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# Macroeconomic Forces And Service Sector Growth In Fast Emerging Economies

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## Abstract

This paper empirically examines the factors that affect the service sector in fast-emerging economies (Brazil, China, India, Indonesia, Malaysia, Mexico, Russia, South Africa and Turkey), employing feasible generalized least squares method (FGLS) on the panel data from 1990-2018. Unlike previous studies, multiple macroeconomic factors that contribute to the growth of the service sector have been analyzed in this research. The findings indicate that GDP per Capita (GDPPC), Gross National Expenditure (GNE) and Foreign Direct Investment (FDI) have a positive impact on the service sector in emerging economies. However, Gross fixed capital formation (GFCF) has a negative impact. This study finally provides policy implications in the sense that services constitute a major sector of the economy, and fast-emerging economies can enhance their potential by focusing on the challenges concerning major factors of the service sector. This study adds originality by utilising an extended dataset and incorporating a broader combination of macroeconomic variables. It provides a forward-looking perspective regarding the drivers that contribute to the growth of the service sector, and has received less attention in earlier studies so far.

**Keywords:** Service value added (SVA), Macroeconomics, Fast-emerging economies, Panel Data, Feasible Generalised Least Squares (FGLS).

## Introduction

Modern economies demonstrate an increasing focus on the service sector, displacing agriculture and manufacturing. In the present-day perspective, the service sector represents a significant share of overall consumption, production, and employment. The framework of each economy has undergone significant transformation due to economic liberalisation, shifting from an agricultural foundation to one centred around knowledge. Irrespective of the current level of development within an economy, it is the structural changes that drive economic advancement. Several decades ago, during the initial phases of economic development, agriculture held significant importance. As economies

develop, there is a notable rise in the proportion of the industrial and services sectors. Papola (2006) identified this trend across various nations, irrespective of their developmental status. The services sector is experiencing rapid growth, both globally and within specific economic settings. Further, this study stresses this trend on a global scale, regardless of the level of development. The goods and service sectors in emerging economies have seen significant growth since the early 1990s. Previous studies suggest that the services sector is most likely to be considered a key driver of economic growth in the future (Eichengreen and Gupta, 2013; Ghani, 2010). The services sector directly influences economic growth by enhancing its contribution to output, employment, and trade, as well as indirectly by establishing connections with other sectors of the economy (Clark, 1967; Baumol, 1967; Fuchs, 1968). Considering the increasing significance of the services sector in rapidly developing economies, it is essential to pinpoint the factors that drive growth in this area. Numerous investigations have examined the topic from various perspectives, each focusing on a single indicator as a key variable of interest and majority of the studies predominantly focus on advanced or developed economies.

### **Literature review**

The worldwide exchange of services has expanded considerably in recent years, driven by various factors such as rapid technological progress, rising demand for services in both developed and developing countries, the increasing importance of multinational corporations, and the increased outsourcing of numerous business functions by companies (Fieleke, 1995). Gordon and Gupta (2005) highlighted that factors like high-income elasticity of demand and increased input consumption of services by other sectors have contributed to the growth of services. The economic reforms and an increase in international demand for service exports played a significant role, particularly during the 1990s. Verma (2006) highlights that the key factor propelling the robust growth in India's service sector is high productivity growth. Singh and Kaur (2014) examine the factors influencing growth in India's services sector. Domestic investment and trade openness positively influence the services sector's contribution to GDP, whereas net FDI inflows appear to exert a negative and insignificant effect, which is just temporary (Chakraborty and Nunnenkamp, 2006). Chitrakalpa (2011) demonstrates in his study that FDI has enhanced the services sector, subsequently impacting the GDP of an economy. The study delves into the complexities of specific subsectors and reveals that the expansion of India's service sector is primarily fuelled by trade, tourism, transportation, storage, and communications. Foreign Direct Investment serves as a notably important route for the international delivery of services (Mattoo et al., 2004). The increase in per capita income, the growing demand for services on a global scale, and the increasing rate of urbanization have all contributed positively and significantly to the growth of the services sector in both India and China (Wu, 2007). Jain et al. (2015) conducted a multiple regression analysis, revealing that FDI, net foreign institutional investment equity, imports, and exports positively influence the growth of the service sector, while foreign institutional investment debt negatively affects it.

