India vs Pakistan
An Evaluation of Long-Run Economic Growth with Respect to the Solow Growth Model

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Abstract. India and Pakistan are very much in common, however, at present Indian economy seems to be in the lead. As growing focus on solving poverty in developed countries these years, we provide suggestions for policy makers of poorer countries based on our analysis. For both countries, the political and economic components affecting economic growth were examined based on Solow Model. Especially we include economics profile of both countries which include not only macro data, sector and investment performance, but also trade and resources data. We found that while the Solow Growth Model is an effective tool in determining overall economic progress of a country, it is primitive and does not consider many characteristics of modern economies. At last there is an extent to the capabilities of the Solow Growth Model; while high savings, low population growth, and high productivity do contribute towards long-run economic growth, there are numerous other factors that have a much more significant impact.

1. Introduction

Now, the richest countries are well over 50 times wealthier than the poorest ones. Why does economic growth occur? Why did some countries develop so quickly and why did others stay stagnant? To answer these questions, the countries Indian and Pakistan were studied. These two countries were chosen for their differing rates of economic growth despite similar location, government type, and natural resources.

Both countries are located in south Asia and are neighboring countries, sharing an east-west border. However, India covers an area of roughly 3.3 million square kilometers, which is over four times that of Pakistan. Additionally, India’s population of about 1.35 million is over six times Pakistan’s population. The two countries share the federal parliamentary republic government system, along with a mixed economy. India and Pakistan’s natural resources are also comparable. The shared resources include coal, ores, natural gas, petroleum, and arable land.

By analyzing two similar countries with differing economic growth rates, the elements affecting economic growth can be studied. Learning about economic growth is perhaps the most important aspect of improving quality of life. As an economy becomes more robust, consumers are able enjoy more goods and services.

Thus, it is important to conduct studies on economic growth. From the results of the analysis, policies promoting economic growth can be suggested to countries in development. Economic development leads to increases in quality of life, and eventually, improvements in the wellbeing of people around the world. Some researchers indicate happiness is related to income (Diener & Biswas-Diener, 2002), Betsey & Justin used multiple rich datasets to reassess "Easterlin paradox" and suggested that economic growth associated with rising happiness (Stevenson & Wolfers 2008). Clark (2011) shows the income-happiness slope is larger in developing economies.

The forthcoming discussion will be split into many sections. First, general background information on the political and socio-economic landscape of India and Pakistan will be given. Following that will be an economic profile for each country. Next is an analysis on the economic growth rates of both countries with basis upon the Solow Growth Model, which will be the main tool used to evaluate economic growth. From the results of the analysis, policies encouraging economic growth will be formulated. Finally, a summary will be provided to recapitulate the key findings.
2. Background of the Country

2.1 India

The politics of India is based upon a federal parliamentary democratic republic system operating within the country’s constitution. The parliament is based on the British model, being composed of an upper and lower house.

Due to its parliamentary system, India has a distinct head of state and head of government. The head of state, or President, fulfills a largely ceremonial role within the parliament and is elected by an electoral college. Conversely, the head of government, or the Prime Minister, is the one who exercises the most executive power. The Prime Minister is chosen by members of the lower house and is appointed by the President.

A prominent feature of the Indian social structure is the caste system. This ancient social stratification originated with the Hindu religion and is deeply ingrained within Indian society. In this system, people are separated into distinct castes, or social echelons.

Due to the many ethical and economic implications of the caste system, it has been severely criticized in modern times. The caste system separates people into inherent superiors and inferiors, and lower castes suffer greatly from economic and social discrimination. Since they are not able to work their way into higher castes, there is no incentive for lower-caste workers to be productive. Moreover, the caste system restricts the pool for potential workers. Because there are set occupations for each caste, the number of workers for a specific job is limited to the population of the appropriate caste (Munshi, 2017). These two factors create inefficiencies that are detrimental to the economy.

