

Impact of Productivity Declines on the People's Republic of China's  
Descent into the Middle Income Trap

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## Abstract

The People's Republic of China has been experiencing over a decade of slowing economic growth. This, paired with a tightening of economic conditions with the Zero Covid Policy, threatens China to fall into the Middle Income Trap. To analyze whether or not China will continue to experience slow long-term growth, we use the Cobb-Douglas production function (CD). By investigating past and present trends, we discover that productivity declines, alongside aging and current issues, are leading China toward the Middle Income Trap and significant policy changes must be made in order to circumvent this.

## Introduction

In the People's Republic of China, which will be referred to as China, annual GDP growth has shrunk from averaging over 9% in 2010 to a mere expected 3% growth this year.<sup>1</sup> The declining growth of the Chinese economy over the past 12 years shows indicators of the Middle Income Trap.

The Middle Income Trap (MIT) is an economic theory of development that argues as a country attempts to move from low-income to high-income, wages in a nation rise to the point that growth potential in export-driven manufacturing is exhausted before it attains the innovative capabilities needed to advance productivity and compete with other developed nations in high value-added industries. Therefore, this leads to wages and GDP per capita stagnating.<sup>2</sup>

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<sup>1</sup> The World Bank Group, "GDP Growth - China."

<sup>2</sup> Medeiros, "China Out of Time."

## Methods

Although short-run issues may affect a nation's risk of falling into the Middle Income Trap, it is primarily driven by long-term factors. This paper uses the Cobb-Douglas production function of capital, labor, and total factor productivity to analyze the long-run impacts of the slowing of the Chinese economy.

$$\text{Cobb-Douglas Production Function: } Q = A * K^{\alpha} * L^{1-\alpha}$$

Q = Quantity; A = Total Factor Productivity; K = Capital; L = Labor;  $\alpha$  = Capital Share

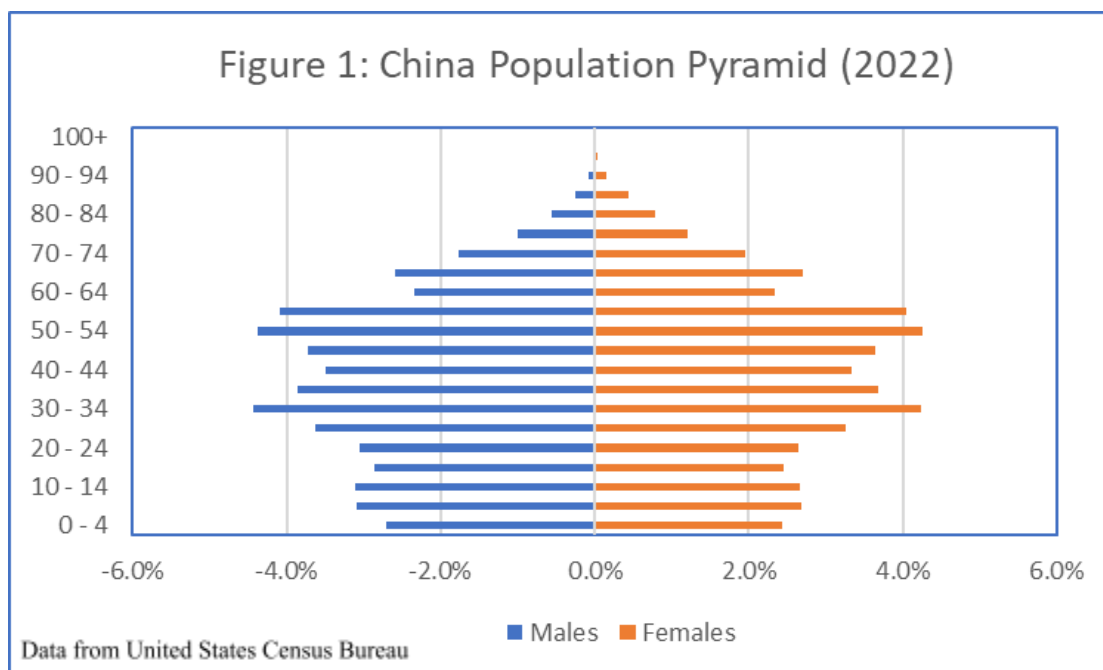
Cobb-Douglas shows when there is an increase in capital, labor, or productivity, output will increase by a certain percentage, depending on the capital share. For an economy to have continued long-run growth it must aim to improve at least one of the three variables: capital, labor, or productivity.