Hada and Suri (2019) found out a positive correlation between the growth of India's service sector and the increase in the nation's GDP per capita income and foreign investment. During the period of 2017-18, the total foreign investment reached approximately US\$ 60.22 billion. The services sector represents the largest segment of the global economy, comprising 63 percent of global wealth. The United States stands as the largest producer in the services sector, contributing approximately 15.53 trillion USD. The industrial sector constitutes 30% of the overall nominal GDP. The overall value of

GDP within the service sector amounts to \$23,835 billion. China leads as the foremost contributor in the service sector, with the US in second place. Agriculture represents 6.4 percent of the global economic output, totaling \$5,084,800 million in overall production. China leads in contributions, with India following closely behind. China and India represent 19.49 and 7.39 percent of the world's agricultural production, respectively. The United States, recognized as the largest economy globally, maintains the third position in ranking. Brazil and Indonesia are the next participants to consider (World Factbook, 2018). Raboloko (2018) investigates the elements that affect the growth of Botswana's service sector. The growth of Botswana's service sector is positively influenced by gross national expenditure, domestic lending to the private sector, and gross fixed capital formation. Conversely, trade openness has been demonstrated to negatively affect the growth of the country's service sector. Iqbal et al. (2018) analyze the key determinants of service sector expansion in both developed and developing countries. The findings of the study indicate that GDP per capita and FDI play significant roles in the growth of the services sector across both developed and developing countries, while trade openness appears to adversely affect growth. The productivity disparity observed in both samples of nations does not significantly impact the growth of the services sector. The advancement of new ideas significantly influences the growth of the service sector in emerging economies.

Estrada et al. (2013) highlight that the role of the service sector differs significantly among lower-income Asian nations. The expansion of the industrial sector was noted as a contributing factor to the growth of the service sector in certain sample countries, whereas in others, liberalisation, structural changes, targeted government incentives, foreign investment, and service trading were highlighted as key influences. Over the past thirty years, there has been a consistent rise in the proportion of GDP allocated to services in both advanced and emerging economies. The factors in question include GDP per capita, FDI, innovation, and trade openness, specifically in the context of selected developing economies. In certain developing economies, innovations notably influence the growth of the service sector. However, the productivity disparity between manufacturing and service sectors does not significantly impact service sector growth in either selected developed or developing economies. Additionally, GDP per capita, net inflows of foreign direct investment, and innovation contribute positively to the expansion of the services sector, while trade openness exerts a negative influence.

Ajmair et al. (2017) assess the growth of the service industry in Pakistan from 1976 to 2014. The authors utilized autoregressive distributed lag (ARDL) bound testing and time varying parametric (TVP) estimation with a general to specific technique. The empirical findings indicate that inflation negatively impacts services sector output growth in the case of the TVP approach, whereas the same effect was not observed with the ARDL approach. The analysis indicates that net foreign direct investment positively and significantly influences the growth of output in the services sector, as evidenced by both the TVP and ARDL estimation methodologies. The TVP approach indicated that gross national expenditure positively influenced services sector output growth at a 5% significance level, while the relationship was found to be insignificant in the ARDL estimation. Rathore et al. (2019) examines the determinants affecting the service sector's impact on Pakistan's GDP. Foreign direct investment and trade in services significantly enhance the service sector's contribution to GDP, but employment in services and population increase exert a detrimental effect. Household consumption and government expenditure yield negligible long-term effects.

Acknowledging the increasing significance of the services sector in rapidly developing

economies, it is essential to ascertain the primary elements that influence the expansion of this sector. Prior research predominantly concentrated on developed countries and employed one single indicator, with the exception of a few studies that considered several factors of service sector growth, such as Wu (2007) about China and India, and Iqbal et al. (2018) concerning EU nations. This study investigates the various effects on the expansion of the Services sector. The impact of various factors on the growth of the services sector can vary significantly among different economies. This variation is influenced by aspects such as financial reforms, investment barriers, political environments, and liberalisation policies, highlighting the need for careful analysis given the diversity and complexity of these economies. This study aims to address this gap by employing a thorough panel data methodology to explore the various factors influencing the growth of the services sector in rapidly developing economies.

