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Emerging Market Economies and Underlying Growth Factors

The purpose of the study is to identify factors responsible for the growth of 19 selected economies that are emerging, as recognized by the IMF, based on the evaluation of available data from 2000 to 2017. The study analyses their growth trajectory and suggests policy implications for the selected Emerging Market Economies (EMEs) and utilizes panel data regression models, namely: (i) pooled regression models, (ii) fixed vs. random panel models, and (iii) dynamic panel regression models. The study found a significant and positive influence of broad money, agriculture, capital, air transportation, and, current account balances for the economic growth of the countries. However, health expenditure, life expectancy at birth and credit has a negative impact on the GDPs of the 19 selected EMEs.

Keywords: Economic growth – Emerging Market Economies (EMEs) – Panel data regression – Economic policy – Investment

1. Introduction

Emerging Market Economies (EMEs) are countries moving towards significant economic development. These countries, however, have poor standards of living and insufficient commercial-based infrastructures. Comparatively, developed economies are countries that feature comfortable living standards, sufficient and strong commercial assets and solid infrastructures (Roztocki & Weistroffer 2008; Purkayastha *et al.*, 2012). A strong economy enables EMEs to gradually and slowly move towards their

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advancement by positively improving their standards of living and creating strong and competitive infrastructures (Roztocki & Weistroffer, 2011; Luo & Zhang, 2016). Numerous factors influencing economic growth of developed countries differ across countries and through time. In the case of developing or EMEs, the same scenario exists (Sharma *et al.*, 2018). While the factors influencing growth of developed nations are responsible for maintaining their sustainable growth throughout the year., factors of volatile EMEs are responsible for their effective transformation and a considerable favourable growth trajectory (Millar *et al.*, 2005; Ngwenyama & Morawczynski, 2009; Kotabe & Kothari, 2016). These transformations occur across social, economic, political and demographic dimensions of the economy (Elango & Jones, 2011). These transformations devolve from such economy's structural and institutional changes (Dietrich, 2012). Structural changes imply reallocation of productive labour between different productivity levels, such as agricultural, engineering and manufacturing and goods and services sectors (Montobbio, 2002; Kuznets, 1966). On the contrary, institutions such as property rights, law, bureaucracies, and civic norms are the type of organizations with a long existence and strong correlation to economic growth of EMEs. Growth of the EMEs depends substantially on these institutions' efficient management and execution (Saleth & Dinar, 2000; Méon *et al.*, 2009). Institutional changes are primarily influenced by exogenous factors in many of the EMEs (Saleth & Dinar, 2000). Strong economic growth also points toward the overall growth in wealth of a country during a specific period (Burlando & Tartaglia, 2018). The growth rate of GDP and per capita GDP are perhaps two of the most frequently used measures to quantify wealth and growth (Petrakis, 2020). While significant research has been conducted to explore the factors (combination of structural and institutional) influencing economic growth of developing markets (Kaynak *et al.*, 2005; Everhart *et al.*, 2009; Anyanwu, 2014; Bakirtas & Akpolat, 2018) and to establish significant relationships in these contexts, there is still ambiguity as to what and how distinct economic factors influence EMEs' economic growth. As such, research on EMEs market economies has become critical to the global landscape since these EMEs, from being small entities, have now become significant players, and, these are expected to dominate and play a vital role in the economic growth of the entire world.

This study therefore aims to search for the confounding factors that have been and are going to be instrumental in the economic growth of the 19 selected economies that are emerging as recognised by the IMF by analysing the data from 2000 to 2017. For this purpose, a detailed analysis of the World Bank Report was done to discover the particular determinants that influenced economic growth of these 19 EMEs, along with the panel cointegration and test for causality, which determined potential relationships between variables despite determining possible cointegration between two components of panel data, namely: cross-section (countries) and time (18 years - 2000 to 2017). Further, in order to meet the study's objectives, this paper aims to address the following:

RQ 1: What are the factors related to the economic growth of the EMEs?

RQ 2: How do these factors influence economic growth of EMEs?

The novelty of this study lies in the fact that:

- (a) it focuses on 19 EMEs as recognized by the IMF. These 19 large EMEs are mentioned in the sample design section, and;
- (b) the study is the first of its kind to deal with such vital factors that are recognized as important by the World Bank Report.

The key factors identified were: agriculture and rural development, health, education, infrastructure development, economic indicators, financial sector growth, poverty and equity. This scientific research will take into consideration all these factors together to verify their effects on economic growth of such markets. This study is also first of its kind to investigate the profound influence of these selected vital-growth factors of the 19 EMEs as recognized by the IMF between the years 2000 to 2017.

This scientific paper is structured into the following segments:

- The first segment introduces the subject and asks the research questions.
- The second segment takes up the thematic review and discussion of literature.
- The third segment discusses the methodology and states the analytical results.
- The fourth segment gives the conclusions and the scope for future research.