Though the caste system is still somewhat present in India, it was officially forbidden in Articles 15 and 17 of the Indian Constitution (Ministry of Law, 2012). This, along with development projects such as the 1991 economic reform, have made drastic improvements to the socio-economic landscape of India over the course of the past few decades.

2.2 Pakistan

The overall structure of the Pakistani government is very similar to that of the Indian government. Like India, Pakistan is a federal parliamentary republic whose politics works within its constitution. The prime minister of Pakistan is elected by the people and heads the executive branch of the government. The president, however, did wield considerable power within the government until 2010. Now, the president does not have much authority and plays a mostly ceremonial role.

Despite the efforts to improve the political condition of Pakistan, the political stability of the country is still considerably poor. In 2017, Pakistan scored a weak -2.4 on the political stability index while India scored -0.83 (The Global Economy, 2019). Due to this instability,

As discussed in the previous section, overall social and political instability plagues the country and prevents significant economic progress. A major social issue in Pakistan is the widespread corruption within the government. In 2018, Pakistan was ranked 117th out of 180 countries in the Corruptions Perception Index (Transparency International, 2019). Though the caste system is much more prevalent in India than in Pakistan, the implications of the systems are largely similar. Social equity, labor productivity, and labor market efficiency are all negatively affected by the caste system of Pakistan.

2.3 Summary

In summary, India and Pakistan possess similar government structures but have varying political and social issues. While India’s government has been focused on economic development, Pakistan still suffers from political instability and corruption. Both countries also suffer from a caste system. Though the specific economic performance indicators of India and Pakistan will be discussed in the subsequent section, these political and social factors do impact the rate of economic growth in the two countries.
3. Economic Profile

3.1 Purpose of Economic Analysis

By examining economic indicators such as macroeconomic performance, major sectors, trade, investment, and resources, the overall economic situation of India and Pakistan can be better understood. These five indicators shed light on the many differences and similarities between the economies of India and Pakistan, which relates to the sociopolitical circumstances of the two countries discussed in the previous sections as well as data relating to the Solow Model that will be explained in the next section.

India

3.2 Country Performance Indicators

3.2.1 Macro Performance

India’s macroeconomic performance in the last few decades has improved significantly. 30 years ago, the real GDP per capita was less than $550. However, the economy began experiencing drastic growth in the mid-1990s. After surpassing Pakistan in 2000, India’s GDP per capita has had consistently high growth. In 2018, GDP per capita has increased to over $2,100. This high rate of economic progress has placed India among the fastest-growing economies in the world (Aiyar, 2016).

![GDP per capita of India and Pakistan](image)

**Figure 1 GDP per capita of India and Pakistan**

India has also sustained a high rate of growth over time. From 1980 to 2018, annual GDP growth averages to a strong 6.17%. However, growth rates have increased significantly since the 2000s. From 1980 to 2000, the rates average to only 5.84%. From 2001 to 2018, the average was just under 7%.

3.2.2 Sector Performance

Though India has experienced rapid industrialization and advancement over the past decades, the agricultural and allied (primary) sector remains an important part of India’s economy. While it currently contributes to only around 16% of the GDP, almost 50% of the Indian population depend on it for jobs. The industry or secondary sector plays a larger role; it makes up almost 30% of the GDP. However, the Indian economy is dominated by the services or tertiary sector, from which around 55% of the GDP is derived (Wikipedia, 2019). The size of the tertiary sector can be largely attributed to the high level of economic development that is shifting India away from an agricultural economy to a services-oriented economy. This phenomenon can be seen in the rise of certain service-based industries that will be discussed in the subsequent section.
3.2.3 Trade Performance
Before the economic liberalization in 1991, India practiced trade isolationism to protect and build up domestic markets (Wikipedia, 2019). Post-liberalization India, however, has increased foreign trade significantly. Over the last decade, total volume of trade in each year totaled to over 48% of India’s GDP. Its export volume index in 2018 was approximately 481 while the import volume index was 609.