## Research Methodology

### Data and Variables

The focus of this study is on developing and emerging Asia and Europe, which were chosen because they make significant contributions to GDP and have strong cultural ties. The focus is on countries that are close to India geographically and have identical opinions on growth, which makes the analysis more useful. These countries are involved in many regional cooperation initiatives, keep up trade ties, and experience financial flows and economic interdependencies that are very important to their growth. By looking at these countries as a whole, this study hopes to find out how these connections have affected their service sectors and find means by which they can work together to improve outcomes. From 1990 to 2019, the panel data used in this study came from the World Bank's World Development Indicators database. Nine countries that are advancing quickly were looked at: Brazil, China, India, Indonesia, Malaysia, Mexico, Russia, South Africa, and Turkey.

By a thorough examination of existing literature, the study has identified essential variables for our research. The dependent variable SVA represents the contribution of the service sector to the economy. The independent variables consist of GFCF, which measures investments in physical assets, and TO, which reflects how integrated a country is in the global economy. GNE accounts for total spending within the economy, while GDPPC acts as a measure of economic prosperity and living standards. Additionally, FDI is used to evaluate the influence of external investments on the performance of the service sector.

To ensure the robustness of the econometric analysis, a systematic model selection approach was employed for the panel data. Multicollinearity is assessed by employing the Variance Inflation Factor (VIF), which confirms that the level of multicollinearity among the independent variables was acceptable. However, the analysis indicates the presence of cross-sectional dependency (CD), which made the fixed and random effects models unsuitable for the data. To address this issue, the second-generation panel unit root test, Cross-Sectionally Augmented Dickey-Fuller (CADF) test, was utilised (Pesaran 2007). Additionally, diagnostic tests were carried out, including the Wooldridge test is applied for checking autocorrelation, and the Wald test is used for group-wise heteroskedasticity (HSD). Both tests indicated the existence of autocorrelation and heteroskedasticity within the data. From the performed tests, we get to know that the model suffers from the problem of autocorrelation, HSD and CD. In this situation, FGLS (Reed and Ye 2011) is an appropriate model where the only requirement is  $T > N$  (Parks, 1967). In light of these findings, the FGLS model was chosen as the final estimation method. This model is

particularly effective in addressing the challenges posed by cross-sectional dependence, heteroskedasticity, and autocorrelation in panel data, thereby ensuring a more reliable analysis. The FGLS model can be employed to control cross-panel correlations. When there is cross-panel correlation, it is more effective than any other estimator that assumes no correlation (Greene, 2000; Wooldridge, 2002). Nevertheless, there are certain pitfalls in employing this approach. The FGLS estimator is less effective when the time period is less than the number of panels (Beck & Katz, 1995). The statistical significance that has been indicated may not be true, as the calculated standard errors are typically quite small. Nevertheless, this does not affect the coefficient's sign or size. Nevertheless, the present analysis contains a greater number of years than there are countries. Consequently, the FGLS estimations are both precise and effective when there is cross-panel correlation (Wooldridge, 2002; Greene, 2000)

### Model Specification

The following is the general equation for the pooled OLS model, which is directly carried out using the ordinary least squares (OLS) regression technique:

$$Y_{it} = \beta_1 + \beta X_{it} + \mu_{it}$$

The model specification in our case is as under:

$$SVA_{it} = \beta_1 + \beta_2 GFCF_{it} + \beta_3 TO_{it} + \beta_4 GNE_{it} + \beta_5 GDPPC_{it} + \beta_6 FDI_{it} + u_{it}$$

Here,  $i$  represents the country and  $t$  is the period. The variables are defined as follows,

SVA is the dependent variable in this study, representing service sector growth, and all other variables are independent variables. All variables are taken in the natural log for analysis.

SVA: Services Value added as a percentage of GDP

GFCF: Gross Fixed Capital Formation

TO: Trade Openness

GNE: Gross National Expenditure

GDPPC: GDP per Capita

FDI: Foreign Direct Investment

$\beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ : Coefficients of independent variables

$u_{it}$ ; Error term satisfying

### FGLS Model

The FGLS estimator can be expressed as under:

$$\beta_{FGLS} = (X'\Omega^{-1}X)^{-1}X'\Omega^{-1}y$$

where,

$X$  = Matrix of Independent variables

$y$  = Dependent variable

$\Omega$  = Estimated variance-covariance matrix of the error term

The FGLS estimator is applicable where there is a problem of autocorrelation or Heteroscedasticity, provided  $N < T$ .