Literature Review

Emerging Economies

EMS economies are those "countries that are not among the poorest but countries that have potential to become a fully developed economy. These are developing economies that show high growth potential. EMEs are extremely volatile, but they offer potential to share in early stages of a country's economic growth. Investments in these markets are usually characterized by a high level of risk and possibility of a high return" (Mody, 2004).

The term 'EME' is comprehensive. Mody (2004) is the first to bring all of the definitions together from different academic disciplines to explain this concept. According to him, the key characteristics of EMEs include substantial volatility and a transformational personality whereby transitions occur at the same time in different socio-political, economic and demographic dimensions (Mody, 2004). A high degree of volatility is due to irrepressible factors or unstable policies of EMEs, and, transitions are long-drawn and disruptive. EME governments, while reinforcing transition, adopt policies that lead to an increase in the progress rate but, at a certain point, also simultaneously cause an increase to occur in the crisis rate (Aguiar & Gopinath, 2007; Ranciere *et al.*, 2003).

Economic Growth

Economic growth "is neither a mechanical nor a smooth process. Institutions and regulations play a crucial role in determining the growth path" (OECD, 2003). Based on these concepts, an extensive amount of literature on numerous factors influencing economic growth exists (Hamdaoui *et al.*, 2021; Younsi & Nafla, 2019). The paragraph below delves deep into the World Bank studies and identifies the relevant factors responsible for their sustainable economic growth phenomena.

"Agriculture sector" in the rural areas is developed and measured with respect to the total "value-added" to the economic growth (GDP) of a country (World Bank, 2012). Khan *et al.* (2020) examined the role of agriculture in West Bengal's (WB) economic growth. Empirical analysis revealed that the economic growth of West Bengal is strongly driven by the agriculture sector. Agriculture has been considered to be the primary source of livelihood and and the supplier of various raw materials to a variety of industries.

Similarly, using empirical and integration analysis, it had been found that agriculture production contributed significantly to the economic trajectory (GDP) of China over subsequent years in terms of product, market, factor, foreign exchange and income for proper maintenance of its rural population. Further, lack of investments by the state remained a major constraint on its structural development (Yao, 2000). Additionally, Baig and Straquadine (2014) conducted a review and noted that the agriculture sector contributed to the largest source of revenue in terms of GDP, thus significantly fuelling livelihoods of population and development in rural areas. Consequently, the hypothesis drawn from the paragraph above is as follows:

- **Hypothesis 1**: *"Agricultural and rural development factors significantly influence the growth of selected EMEs"*

The *"Health sector"* is measured in terms of the total expenditure to maintain the good health of the entire population. "Life expectancy" (in years) and the estimated "mortality rates" are the determinants of good health (World Bank, 2012). In examining the influence of health on economic growth of a group of major countries [that operated] for every ten years from 1960 to 1990, Bloom *et al.* (2004) found that health positively and significantly influenced the labour productivity within the larger dimension of human capital. It also improved the countries' GDP, resulting in lower mortality rates at the same time. The population's expectations of longer lives were materialized as indicated by the yearly increase in longevity. Sarwar *et al.* (2021) investigated the data of 83 countries from 2002 to 2017 and verified that health, as evaluated by human capital, positively influenced economic growth of these countries (GDP). Therefore, from the preceding paragraph, the following hypothesis was derived.

- **Hypothesis 2**: *"Health-related factors significantly influence the growth of selected EMEs"*

"Education" is measured as the total expenditure made by a country to improve its GDP. Here, it is measured in terms of "age dependency ratio" and the number of "individuals using the internet". The World Bank displays these measures on its official website (World Bank, 2012). Peng (2005) scrutinized the role of human capital (education) on the growth trajectory of the Chinese economy. Empirical results indicated that education

from the human capital perspective was significantly linked to the China's economic growth between periods 2000 and 2030. Employing a Computable General Equilibrium model, it was predicted that education could substantially reduce the age dependency ratio among Chinese people by the end of 2030, resulting in an increase in the working-age population's percentage. Oketch (2006) analysed the human capital on the economic development of 47 African countries for every five years from 1960 to 1998. Results from OLS and 2SLS estimations indicated that the investment in education from the human capital perspective by these countries benefitted, among other things, due to the easy access to the internet by their population, which enhanced the country's GDP in terms of its per capita growth. Therefore, from the preceding paragraph, the following hypothesis was derived.

- **Hypothesis 3**: *"Education development significantly influences the growth of selected EMEs"*

"Infrastructure development", as indicated by the World Bank on its official website, is measured in terms of "gross capital" or "fixed capital" (World Bank, 2012). Infrastructure development is mainly related to road, rail, air transportation, and electricity supply (Palei, 2015). Sahoo & Dash (2009) analysed the data at the regional level from 1970 to 2006 to investigate the infrastructure development's impact on economic growth of India. Results indicated that the infrastructure development positively and significantly influenced the total gross domestic output, i.e. GDP of India. Further, in analysing the causal relationship between the variables, it was also found that a unidirectional relationship existed between the two variables. Therefore, from the preceding paragraph, the following hypothesis was derived.

