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Contribution of foreign trade and service sector in the GDP growth of India

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Abstract
For the meaningful perseverance of economic development in a country, the foreign trade and service sector is one of the most contributing factors. The Foreign Trade of a country brings foreign transactions into inflow and outflow from one country to a different country. The service sector is the line of life for the social-economic growth of a country. It is nowadays the fastest and largest growing sector everywhere, contributing to a greater extent to worldwide and employing a lot of people and producing huge output and leading to fast growth. Services sectors have become growingly important in current years as advances in technology have granted recent methods of services providing across borders. The growth of the service sector in output at current times has generally come from the accelerated development of skill-intensive professional service segments and information technology. This study investigates the contribution of foreign trade and services sector in Indian economic growth after the liberalization of the Indian economy.
The current study is based on the contribution of the Foreign Trade and Service sector in the overall growth of the economy. There are various parameters on which I can measure the factors responsible for the development and the growth of the economy, but being an evolving and latest factor, foreign trade and service sector are the most contributing factors in the growth of the Gross Domestic Product and the economy.

Keywords: foreign trade, service sector, GDP growth

1. Introduction
Foreign trade in India contains whole exports from and imports to India with counties around the world. It is administered by The Ministry of Commerce and Industry at the level of Central Government. The contribution of Foreign Trade in India's GDP is supposed to be around 50 %. A lot of information regarding the data of India's relation with the other countries of the world is evidence of the growth of foreign Trade in India. India had a very good multilateral trade relations with foreign countries. History tells a lot about the foreign trade and contribution of foreign trade in the economic growth of the country.
The large amount of profit made from foreign trade has resulted in tremendous growth in the overall economic performance. Before the liberalization of the economy in 1991, India imposed a substantial amount of tariff on imported and exported goods, and the total profit attained by the economy was not a significant one, yet India had to deal with it. After the liberalization in 1991, there was a significant increase in the profits earned by the government of India as tariffs were lowered and trade were liberalized. Since the Reform, India's economy has improved mainly due to inflated foreign trade. In the year 2015, India exported the goods and services with a value of US$318.2 billion and imported $462.9 billion. According to a survey conducted by the Indian government, five states — Maharashtra, Gujarat, Karnataka, Tamil Nadu, and Telangana — contributed to around 65% of India's total exports. And for the very first time, the survey included international export data for states. The statement of the survey was that there is a very high degree of relationship with the foreign trade and the Gross Domestic Product of the country. The survey also reported the largest firms in India contributed to a very smaller percentage of exports when compared to countries like Brazil, Germany, Mexico, and the United States. The top 1% of India's companies accounted for 38% of total exports. India's largest trading partners in descending order of value of total trade are the United Arab Emirates, China, the United States, Saudi Arabia, Switzerland, Singapore, Germany, Hong Kong, Indonesia, Iraq, and Japan.
There are three important sectors in an economy, and the Tertiary sector is also known as the service sector. The service sector comprises of all those goods and service which are not present in the primary and secondary sectors of the economy. And as far as the contribution of these sectors is concerned, the service sector is in the lead with the two rest sectors of the economy, the primary sector having the least contribution in the economy. The service sector includes services provided for all factors working either in production or consumption going on in the economy. The service sector may be termed as the sector which has a great share in the development process of an economy. The increase in employment due to an increase in the service sector is quite significant. Growth in the service sector has resulted in the growth of the HDI ranking of the country. The growth of the service sector came mostly after 1991, and the rate of increase in this sector has been much more than the two other sectors of the country. With the help of globalization that came due to the opening of the boundaries, technologies of other countries came to the developing countries and in turn resulted in the growth of the service sector.

2. Review of Literature
A lot of research papers have been published in relation to the topic of concern, which is "the effect of foreign trade and service sector in the growth of the country's Gross

Domestic Product". Some of the very relevant research papers and journals are mentioned, which are related to the topic of the term paper.

Archana Aggarwal (2012) [1]: In her paper titled "INDIA'S SERVICE SECTOR: GATEWAY TO DEVELOPMENT" has tried to throw some light over the contribution of the service sector in the development of the economy. She states that there are numerous problems for seeing the service sector as a door for development. He first considers the unmatched changes in GDP, which has been caused to make the service sector increase with the employment patterns. In the second position, she considers two consequences of the service sector. And in the end of her statement, she asserts that the increase in the service sector has resulted in a decrease in employment in the corporate sector of the country.

