

Economic Growth: Key Factors and Variation Across Countries

Pranay Mundhra

Cathedral and John Connon Senior School, Mumbai

Abstract — This paper will delve into the deeper, more fundamental components of an economy and its growth model in order to draw conclusions as to the differing natures of economies at different points in their development periods. Especially during modern times, when some of the most fundamental facets of economic growth are being questioned due to the impact of the Covid-19 pandemic, understanding and investigating the growth drivers of an economy is essential to diagnosing the state of a given economy and drafting further policy measures.

Although traditional approaches use the simple indicator of aggregate supply, and the commensurate real GDP to measure economic growth, this paper will make use of the more detailed Cobb-Douglas model, which takes into account the core components of economic growth. It attributes the proportional contribution of each component based on the development level of a country, furthermore proposing a framework for quantifiable classification of economies based on production capabilities.

1. SECTION 1: AN ANALYSIS OF ECONOMIC GROWTH

To best address the question of economic growth, we must first come up with a quantitative way of expressing and measuring economic growth, and then build a framework to explain why some parts of the world grow faster than others. This paper will do so using the Cobb-Douglas model, and apply it to countries with different income and development levels to explain their different growth outcomes.

Economic growth and its principal contributing factors

Economic growth is a process that generates economic and social, quantitative and, particularly, qualitative changes, which causes the national economy to cumulatively and durably increase its real national product. A useful indicator of this economic growth is real GDP per capita¹. Real GDP is a measure of the total economic output of the country, whereas real GDP per capita allows economists to assess the general wealth and standard of living in the country, controlling for population.

Economic models have traditionally attributed increase in real GDP to the contribution of the four factors of production - land,

labor, capital and entrepreneurship². In the modern global economic context, it might be more relevant to use the Cobb-Douglas model instead. It postulates that final output Y_t is produced using physical capital K_t and human capital H_t :

$$Y_t = A_t M_t K_t^\alpha H_t^{1-\alpha}$$

where α and $1 - \alpha$ are measures of elasticity between 0 and 1,

A denotes the economy's knowledge (and is affected by technology improvements), M is anything else that affects total factor productivity ("Measure of ignorance"³). M and A together constitute total factor productivity, or the ratio of aggregate output to aggregate input⁴.

This model collapses the traditional factors of land and capital into one combined factor of physical capital, and labor is represented by human capital. The more interesting change is the presence of a dedicated variable to capture the effect of knowledge/ technology, which is increasingly material in today's economic activity. The inclusion of the M variable is an acknowledgement of the fact that economic models are inherently able to attribute only a part of the economic growth to known factors, and there is some uncertainty about residual attribution.

Variations in growth rates of countries

Different countries have experienced widely varying growth rates over sustained periods of time. This divergent performance can be attributed to many reasons e.g. availability of natural resources, different forms of political organization etc. In this paper, we will use the framework of the Cobb Douglas model to consider which of the factors influencing economic growth are most influential for countries at different per capita income levels. The conclusions we derive can

¹ Haller, Alina-Petronela. "Concepts of Economic Growth and Development. Challenges of Crisis and of Knowledge." Researchgate, 2012.

² Dowrick, Steve. "Estimating the Impact of Government Consumption on Growth: Growth Accounting and Endogenous Growth Models." *Long-Run Economic Growth*, 1996, pp. 163–186., doi:10.1007/978-3-642-61211-4_8.

³ Abramovitz, Moses. *Resource and Output Trends in the United States since 1870*. American Economic Review, 1956.

⁴ Jones, Charles. "The Facts of Economic Growth." 2015, doi:10.3386/w21142.

equally be applied to growth differentials between provinces of a country.

Less developed countries with low GNI per capita (less than \$1026)⁵ usually have the opportunity to grow fastest in percentage terms, because they start from a smaller base. The paucity of physical capital in these poorer countries usually leads to human capital being the main driver of growth. Increase in the population can potentially grow the total real GDP of the country, but it is improved productivity that grows GDP per capita⁶. Additionally, since these countries have low mean incomes, aggregate domestic demand for goods and services is low, which is why the fastest growing of the less developed countries have typically relied on exports to achieve sustained growth⁷.