- **Hypothesis 4**: *"Infrastructure development significantly influences the growth of selected EMEs"*

"Economic indicators" are measured in terms of "employment to population ratio". This measure provides information on current and future employment growth with respect to its GDP (World Bank, 2012). Akeju and Olanipekun (2014) tried to find the causal link between unemployment rate of youth and Nigeria's overall economic growth by employing Johansen cointegration test. The empirical analysis observed that a negative

relationship existed between the observed variables. Therefore, authors have suggested that in order to reduce high unemployment rate in Nigeria, more FDI and other fiscal measures must be included in their economic policy. Further, a review on how FDI drives transition economies, it was concluded that a positive effect was prevalent between the variables for such economies (Jensen, 2006). "Economic indicators" are also measured using the "inflation rate" and "broad money". Akinsola and Odhiambo (2017) reviewed the existing literature to determine how inflation in industrialized and developing countries was connected to the growth of these economies. A detailed subject investigation found that inflation was negatively linked to the economic growth in these economies. Nwanne (2014), while studying the factors that influenced Nigerian growth, discovered that money supply was positively and significantly related to the Nigerian GDP. This study was given the final shape using OLS technique and data from 1987 to 2010. On the contrary, Khan and Gill (2010) discovered a positive and substantial link between inflation and GDP deflator in Pakistan from 1971 to 1972 and from 2005 to 2006. Consequently, the hypothesis drawn from the paragraph above is as follows:

- **Hypothesis 5**: *"Economic factors significantly influence the growth of selected EMEs"*

"Financial Sector Growth" is measured in terms of "domestic credit provided by the financial sector" (World Bank, 2012). Duican and Pop (2015) analysed the data from Romania at the regional level from 2005 to 2014 to find out how credit impacted the the country's economic growth. The review found that credit significantly influenced the GDP of Romania. In investigating how credit influenced economic growth of Germany, Italy and Spain, Pistoresi and Venturelli (2015) found that between 1995 and 2000, commercial bank credit support strongly and positively influenced the economic growth of these three countries. Economic growth was measured with regard to gross output or GDP. Consequently, the hypothesis drawn from the paragraph above is as follows:

- **Hypothesis 6**: *"Financial development indicators significantly influence the growth of selected EMEs"*

3. Methodology

3.1 Objective

The study aims to identify the factors responsible for the growth of the selected EMEs, analyse their growth trajectory and suggest policy implications for EMEs. The objective targets evaluated the impact of the identified factors responsible for past growth of the selected EMEs.

3.2 Research Design

The research discusses factors contributing to the growth of the emerging markets. The paper describes the impact of identified factors responsible for the past growth of selected EMEs.

3.3 Sampling Design

The study selected a sample of 19 large EMEs based on an IMF working paper (Bems, Caselli, Grigoli, Gruss, & Lian, 2018) namely Chile, Romania, Argentina, South Africa, China, Philippines, Hungary, Thailand, Brazil, Indonesia, Bulgaria, Peru, Russia, Mexico, Colombia, India, Turkey, Malaysia and Poland. The IMF paper suggested these countries based on the availability of consistent data, trends and forecasts for inflation and a minimum population of two million people. Annual data for selected variables were collected for the years 2000 to 2017. The year 2017 was chosen as the final reference year since it was the last available year for which annual data was available.

3.4 Data Type and Data Collection Source

Data of the selected variables of 19 countries are secondary, and, it was collected from the World Bank databases. The data is panel data as it includes two components of data, namely cross-section (countries) and time (18 years – 2000 to 2017).

3.5 Variables

The data on selected variables is collected from World Bank databases. The selection of variables is done across various categories like: agricultural and rural development, education development, health-related factors, infrastructure development, economic factors and financial development. Within these categories, the variables are selected on

the basis of review of relevant literature and the availability of consistent data from 2000 to 2017 for all the selected countries. (See Table 1).

3.6 Statistical Test

This objective is fulfilled with the help of correlation analysis, followed by panel data regression models, namely, pooled regression (PR) models, fixed vs. random panel models, and dynamic panel regression models. Correlation analysis is conducted to identify strongly correlated independent variables. PR is applied to 19 countries, since all the selected countries (cross-section) are assumed to be homogeneous. In order to account for plausible heterogeneity, the panel regression models are also applied to the selected countries. In the panel regression model, the fixed and random effect models are tests that are applied the most in order to incorporate the cross-section effects, i. e. cross-sectional heterogeneity in the regression model. The study applies F test and Hausman test to select the most appropriate model for collected data in the study. The significant F statistics indicate the presence of substantial cross-sectional heterogeneity. However, the Hausman test identifies whether or not the cross-section heterogeneity is random, i.e. due to chance and sampling method..

