shared wealth more broadly (Todaro & Smith, 2015).

In cohesion with Kuznets curve, the Lorenz curve is a common way to analyze personal income statistics. The percentage of the income recipients is plotted on the horizontal axis and expressed in terms of cumulative percentages. This means that at point 20 resides the poorest 20%, at 50 resides the lower half of the population, and at 100% all of the population has been accounted for.

The vertical axis shows the total income received by each percentage of the population. The Lorenz curve essentially displays the inequality of income distribution of a particular country.

The Lorenz curve is displayed within a square, with a diagonal line drawn from the lower left corner (origin) to the upper right corner. At each point on the diagonal, the percentage of income received is equal to the percentage of the population receiving the income. For example, at point 65 on the diagonal, 65% of the population is receiving 65% of the income. The diagonal line represents perfect equality of income, as each percentage of the population is receiving the same percentage of the total income.

The Lorenz curve shows the actual relationship between income and the population in the course of a given time period. The more the Lorenz curve bends away from the diagonal line, the greater the inequality represented. Perfect inequality would be represented by one person receiving all the income, and would be displayed at the bottom horizontal and right hand vertical axes. Obviously, no country has perfect equality or inequality, so the reality is that the Lorenz curve lies somewhere between the diagonal line and the bottom right corner. The greater the inequality, the greater the bend of the Lorenz curve and closer to the bottom it will be (Todaro & Smith, 2015).



The Lorenz curve for percentage of income against percentage of population.

*Figure 1 - Street & Walling, 1990*

Finally, the summary measure of the relative degree of inequality is found by "calculating the ratio of the area between the diagonal and the Lorenz curve divided by the total area of the half-square in which the curve lies" (Todaro & Smith, 2015, p. 222). This is referred to as the Gini coefficient, first formulated in 1912. The Gini coefficient is a number between 0 and 1, with 0 being perfect equality and 1 being perfect inequality. Countries with highly unequal income distributions typically lie between .5 and .7, while countries with relatively more equal income distributions have a Gini between .2 and .35. As a result, when the Lorenz curve is charted on a graph next to another Lorenz curve, the upper curve has a more equal income distribution. The Lorenz curve is able to tell quite a bit about a country's income distribution, including the general income level of the poor, the middle class, or the rich. More information would be needed to determine which country is more equal overall, but the Lorenz curve provides a strong starting point to examine the issue.

Although this paper will not explore this topic in depth, it is also important to mention another measure of income distribution. The factor share distribution of income attempts to show the share of national income received by each factor of production – land, labor, and capital. Ownership of these factors is not taken into account, rather it is just looking at where the income goes. There is much research and more in-depth analysis on this issue that is not explored here, but it is important to mention this measure as we will examine it briefly in the context of South Korea (Todaro & Smith, 2015).

In short, Kuznets curve and the Lorenz curve are both used as ways to measure income distribution, and often in tandem. The Lorenz curve is used to calculate the Gini coefficient, while Kuznets curve plots Gini coefficients. Additionally, the Lorenz curve focuses on a look at income at a particular moment in time, but Kuznets is a long-term look at income based on the Gini coefficient, or the changes in the Gini in a country over time compared to overall economic growth in that country (Bagan, 2012).

In 1973, Kuznets published "Modern Economic Growth: Findings and Reflections" (1973) which focused on modern economic growth and its worldwide impact. This article focuses in large part on breaking down Kuznets' six characteristics of modern economic growth in developing countries, which he theorized in his aforementioned publication:

1. High rates of growth of per capita product and population.
2. High rates of growth in productivity.
3. High rate of structural transformation of the economy.
4. High rates of social and ideological transformation.
5. Increased ability to reach to the world market and world demand.
6. Limited spread of economic growth to more than one-third of the world population

(Kuznets, 1973, pp. 248-249).

It has been argued that although these characteristics are considered by Kuznets to be reliable indicators of a country experiencing economic growth, they have rarely been applied or tested fully (Bagan, 2012). Each of these characteristics can be further broken down. First, high rates of growth are typically reflected as an increase in Gross Domestic Product (GDP) and a decrease in population growth rates. GDP may not accurately reflect a developing country's growth, and often underestimates this, but it is the most widely-used measure of economic development. Population growth rates are also highly relied upon. Second, growth rates of productivity are measured in multiple ways, but Total Factor Productivity (TFP) is the most commonly used as it measures the average productivity of all factors of an economy. Third, structural transformation of an economy is typically marked by a shift from an agriculturally based society to one that relies more on industry and manufacturing, as well as a service sector. Fourth, social and ideological transformation refers to the idea of modernization as the driving force behind development. The idea that economic growth would lead to a better life gave force to increased economic planning, improved institutions, and greater opportunities. Fifth, countries were often marked by a greater willingness to engage with the rest of the world in trade. The modern technology and infrastructure often allowed them to do this more easily. And finally, Kuznets' last characteristic argues that economic growth is not limited to or felt only by the few countries that drive this growth – it should also be felt across more countries and sectors due to technological advancement. In essence, there should be a ripple effect that touches countries who were not part of the initial growth boom.

