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Classical Economic Theory Testing on Economic Challenges in India Using Vector Analysis Method

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Abstract

This study is to investigate the direction of the relationship between inflation, population, and economic growth using vector analysis with a research period of 1995 to 2020 to investigate the impact of economic shocks on the validity of the classical theory in explaining economic phenomena starting from economic shocks to financial crises Asia in 1997, the global financial crisis in 2008 and the economic shocks caused by the pandemic in India. We find that economic shocks from the 1997 Asian financial crisis to economic shocks due to the COVID-19 pandemic have not been able to invalidate the classical theory as a theory that explains economic phenomena related to economic growth, inflation, and population growth in India.

Keywords: GDP, India, Population Growth, Inflation, Classical Economics

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Background

The economy of a country requires an indicator that is used to see whether the economy in that country is going well or poorly. One of these pointers should be utilized to decide the all out pay acquired by all people in the nation's economy. GDP is an indicator of the prosperity of a country (Mankiw, 2006). Adam Smith (1776) revealed that economic growth will progress and develop because there is an increase in population which will increase the output of market expansion and will encourage the economy in the country (Kennedy,2018). Meanwhile, David Ricardo (1917) regarding economic growth reveals that more and more population growth will be one of the factors of economic slowdown because of large population growth there will be an excess of labor which will reduce the wages of workers (Henderson & Davis,2012).

Therefore, the two theories are very contradictory because Adam Smith considers economic growth to require an increase in population, while David Ricardo assumes that population growth causes a decrease in economic growth that occurs. This increase or decrease can be seen from the GDP figure which is used as a measure of income and expenditure in an economy. In this case, the government issued a fiscal policy that was able to encourage economic activity and increase economic growth. GDP is strongly influenced by one of them, namely an increase in inflation, especially its broad impact on the aggregate macroeconomy, namely economic growth, external

balance, competitiveness, interest rates, and even income distribution. Inflation is a very haunting economy of every country that can cause a recession in that country. Many discuss inflation, not only regional, national, but also international coverage to maintain the stability of economic growth of each country (Taylor & Uhlig,2016).

Adam Smith (1776) considers economic growth can be seen if there is an increase in population. The division of labor is the beginning of economic growth because it can increase the productivity of labor in the process of production activities. And the accumulation of capital in this case as a process that plays an important role in economic growth even Adam Smith emphasized that capital accumulation must be done before the division of labor so that economic activities can run properly. Fast or slow growth in a country can be determined by the capital cultivators that have been proposed by Adam Smith. Adam Smith's theory has a weakness in that it can be assumed that each stage of development is in a perfectly competitive market condition (Kennedy,2018).

David Ricardo considered that the inhibiting factor in the process of community economic growth so that the slowdown in the increase in living standards in the country was caused by the inability to increase land production factors (natural resources). In his first book entitled The Principles of Political Economy and Taxation (1917) David Ricardo revealed the theory of economic growth. One of the characteristics of the economy, according to David Ricardo, is that when the level of profit earned by the owners of capital is above the minimum level of profit, investment is needed (Henderson & Davis,2012).

In other words, the unemployment trade-off is seen as relevant only for short-term spells with the association never remaining permanent (Victor et al 2021). The COVID-19 pandemic has changed the global economic climate in a unique way. The global COVID-19 pandemic has suppressed human production and performance. (Loayza and Pennings 2020). Shocks happen similarly in all nations of the world as far as interest and supply interruptions and the subsequent monetary lull. Be that as it may, on account of India, the issue might be more intense and more enduring because of the condition of its economy, in the pre-Covid-19 period. When the first Covid-19 cases were accounted for in Quite a while, the economy had crumbled essentially following quite a while of feeble execution (Singh & Misra,2020).

The Indian economy is encountering an expansion in extremely fast financial development. The financial improvement in India can be a market opportunity for all nations on the planet to foster their business sectors as opposed to simply focusing on customary business sectors where rivalry is extremely close (Arora,2018). Financial development in India keeps on expanding quickly and the pay per capita of its populace is additionally expanding, yet behind that, the economy is encountering an irregularity of value in the economy. The awkwardness is found in the distinction in the proportion of the populace, accessible positions, and human resource in India. This makes a hole between the rich and poor people. Also, the fundamental issue in the economy in India is the uncommon expansion in the worth of swelling by India's financial development which is beginning to improve from one year to another (Sahoo et al,2021).

Since March 2020, India has been influenced, similar to a large part of the world, by the COVID-19 pandemic. In a brief time frame, India has encountered an uncommon expansion in contaminations. India's Covid crisis cost has passed the boundary of 100,000 cases. As per a report from Johns Hopkins University, the number of cases in India has reached 101,139, while the passings brought about by the infection to date remain at 3,164. The country's Ministry of Health has affirmed the exactness of this information. The Indian Council of Medical Research has declared that 2,404,267 tests have been completed from one side of the country to the other (Mele & Magazzino n.d 2020). While the pandemic is probably going to influence created economies, generally, agricultural nations like India can't yet be influenced. Governments in numerous nations have communicated their anxiety and forced lockdowns to diminish the fast spread. Since India has forced a 21-day lockdown cross country with the expectation of broadening it later, financial action in the nation has practically slowed down. By deferring the creation cycle, the states bring about gigantic financial expenses.