4. Data Analysis and Interpretation

4.1 Factors Contributing to the Growth of EMEs

The GDP of selected countries is assumed as a measure of economic growth, and it is a dependent variable which is explained using the panel regression models. This paper aims to identify the standard variables influencing GDP in general for all the countries using the panel data. The fixed and random effect model in this segment explains the individual heterogeneity of included countries. Panel regression starts with analysing the relationship between the selected variables for all countries in four stages.

Stage one examines PR model and identifies variables contributing to the selected countries' GDP. In the second stage, the PR model is modified by removing insignificant variables from the regression model, leaving the contributing variables in the regression model. The third stage includes removing three countries, namely Thailand, Mexico and Columbia, due to unconventional reasons for the growth of their economies. Independent variables selected in the study for these countries are not significant in explaining GDP.

PR model is applied to the remaining 16 countries. In the fourth stage, insignificant variables are removed from the PR model, leaving only the significant independent variables explaining the significant contribution toward the remaining countries' GDP. This is followed by applying the panel regression model (fixed and random). Results of the research are discussed in subsequent sections.

4.2 Correlation Assessment

The relationship between GDP and selected variables in the study is examined through a correlation assessment. Table 2 shows the Results of Correlation Analysis. Results indicated the existence of a significant correlation amongst the variables represented (in bold letters). GDP is found to be significantly correlated with ADR, AFW, AFV AGR, AT, ACP, BM, CHE, EMP ratio, GCF and IU.

The different independent variables are significantly correlated with GDP and are assumed as the dependent variables in the study. In addition to this, different independent variables are also moderately correlated with other variables. The relationship between the dependent variable, i. e. GDP, and the independent variables is examined with the help of regression models.

4.3 Pooled Regression (PR) Model

This segment discusses the influence of selected independent variable for the countries and their GDP. GDP of a country is assumed as the measure of its economic growth and it is deemed to be the dependent variable. However, different independent variables are collected to analyse their impact on the GDP. Multivariate regression analysis (PR model) examines the impact of selected independent variables on GDP of the selected countries. The PR models can be stated as:

$$GDP(Y) = \alpha + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \beta_4 * X_4 + \beta_5 * X_5$$

where, the dependent variable is Y. Intercept is α and the slope coefficient is β. The independent variable is X_i as represented in the study. The following hypothesis is tested *via* PR analysis:

- **Hypothesis:** *"There exists no significant impact of selected independent variables on the GDP of the EMEs"*

PR is applied in the study four times, i. e. four different models are used in order to evaluate the effect that independent variables have on GDP. Model 1 examines the PR model and identifies variables contributing to the countries' GDP. Model 2 is a modified PR model, after removing insignificant variables from the regression model, leaving only the contributing variables in the regression model. Model 3 represents PR model after removing three countries, namely Thailand, Mexico and Columbia, due to unconventional reasons for their economic growth. Thailand's growth is driven largely by tourism. Tourism is vital to Thailand in order to attract foreign currency spending. This in turn adds international funds which helps to make the best use of the resources from other allied/corresponding sectors. All these factors enhance Thailand's economic status. Same is the case for Mexico which has a great scope to promote tourism due to it's a significant number of UNESCO's cultural and natural world heritage sites. Columbia is also growing in its creative industry space especially in the areas of video, film production, photography and interactive games. It plans to export the content of creative industry mainly to the United States. These creative activities will have a positive impact on the GDP of Columbia. Therefore for these 3 countries, the independent variables selected herein are not substantial in explaining their GDP. The PR model is applied to the remaining 16 countries. Finally, Model 4 represents the PR model after eliminating the insignificant variables, and leaving only the significant independent variables, explaining the significant contribution to the remaining countries' GDPs. The result from PR analysis is presented in Table 3.

Table 3 reports the results of the four regression models, namely: (i) Pooled effect model (all countries); (ii) Refined Pooled effect (all countries), (iii) Pooled effect model (after removing unconventional countries), (iv) and Refined Pooled effect (after removing unconventional countries).

The results obtained failed to support the hypothesis that "there exists no significant impact of selected independent variables on GDP of EMEs" in the case of AFV AGR, ADR, BM, DCF , GCF, and Internet usage. The slope coefficient of independent variable AFV AGR is positive and significant – indicating that the higher values of AFV AGR increase the GDP of EMEs. The slope coefficient of BM and GCF is significant and positive – indicating the positive influence on GDP of EMEs. However, for DCF and IU,

the slope coefficient is negative and significant – indicating inverse relationship with GDPs of EMEs.