Kuznets' six characteristics are not without critics. First, high rates of per capita output do not take in to account the social aspects of development. If only growth rates were measured, many countries would be assumed to be developed due to high per capita growth rates. A country needs both a developed economy and a developed social system in order to be qualified as developed. In regard to Kuznets' second characteristic, problems arise when measuring Total Factor Productivity (TFP). TFP is difficult to measure and data are hard to find. Different countries measure data and make assumptions about data differently, and this can cause growth estimates to vary widely. When growth factors other than technical change are measured, the data can also be unreliable. Third, while Kuznets advocates for structural transformation, he ignores the negative externalities

that arise from this transformation. Urbanization leads to giant, overpopulated cities, poor public services, and high unemployment and underemployment. A rural environment offers simplicity and stability, but migrating to an urban center often leads to life in the slums and joblessness. Fourth, how is change in social, political and ideological transformation measured? This is much more subjective – for example, while a country may be more advanced in democratic ideals, but it might lag far behind in human rights protection. Measurement and analysis of ideological change can be quite difficult. Fifth, by arguing that involvement in international trade is essential for development, Kuznets also reinforces the tendency of rich or developed countries to implement a top-down relationship, drawing on developing countries for primary products, raw materials, and cheap labor. The cycle of buying primary products cheaply, modifying them and selling them back to developing countries continues and perpetrates the dependence of developing countries on developed ones. This does help developing countries grow, but does nothing to help them out of the dependency cycle. Finally, although government policy is necessary to help foster growth, often the governments in developing countries are corrupt or ineffective. Instead of seeing an increase in incomes across countries, ineffective government policy leads to increasing inequality (Burns, 2012).

Kuznets curve, the Lorenz curve, and the Gini coefficient have all been examined through substantial research and peer review over the years. The 1970s and 1980s were the prime era of research on Kuznets hypothesis, and more recently, starting in the 1990s, Thomas Piketty's research has argued against this theory, opining that inequality has actually increased in developed countries and is continuing to get worse.

When applied, reviews of Kuznets curve offer a wide range of perspectives and often mixed results. Respected economists Daron Acemoglu and James A. Robinson (2002) argue that when development leads to increasing inequality, this can also cause political instability and force elites to adopt democracy. Democratization causes institutional changes which encourage the redistribution of income and reduce inequality. As a result, development does not necessarily follow a Kuznets curve. They suggest that development can also follow two less democratic paths – an autocratic disaster with high inequality and low output, or an "East Asian Miracle" with low inequality and high output. The argument rests on the idea that either of these scenarios arise when inequality does not increase with development. They go on to show that western European countries have tended to follow Kuznets' hypothesis, but that many Latin American countries (Colombia and Brazil), and Asian countries (Japan, Taiwan) have actually experienced falling inequality in the relative short-term. Kuznets' hypothesis can only be successful if it is able to explain not only the inverse-U shaped pattern of European economies, but also account for the lack of relationship among the Latin American and Asian growth patterns. They argue that political and institutional transformation are more crucial to understanding patterns of inequality. The downward segment of Kuznets curve is actually driven by political reforms and their impact, and thus does not characterize all development paths, as Kuznets presumes to do.

With regards to Kuznets hypothesis, Japanese researcher Toshiyuki Mizoguchi (1993, p. 456) poses the question "Are efficiency and equity compatible goals?" Based on Kuznets' hypothesis, in the early stages of economic growth, efficiency is achieved at the expense of equity, and as the process matures, economies should become more efficient and equitable. Studies of various Asian countries suggest that empirical evidence does not support Kuznets' hypothesis. He concedes that his data are limited to two decades and does not give enough evidence to reject Kuznets' hypothesis outright. Mizoguchi's argument centers around the idea that using a longer period of time would

be the only way to prove or disprove Kuznets. According to Mizoguchi, data limitations are the main obstacle to proving Kuznets' hypothesis.

Critics also suggest that it is necessary for other measures to be developed because Lorenz curves are often used to measure two populations. It is easy to compute inequality levels and be highly accurate if one curve is lower than the other curve. However, if the curves cross, they argue that the validity of the procedure becomes questionable. It is possible that two very different Lorenz curves could have identical values in the area between the line of equality and the curve and show an inaccurate depiction of inequality levels of the two populations. They would have the same Gini, but in reality the curves convey a very different picture of inequality. Alternative analytical measures could include arc length, difference in ordinate values, or other measures to help distinguish between two curves (Street & Walling, 1990). Other studies in early days showed that Kuznets' curve has some validity when tested for developed countries' experience of economic growth. Kulkarni et. al. (1997) showed the validity of Kuznets hypothesis for Malaysia case, justifying the trickle down growth that in the long run re-establishes the income equality.