![India GDP by Sector](image)

Figure 2 GDP by sector of India

The export and import volume of India is depicted in Figure 3. Over the years, there has been a significant increase in both exports and imports. In 2018, India’s highest-valued exports were mineral fuels, precious metals, textiles, machinery, and chemical products (The Observatory of Economic Complexity, 2019). Its largest trade partner is China, with total trade at 84.4 billion dollars in 2017~2018. However, exports account for less than 20% of the total trade volume. India’s largest export partners are the US and the UAE, exporting 48.6 and 30.29 billion dollars respectively in 2017~2018 (Wikipedia, 2019).

![Import and Export Volume](image)

Figure 3 Import and Export Volume of India

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3.2.4 Investment
Like foreign trade, foreign investment in India has also increased drastically since the economic liberalization. The total net inflow of FDI from 1994 to 2006 adds around 64 billion dollars. From 2007 to 2018, total increased to an astounding 426 billion dollars. Because of the emerging private businesses and competitive wages, many foreign companies are choosing to invest in India’s markets.
3.2.5 Major Resources
India’s major resources include arable land, mineral fuels, and metal minerals and ores. Globally, India ranks second in terms of food production thanks to its vast amount of arable land (World Atlas, 2019). It also has the world’s fourth largest reserve of coal and considerable amounts of petroleum and natural gas. Over 550 fuel mines operate throughout the country. Lastly, India is rich in metal minerals such as bauxite, iron ore, mica, copper, and zinc (T.G. Percival Spear, 2019).

Pakistan
3.3 Country Performance Indicators
3.3.1 Macro Performance
Compared to India, Pakistan’s macroeconomic performance has been mostly stagnant over the past years. While India’s trends take the shape of exponential growth, Pakistan’s growth is flat and linear. In 1980, Pakistan had a higher GDP per capita than India with $556.41. In 2018, however, India almost doubles Pakistan’s GDP per capita.

Likewise, Pakistan’s annual GDP growth rate was consistently less than India’s from 1993 and onwards. The average annual growth from 1980 to 2018 of Pakistan is about 4.91%, which is 1.26% less than that of India.
3.3.2 Sector Performance
Pakistan’s distribution of GDP by sector is comparable to India’s. Both have a dominant services sector and a lesser agriculture sector. Pakistan’s agricultural sector contributes to 18.5% of the total GDP, the industry sector contributes 20.3%, and the service sector takes up the remaining 61.2% (Wikipedia, 2019). Major industries in Pakistan include mining, mineral fuels, and manufacturing.

![Figure 6 GDP by sector of Pakistan](image)

3.3.3 Trade Performance
Whereas trade in India has increased substantially over time, Pakistan’s volume of trade has remained generally stagnant. In 1994, Pakistan traded approximately 35% of the GDP’s worth of imports and exports, almost 15% more than India. In 2018, however, Pakistan’s total volume of trade in 2018 was only 28% of the GDP. India, on the other hand, traded over 40% of its GDP in 2018. Pakistan’s import and export volume index scores also reflect the lackluster trade.

![Figure 7 Trade as a % of GDP of India and Pakistan](image)

![Figure 8 Import and Export Volume Index of India and Pakistan](image)
Pakistan’s exports are dominated by textiles, such as house linens, clothing articles, and fabrics; they accounted for over 60% of exports in 2017 (The Observatory of Economic Complexity, 2019). Lesser exports include foods and minerals. The largest trading partners of Pakistan are China and the European Union, which combined account for 30% of total trade.

3.3.4 Investment
Like trade, foreign investment in Pakistan did not see any substantial growth over time. From 1994 to 2018, net FDI inflow grew from 420 million dollars to 2.35 billion dollars, which is miniscule in comparison to India’s 40 billion dollar increase. This is likely due to the unstable political landscape; foreign entities would be hesitant to invest in a country that does not have a firmly established government.