4.4 Pooled vs. Panel Regression Model

The PR applied to the 19 countries (cross-section) are assumed to be similar (homogeneous). However, there is a possibility of differences among these countries due to their geography, culture, demography and the various institutions. Thus, assuming the heterogeneous nature of the countries, the PR model must be modified. Thus, the study applies the panel regression models to the selected countries. In the panel regression model, the fixed and random effect models are the tests that are applied the most and incorporate the cross-section effects, i. e. cross-sectional heterogeneity in the regression model. The study applies the F test and Hausman test to select the most appropriate model for the data collected for the study. The F test provides information about the cross-section heterogeneity in the collected data – be it significant or not. The F test, if found significant, suggest the possibility of fixed-effect models. In other words, in the selected countries, the significant F statistics indicate the presence of substantial cross-sectional heterogeneity. However, the Hausman test identifies whether the cross-section heterogeneity is random, i.e. due to chance and sampling method or not. The F test and Hausman test results are presented in Table 4.

The results obtained indicate that the cross-section F statistics are significant, and, these represent the significant differences in cross-section (heterogeneity) in selected countries. Selected countries are significantly different due to differences in their government policies, demographics, geographic locations, political environment and institutional setup. Further, the Hausman test is applied to examine whether heterogeneity among countries is due to their significant differences. The results reported that the Hausman test is found significant. Thus, fixed effect model of regression is applied in the study to examine the relationship between selected economic indicator and GDPs of the selected countries.

Detailed below are the results of the fixed-effect regression.

4.5 Fixed Effect Regression Models

This segment discusses the influence of selected economic indicators on GDP of the

selected countries with help of panel data regression model. In the panel data, annual data of 19 countries are included for 18 years – from 2002 to 2017. The nature of data is the balanced panel. The GDPs of these countries are assumed as the measure of their economic growth, which are their dependent variables. However, the different independent variables are also collected to analyse their impact on their GDPs. The multivariate fixed panel regression analysis (based on the F test and Hausman test) is used to evaluate the impact of the selected independent variables on GDPs of the selected countries. Fixed effect panel regression models can be stated as:

$$GDP\,(Y_{it}) = \alpha_{it} + \beta_1 * X_{1it} + \beta_2 * X_{2it} + \beta_3 * X_{3it} + \beta_4 * X_{4it} + \beta_5 * X_{5it}$$

where, the dependent variable is Y_{it}, the intercept is α, slope coefficient is indicated by β. The independent variable is X_{it} in the study. The following hypothesis is tested *via* PR analysis:

- **Hypothesis:** *"There exists no significant impact of selected independent variables on the GDP of the EMEs"*

The fixed effect panel regression model (within the fixed effect model), which adopted the time-demeaned transformation, is applied in the study four times (i. e. four different models are used to evaluate the effect of independent variables on GDP.

Model 1 examines the fixed effect panel regression model and identifies the variables contributing to the GDP for the countries included.

Model 2 is the fixed effect regression model – modified after removing insignificant variables from the regression model leaving only the contributing variables in the regression model. Model 3 represents the fixed panel regression model after removing three countries (Thailand, Mexico and Columbia). In these countries, independent variables selected are not significant in explaining GDP. Fixed effect panel regression model is applied to the remaining 16 countries.

Model 4 represents the fixed effect panel regression model after removing the insignificant variables, and explaining the significant contribution to the remaining countries' GDPs. The results of panel regression analysis are given in Table 5.

The results obtained have failed to support the hypothesis that "There exists no significant impact of selected independent variables on the GDP of the EMEs" in the case of the following economic variables:

- ADR
- AFV
- AGR
- AT
- ACP
- CAB
- CHE
- DCF
- GCF
- LE

- ADR has a significant inverse relationship with GDP of all the selected countries. Higher the ADR, lower the GDP.
- AFV AGR significantly influences GDPs of all the selected countries. The regression coefficient of AFV AGR is positive, indicating significant positive impact on GDP.
- AT and ACP are also found to significantly and positively influence GDPs of all the selected countries.
- CAB and GCF also positively influence the GDPs of the EMEs.
- However, CHE, DCF, LE negatively influence GDP.
- After removing the three countries from the list of the total EMEs, three independent variables, namely IU, IGD and MR, are also found to influence GDPs of the countries significantly.

The R square of the regression method is high indicating that GDP is explained adequately with the help of variables mentioned above. The F stats support the model's statistical fitness and also indicate that the regression model is statistically fit.

5. Conclusions and Discussion

The study evaluates the influence of the different selected factors on GDPs of the 19 selected countries, assuming economic growth (GDP) of these countries as the dependent variable. Further, significant correlation between GDP and selected variables – ADR, AFV, AFV AGR, AT and ACP, BM, CHE, EMP ratio, GCF and IU – has been identified. The study also found the significant influence of AFV AGR, ADR, BM, DCF, GCF, and

IU on the EMEs' economic growth. The slope coefficient of independent variable AFV AGR is positive and significant, indicating that higher values of AFV AGR increases GDPs of the EMEs. These EMEs are conventionally rich in natural resources and have fertile soil, sufficient water resources and conducive climatic conditions. They also enjoy the advantages of a comparatively low-cost but qualified labour force, sophisticated infrastructure and favourable government incentives and policies. These markets are export hubs for a bouquet of agricultural products like rubber, palm oil, wheat, rice, tea, fruits and vegetables, etc., which has positively influenced the GDPs of the selected EMEs. This is corroborated by similar results from earlier studies, Khan *et al.* (2020) and Baig and Straquadine (2014).