Perhaps the best example of this is China's economic transformation - from a rural nation with 300 million denizens earning a dollar a day, it experienced double-digit growth for decades, turning it into an economic superpower today. A major contributor to this growth was the transition of substantial portions of the national labor force from agricultural jobs with relatively low productivity to more formal and higher value manufacturing jobs. Of course, the secular trend of globalization of the manufacturing supply chain also was a potent enabler of this transition since it allowed China to become one of the largest exporters in the world economy and use international demand for its goods to drive economic growth.

We turn next to middle income countries with GNI per capital between \$1026 and \$12375⁸. These countries enjoy higher domestic demand for goods and services, given higher income levels. Physical capital is also more available in these countries, but they also have a harder challenge since most of the low hanging fruit for economic growth has already been utilized in their transition from low income to middle income levels.

Population growth rates in middle income countries are usually lower than those in poorer countries, so growth from human capital has to mainly come from enhanced knowledge and skills of the labor pool. Countries in this bracket which are able

to augment domestic physical capital with foreign capital can also increase investment rates, resulting in faster economic growth. In the Cobb Douglas framework, these countries have a more balanced usage of all the growth inducing factors.

It is worth considering why certain countries are more successful in attracting foreign capital, investment and technology since this tends to be a large driver of relative performance. In the modern era, international capital is fungible and mobile, and countries compete to attract investment. Some of the dominant factors that determine global capital flows include investor perception about political stability, government policies that affect the ease of doing business⁹, protection of intellectual property rights and approach to taxation. For example, a 2012 IMF paper directly traced the relationship between political instability and economic growth, concluding that on average, "When there is an additional cabinet change per year, the annual growth rate decreases by 2.39 percentage points"¹⁰. To some extent, the political system of a country also affects the economic growth of a country as it may determine the propensity of the country to institute reforms (part of the "M" variable). In the case of Singapore, the thirty-year long regime of Lee Kuan Yew witnessed an average annual real GDP growth of 8% from 1960 to 1990¹¹.

Finally, consider high income countries with per capita GNI of over \$12375.¹² These countries already have high income levels, high labor force participation and ample physical capital. Hence, incremental growth for these countries is based principally on advances in intellectual capital- the "knowledge" portion of the Cobb-Douglas model. As such, they tend to have lower economic growth rates, since advances in intellectual capital is a gradual process, "rarely changing labor productivity or the standard of living in the way that electric light, motor cars or indoor plumbing changed it" in the past¹³. Of course, while percentage growth rates might be modest, the absolute amount of economic activity added every year can be substantial given the large base of national real GDP.

It follows, therefore, that the proportional contribution of each variable in the Cobb-Douglas model is correlated with the

⁵ World Bank Data Team. "New Country Classifications by Income Level: 2019-2020." *World Bank Blogs*, 1 July 2019, blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020.

⁶ Dao, Minh, "DRIVERS OF ECONOMIC GROWTH IN DEVELOPING COUNTRIES" (2014). *Faculty Research and Creative Activity*. 10. http://thekeep.eiu.edu/economics_fac/10

⁷ Felipe, Jesus. "Export-Led Growth or Domestic Demand-Led Growth in Asia?" *Inclusive Growth, Full Employment, and Structural Change*, May 2005, pp. 261-278., doi:10.7135/upo9781843313557.019.

⁸ World Bank Data Team. "New Country Classifications by Income Level: 2019-2020." *World Bank Blogs*, 1 July 2019, blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020.

⁹ Hossain, Mohamed Tareq, et al. "Ease of Doing Business and Its Impact on Inward FDI." *Indonesian Journal of Management and Business Economics*, vol. 1, no. 1, 2018, p. 52., doi:10.32455/ijmbe.v1i1.52.

¹⁰ Aisen, Ari, and Francisco José Veiga. "How Does Political Instability Affect Economic Growth?" *IMF Working Papers*, vol. 11, no. 12, 2011, p. 1., doi:10.5089/9781455211906.001.