China is globally recognized as a powerhouse in building massive infrastructure plans that boost the economy. Since the start of the COVID-19 pandemic, it has issued trillions of additional dollars to new infrastructure plans throughout the country in hopes of spurring economic growth to compensate for the lack of consumer consumption. Although this has had some positive short-run impacts, the costly investment into state-operated infrastructure projects has not successfully prevented the decline of the growth of the Chinese economy. This can be accredited to the inefficiencies of the projects that, on average, have led to costs overrun by 22% without reaching the desired returns on investment.<sup>3</sup> China continues to invest heavily in physical capital

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<sup>3</sup> Rabe, Kostka, and Habich-Sobiegalla, "Cost Performance in China."

investments without regard for the level of debt that is being accumulated. Kenneth Rogoff argues that the massive Chinese investment into infrastructure projects without significant returns mirrors projects by both Japan and the USSR in the 80s and 90s,<sup>4</sup> of which failed to reignite their economies and ultimately led to both economies stagnating. Overall, the Chinese overspending on capital projects will not lead to long-run economic growth and will thereby not be the focus of this study.



China will reach a historical peak in the working-age population that will swiftly decline. It is estimated that surplus labor will fall below negative 100 million.<sup>5</sup> China has a severe aging crisis that will undoubtedly have far-reaching implications on the health and growth potential of its economy. As seen in figure 1, the bulk of the population pyramid lines in the 30-54 age range which shows that China's population is not being reproduced at a high enough rate to replace the

<sup>4</sup> Rogoff, "China's Diminishing Returns."

<sup>5</sup> Das and N'Diaye, "Chronicle of a Decline."

previous generations. This paper analyzes the probability of China entering the MIT and aging is likely to become one of the biggest factors. Although most literature focuses on the impacts of aging on China's descent into the MIT without significant consideration of total factor productivity. Therefore, this paper focuses on the major impacts of productivity declines to analyze an additional factor in the Cobb-Douglas production formula.

Total Factor Productivity (TFP) is the measure of how much total output can be produced by the set amount of input. In practical terms, total factor productivity is the effectiveness of production. For China to not fall into the MIT, its economy must increase TFP as it has been steadily decreasing over the past few decades. The government has the capacity to enact significant policy changes to increase TFP.

## **Economic Productivity**

Brookings categorizes the three major factors of TFP that China must improve upon to avoid the MIT: market competition, advanced skills, and improved governance.<sup>6</sup>

### **Market Competition**

China has significant disparities in market competition that is barring long-term growth in comparison to major open market economies. Market competition plays an important role in the growth of TFP because there is a positive causal relationship between competition and productivity.<sup>7</sup> When firms have to compete in the market, it leads to a survival of the fittest

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<sup>6</sup> Raiser and Soh, "China to Sustain Growth."

<sup>7</sup> Van, "Competition Improves Productivity."

competition to outcompete other firms in order to survive which drives innovation and productivity. The more competition that an economy has, the higher the TFP will grow.

A major indicator of market competition is the level of involvement of the state in major industries. In China, 43.6% of the top 10 companies in each major industry are considered State Owned Enterprises (SOEs). This is in comparison to the US's 0% and a globally developed nation's average of less than 5%.<sup>8</sup> When there is a large amount of SOEs in an economy, there is less room for market competition because the government guarantees a monopoly to these firms. When firms are backed by the central government, they lack the necessity to compete and therefore are less productive and efficient.

Market competition also expands to the foreign investment market. China has largely been an unstable player in the geopolitical sphere which has led to its government using its economy to prioritize its policy goals. Many foreign companies, especially those from Western nations, are experiencing difficulties to compete in China due to government favoritism for domestic firms.<sup>9</sup> Although prioritizing domestic firms may be advantageous politically, it worsens market competition and leads to total factor productivity declines in the long run.

### **Advanced Skills**

China currently overemphasizes investments in physical capital rather than human capital. A shift in financing towards more human capital-based projects will help increase TFP. As the economy has evolved into an upper-middle-income country, and potentially into a high-income

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<sup>8</sup> Rosen, "China Pathfinder: Annual Scorecard."