Suresh D. Tendulkar (2007) [2]: In his paper, which has the title "INDIA'S GROWING SERVICE SECTOR: DATABASE PROBLEMS AND ISSUES," the researcher studied the problems and issues faced by the service sector which is growing sector of the economy. He states that the rate of growth of GDP of the country, which is around 6% per year, is mainly due to the contribution of the service sector. The service sector has contributed more than 50% in the economy. He further mentions that the contribution of the service sector has caused a tremendous growth of the economy.

Dhanmanjiri Sathe (2001) [3]: The paper is having the title "BALANCED GROWTH AND FOREIGN TRADE." In this paper, the researcher has tried to show the relationship between foreign trade of a country and the growth rate of the Gross Domestic Product of the economy. He has tried to show the link between the least achievable rate of growth of the economy with that of the trade sector of the economy in the pattern of Balanced Growth Model. He asserts that the amount of imports and export of the country has to increase by a much larger amount to stimulate the growth of the country.

Michele Alessandrini *et al*. (2007): This research paper contains the title "THE CHANGING PATTERN OF FOREIGN TRADE SPECIALIZATION IN INDIAN MANUFACTURING." In this paper, they have tried to observe the trend of International trade specialization in India's secondary sector since the 1980s and have used the data of imports and export of the country. They have stated that in India, the low technological sectors have dominated in the country, and that is a reason behind the trade specialization.

3. Objective of the study

The objectives of this paper is to show the following points using the econometrics model and regression equations:

1. The impact of balance of payment on GDP growth rate.
2. Contributions of service sector on GDP Growth Rate.

4. Data and Research Methodology

In this paper, I try to display the association between Balance of Payment and GDP Growth rate and the contribution of the service sector in the growth of the GDP of India. I am doing this by obtaining relevant secondary values regarding the variables for India assumed in this particular model. Yearly data is used from the year 1997 to 2017 in this model. The variables under consideration are GDP Growth Rate, Balance of Payment, and Contribution of Service Sector in GDP. Secondary Data has been collected from the official site of the World Bank (data.worldbank.org), which is published by the World Bank itself.

4.1 The Specification of the Econometric Model

In this model, there is a relationship between

a. GDP Growth Rate
b. Balance of Payment
c. Contribution of Service Sector in GDP

The model is a log-log linear regression model in which the parameters β_1 represents intercept, β_2, β_3, represents slope and all these parameters are linear, where values of the slope coefficient show the percentage change in the dependent variable due to a percent change in the independent variable. So, in a log-log model, the slope coefficients show the relative change in the dependent variable due to a percentage change in the independent variable. It is a linear model because the parameters β_1, β_2, β_3 are linear. The regressand in this linear equation is the logarithm of GDP, and the regressors are the logarithm of the Balance of Payment and log of the contribution of the service sector in GDP whose values are specified for 20 years.

In this model, I study the effect of Balance of Payment and Contribution of the Service sector in GDP. There may be some other variables that might affect the rate of Growth of GDP like the level of technology, human resource development, and resource availability etc. But I am not considering them into our study as they are not part of the study.

To have an inexact relationship between these economic variables, I try to form an Econometric model rather than an exact Mathematical model as follows:

$$LnGDPGR = \beta_1 + \beta_2 LnCOSS + \beta_3 LnCAB + u \quad (1)$$

Where LnGDPGR is the log of the GDP Growth Rate, LnCOSS is the log of Contribution of Service Sector in GDP, LnCAB is the log of Current Account Balance, and u, known as the error term, is a random variable. The error term *u* may well represent all those factors that affect the per capita income of a country but are not taken into account explicitly to find out a more accurate relationship.

4.2 Statement of Hypothesis

The hypothesis of this study is that there no effect of the contribution of the service sector and Current Account Balance on the GDP Growth Rate of India.

H_o: There is no contribution of the Current Account Balance and Service Sector on the GDP Growth Rate of India.

H_I: There is a significant effect of the Current Account Balance and Service Sector on the GDP Growth Rate of India.