However the modern time has seen some serious critics of the Kuznets' arguments. Thomas Piketty is one of the main voices of opposition against Kuznets' hypothesis. Piketty's challenge to Kuznets curve is important because economic development has been mostly summed up by Kuznets curve for the past 50 years. Piketty's voice and data have upset conservative economists who support unobstructed capitalism and free markets. A primary theoretical claim in his landmark work *Capital in the Twenty-First Century* (Piketty 2014) is that the "share of income being converted to wealth is higher than the share of income accruing to labor, resulting in long-run growth in income and wealth inequality" (Fligstein, 2014, p. 1). Over time, returns on capital will exceed GDP growth per capita, and as a result, people who depend on income will not be able to convert their earnings in to wealth fast enough to keep up with those who already possess wealth and who are already generating high returns on that wealth. As a result, inequality only increases. Piketty sharply contradicts Kuznets hypothesis by showing that post-1980 inequality actually increased dramatically in developed countries. He argues that it is no longer possible for economists and politicians to say that income inequality will take care of itself through economic growth. Instead, inequality should continue to increase as economies grow, barring shocks to the system (he cites World War II or the Great Depression as examples). It was during these upheavals that political response determined whether inequality increased or decreased. Governments that prioritized the needs of the working class instituted policies to help keep inequality down, while governments that favored businesses-oriented policy in a direction which made inequality worse.

Charles C. Carter's book review (2016) of *Capital in the Twenty-First Century* claims that Piketty's data collection rivals only Karl Marx and Kuznets in in its complexity and scope. While Marx argued that inequality is bound to grow to destructive levels and Kuznets takes a more optimistic view, Piketty says that neither Marx nor Kuznets had sufficient or correct data in order to conduct this sort of study. Piketty attempts to map growth and decline of capital over the longest time possible, and he draws the conclusion that developing nations capital was greatest in the 1700s, remained stable until roughly 1914, and then fell around 1950 following WWII. The loss of capital between 1914 and 1950 was due to wartime destruction of housing and domestic capital, as well as loss of foreign capital. This highlights a period of income inequality dropping significantly. However, around 1970 inequality increases quickly and has continued to increase. Piketty states that the last 35 years have been the "age of super-managers" (2014, p. 265) as differences in income are the result of very large salaries received by the richest 1% of the

population. Again, he argues that Kuznets' hypothesis is redundant and proven false by recent trends of high inequality and overall insufficient data.

In a similar vein, Nobel Prize recipient Joseph Stiglitz (2015) takes a critical view of the implications of Kuznets' theory. While Kuznets and other economists of the middle of the twentieth century took the view that a rising tide lifts all boats with regards to economic growth, Stiglitz does not believe that to be the case today. Among industrialized countries in the 1950s and 1960s, those with lower incomes were advancing, and the debate during this time was that policies that favored the rich classes would end up benefiting everyone by trickling down to the rest. This post-war period was characterized by greater equality of incomes after an initial rise in inequality as growth took off, but this has now been reversed, according to Stiglitz. Inequality is rising, and economic growth has benefitted the rich in far greater measure than the poor. Stiglitz notes that theories such as Kuznets's attempt to explain and justify inequality and why it is beneficial for the economy as a whole. However, Stiglitz's conclusion is that inequality leads to weaker economic performance and is continuing to increase as opposed to decline in the long-run, especially in developed countries. Kuznets's unspoken assumption is that inequality is acceptable in the short-term as it serves to drive the economy, but Stiglitz counters this by arguing that GDP growth is the wrong metric to consider. He argues that what matters is greater equality and sustainable growth, with most citizens seeing their living standards rising year after year.

**Empirical Test for South Korea**

South Korea is often cited as an example of impressive economic growth since the end of the Korean War in the 1950s. Before the war Korea was one of the poorest and technologically backward countries in the world. A third of the population was homeless. Many children had been orphaned, GDP per capita was below $100, and the government was completely dependent on foreign aid, primarily from the United States. After a brief experiment with democracy under South Korea's first president, Syngman Rhee, General Park Chung-hee took control in May 1961. He began to implement the changes that would make South Korea a wealthy country. His influence

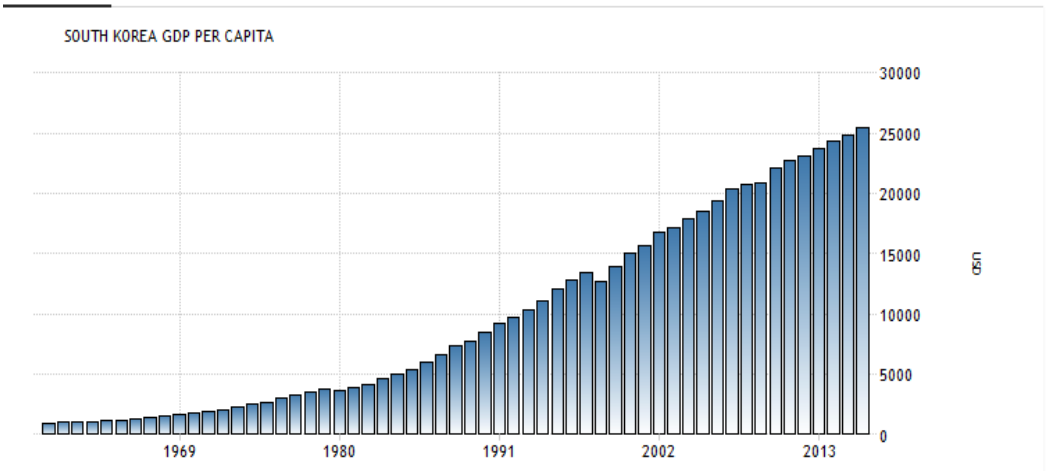



*Figure 2 - https://tradingeconomics.com/south-korea/gdp-per-capita -*

during his reign as general (and eventually president) from 1961-1979 was instrumental in changing the growth trajectory of South Korea (Tudor, 2012).