<sup>9</sup> Froese et al., "Challenges for Foreign Companies."

country in the future, labor demands will shift from many low-skilled workers to fewer highly-skilled workers. China is able to increase the level of human capital through government investment in education and other social programs.

Although it is hard to measure, education is one of the biggest factors in determining human capital. Oftentimes, more money spent on quality education will lead to productivity increases. According to the World Bank, China invested only 3.6% of its GDP in government expenditures on education. That is in comparison to Western developed countries such as the UK and Sweden which invest over 5% of GDP in government expenditure on education.<sup>10</sup> Increasing the amount of government spending on education will increase the level of the human capital of Chinese laborers and, in turn, increase long-run productivity.

Current Chinese policy is running counter to these long-term human capital goals. The Zero Covid Policy is leading to school closures which will continue to worsen the education standards of students. A new study by the OECD's Economic Department found that educational lockdowns in the last two years are projected to lead to a 2.1% loss in overall productivity.<sup>11</sup> In order for China to increase productivity, it must reopen education centers and expand upon education and social programs.

### **Improved Governance**

Lockdowns have been a key aspect of the Covid-19 pandemic and this is even more significant for China. In an attempt to reach zero Covid cases, the government has closed down all

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<sup>10</sup> The World Bank Group, "Government Expenditures on Education."

<sup>11</sup> Maisonneuve, Égert, and Turner, "Macroeconomic Impact of Covid-19."

manufacturing and consumer activities in regions affected by a spike in cases. Notably, Shanghai, a manufacturing hub, was locked down for over two months at the beginning of 2022. Lockdowns freeze manufacturing, consumption, working, and nearly all other parts of the economy, which leads to a rapid decline in GDP and other economic growth indicators. On top of that, United States investors are experiencing significant losses in China, citing Zero Covid as the biggest reason.<sup>12</sup> A freeze on domestic manufacturing, alongside a decrease in foreign investment, will stunt long-run Chinese growth. These freezes have a pronounced effect on the short-run productivity of China and may have lasting impacts beyond the expiration of the shutdowns.

Economic freedom is a major indicator of the effect of governance in TFP. There is a positive causal relationship between economic freedom and total factor productivity due to an increased level of entrepreneurship.<sup>13</sup> Historically, China has not been considered a nation with high levels of economic freedom. The Fraser Institute measures Economic Freedom in a ranking system through 5 variables: size of government, legal system and security of property rights, sound money, freedom to trade internationally, and regulation.<sup>14</sup> In 2020, China had a global ranking of 116 for economic freedom; this is in comparison to countries such as the United States, Switzerland, and Denmark all being in the top 10.<sup>15</sup> These rankings have been commonplace for China as they have ranked between 110-120 for the past several years. By ranking below other competitive market economies, China further stunts its productivity. Overall, poor short and

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<sup>12</sup> Bloomberg News, "US Confidence in China."

<sup>13</sup> Bjørnskov and Foss, "Economic Freedom Impact on Productivity."

<sup>14</sup> Fraser Institute, "Economic Freedom of World."

<sup>15</sup> Klaus and Zahidi, "Global Competitiveness Report 2020."



long-run decisions by the Chinese government are leading to a declining level of productivity which will lead China into the MIT.

## **Conclusions**

It is imperative that China promptly responds to its declining economy. It is on a path that is destined to place itself, trapped, with other middle-income countries. Its aging crisis, alongside a decline in productivity growth, will likely lead to them becoming trapped in the MIT. China must improve market competition, human capital, and government intervention alongside employing rapid solutions to the aging crisis in order to keep its rapid economic growth and continue to become a high-income nation.

The first present solution is to loosen the Zero Covid Policy in order to start the economy again. Although there are some concerns over a public outbreak of Covid-19, China must open its economy if it wishes to avoid economic collapse. Following that, China ought to invest more in healthcare systems in order to support the aging population alongside providing incentives for families to have more children. In order to improve productivity it must open the market for greater competition and invest more in human capital boosters such as higher education. Overall, policy to expand the Chinese economy is possible and the nation must take the required steps in order to avoid the Middle Income Trap. More research is required on this issue to determine when exactly China will become trapped within the MIT although it is certain that is where it is heading with its current economic policy.

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