### Results and Discussion

The empirical analysis employed a robust econometric approach to guarantee the accuracy and reliability of the findings. During the model selection process, it was confirmed that the panel data exhibited all three issues of cross-sectional dependence (CD), autocorrelation, and heteroskedasticity (HSD). To address these issues, the FGLS method was utilised, resulting in efficient and unbiased estimates. Multicollinearity was assessed through the VIF, with all values remaining below 10, suggesting an acceptable degree of multicollinearity among the independent variables as shown in Table 1. The Pesaran CD test produced statistically significant results, affirming the presence of Cross-Sectional dependence within the dataset as shown in Table 2. Unit root tests, performed using the second-generation CADF test, revealed that some variables including dependent variable were stationary at level I (0) and two independent variables at first difference I(1), with significance levels varying from 5% to 1% as indicated in Table 3.

**Table 1: Multicollinearity test**

Variable	VIF	1/VIF
GFCF	1.43	0.69
TO	1.83	0.54
GNE	1.69	0.59
GDPPC	1.37	0.73
FDI	1.24	0.80
Mean VIF	1.51	

Source: Authors elaboration using Stata

**Table2: Pesaran Cross-sectional dependence test**

Variables	Statistics
SVA	14.589***
GFCF	5.974***
TO	7.755***
GNE	3.535***
GDPPC	30.764***
FDI	4.449***

H<sub>0</sub>: No cross-section dependence in residuals

Source: Author's elaboration using Stata.

**Table 3: CADF**

Variables	I (0)	I(1)
SVA	-2.450**	-4.150***
GFCF	-2.118	-3.489***
TO	-2.136	-4.334***
GNE	-3.057***	-4.747***

GDPPC	-2.711***	-2.638***
FDI	-2.823***	-4.585***

Source: Author's elaboration using Stata

The Wooldridge test for autocorrelation produced a test statistic of 53.440 and a p-value of 0.0001 as shown in table 4, confirming the presence of autocorrelation. Likewise, the Wald test for groupwise heteroskedasticity generated a significant chi-square value of 974.61 with a p-value of 0.0000 as displayed in table 4, thereby confirming the presence of heteroskedasticity. In light of these diagnostic findings, the FGLS model was chosen to deliver robust estimates that address cross-dependence, heteroskedasticity, and autocorrelation.

**Table 4**

Tests	Test Statistics
Wooldridge autocorrelation test	53.440***
Wald test for groupwise heteroskedasticity	974.61***

\*\*\*Significant at 1%

Source: Authors elaboration using Stata.

### FGLS regression results

The results FGLS regression are presented in Table 5. The model is statistically significant ( $\text{Chi}^2 = 906.24$ ,  $p\text{-value} = 0.0000$ ), confirming the suitability of the selected independent variables in explaining SVA.

### Impact of Independent Variables on Service Value Added (SVA)

**Gross Fixed Capital Formation (GFCF):** The GFCF coefficient is measured at -0.29 and depicts statistical significance at the 1% level, suggesting that an increase in fixed capital investments negatively impacts SVA. An increase of 1% in GFCF results in a 0.29% decrease in the development of the service sector, with a significance level of 1%. This result could indicate that as services expand, there is a decline in investment in capital-intensive projects. Contemporary services do not rely on tangible investments. Despite an increase in the service sector growth, there is a likelihood of unparalleled growth in other major sectors.

**Trade Openness (TO):** The coefficient for TO is 0.004 but insignificant, suggesting that trade openness has a positive effect on the value addition of the service sector. The insignificant effect may be due to the limited tradability and global integration of many service sectors, reducing the direct impact of trade openness. Additionally, regulatory barriers and structural characteristics of domestic services may dampen potential gains from external trade.

**Gross National Expenditure (GNE):** A strong positive relationship exists between GNE and SVA (coefficient = 0.918,  $p < 0.01$ ). A 1% rise in Gross National Expenditure results in a growth of 0.91% in the service sector. This indicates that increased national spending through consumption, investment, or government expenditure propels the expansion of the service sector. This also includes building public confidence, which eventually results in increased private investment, which ultimately gives a boost to the service sector.