4.3 Auto-Regressive Distributed Lag (ARDL) Model

The ARDL model was developed by Pesaran *et al*. (2001). In the Autoregressive Distributed Lag Model, the dependent variable is a function of its own past lagged values as well as current and past values of other explanatory variables. This model helps us to analyze an economic scenario over a period of time. In the real world, change in any economic variable may lead to a change in other economic variables beyond time, and this change may be distributed over a past

and future period of time and may not be reflected immediately. It is generally used while analyzing a time series data in which the dependent variable is non-stationary I(1). It is a very valuable method to estimate the long-run relationships among economic variables in a single-equation time-series set-up. The ARDL model is auto-regressive in the sense that the dependent variable is explained in part by lagged values of itself. It also has a "distributed lag" in the form of successive lags of the independent or explanatory variable(s).

Since the early 1960s both policy makers and academics have shown great interest in exploring the possible relationship between international trade and economic growth. The reason is obvious. Nations are concerned about improving the quality of life of their countrymen, which mainly comes from overall, i.e. macroeconomic, development in a highly competitive and globalised world. Thus, creating wealth, increasing GDP is of prime importance for any economy. There are many different approaches to achieve this goal, though not a single foolproof. One possibility is to find new export markets for goods and services, as exports, along with the imports of new technologies, is an important engine of development. This strategy, however, raises the question: should a country promote exports and/or imports to speed up economic development and growth, or should it primarily focus on economic growth to generate international trade?

In the literature there has been considerable debate on the export-led growth (ELG) and growth-driven exports (GDE) hypotheses, with special regard to their implications on development policies and international trade. As reported by Giles and Williams (2000a), the story goes back at least to Nurkse (1961). A large number of empirical studies have focused on this issue, some of them using Indian data. Giles and Williams (2000a, 2000b) and Ahmad (2001) offer almost exhaustive and comprehensive reviews of these studies, highlighting their similarities and differences.

In 1991, with the advent of WTO, India has entered into the era of trade reforms and has been moving gradually towards an open economy since then. It is widely believed that exports are crucial in providing the impetus for economic growth in developing countries. Thus, export-led growth has been put forward as an efficient alternative to inward-oriented strategy of development. Outward orientation is said to lead to higher total factor productivity growth (Bhagwati 1978, Krueger 1978, Kavoussi 1984, Ram, 1987) and encourages capital material investment including foreign direct investment. The pressure to compete with the best in the world may lead to better products and service quality and force the domestic producers to reduce inefficiencies. For example, foreign exchange liberalisation, which is an important component of the export-led growth strategy, is likely to reduce the allocation inefficiencies of exchange control. MacDonald (1994) argues that the imports of final and intermediate goods will force domestic producers to innovate and increase their efficiency to compete with foreign imports.

Anoruo and Ahmad (2000), referring to Esfahani (1991) and Ram (1990), note that imports have positive influence on economic growth. Imports of capital goods are especially important for developing countries which depend on foreign capital for their economic development programmes. However, to be beneficial, imported capital must be productively engaged in the production of goods and szzz3.

YEAR	GDP GROWTH RATE	CURRENT ACCOUNT BALANCE	CONTRIBUTION OF SERVICE SECTOR	LnGDPGR	LnCAB	LnCOSS
1997	4.05	-2.965	38.174	1.398717	1.08687703	0.335555
1998	6.184	-6.903	39.197	1.821965	1.9319561	0.599916
1999	8.846	-3.228	40.694	2.179965	1.17186275	0.779309
2000	3.841	-4.601	41.269	1.345733	1.52627367	0.296939
2001	4.824	1.41	42.572	1.573603	0.3435897	0.453368
2002	3.804	7.059	43.538	1.336053	1.9543034	0.28972
2003	7.86	8.773	43.67	2.061787	2.17167882	0.723573
2004	7.923	0.78	42.845	2.06977	-0.2484614	0.727437
2005	9.285	-10.284	42.894	2.2284	2.33058929	0.801284
2006	9.264	-9.299	42.733	2.226136	2.22990687	0.800267
2007	9.801	-8.076	42.476	2.282484	2.0888967	0.825265
2008	3.891	-30.972	44.843	1.358666	3.43308357	0.306503
2009	8.48	-26.186	45.531	2.13771	3.26522492	0.759735
2010	10.26	-56.516	45.179	2.328253	4.03452378	0.845118
2011	6.638	-62.518	45.442	1.892811	4.13545452	0.638063
2012	5.456	-91.471	46.301	1.696716	4.51602198	0.528695
2013	6.386	-49.123	46.699	1.854108	3.89432736	0.617404
2014	7.41	-27.314	47.822	2.00283	3.30739939	0.694561
2015	8.154	-22.457	47.912	2.098509	3.11160237	0.741227
2016	7.113	-12.114	47.88	1.961924	2.49436181	0.673926
2017	6.624	-39.073	48.931	1.890699	3.66543169	0.636947