¹¹ Cahyadi, Gundy, et al. *Singapore's Economic Transformation. Global Urban Development*, 2004, pp. 2-8, *Singapore's Economic Transformation*.

¹² World Bank Data Team. "New Country Classifications by Income Level: 2019-2020." *World Bank Blogs*, 1 July 2019, blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020.

¹³ Gordon, Robert J. "Is U.S. Economic Growth over? Faltering Innovation Confronts the Six Headwinds." *NBER Working Paper Series*, Aug. 2012, [nber.org](https://www.nber.org).

economic status of the country at a particular point in time. These contributions determine the economic output of a country; therefore, the change in these contributions determines the change in the economic output of the country - the economic growth.

2. SECTION 2- THE RELATION OF RATIONALITY TO ECONOMIC GROWTH

From the above discussion, we can conclude that maximizing economic growth requires maximizing the A, M, K and H variables. What's interesting, though, is that although A, K and H are easily controlled by a government, the M variable, by virtue of its nature, prevents countries from reaching its production possibilities frontier because it is a measure of ignorance; it is what is not known. It is possible that the reason this variable exists is in order to combat certain incorrect or inaccurate assumptions of common economic theory. One such assumption that comes to mind is that of rationality. However, the assumption of rational economic behavior is not so easily overturned.

Economics is a social science, and, as a result, economists use the scientific method. The two fundamental assumptions of science, and therefore the scientific method, are determinism and that humans can discover the laws describing that determinism¹⁴. In the economic context, these two assumptions allow economists to conclude that any economic phenomenon must be causal. Since economics is the study of choices, and these choices are made by human beings, who are susceptible to random bias and preferences, this would imply that economists could never make definite conclusions about any economic phenomena. Therefore, it is necessary in economic theory to extend the assumption of determinism to human behavior, and this is done by assuming rationality, which means that all humans are logical economic decision makers.

A rational human always maximizes utility. However, utility may be defined differently by different individuals - whether as pure economic benefit, or social welfare. For economic analysis, the general assumption is that with scarce resources, a rational human will always choose to buy goods in such a combination that it provides the maximum possible utility to him.

As economics has evolved, so has the concept of rationality. Classical economists believed that it was the production cost of a product that determined its price, whereas neo-classical economics assumes that it is the consumer's perception of the value of a product that determines the market price. Of course, both of these systems still assume that all individuals are rational economic decision makers; the primary difference is the implied assumption of equivalent utility in the classical

model. Specifically, the classical model of economics does not take into account the fact that not every good has equal utility for different people, and this causes the divergent conclusions, despite the same fundamental assumptions of determinism and the ability of humans to discover causality.

Keynesian economics brings in a more nuanced approach to the concept of rationality. Across his different works, from his *Treatise on Probability* to *The General Theory*, Keynes suggests that economic agents respond to circumstances and information available to exhibit a range of rationality¹⁵. The intellectual revolution triggered by Keynes's *General Theory of Employment, Interest and Money* is often described as a shift in emphasis from microeconomics to macroeconomics, and from the study of optimal behavior of the individual consumer or firm to the study of broad statistical aggregates, such as income and employment, or consumption and investment¹⁶. One could argue, therefore, that as economics transitioned from the study of the individual to the study of statistical outcomes, so too was the concept of individual rationality superseded by the statistical truth that in general, human behavior may not be completely rational, but it is predictable. The recent rise of behavioral economics is perhaps the best proof of that- as psychology was integrated into the theoretical framework of economics, it allowed for the use of cognitive psychology¹⁷. In a way, human behavior is rational in the sense that it follows some broad statistical rules; however, recent advances have shown that in no way do humans always make the best choices.