During this time, entrepreneurs benefited from being able to purchase abandoned Japanese colonial era assets, such as factories, at extremely low prices. Then, the government would block importation of competing goods from overseas. Many firms benefited from this protection, including Samsung – still the largest business group in South Korea today. Park's bigger objective was to pursue industrial development in order to bring people out of poverty. To do this, he offered eighteen leading entrepreneurs a choice: participate in his development plans or go to jail. The government used cash from US government loans and compensation from Japan for its colonial era atrocities to help prop up these capital-intensive industries such as ship building and car manufacturing. Favored firms were offered low interest rates through state banks. In 1964, just nine business groups shared 40% of all bank loans received. The roots of South Korea's economic miracle were a result of a strong partnership between the state and industry (Tudor, 2012).

These conglomerates that Park helped to create were termed *chaebol*, which means simply, "big business". Samsung, Hyundai, Daewoo, and Lotte are all examples of chaebols that still exist and are thriving today. Chaebol style of capitalism is rigidly bureaucratic and was influenced by Confucian culture. Leadership is paternalistic, and family members rise through the ranks. In the 1960s, wages were kept low and unions banned, but the philosophy was "growth together" where everyone worked towards the same goal of economic development. Much of the ownership of chaebols was by banks or the state. Tariffs were high to protect these domestic firms. Competition did not exist, as nearly all Korean products were chaebol made. Today, chaebols are no longer government run, but they still dominate the economy. The five biggest chaebols represent half of the stock market index, with Samsung at roughly 28% of South Korea's GDP.

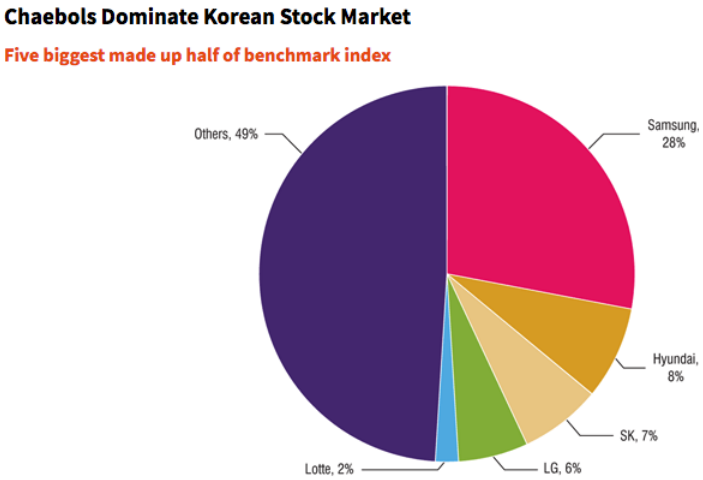



*Figure 3 - (Premack, 2017)*

During the 1960s and 1970s, the chaebol lead economic system helped generate enormous prosperity. Exports rose from $100 million in 1964 to $10 billion in 1977. GDP Per capita rose from $120 to $1,040 over the same time period (Tudor, 2012).

In the 1980s (post-Park Chung-Hee), the government's Economic Training Board, led by US trained, neo-liberal advisors, were allowed great influence to direct economic policy. They dropped Park's economic targets, such as exporting a certain proportion of products, began

reducing import tariffs, and sold stakes in banks to private investors. In 1997, the Asian economic crisis forced twenty-five chaebol bankruptcies in a single year. This crisis was caused in large part to large debts the chaebols had accumulated since the 1960s. Recently, South Korea has continued to reduce import tariffs and protectionist policies, forcing the chaebols to now compete with foreign firms within South Korea. Even though economic policy has been liberalized, the chaebols still have enormous power and advantage doing business in South Korea (Tudor, 2012).

Today, South Korea, led by the chaebols, is a global economic leader specializing in electronics, communications, automobile and steel production. South Korea ranks fifth globally in exports and 11th in GDP, with the world's fourth largest trade surplus. South Korea overhauled its economy through export-led industrialization policies in the 1960s, and this remains a primary mechanism for growth. However, there are some signs that GDP growth is slowing down. It's current growth, as of 2016, is around 3.5 percent, down from 7.1 percent in the 1990s and 4.4 percent in the 2000s (Premack, 2017).