Fig 1: Data on per capita income for the period 1997 to 2017

Where,

LnGDPGR is the log of GDP Growth Rate

LnCOSS is the log of the contribution of the service sector in GDP

LnCAB is the log of the current Account of Balance of payment.

5.4 Unit Root Test

In order to test the stationarity (or non-stationarity) we use the *unit root test*. In the unit root test, we check whether the variance of the dependent variable is non-stationary or stationary. The name unit root is due to the fact that $\rho=1$. Thus, the terms non-stationarity and unit root are synonymous.

5.5 Augmented Dickey-Fuller Test

In statistics and econometrics, an augmented Dickey-Fuller test (ADF) tests (1979) the null hypothesis that a unit root is present in a time series sample. The alternative hypothesis is different depending on which version of the test is used but is usually stationarity or trend-stationarity. Dickey and Fuller have developed a test in which they have computed the critical values of the *tau statistic* on the basis of the Monte Carlo simulation. In the literature, the *tau statistic or test* is known as the Dicky-Fuller test. But in the Dicky-Fuller test, it was assumed that the error term *u* was uncorrelated. But in case of the error term, *u* are correlated, Dicky and Fuller have developed another test, which is known as the Augmented Dicky-Fuller (ADF) test. This test is conducted by "augmenting" by adding the lagged values of the dependent variable. The general form of the ADF test estimates is given below:

$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t$

The ADF test estimates the following regression for our model:

$\Delta LnGDPGR = \beta_1 + \beta_2 t + \delta LnGDPGR_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta LnGDPGR + \varepsilon_t$

Where ε_t is a pure noise error term and where $\Delta LnGDPGR_{t-1} = (LnGDPGR_{t-1} - LnGDPGR_{t-2})$, etc. The number of lagged difference terms to include is often determined empirically, and the idea is to include enough terms so that the error term is serially uncorrelated so that we can obtain an unbiased estimate of the coefficient of the lagged $LnGDPGR_{t-1}$, δ.

5.6. Phillips-Perron Test

In statistics, the Phillips–Perron test (named after Phillips, *P. C. B. Perron, P. (1988). "Testing for a Unit Root in Time Series Regression"*) is a unit root test. An important assumption of the ADF test is that the error term is identically distributed and took care of the possible serial correlation in the error terms by adding lagged difference terms of the regressand. Phillips and Perron used the non-parametric statistical methods to diagnose the serial correlation in the error terms without adding lagged difference terms in the test. The Phillips–Perron test makes a non-parametric correction to the t-test statistic in order to address the issue that the process generating data for y_t might have a higher order of autocorrelation than is admitted in the test equation and make y_{t-1} endogenous. It is used to test the null hypothesis in which the time series is integrated of order 1. The Phillips-Perron test involves fitting the regression model:

$y_t = \alpha + \delta t + \rho y_{t-1} + \varepsilon_t$

The null hypothesis restricts the value of $\rho=1$.

Table 2: Unit Root Test Table

	ADF		PP	
Variables	At Level	1st Difference	At Level	1st Difference
LnGDPGR	-3.989**	_	-3.99**	_
LnCOSS	-4.15**	_	-4.15**	_
LnCAB	-3.201	-4.705***	-3.180	-7.325***

Where
At 1% level of significance is represented by ***
At 5% level of significance is represented by **
At 10% level of significance is represented by *

VAR Lag Order Selection Criteria
Endogenous variables: LNGDPGR LNCOSS LNCAB
Exogenous variables: C
Date: 10/30/18 Time: 20:22
Sample: 1 21
Included observations: 18

Lag	LogL	LR	FPE	AIC	SC	HQ
0	17.87078	NA	3.85e-05	-1.652309	-1.503914*	-1.631847
1	28.99859	17.30993*	3.11e-05	-1.888733	-1.295151	-1.806886
2	33.74201	5.797507	5.55e-05	-1.415779	-0.377012	-1.272547
3	52.59852	16.76135	2.49e-05*	-2.510947*	-1.026994	-2.306330*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Fig 3: Optimal Lag Selection Table

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	4.385228	10%	2.63	3.35
k	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

Fig 4: Bounds Test

The value of the F-statistic (=4.385) is more significant than all the tabulated values at a different level of significance, so I reject the null hypothesis and can proceed for further analysis.