The slope coefficient of BM and GCF is also positive and significant, indicating positive influence on GDP of EMEs. BM has a positive and significant impact on GDP, which is corroborated by the findings of Nwanne (2014). An increase in BM, the most inclusive method of a country's money supply naturally pulls down interest rates, attracts higher investment and encourages consumer spending to spur the economic growth. GCF has positive and significant impact on GDP due to the growth of industry and manufacturing sectors which employ majority of the workforce in these selected EMEs and contribute to growth of their GDPs. This positive relationship is also in line with the findings of Sahoo and Dash (2009).

Also, there has been an increase in the manufacturing of chemicals, textiles, steelmaking and automobiles production in the free-trade zones that reduce costs of raw and semi-finished products. These initiatives lead to increase in GCF, exports and positively impact GDPs of selected 19 EMEs.

However, in the case of DCF and IU, slope coefficient is negative and significant, indicating inverse relationship with GDP of the EMEs. DCF has a negative and significant impact on GDPs of the 19 selected EMEs, which is not consistent with the findings of Pistoresi and Venturelli (2015). This is due to the existence of inefficiencies in the lending business, leading to non-productive ventures, lack of financial inclusion and also due to existence of a large informal sector where employees tend to evade taxes due to low wages. These countries also lack a robust governance and credit supervision of the financial sector, Besides, risk-based supervision in the lending sector is relatively new

which makes returns from the lending business uncertain.

The IU showed a negative and significant impact. Despite the increase in IU in these countries, there is disparity in internet accessibility as only urban homes have access to high-speed internet whereas the rural folk lack even the basic coverage. Also, in order to reap positive benefits of IU by being able to provide IT and advisory services, these countries need to address the severe digital skills-gap as much of its population does not possess basic digital skills. There are rigid barriers set to limit the entry into the communication sector and complex regulations which pose a challenging scenario in the selected EMEs thus delaying the reaping of the benefits of global digitalization. Specifically in China and Russia there are investment restrictions imposed, security controls in place and a range of protectionist policies around IU, making the challenge to compete in telecommunication and internet sector more difficult. These hurdles also act as constraints for foreign business investors to oversee their operations if they decide to outsource processes from these two countries.

The results of the panel regression fixed-effect model indicate that GDP is influenced by the following factors: ADR, AFV AGR, AT, ACP, CAB, CHE, DCF, GCF and LE. ADR significantly influences GDP, though inversely. Higher the age dependency ratio, lower the GDP. A fall in ADR means that more people are required to work in order to support a dependant population, which is consistent with findings of Peng (2005) and Oketch (2006). This indicates a burden to be carried by working-age population, which is shrinking, which in turn has led to a positive and significant impact on GDPs of the selected 19 EMEs. AFV AGR is found to significantly influence GDPs of all the selected countries. Regression coefficient of AFV AGR is positive, indicating significant positive impact on GDP of these countries. This aligns with findings of the research papers referenced earlier in this study. AT and ACP is also found to significantly and positively influence the GDPs of all the selected countries. CAB and GCF also positively influence GDP growth rate of EMEs. CAB has a positive and significant impact on GDPs of the 19 selected EMEs. This is because of the substantial trade surpluses in these countries where imports are greater than exports. These EMEs are major manufacturing hubs due to the availability of cheap labour and other raw materials. In addition, economic policies are also export-oriented which allows these EMEs to earn higher export revenue. However,

CHE, DCF and LE negatively influence GDP. CHE has a negative impact on GDPs of the 19 selected EMEs, which is not consistent with the findings of Bloom *et al.* (2004) and Sarwar *et al.* (2021).

Despite the favourable context in expansion of healthcare facilities in these countries, organizational problems persist, including breaks in management and organization. Besides low public funding and ineffective resource allocation negatively affect the EMEs. Also, access to healthcare services is hindered due to regional inequalities and the disadvantage that poorer regions and lower socio-economic population groups suffer as a consequence. These socio-economic problems and disparities impact negatively. Also healthcare systems in these countries suffers from underinvestment by the public sector, lack of education and effective training to health-care providers, and lacuna of effective regulation, and, implementation by the public systems have been observed in the selected 19 EMEs during the period from 2000 to 2017 of this study. This is in consonance with the trend around the world where life expectancy has increased, but GDPs have shown both declining and upward trends.

After setting aside the three identified countries from list of 19 EMEs, three independent variables, namely IU, IGD and MR, are also found to influence GDPs of the countries significantly. Decrease in MR represents a healthier population in the country which has a positive impact on GDPs of the selected EMEs. IGD is shown to have a negative and significant impact on GDPs of the selected EMEs. This is because the level of real economic activity has not substantially increased, while keeping inflation in check and maintaining the purchasing power of the currency for the selected EMEs.