What has this rapid economic growth led to in terms of inequality in South Korea? Two main sources of empirical data and analysis were drawn from to examine this question. First, in an article published in the Korea Observer, Moon-Gi Suh (2011) uses the polynomial quadratic equation to examine and provide an accurate account of income inequality in South Korea. He does this by testing Kuznets's hypothesis that economic growth and income inequality follow the inverted-U shaped curve. Based on his data, his main argument is that state intervention has had a direct influence on inequality levels, and he attempts to develop a thesis around how these two interact. Much of his statistical information is drawn from Korean Statistical Information Service by the Statistics Korea (KOSIS) (2014). Second, S. Sato and M. Fukushige (2009) specifically look at the period from 1975-1995 in South Korea in the Journal of Asian Economics. The article focuses on analyzing the Gini coefficient for income and expenditure during this time. Although Sata and Fukushige's time frame is narrower than that of Suh's, their regression analysis is also quite useful to look at and is among the best data available. Finally, OECD figures (Kang, 2001) for South Korea are examined, including an empirical discussion of how policy affects income distribution. Gini figures for as early as 1950 were challenging to locate, and reliable information could only be found starting around 1970. Using these primary resources, we will empirically examine the question of whether or not Korea's growth has followed the Kuznets curve.

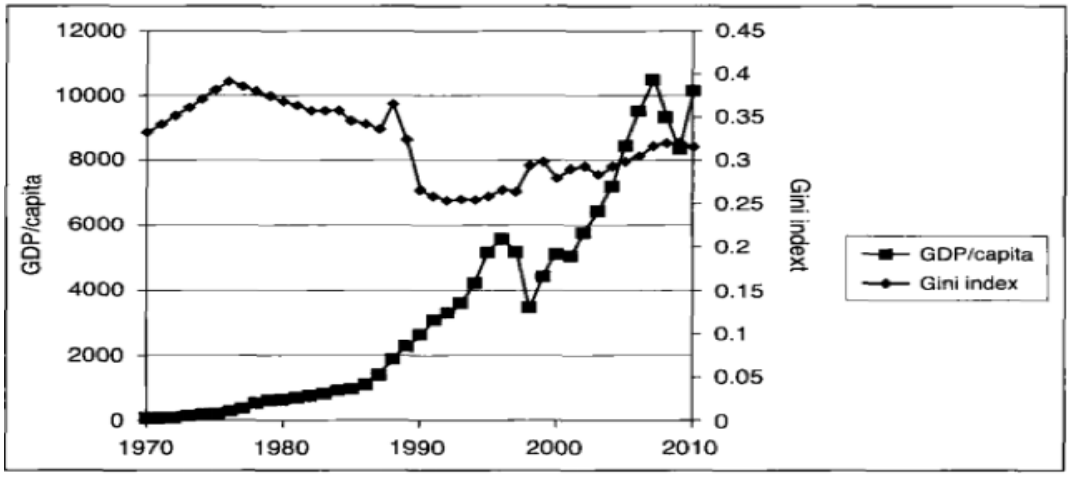



*Figure 4 – Economic Development in South Korea (Suh, 2011)*

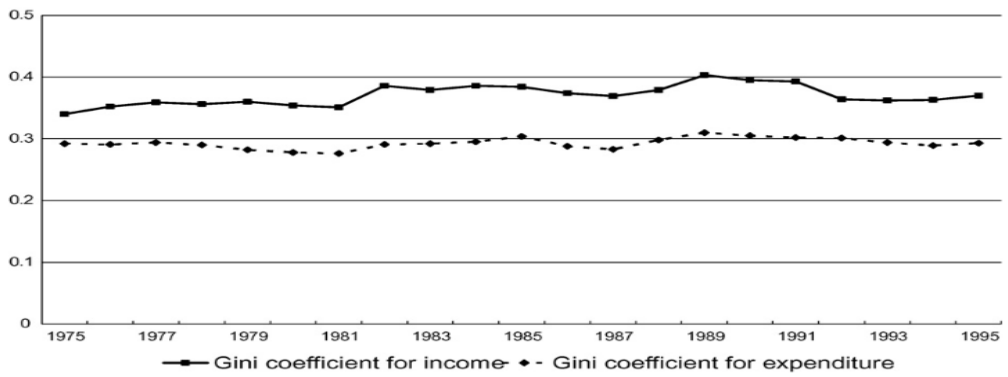
Figure 4 highlights the relationship between economic growth and income distribution from 1970-2010 in South Korea. This chart indicates evidence of Kuznets inverted-U shaped pattern between 1970 and 1990. This suggests that as South Korea made industrialization a priority early in its growth, income inequality increased. This also coincides with the first decade of export-oriented development begun in the 1970s. As GDP per capita rises starting in 1970, there is also a short-term rise in inequality through 1976. At this point, the Gini index trends downward (even as incomes still rise). There is a slight rise in inequality around 1987, but the index adjusts and continues to trend in a downward direction until 1992. As Korea began to democratize in the 1980s, the Gini coefficient is reduced as a large base of the population is able to enjoy the economic benefits. Up to this point, it looks like Kuznets's hypothesis reflects reality (Suh, 2011).

However, the picture portrayed by comparing economic growth and the Gini index between 1990 and 2010 begins to tell a different story. At this point, as GDP continues to rise sharply, so does the Gini coefficient. Around 1992 the Gini coefficient was at its lowest point of around 0.25 and has continually risen since then. This calls in to question Kuznets's suggestion that inequality will decrease in the long-run, as the opposite trend appears to be occurring in the case of South Korea's economic growth. There are a few key time periods to recognize as well. Around 1997 GDP growth dropped sharply, aligned with the Asian Financial Crisis. From this point on growth continued to rise rapidly, until the 2008 worldwide recession caused a brief dip before it rising again. Suh draws the conclusion that, based on this chart, "economic growth itself does not guarantee the solutions for inequality, which can be hidden, or even made worse by the former" (Suh, 2011, p. 8).