The current COVID-19 circumstance combined with drooping financial development has pushed agricultural nations, for example, India into unstable economic situations. Before the flare-up of

COVID-19, the Indian economy had encountered a monetary log jam in the course of the last couple of quarters. The economy is as of now faltering from rising joblessness, low utilization, and frail mechanical yield and costs. In case of a decrease in homegrown venture and normal utilization levels, a few financial and monetary. As the circumstance has not gotten back to business as usual and the quantity of cases is expanding worldwide just as at the public level, it is expected that the rise of the infection will additionally deteriorate the recuperation cycle in the close to medium term. This pestilence has set another arrangement of difficulties before the country by spreading its unsafe impacts on both organic market sides (Rakshit and Basistha 2020).

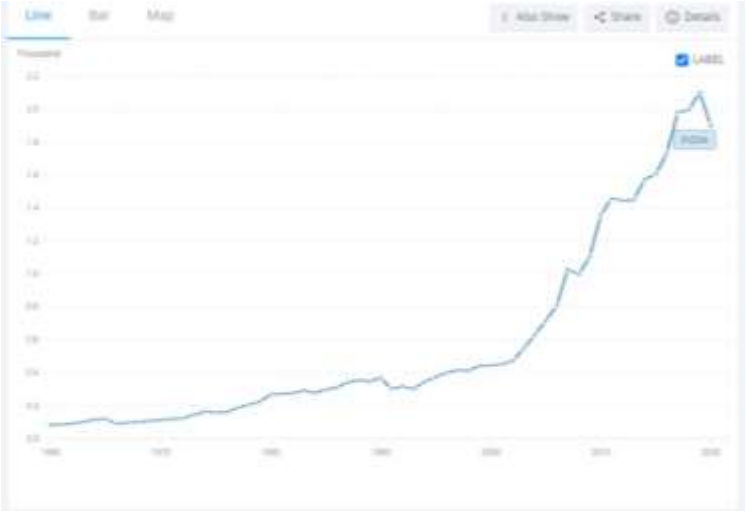

Figure 2.1 GDP Curve in India

The World Economic Outlook has to gauge a worldwide financial shrinkage of 4.9 percent in 2020. Paradoxically, the 2020 World Bank has cautioned of a decrease in per capita payments, endangering the prosperity of millions of individuals internationally. Moreover, COVID-19 presents a novel situation of a synchronous decrease in market interest, alongside diminished creation and business (Loayza and Pennings 2020). Consequently, this situation is described by a Keynesian stock shock, wherein total interest falls further in light of a decrease in total inventory bringing about a deficiency of interest downturn. There is proof of diminished work, usefulness, and exchange stuffing after the pandemic. The Indian economy has encountered a decay of 23.9 percent in Q2 2020 and is relied upon to encounter a decrease of 4.5 percent in 2020. Albeit the joblessness rate at first, declined, it began to ascend in mid-2017, inferring that the downturn had offered an approach to stagnation. The pattern of rising expansion and joblessness all the while is an obvious sign of the steadiness of swelling in the economy. Moreover, the pandemic-incited lockdowns affect the monetary slump as far as a colossal spike in the joblessness rate.

The financial crisis had a significant impact on the economy in Asia (Raj & Roy, 2014). Research from Bresser-Pereira (2010) explains that the 2008 global financial crisis invalidated classical economic theory based on production as an economic emphasis and global capitalization. Estola (2020) explained that the economic shock from covid 19 could invalidate the economic theory that has been in effect so far.

In Adam Smith's classical economic theory, there are two things in the economy, namely economic growth and population growth. When population growth is higher than economic growth, the amount of demand increases, and the growth in supply or supply is not as large as the level of demand, resulting in an increase in prices called inflation (Mankiw, 2006 ; Kennedy,2018). In the pandemic era, there was an economic shock due to limited economic productivity, while on the other hand there were many deaths. This is a research motivation for us to understand whether the classic

theory is still valid in India with a large enough population in the world. Based on the theoretical basis and previous research, temporary hypotheses can be developed as follows:

H1. Economic shocks can invalidate the classical economic theory
H2. Economic shocks can not invalidate the classical economic theory

Based on the hypothesis above, the purpose of this study is to investigate the direction of the relationship between inflation, population, and economic growth using vector analysis. Based on previous research related to economic shocks, namely economic shocks in 1997 (Raj & Roy, 2014), global financial crisis shocks (Bresser-Pereira, 2010), and economic shocks due to the COVID-19 pandemic (Estola, 2020), in this study, the research period is determined starting from 1995 to 2021 using the second data sourced from the world bank.