The three countries that were studied separately are Thailand, Mexico and Columbia. Decrease in their MR represents a healthier population in the country which has a positive impact on GDPs of the selected EMEs. IGD is shown to have a negative and significant impact on GDPs of the selected EMEs. This reason being that the level of real economic activity has not substantially increased while keeping inflation in check and maintaining the purchasing power of the currency for the selected EMEs.

Overall, these EMEs should build on their comparative advantages in the agricultural sector and fuel their economic growth through agricultural exports. EMEs can continue to

focus on increasing its capital formation in the manufacturing sector with the aim of increasing exports to increase its GDP.

As indicated by analysing DCF, more diligence should be applied by the lending sector to avoid extending credit facilities to non-productive ventures. Also, as indicated by analysing CHE, better caution should be taken by the public funding management and resource allocation institutions to ensure the positive impacts of healthcare on GDP. EMEs should continue to lower their ADR, improve their AFC AGR and CAB to further pivot on their positive growth trajectory.

The current research paper focuses on the selected 19 EMEs from 2000-2017, the data for which is collected from the World Bank Reports. This data however is not available consistently across all 19 EMEs for the 16 selected variables from 2018 onwards, which limits the ability to include the results for more recent years in order to analyse the impact of COVID-19 on the economic trajectory of the EMEs. The current research paper can be further built upon with more recent data being made available in order to incorporate suggestions on the future direction of economic development post-COVID-19 scenario.

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Table 1: Variables

Variables	***Definitions***
Dependant Variable	
GDP	GDP per capita growth (annual %)
Independent Variable	
ADR	Age dependency ratio (% of working-age population)
AFV	Agriculture, forestry, and fishing, value added (% of GDP)
AFV AGR	Agriculture, forestry fishing, value added (annual % growth)
AT	Air transport, passengers carried
ACP	Air transport, registered carrier departures worldwide
BM	Broad money (% of GDP)
CAB	Current account balance (% of GDP)
CHE	Current health expenditure (% of GDP)
EMP Ratio	Employment to population ratio,15+,total(%) (model-ILO estimate)
DCF	Domestic credit provided by financial sector (% of GDP)
FDI	FDI, net inflows (% of GDP)
GCF	Gross capital formation (% of GDP)
IU	Individuals using the internet (% of population)
IGD	Inflation, GDP deflator (annual %)
LE	Life expectancy at birth, total (years)
MR	Mortality rate, under-5 (per 1,000 live births)

Table 3: Results of Pooled Regression Model

Independent Variables	***Pooled effect model (All countries)***	***Refined Pooled effect (All countries)***	***Pooled effect model (After removing unconventional countries)***	***Refined Pooled effect (After removing unconventional countries)***
Intercept	7.156 (1.436)	3.864 (2.298)	3.607 (0.650)	0.392 (0.490)
ADR	-0.059 (-1.831)	-0.074 (-3.093*)	-0.070 (-1.658)	
AFV AGR	0.085 (4.865*)	0.085 (5.001*)	0.0832 (4.629*)	0.080 (4.555*)

BM	0.065 (3.918*)	0.068 (4.898*)	0.059 (3.337*)	0.061 (4.116*)
DCF	-0.071 (-4.784*)	-0.076 (-5.663*)	-0.064 (-3.907*)	-0.068 (-4.765*)
GCF	0.208 (3.981*)	0.184 (6.516*)	0.204 (3.664*)	0.216 (7.388*)
IU	-0.029 (-3.029*)	-0.026 (-3.57**)	-0.040 (-3.416*)	-0.033 (-3.430*)
AFV	0.025 (0.354)		-0.060 (-0.730)	
AT	0.000 0.542		0.000 0.658	
ACP	0.000 (-0.694)		0.000 (-0.781)	
CAB	0.007 0.150		0.007 0.145	
CHE	-0.035 (-0.220)		-0.145 (-0.812)	
EMP Ratio	-0.012 (-0.503)		0.005 0.180	
FDI	0.009 0.316		0.003 0.110	
IGD	0.000 0.007		-0.004 (-0.151)	
LE	-0.045 (-0.581)		0.020 (0.230)	
MR	-0.026 (-1.011)		-0.011 -0.380	-0.031 (-2.728*)
R Square	0.389	0.379	0.408	0.395
F Stats	12.901	33.967	11.654	30.527

Note : The cells represent regression coefficients (first value) and T statistics (second value)

Table 4: Fixed Effect *vs.* Random Effects Panel Regression Model (*Dependent variable: Tobin's q*)