Building on Suh's analysis, Sato and Fukushige (2009) also argue that South Korea's economic development does not follow Kuznets curve. Their analysis centers on the assertion that opening goods markets reduces income inequality in both the short and long-runs. Conversely, the opening of capital markets increases income inequality in both the short and long-run. He argues that the effects of economic development on income inequality, in terms of goods and capital markets, have two routes and two different speeds. After examining numerous studies, he argues that the evidence to support Kuznets' hypothesis is mixed and not definitive.

Sato and Fukushige's methodology was focused on measuring lifetime income inequality based on household expenditure. Figure 5 (below) shows the Gini coefficient of both income and expenditure in South Korea from 1975-1995. Income and expenditure are made the focus as South Korea has achieved high rates of economic development, but also encouraged trade liberalization and foreign direct investment.

*Figure 5 – Gini coefficients for income and expenditure: Sato and Fukushige (2009)*



According this data, income inequality is larger than expenditure inequality and fluctuations in either seem to be connected. This chart shows the time towards the end of Park Chung-hee's reign (ending in 1979), and the liberalization initiatives begun in the 1980s. Even though the time period is limited to these twenty years, it is still a useful time frame to look at, as it covers a significant period of economic growth and liberalization. Sato and Fukushige also acknowledge the difficulties in gathering data from any developing country and recognizes that this limits his ability to draw long-term conclusions.

Finally, Seoghoon Kang (2001), reporting on behalf of the OECD Development Center, also questions the relationship between growth and inequality, specifically looking at the income distribution trends over time in South Korea. He writes that it is "generally accepted that while Korea has experienced rapid economic growth during the past, Korea's income distribution has improved or at least has not been consistently deteriorating up until the early 1990s" (Kang, 2001, p. 3). Between the end of the Korean War in1953 and 1999, GDP increased 9,984-fold and per capita GDP increased 4,253-fold in Won, the local currency. Exports increased from $33 million USD to $143.7 billion over the same time period.

This rapid growth was spearheaded by a 1962 government initiative to implement six consecutive five-year economic growth plans. "The goals of each plan were to:

(1) Establish a self-sufficient economy (1962-1966).
(2) Promote export-oriented development (1967-1971).
(3) Build up the heavy and chemical industries (1972-1976).
(4) Further develop the heavy and chemical industries (1977-1981).
(5) Establish price stability and pursue structural adjustments to the second oil shock (1982-1986).
(6) Create an advanced economy with social and welfare programs and a balanced economy (1987-1991)" (Kang, 2001, p. 5).

The government was also allowed to override private investment decisions. Increasing exports was made a top priority, and growth was given a higher priority than addressing uneven income distribution, because growth was ultimately expected to rectify these problems. Using this philosophical framework, South Korea was able to fulfill each of these six economic goals.

What specifically was it about South Korea's government policy that lead to a rise in inequality in the short-run? The government basically believed that economic development would occur through industrialization and under government control. These objectives were sought after using intervention policies such as price control, direct investment in industry, and financing to promote the priority industries. Figure 6 shows the changes in the industrial structure of Korea from 1970-1999.

The chart shows the share of agriculture, forestry, and fisheries as a percentage of GDP decreases from 27.1% in 1970 to 5.0% in 1999. At the same time, the share of manufacturing increased from 21.2% in 1970 to 31.8% in 1999.

| Year | Per Capita Gross National Income | | Share of Production over GDP (%) | | | | |
|---|---|---|---|---|---|---|---|
| | In 10 thousand KRW | In US$ | Agriculture, Fishery and Forestry | Mining | Manufacturing | Construction, Electricity, Water and Gas | Other Services |
| 1970 | 9 | 249 | 27.1 | 1.5 | 21.2 | 6.7 | 43.5 |
| 1975 | 29 | 592 | 25.0 | 1.6 | 25.9 | 6.0 | 41.5 |
| 1980 | 97 | 1,598 | 14.8 | 1.5 | 28.2 | 10.1 | 45.4 |
| 1985 | 194 | 2,229 | 12.6 | 1.3 | 29.2 | 10.5 | 46.4 |
| 1990 | 417 | 5,886 | 8.5 | 0.8 | 28.8 | 13.5 | 48.4 |
| 1995 | 835 | 10,823 | 6.2 | 0.4 | 29.4 | 13.4 | 50.6 |
| 1999 | 1,017 | 8,551 | 5.0 | 0.4 | 31.8 | 11.4 | 51.4 |

*Figure 6 - Kang (2001)*

At the same time, the employment structure also changed. In 1950, 50.4% of people were employed in agriculture, forestry and fisheries (AFF), and in 1999 this number was 11.6%. Mining and manufacturing (MM) fluctuated, but share of people work in services nearly doubled, from 35.3% to 68.5%, during this time.