**GDP per Capita (GDPPC):** The GDPPC coefficient stands at 0.138 and is significant at the 1% level, highlighting the positive impact of economic well-being on the progress of the

service sector. A 1% increase in GDPPC corresponds to a growth of 0.138% in the service sector. As GDP per capita rises, individuals have greater financial resources to put into intangible assets such as healthcare, education, financial services, travel, and entertainment. This indicates that a change in the economic status of individuals results in a corresponding change in spending, which subsequently drives growth within the service sector.

**Foreign Direct Investment (FDI):** The FDI coefficient stands at 0.054 and is statistically significant at the 1% level, demonstrating that FDI inflows have a positive impact on the service sector growth. This suggests that a 1% rise in FDI leads to a growth of 0.054% in the service sector. This suggests that foreign direct investment (FDI) results in an inflow of technology, improvements in infrastructure, and enhanced managerial expertise, in addition to providing access to global markets. Foreign direct investment inflows are not only advantageous for traditional sectors; they also support various service sectors, including banking, IT, education, tourism, logistics, and others.

**Table 5: FGLS regression**

<b>Variables</b>	<b>log of SVA</b>
<b>log of GFCF</b>	-0.29*** (-14.14)
<b>log of TO</b>	0.004 (0.33)
<b>log of GNE</b>	0.918*** (9.07)
<b>log of GDPPC</b>	0.138*** (18.39)
<b>log of FDI</b>	0.054** (2.79)
<b>Constant</b>	-0.620 (-1.30)
<b>Prob.&gt;Chi2</b>	0.0000

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author's elaboration using Stata.

The positive influence of GNE, FDI and GDPPC supporting the finding of multiple studies conducted by Ajmair et al. (2017), Chitrakalpa (2011), Estrada et al. (2013), Iqbal et al. (2018), Mattoo et al. (2004), Singh and Kaur (2014), Wu (2007), Hada and Suri (2019), and Raboloko (2018). A negative impact of GFCF on the service sector is contrary to the results of Raboloko (2018) may be due to the difference in economies, and the role of determinants affecting the services sector is different in different economies. The findings highlight the vital importance of macroeconomic variables in influencing the service sector's performance. The adverse effect of GFCF on SVA indicates that simply boosting fixed capital investments may not suffice for the service sector performance unless accompanied by measures that enhance efficiency. The beneficial effects of national spending, GDP per capita, and FDI are consistent with the current literature, highlighting the significance of economic integration, consumer spending, and foreign investment in fostering the performance of the service sector. From a policy standpoint, these results indicate that decision-makers ought to prioritise enhancing the

effectiveness of capital investments and drawing in foreign investments to support the service sector's performance. Furthermore, initiatives aimed at boosting domestic consumption and economic well-being can further amplify the sector's role in the broader economy.

### Conclusion

The objective of this study is to analyse the impact of macroeconomic factors on the services sector. This study employed five factors based on the literature review, which are Gross Fixed Capital Formation (GFCF), Trade Openness (TO), Gross National Expenditure (GNE), GDP per capita (GDPPC), and Foreign Direct Investment (FDI). The study utilised different panel data models to analyse the impact of different determinants of the service sector over the time frame of 1990-2019. This study discovered that Gross National Expenditure positively contributes to the services sector. GDP per capita also have a positive impact on service sector. It is widely assumed that FDI promotes the services sector due to the inflow of foreign technology, know-how, and knowledge transfer, which can help any economy to grow. While different studies show varying effects of FDI on service sector growth. Some studies found a positive impact of FDI on service sector, while others found a negative impact. This study discovered that Gross Fixed Capital Formation negatively contributes to the service sector. To summarize, fast-emerging economies have the opportunity to boost their performance in the service sector by leveraging their potential and improving their competitiveness in the services trade. A proper policy framework would allow policymakers to develop a holistic approach to international trade in services to promote development of these developing economies, in particular, and those of fast-emerging economies in general. Fast-emerging economies have the potential to compete in the services industry globally, provided they can recognize their potential and enhance their competitiveness in trading services internationally.

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