![Foreign Direct Investment, Net Inflows](image)

**Figure 9** Foreign Direct Investment, Net Inflows of India and Pakistan

3.3.5 Major Resources
Pakistan’s resources are similar to those of India; they include arable land, ores, minerals, and mineral fuels. Agriculture accounts for a large portion of the total GDP, and the main crops produced are rice, sugar cane, cotton, and wheat. Pakistan also possesses sizeable reserves of fuel resources such as petroleum, natural gas, and coal. Finally, mineral resources include iron ore, copper ore, limestone, chromite, barite, and celestine (Lawrence Ziring, 2019).

3.3.6 Summary
Through examining both countries’ macroeconomic performance, sector performance, trade, foreign investment, and major resources, it is conclusive that India has had far greater economic progress than Pakistan. India’s trends show upwards growth, Pakistan’s show stagnation. These trends can be partially attributed to the political and social phenomena in each country as discussed in the previous section: India’s growth may be instigated by the 1991 economic reforms, while Pakistan’s lack of progress may be due to the continuous political instability in the country. While this is an accurate explanation of these trends, the subsequent section will attempt to explain them through another lens. India and Pakistan’s economic performance will be evaluated using the Solow Growth Model.

4. Solow Growth Model

4.1 Description of the Solow Growth Model
Being the first growth model based upon neoclassical economics, the Solow Model laid the foundation for modern economic growth theories and more complex models, such as the Harrod-Domar Model and the Endogenous Growth Model. Solow model can serve as a reliable indicator of factors of economic growth. With the structure of the Solow Growth Model established, there are a few variables that can be adjusted to increase the output of the economy. First, the savings rate can be raised. This leads to higher levels of investment, allowing firms to purchase more capital and
increasing output. However, raising savings forgoes consumption, a crucial aspect of short-run economic performance. Moreover, policies targeted to raise savings are difficult to execute. The variables making up the break-even investment curve can also be changed to adjust output.

4.2 Saving rates

The Solow Model’s first variable to economic growth is the saving rate. Over the course of the last 25 years, India’s gross savings as a percent of GDP have been consistently higher than that of Pakistan, with an average difference of about 10%. This coincides with India’s higher GDP per capita, proving the Solow Growth Model to be correct in this case.

![Gross Saving of India and Pakistan](image.png)

Though savings are an important factor in the Solow Growth Model, it may not be as reliable in real-world situations. In a wealthy country, necessities such as food and clothing taking up a smaller portion of disposable income. Thus, saving rates will be comparatively lower, causing higher economic growth. Conversely, the average citizen in a poorer country will need to spend a greater portion of income on necessities. However, comparing growth using savings may be unreliable. In the face of low rates of domestic saving, capital infusion through bilateral aid and multilateral lending institutions was seen as the key to reducing unemployment, to increasing worker productivity, and to achieving higher standards of living (Mason 1988). Also, Aghion (2016) state that a cross-country regression shows lagged savings is positively associated with productivity growth in poor countries.

4.3 Population growth rates

The next variable in the Solow Model is the population growth rate, which relates to the rate at which new capital is needed. With a lower population growth rate, each worker will have access to more capital, effectively increasing output. In the past 25 years, Pakistan’s annual population growth averages to around 2.38%, which is considerably greater than India’s 1.51%. This difference in population growth, like the aforementioned savings trend, agrees with the Solow Growth Model. India, which has the lower rate of population growth, experiences higher GDP per capita growth.
4.4 Productivity & Technology

The last and most important factor of the Solow Growth Model is productivity, or the ability to generate more output with the same amount of input. Though productivity can be quite vague and difficult to measure, it can be quantified with the level of technology. Better technologies such as automation make the input-to-output process more efficient, and thus increasing overall output.

Unlike saving rates and population growth rates, there is not a single definitive measurement of technological progress. However, statistics on patents, research funding, and number of high-tech exports can be indicators of the overall level of technology in a country.
Data on patents, R&D funding, and high-tech exports all suggest that the overall level of technology in India is superior to Pakistan’s. This works in accordance with the Solow Model, confirming that the higher level of technology leads to more output and economic growth over time.