Research Method

The purpose of this study is to re-examine the theorys of Adam Smith's classical economic theory in an atmosphere of the COVID-19 pandemic. To test this economic theory, vector analysis is used which analyzes the direction of the relationship between variables. With the following basic equation:

$$Xt = 0 + 1Xt\text{-}1 + nXt\text{-}n + et \quad (1)$$

Where

$$\Delta Xt\text{-}1 = 0 + i=1k\text{-}1\Gamma\Delta Xt\text{-}i + \alpha\beta'Xt\text{-}k + t \quad (2)$$

Where $\Gamma\Delta Xt\text{-}i$ is a short-term relationship variable, 0 is the intercept coefficient, α is parameter or speed of adjustment . β' is a long-term equilibrium coefficients, and k is the length of the lag.

Based on the theoretical basis and previous research the following equation can be formulated:

$$Inf = f(GDP,P) \quad (3)$$

So, the econometric formulation is formulated as follows :

$$Inf_t = \beta_0 + \beta_1 GDP_{t1} + \beta_2 P_{t2} + e_t \quad (4)$$

Based on equation 1, equation 2, equation 3, and equation 4, the autoregressive vector equation can be derived as follows:

GDP = C(1,1)*GDP(-1) + C(1,2)*GDP(-2) + C(1,3)*INF(-1) + C(1,4)*INF(-2) + C(1,5)*P(-1) + C(1,6)*P(-2) + C(1,7)

INF = C(2,1)*GDP(-1) + C(2,2)*GDP(-2) + C(2,3)*INF(-1) + C(2,4)*INF(-2) + C(2,5)*P(-1) + C(2,6)*P(-2) + C(2,7)

P = C(3,1)*GDP(-1) + C(3,2)*GDP(-2) + C(3,3)*INF(-1) + C(3,4)*INF(-2) + C(3,5)*P(-1) + C(3,6)*P(-2) + C(3,7)

Where GDP is Gross domestic product growth in percent. P is Population growth in percent. Inf is Inflation in percent, and t is time period. β is coefficient, and e is error term.

Result and Discussion

Vector autoregressive has a requirement that the data must be stationary. Then the data stationarity test is carried out

Table 1. Stationarity test results using the ADF test

Method			Statistic	Prob.**
ADF - Fisher Chi-square			8.26604	0.2193
ADF - Choi Z-stat			-0.99153	0.1607
Series	Prob.	Lag	Max Lag	Obs
INF	0.2391	2	5	23
P	0.1174	5	5	20
GDP	0.5715	0	5	25

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

From the results of the stationarity test, it is known that all the data are stationary and vector autoregressive estimation can be done

Table 2. Vector Autoregressive estimation results

	INF	P	GDP
INF	0.373336	-0.001397	0.390373
	-0.28442	-0.01541	-0.53863
	[1.31263]	[-0.09061]	[0.72475]
P	-41.47176	2.80824	-27.57078
	-46.5025	-2.51994	-88.0669
	[-0.89182]	[1.11441]	[-0.31307]
GDP	0.214594	-0.01987	0.646043
	-0.22903	-0.01241	-0.43373
	[0.93699]	[-1.60104]	[1.48950]

From the estimation results, it can be seen that the relationship between previous inflation and current inflation is significantly positive with a statistical value of 1.31263 and a coefficient value of 0.373336. The relationship between inflation and population growth is significantly negative with a statistical value of -0.09061 and a coefficient of -0.001397. The relationship between inflation and economic growth is positive with a t-statistic value of 0.72475 and a coefficient value of 0.390373.

Population growth has no significant negative correlation with inflation with a t-statistic value -0.89182 and coefficient value --41.47176. Population growth has an insignificant positive effect on future population growth with a t-statistic value of 1.11441 and a coefficient value of 2.80824. Population growth has an insignificant negative effect on GDP with a t-statistic value of -0.31307 and a coefficient of -27.57078. GDP growth has a significant positive effect on inflation with a t-statistic value of 0.93699 and a coefficient value of 0.214594. Economic growth has a significant negative effect on population growth with a t-statistic value of -1.60104 and a coefficient value of -0.01987. GDP growth has a significant positive effect on future GDP growth with a t-statistic value of 1.48950 and a coefficient value of 0.646043

Based on the estimation results, it can be indicated that hypothesis 2 is accepted and hypothesis 1 is rejected. So that the classical economic theory in India is still relevant and can still be used as a reference for explaining and understanding economic phenomena in the midst of economic shocks, both the 1997 crisis shocks, the 2008 global economic crisis shocks and the economic shocks due to the COVID-19 pandemic.

Conclusion

Economic shocks from the 1997 Asian financial crisis to economic shocks due to the COVID-19 pandemic have not been able to invalidate the classical theory as a theory that explains economic phenomena related to economic growth, inflation, and population growth in India.

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