This discussion is important to bear in mind when attempting to model economic growth. In no way can the assumption be made that any firms or nations will act in a perfectly optimal manner, since they are composed of a large number of people, each of which will not always make optimal choices. Moreover, it is well known in economic theory that even if individuals do choose to make optimal choices for themselves, those actions will not always result in the optimal result for the firm or nation, revealing that no nation can feasibly reach the PPC due to human inefficiencies. This is an important fact to bear in mind about the "actual" or "real" limit for economic growth.

It's interesting how the economic growth in the Cobb-Douglas model is directly derived from this discussion of individuals making choices. By mostly trying to maximize individual utility, they end up causing the classic development cycle of an economy.

¹⁴Lammers, William J., and Pietro Badia. *Fundamentals of Behavioral Research*. Thomson/Wadsworth, 2005.

¹⁵Gan, Ailian. "Das Maynard Keynes Problem: Rethinking Rationality." *Duke Papers*, 2016, sites.duke.edu/djepapers/files/2016/08/Ailian-Gan.pdf.

¹⁶Kregel, John Allen, and Eric Nasica. *Fundamental Uncertainty*. Springer Nature., 2011.

¹⁷Angner, Erik, and George Loewenstein. "Behavioral Economics." *Philosophy of Economics*, 2012, pp. 641-689., doi:10.1016/b978-0-444-51676-3.50022-1.

3. SECTION 3- A DEEPER ANALYSIS OF THE APPLICATION OF THE MIDDLE-INCOME RANGE TO INDIA

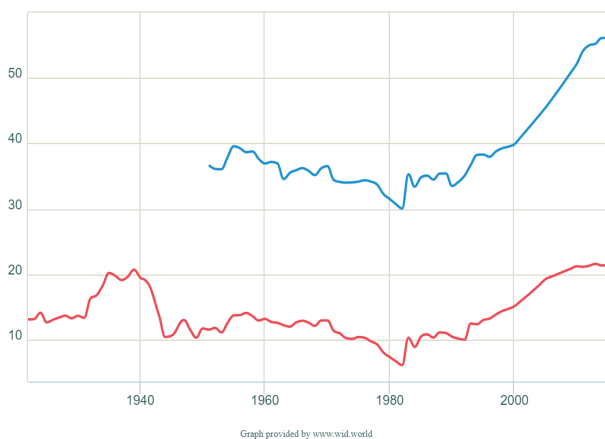
India's GNI per capita was \$2020 in 2018¹⁸, and thus it falls firmly within the category of middle income countries as per the earlier classification. As predicted, domestic consumption in India is incredibly powerful, and India's economy as a whole is transitioning away from a purely agriculture driven economy to a more modern economy, with the majority of its GDP being drawn from services, with in particular a booming IT sector. The IT-BPM sector in India comprises 56% of the global outsourcing market size and it constitutes 45% of Total Indian Service Exports¹⁹. No doubt a large part of the slightly lopsided Indian economy can be contributed to Indian cultural and social constructs.

Income Inequality

It's important to remember that another problem with the Indian economy is the degree of inequality, which naturally affects the economic growth and development process for India.

Consider the following graph²⁰:

Income inequality, India, 1922-2015



The graph shows that the proportion of income, shown on the y-axis, for the top 1% (the red line) and the top 10% (the blue line) has increased significantly in recent years. What this shows is that the fruits of economic growth have yet not trickled down to the majority of the population to the same extent as with the richest people in India. Therefore, a possible

¹⁸ National accounts, World bank. "GNI per Capita, Atlas Method (Current US\$) - India." Data, 2018, data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=IN.

¹⁹ Das, Chandrika Prasad. (2018). MAKE IN INDIA-AN ANALYSIS OF IT SECTOR.

²⁰ Tax data, Surveys and. "India - WID - World Inequality Database." WID, 2015, wid.world/country/india/.

reason for India's lopsidedness is income inequality as the rich and the middle class opt for jobs typical to a developed nation while the lower income groups are still stuck doing the same agricultural jobs as those in a completely undeveloped economy. Although more than half of India's population are currently a part of the agricultural sector, it only contributes around 17% of India's GDP.