4.5 Other factors not in Solow Model

By analyzing the savings, population growth, and technology level statistics from India and Pakistan, the Solow Growth Model can be used to explain why India’s economic growth has exceeded Pakistan’s over the last few decades. However, there are many factors affecting growth that the Solow Model does not take into account.

Changes in policies and governance can be a major driving force of economic growth. This was the case in India, where the 1991 economic reforms mentioned in section 2 greatly rejuvenated the sluggish economy. Through the reforms, certain nationally owned industries were privatized, incentivizing productivity (higher profits), higher efficiency, less political implications, and greater market competitiveness. This reform was largely responsible for India’s high economic growth over the last decades. Conversely, Pakistan’s unstable government body caused its economy to lag behind. Frequent changes in power greatly disrupted long run economic growth plans, causing the economy to remain stagnant for a long period of time.

Another fault in the Solow Model is that it works within a closed economy. Modern economies, however, take in and put out billions of dollars in trade and foreign investment. Direct Foreign Investment (FDI) can contribute greatly to developing economies and emerging markets. Benefits of
FDI include increased financing for development, introducing new technologies, and promoting stable relationships. This helps developing countries industrializes faster than they would relying solely on domestic savings. The inflow of FDI to India was consistently higher than that of Pakistan, and even skyrocketed in 2006 while FDI inflow to Pakistan was static.

Using the Solow Growth Model and other sources, the high economic growth of India and relatively little economic progress in Pakistan can be explained.

5. Policy Recommendations

With all the relevant political, social, and economic information discussed in the previous sections, a few policies can be recommended to Pakistan to stimulate economic growth.

A major factor preventing Pakistan from developing its economy is its history of political instability. With three regime-changing coups taking place over the past decades, it was difficult for the governing body to establish appropriate economic development policies. On top of what is being done now, Pakistan could further democratize the government to ensure that the people are represented in the country and do not feel the need to seize power through violent means. Without a stable government in Pakistan, consistent long run economic growth cannot be realized.

In addition to stabilizing the political landscape, Pakistan should also focus on combating the widespread corruption within the government. Corrupt officials leach off tax dollars that are used to fund infrastructure, education, social programs, and more. Money that should have been spent towards economic development are pilfered for personal gains. Consequently, Pakistan can only achieve its full economic potential if it punishes corruption within the government.

The Solow Model can also be applied to recommend policies encouraging growth. Policies that promote savings and discourage population growth have many implications, so Pakistan should focus on increasing productivity. This can be done through improving education and increasing investment in research and development of advanced technologies. These two elements work hand in hand, as better education can lead to more innovative ideas while more R&D funding can bring these innovative ideas into fruition. Political stability also plays a role in this. If Pakistan becomes politically stable, foreign entities are more likely to invest in its firms and markets. With new, innovative technologies, goods and services can be produced more efficiently, and the economy grows.

6. Summary

Throughout the research paper, the key reasons behind India’s economic success were determined. From a sociopolitical perspective, India’s economic reforms were vital in progressing the economy. With regard to the Solow Growth Model, India’s higher savings rate, lower population growth, and superior productivity are also factors that contributed to its economic growth. In contrast, Pakistan’s relative economic torpor can be attributed to its political instability, which hinders any long-term economic development plans. Furthermore, Pakistan has a lower savings rate, higher population growth, and inferior productivity. For these reasons, India has experienced significantly higher levels of economic growth than Pakistan.

For both countries, the political and economic components affecting economic growth were examined. However, these two factors are not equal in magnitude. While the Solow Growth Model is an effective tool in determining overall economic progress of a country, it is primitive and does not consider many characteristics of modern economies. With all its complexities, it is difficult to argue that a modern-day economy can grow substantially simply by having optimal savings rate, population growth, and productivity. Consequently, it is likely that the Solow Model variables of savings, population growth, and technology do not play a significant role in the economic development of India. There is an extent to the capabilities of the Solow Growth Model; while high savings, low population growth, and high productivity do contribute towards long-run economic growth, there are numerous other factors that have a much more significant impact.
References