| Year | Participation Rate(%) | Unemployment Rate(%) | Employment Share (%) | | | Income Share (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | AFF | MM | Services | EC | OS | CFC | ITS |
| 1970 | 57.6 | 4.4 | 50.4 | 14.3 | 35.3 | 34.1 | 49.6 | 6.9 | 9.5 |
| 1975 | 58.3 | 4.1 | 45.7 | 19.1 | 35.2 | 32.4 | 50.4 | 7.4 | 9.8 |
| 1980 | 59.0 | 5.2 | 34.0 | 22.5 | 43.5 | 39.7 | 40.1 | 8.0 | 12.2 |
| 1985 | 56.6 | 4.0 | 24.9 | 24.4 | 50.6 | 40.6 | 38.0 | 9.8 | 11.6 |
| 1990 | 60.0 | 2.4 | 17.9 | 27.6 | 54.5 | 45.9 | 32.2 | 10.6 | 11.4 |
| 1995 | 61.9 | 2.0 | 12.4 | 23.6 | 64.0 | 47.7 | 30.2 | 10.8 | 11.4 |
| 1999 | 60.5 | 6.3 | 11.6 | 19.9 | 68.5 | 43.1 | 30.3 | 13.6 | 13.0 |

*Figure 7 - Kang (2001)*

Using these baseline economic goals as a framework, Kang examines the Korean economy over these four decades, and reviews the rapid economic growth and historical trends using two key determinants: market forces and government policy. His primary argument, and the most convincing one this author was able to find, was that high economic growth accompanied by low unemployment rates tends to improve income distribution, while skill based technological change and international trade (specifically exports) focusing more on skilled labor-intensive products tends to increase income inequality. Kang also argues that a shift in Korea's educational policy caused income distribution to improve. Labor, tax, and welfare policies were determined to not be as effective as education policy. Rapid economic growth leads to low unemployment, which ultimately leads to lower inequality and should be made a top policy priority. (Kang, 2001).

| Year | Choo (1992) | Ahn (1992,1995) | Whang & Lee (1996) | FIES (NSO) | Yoo (1998) |
|---|---|---|---|---|---|
| 1965 | 0.3439 | 0.3365 | | | |
| 1966 | | 0.3287 | | | |
| 1967 | | 0.3647 | | | |
| 1968 | | 0.3458 | | | |
| 1969 | | 0.3464 | | | |
| 1970 | 0.3322 | 0.3125 | | | |
| 1971 | | 0.3074 | | | |
| 1972 | | 0.3121 | | | |
| 1973 | | 0.3676 | | | |
| 1974 | | 0.3823 | | | |
| 1975 | | 0.3769 | | | |
| 1976 | 0.3908 | 0.3899 | | | |
| 1977 | | 0.3780 | | | |
| 1978 | | 0.3699 | | | |
| 1979 | | 0.3752 | | | |
| 1980 | 0.3891 | 0.3567 | | 0.3065 | 0.366 |
| 1981 | | 0.3572 | | 0.3059 | |
| 1982 | 0.3574 | 0.3766 | 0.393 | 0.3092 | |
| 1983 | | 0.3736 | | 0.3094 | |
| 1984 | | 0.3804 | | 0.3111 | 0.351 |
| 1985 | 0.3449 | 0.3803 | 0.384 | 0.3115 | |
| 1986 | 0.3368 | 0.3771 | | 0.3069 | 0.340 |
| 1987 | | 0.3777 | | 0.3065 | |
| 1988 | 0.3355 | 0.384 | 0.365 | 0.3006 | 0.327 |
| 1989 | | 0.4127 | | 0.3039 | |
| 1990 | 0.3226 | 0.4017 | | 0.2948 | 0.300 |
| 1991 | | 0.4013 | 0.365 | 0.2869 | 0.302 |
| 1992 | | 0.3883 | | 0.2836 | 0.287 |
| 1993 | 0.3097 | 0.3797 | | 0.2817 | 0.289 |
| 1994 | | 0.3845 | 0.363 | 0.2845 | |
| 1995 | | | | 0.2837 | |
| 1996 | | | | 0.2907 | 0.288 |
| 1997 | | | | 0.2830 | 0.282 |
| 1998 | | | | 0.3163 | |
| 1999 | | | | 0.3210 | |
| 2000 | | | | 0.3207 | |

*Figure 8 - Historical Trends of Korea's Income Distribution: Kang (2001)*

What does the data show? Did this structural change and shift in the industry of Korea lead to a Kuznets curve? Figure 8 shows Korea's Gini coefficient by year, using multiple data sources to fill in gaps where one source may not have the correct data. In some cases, each source might have a different data point for that particular year; this is also included. Kang argues that there are many different estimates and interpretations about what happened to inequality in Korea, and each depends on which data and methods are used to analyze. This author believes that inequality continued to decrease until the late 1990s until the financial crisis. At this point inequality sharply increased. This data shows a 3% increase from 1997 to 1998, which is a reversal of the trend of

generally decreasing inequality that had been seen up until 1997. Although data points are not examined past in Kang's study past the year 2000, a quick look at the OECD's data on South Korea indicates that inequality has not decreased significantly as late as 2015 (OECD, 2018).