This is further supported by the inequality between Indian states. For example, the GDP per capita for Maharashtra, a state located in the South-west of India, is \$2900 as of 2019²¹- which is almost one and a half times that of the national average, while the GDP per capita for Uttar Pradesh, a Northern state, is \$990 as of 2019²², less than half of the national average. It's clear that the fruits of economic growth are concentrated to a much greater extent in some states than in other, since some states are still more reliant on agriculture than others. It's clear, then, that for India a better approach may be to generate separate Cobb-Douglas models for each state. This approach may also be extensible to other nations with a clear division between lesser developed and more developed states.

It's possible that this inequality also contributes to the M and H variables in the Cobb-Douglas production function. The greater the degree of income inequality, the greater the disparity between the rich and the poor, and therefore the lesser motivation for the poor to strive to increase their wealth. Far more importantly, income inequality tends to decrease the number of youths with the ability to pursue further education, and therefore the average skill level of the national labour force, hurting the H variable. It was found that rising inequality caused growth in Mexico and New Zealand to be ten percentage points lower over the two decades leading up to the Great Depression. In Italy, the UK, and USA, the cumulative growth rate would have been six to nine percentage points higher had income inequality not widened, and to a lesser extent also in Finland, Sweden and Norway. On the other hand, greater levels of income equality helped increase GDP per capita in Spain, France and Ireland prior to the crisis²³.

Growing Services Sector and Increased Investment

The Indian Ministry of Finance's yearly report shows that since the 1980s, India's services sector has been consistently growing at a faster pace than its manufacturing or services

²¹ United States, Congress, Planning department, Government of Maharashtra, Mumbai, and R. R. Shinge. "Economic Survey of Maharashtra 2019-20." *Economic Survey of Maharashtra 2019-20*, 2019. mahades.maharashtra.gov.in/files/publication/ESM_2019_20_Eng_Book.pdf.

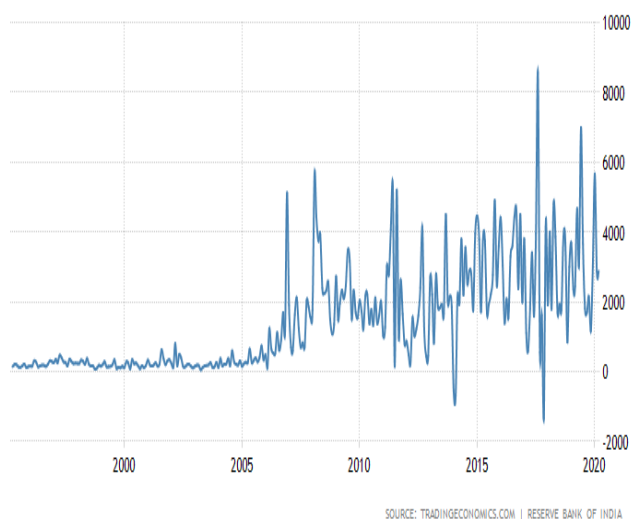
²² UNDP. "Uttar Pradesh: Economic and Human Development Indicators." *Uttar Pradesh Factsheet*, 2019, www.undp.org/content/dam/india/docs/uttar_pradesh_factsheet.pdf.

²³ Newsroom, OECD. "Inequality Hurts Economic Growth, Finds OECD Research." *OECD*, 2014, www.oecd.org/newsroom/inequality-hurts-economic-growth.htm.

sectors²⁴. So too has India's average total factor productivity, which could be attributed to the growing use of technology especially in the services sector. Indian farmers cannot, in general, afford to buy expensive machinery in order to increase productivity, and this is reflected in the data, showing how as other sectors increase TFP with better technology, agriculture cannot compete and hence its contribution to GDP has fallen to a great extent.

A question, though, may be why India's economic growth was quite so rapid, despite the fact that the limited liberalization measures and reduced taxes didn't come close to rivaling China's sweeping reforms before them. A reason may be that India has operated well below the production possibilities curve²⁵. Any reforms would then result in not only a shift of the PPC, but also a shift towards the PPC.