5.7. Long-Run Form and Bounds Test:

The long-run equation is of the form:

$$LnGDPGR_t = a + \sum_{i=0}^{t} \alpha_i LnCOSS_{t} + \sum_{i=0}^{t} \beta_i LnCAB_t + \sum_{i=0}^{t} \delta_i LnGDPGR_{t-n} + u_t \quad (2)$$

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LNGDPGR)
Selected Model: ARDL(3, 1, 1)
Case 2: Restricted Constant and No Trend
Date: 10/30/18 Time: 20:24
Sample: 1 21
Included observations: 18

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.415403	0.138530	2.998643	0.0134
LNGDPGR(-1)*	-0.554727	0.170025	-3.262613	0.0085
LNCOSS(-1)	1.063097	0.304011	3.496904	0.0058
LNCAB(-1)	-0.011136	0.003819	-2.916104	0.0154
D(LNGDPGR(-1))	-0.008106	0.016746	-0.484056	0.6388
D(LNGDPGR(-2))	-0.038609	0.012110	-3.188104	0.0097
D(LNCOSS)	1.788115	0.021305	83.93060	0.0000
D(LNCAB)	0.004343	0.003992	1.088056	0.3021

* p-value incompatible with t-Bounds distribution.

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNCOSS	1.916433	0.091985	20.83409	0.0000
LNCAB	-0.020074	0.008520	-2.356068	0.0402
C	0.748842	0.046859	15.98092	0.0000

EC = LNGDPGR - (1.9164*LNCOSS -0.0201*LNCAB + 0.7488)

Fig 5: ARDL Long-Run Form and Bounds Test Table

6. Estimation of the Econometric Model

The estimated long-run equation of our model is of the

form:

$$LnGDPGR=0.748+1.916LnCOSS-0.2LnCAB-0.554LnGDPGR_{t-1}+u_t \quad (3)$$

The above equation is obtained from Table 5 of the ARDL Long-Run Form and Bounds Test by simply putting the values of the coefficient in the table 5 of the respective variables in the long-run equation.

7. Results and Discussion

As the theory and previous works suggest that the Contribution of the Service Sector has a positive effect on the GDP growth rate, and the Current Account Balance of payment has a negative effect on the GDP growth rate as this model shows the same results. However, Dhanmanjiri Sathe (2001) [3] found that the amount of imports and export of the country has to increase by a much larger amount to stimulate the growth of the country which contradicts our results as we do not find any such result in our study. But we can test that in future when amount of imports and exports increase significantly and see its effect on GDP Growth Rate.

As the long-run equation suggests 1% change in the Contribution of Service Sector leads to 2% positive change in the GDP growth rate, 1% change in the Current Account Balance of payment to a negative change of 0.2% in the GDP growth rate, and 1% change in the GDP Growth Rate in the previous period leads to a negative change of 0.5% in the GDP per capita income. Therefore, I reject the null hypothesis that The Contribution of Service Sector, Current Account Balance of payment, and lagged values of GDP Growth Rate has no effect on the GDP per capita income of the country, and it can be said that these explanatory variables have a significant impact on the dependent variable GDP per capita income.

8. Conclusion

By assuming the different macroeconomic variables likewise the contribution of service sector and the current account balance which may also be termed as the balance of payment as independent variables and keeping the Gross Domestic Product of the country as dependent variable, and by running some statistical tests we have come to a result that the relationship between the contribution of the service sector and the Gross Domestic Product of the economy is a positive one, while the relationship between current account balance and Gross Domestic Product is of a negative one. Hence for the attainment of a continuous and increasing rate of growth the trade of the country has to be increased by many folds. On the other hand, to increase the contribution of the service sector, which has a great role in increasing the Gross Domestic Product of the country, the latest available technology has to be used.

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