*Figure 9 - Tradingeconomics.com | World Bank*

Looking back at South Korea's economic growth through the lens of Kuznets' six characteristics of growth, one can see each of these applied in some fashion. First, Korea experienced high rates of growth in per capita product and population, as well as overall GDP growth rates per capita. While GDP per capita and GDP per capita PPP have risen, the growth rate has declined significantly, to roughly .36% in 2018 (World Population Review, 2018).

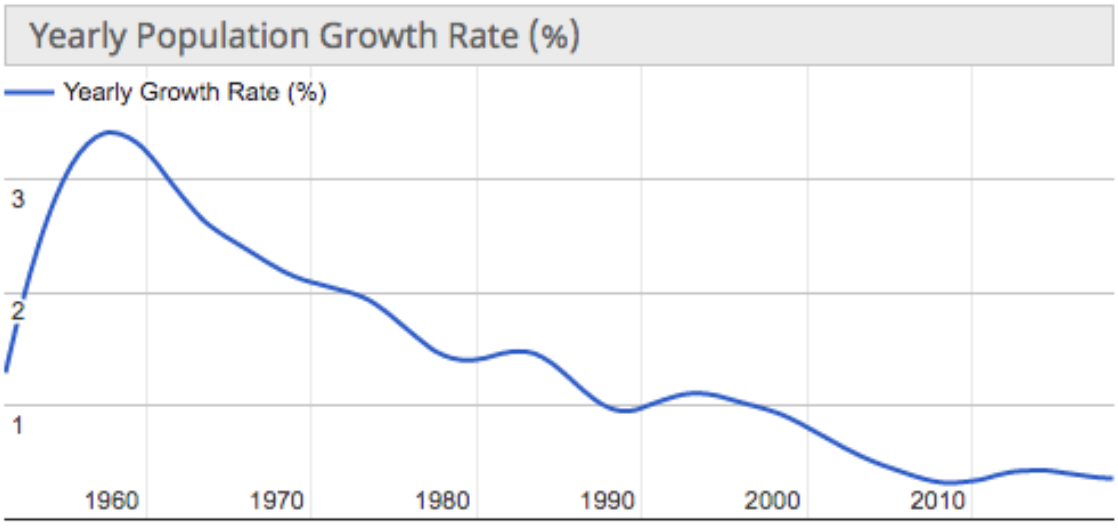



*Figure 10 – World Population Review (South Korea) (2018)*

Next, as the chaebols gained momentum under Park Chung-hee, the rates of growth in productivity increased significantly. The economy shifted to an export led growth strategy, and

structural transformation occurred as jobs shifted from being primarily agricultural based to manufacturing and production jobs. An ideological transformation under the mantra "grow together" led to societal change where developing economically was the primary focus of every initiative. As South Korea began to grow in its ability to produce and export goods, its ability to reach the world market and demand for its goods also increased. And finally, Korea is very much at the center of the developed world, long removed from peripheral status as less developed.

**Summary and Conclusion**

Based on the empirical analysis, at first glance South Korea seems to follow and abide by Kuznets' six characteristics of economic growth. Additionally, in the early stages of its economic growth, the distribution of income (measured by the Gini coefficient) for South Korea does get worse, level out, and then decrease, at least until 1990. However, the Gini index from 1990-2010 offers a new perspective. After following the inverted-U curve up to this point, there is an increase in the Gini coefficient. The Gini coefficient was at its lowest point of around 0.25 in 1992 and has continually risen since then. It seems that Kuznets curve has not fully explained South Korea's growth, and has failed to account for this recent rise in inequality. It could be said that Piketty's theory, which says that it is not enough for the market to take care of itself through economic growth, as inequality is now on the rise in developed countries, better explains South Korea's current growth trajectory. This certainly appears to be the case for South Korea, even though its inequality increase is not as sharp as other developed countries (such as the United States) and is actually quite low compared to many developed nations. Attempting to classify South Korea's growth only in terms of Kuznets curve would be unfair, as there are many different factors at play and dynamics taking place. Kuznets curve tells part of the story, just as Piketty tells the more recent tale.

The research done, and data analyzed lead to three primary policy recommendations. First, the data shows that Kuznets' hypothesis needs a longer time period to possibly be proven accurate, and government policy should take this into account. The economic data available prior to 1970 was limited, and even the roughly 50-year range shown in this analysis could still be argued to be short-term. "Long-term" is not defined as a specific time frame, and Kuznets' hypothesis could still be proven true if more time were given to the study and future analysis done. It seems unrealistic to attempt to accurately quantify South Korea as having completed its growth pattern at this point in history, as more ups and downs and economic shifts are likely to occur moving forward. Policy should reflect the constantly evolving nature of economic growth. Second, since high economic growth accompanied by low unemployment rates tends to improve income distribution, governments would do well to focus policy on driving down unemployment, as this tends to decrease inequality as well. Creating jobs and orienting policy towards educating and creating a workforce that is better equipped to contribute to society can play a large part in decreasing inequality figures. And finally, South Korea needs to do more to encourage entrepreneurship. The Chaebol led system provides a strong economic foundation, but as Korea advances, they would be well served to embrace more competition, creativity, and new business ideas. This would lead to more opportunities for its people, allow for less reliance on the chaebols, and perhaps even help drive down inequality in the long-run.

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