Moreover, these actions would have had a disproportional impact on the growth of the Indian economy, because it would increase foreign confidence in India and therefore increase foreign direct investment in India, which is reflected in the data. Consider the following graph, showing FDI in millions of USD²⁶:



It's evident that despite deviations from year to year, the general trend is that foreign investment in India has been increasing since before 2000. Of course, foreign direct investment has a positive causal relationship with economic growth.

²⁴ Ministry of Finance, *Economic Survey 2005–2006*

²⁵ Rodrik, D., and Subramanian, A. (2004b), 'From "Hindu Growth" to Productivity Surge: The Mystery of the Indian Growth Transition', IMF Working Paper No. WP/04/77.

²⁶ Reserve Bank of India. "India Foreign Direct Investment 1995-2020 Data: 2021-2022 Forecast: Historical." *India Foreign Direct Investment | 1995-2020 Data | 2021-2022 Forecast | Historical, 2020*, tradingeconomics.com/india/foreign-direct-investment.

4. CONCLUSION

Economic growth can be represented in any number of ways, and in fact defined in many different ways as well. This is important as typical definitions tend to miss out on a few very important factors that have simply not been discovered yet. Thus, the only truly accurate definitions can be those that account for a measure of ignorance, like the Cobb-Douglas production function. One example that has been discussed in this paper is the assumption of rationality that is involved in most economic theory. Moreover, in the Indian context, other atypical factors emerge such as income inequality. In addition, it is shown that certain factors can have a disproportional effect on economic growth due to multiplying effects such as increased foreign investments.

REFERENCES

- [1] Haller, Alina-Petronela. "Concepts of Economic Growth and Development. Challenges of Crisis and of Knowledge." *Researchgate*, 2012.
- [2] Abramovitz, Moses. *Resource and Output Trends in the United States since 1870*. American Economic Review, 1956.
- [3] Dowrick, Steve. "Estimating the Impact of Government Consumption on Growth: Growth Accounting and Endogenous Growth Models." *Long-Run Economic Growth*, 1996, pp. 163–186., doi:10.1007/978-3-642-61211-4_8.
- [4] Jones, Charles. "The Facts of Economic Growth." 2015, doi:10.3386/w21142.
- [5] World Bank Data Team. "New Country Classifications by Income Level: 2019-2020." *World Bank Blogs*, 1 July 2019, blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020.
- [6] Dao, Minh, "DRIVERS OF ECONOMIC GROWTH IN DEVELOPING COUNTRIES" (2014). Faculty Research and Creative Activity. 10. http://thekeep.eiu.edu/economics_fac/10
- [7] Felipe, Jesus. "Export-Led Growth or Domestic Demand-Led Growth in Asia?" *Inclusive Growth, Full Employment, and Structural Change*, May 2005, pp. 261–278., doi:10.7135/upo9781843313557.019.
- [8] Aisen, Ari, and Francisco José Veiga. "How Does Political Instability Affect Economic Growth?" *IMF Working Papers*, vol. 11, no. 12, 2011, p. 1., doi:10.5089/9781455211906.001.
- [9] Hossain, Mohamed Tareq, et al. "Ease of Doing Business and Its Impact on Inward FDI." *Indonesian Journal of Management and Business Economics*, vol. 1, no. 1, 2018, p. 52., doi:10.32455/ijmbe.v1i1.52.
- [10] Cahyadi, Gundy, et al. *Singapore's Economic Transformation*. Global Urban Development, 2004, pp. 2–8, *Singapore's Economic Transformation*.
- [11] Gordon, Robert J. "Is U.S. Economic Growth over? Faltering Innovation Confronts the Six Headwinds." *NBER Working Paper Series*, Aug. 2012, nber.org.
- [12] Lammers, William J., and Pietro Badia. *Fundamentals of Behavioral Research*. Thomson/Wadsworth, 2005.
- [13] Gan, Ailian. "Das Maynard Keynes Problem: Rethinking Rationality." *Duke Papers*, 2016, sites.duke.edu/djepapers/files/2016/08/Ailian-Gan.pdf.

- [14] Kregel, John Allen, and Eric Nasica. *Fundamental Uncertainty*. Springer Nature., 2011.
- [15] Angner, Erik, and George Loewenstein. "Behavioral Economics." *Philosophy of Economics*, 2012, pp. 641–689., doi:10.1016/b978-0-444-51676-3.50022-1.
- [16] National accounts, World bank. "GNI per Capita, Atlas Method (Current US\$) - India." *Data*, 2018, data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=IN.
- [17] Das, Chandrika Prasad. (2018). MAKE IN INDIA-AN ANALYSIS OF IT SECTOR.
- [18] tax data, Surveys and. "India - WID - World Inequality Database." *WID*, 2015, wid.world/country/india/.
- [19] United States, Congress, Planning department, Government of Maharashtra, Mumbai, and R. R. Shinge. "Economic Survey of Maharashtra 2019-20." *Economic Survey of Maharashtra 2019-20*, 2019. mahades.maharashtra.gov.in/files/publication/ESM_2019_20_En_g_Book.pdf.
- [20] UNDP. "Uttar Pradesh: Economic and Human Development Indicators." *Uttar Pradesh Factsheet*, 2019, www.undp.org/content/dam/india/docs/uttar_pradesh_factsheet.pdf.
- [21] Newsroom, OECD. "Inequality Hurts Economic Growth, Finds OECD Research." *OECD*, 2014, www.oecd.org/newsroom/inequality-hurts-economic-growth.htm.
- [22] Ministry of Finance, Economic Survey 2005–2006
- [23] Rodrik, D., and Subramanian, A. (2004b), 'From "Hindu Growth" to Productivity Surge: The Mystery of the Indian Growth Transition', IMF Working Paper No. WP/04/77.
- [24] Reserve Bank of India. "India Foreign Direct Investment 1995-2020 Data: 2021-2022 Forecast: Historical." *India Foreign Direct Investment | 1995-2020 Data | 2021-2022 Forecast | Historical*, 2020, tradingeconomics.com/india/foreign-direct-investment.
- Works referred to:**
- [25] Kravis, Irving B., et al. "Real GDP Per Capita for More Than One Hundred Countries." *The Economic Journal*, vol. 88, no. 350, 1978, p. 215., doi:10.2307/2232127.
- [26] Fantom, Neil, and Umar Serajuddin. *The World Bank's Classification of Countries by Income*. World Bank Group, 2016, *The World Bank's Classification of Countries by Income*.
- [27] Bao, Shuming, et al. "Geographic Factors and China's Regional Development under Market Reforms, 1978–1998." *China Economic Review*, vol. 13, no. 1, 2002, pp. 89–111., doi:10.1016/s1043-951x(02)00055-x.
- [28] Huff, Gregg. "What Is the Singapore Model of Economic Development?" *Cambridge Journal of Economics*, 1995, doi:10.1093/oxfordjournals.cje.a035339.
- [29] Kaiser, Stefan, et al. "Foreign Direct Investment in China: An Examination of the Literature." *Greater China*, 2018, pp. 44–65., doi:10.4324/9780429428425-3.
- [30] Ding, Sai, and John Knight. "Why Has China Grown So Fast? The Role of Physical and Human Capital Formation*." *Oxford Bulletin of Economics and Statistics*, vol. 73, no. 2, 2010, pp. 141–174., doi:10.1111/j.1468-0084.2010.00625.x.
- [31] Bank national accounts data, World. "GDP per Capita Growth (Annual %)." *Data*, 2019, data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG.
- [32] Alesina, Alberto, et al. "Political Instability and Economic Growth." *NBER*, 1992, doi:10.3386/w4173.
- [33] Shackleton, Robert. *Total Factor Productivity Growth in Historical Perspective*. Congressional Budget Office, 2013, *Total Factor Productivity Growth in Historical Perspective*.
- [34] Hammond, Peter J. "Rationality in Economics." *Stanford RatEcon*, 1997, web.stanford.edu/~hammond/ratEcon.pdf.