Model	**F Test (*Fixed Effects*)**			**Hausman Test (*Random Effects*)**		
	Test	***Statistics***	***P-value***	***Test***	***HausmanTest (p-value)***	***Remarks***
Fixed Effect Model (*All countries*)	Cross-section F	4.028	0.000	Cross-section random	72.194 (0.000)	Fixed effect model is finalised
	Cross-section Chi-square	72.525	0.000			
Refined Fixed Effect (*All countries*)	Cross-section F	4.29	0.000	Cross-section random	72.287 (0.000)	Fixed effect model is finalised
	Cross-section Chi-square	71.60	0.000			
Fixed Effect Model (*After removing unconventional countries*)	Cross-section F	4.29	0.000	Cross-section random	74.086 (0.000)	Fixed effect model is finalised
	Cross-section Chi-square	64.60	0.000			
Refined Fixed Effect (*After removing unconventional countries*)	Cross-section F	4.29	0.000	Cross-section random	74.086 (0.000)	Fixed effect model is finalised
	Cross-section Chi-square	64.60	0.000			

Table 5: Panel Data Regression Modelling

Independent Variables	***Fixed effect model (All countries)***	***Refined Fixed effect (All countries)***	***Fixed effect model (After emoving unconventional countries)***	***Refined Fixed effect (After removing unconventional countries)***
Constant	61.932 (3.217)	34.287 (3.675)	103.245 (3.862)	98.39 (3.94)
ADR	-0.067 (-0.974)	-0.123(-2.252*)	-0.046 (-0.615)	
AFV AGR	0.078 (4.626*)	0.080 (4.946*)	0.078 (4.493*)	0.082 (4.966*)
AT	0.000 (1.898)	0.000 (2.386*)	0.000 (1.778)	0.000 (2.110*)
ACP	0.000 (-1.615)	0.000 (-2.238*)	0.000 (-1.455)	0.000 (-1.775)

CAB	0.093 (1.5110	0.111 (2.017*)	0.070 (1.074)	
CHE	-1.224 (-3.445)	-1.002 (-3.039*)	-1.341 (-3.471)	-1.426 (-3.851)
DCF	-0.082 (-3.759)	-0.076 (-5.124*)	-0.087 (-3.786)	-0.105 (-6.299)
GCF	0.311 (3.742)	0.350 (4.969*)	0.288 (3.214)	0.211 (3.404)
LE	-0.756 (-2.705)	-0.308 (-2.607*)	-1.364 (-3.519)	-1.277 (-3.673)
AFV	0.114 (0.699)		0.226 (1.251)	
BM	-0.011 (-0.374)		-0.018 (-0.568)	
EMP Ratio	0.087 (1.100)		0.155 (1.732)	0.161 (1.847)
FDI	-0.007 (-0.245)		-0.017 (-0.557)	
IU	0.030 (1.498)		0.059 (2.363)	0.052 (2.642)
IGD	-0.052 (-1.912)		-0.079 (-2.613)	-0.070 (-2.456)
MR	-0.068 (-1.255)		-0.164 (-2.423)	-0.157 (-2.745)
R Square	0.506	0.496	0.528	0.521
F stats	9.226*	11.412*	9.193*	10.87*

Table 2: Results of Correlation Analysis

	GDP	ADR	AFV	AFV AGR	AT	ACP	BM	CAB	CHE	EMP Ratio	DCF	FDI	GCF	IU	IGD	LE
ADR	-0.210 **-3.961***	1														
AFV	0.280 **5.382***	0.261 **4.984***	1													
AFV AGR	0.229 **4.338***	0.025 0.457	0.057 1.048	1												
AT	0.235 **4.459***	-0.369 **-7.301***	0.168 **3.142***	0.044 0.808	1											
ACP	0.235 **4.447***	-0.369 **-7.299***	0.149 **2.770***	0.048 0.880	0.990 **126.576**	1										
BM	0.211 **3.974***	-0.449 **-9.255***	0.190 **3.560***	0.019 0.349	0.634 **15.110***	0.615 **14.371***	1									
CAB	-0.002 -0.043	-0.017 -0.319	0.203 **3.814***	0.034 0.633	0.169 **3.153***	0.180 **3.364***	0.412 **8.318***	1								
CHE	-0.308 **-5.959***	-0.052 -0.966	-0.683 -	-0.020 -0.359	-0.183 **-3.420***	-0.152 **-2.839***	-0.274 **-5.238***	-0.357 **-7.047***	1							
EMP Ratio	0.148 **2.753***	-0.106 -1.958	0.300 **5.800***	0.045 0.826	0.285 **5.471***	0.296 **5.713***	0.329 **6.415***	0.366 **7.248***	-0.424 **-8.632***	1						
DCF	0.091 1.678	-0.424 **-8.625***	0.113 **2.092***	0.027 0.501	0.606 **14.027***	0.586 **13.310***	0.951 **56.630***	0.362 **7.151***	-0.189 **-3.538***	0.241 **4.565***	1					
FDI	0.084 1.544	-0.175 **-3.277***	-0.174 **-3.262***	0.095 1.759	-0.094 -1.733	-0.100 -1.842	-0.008 -0.140	-0.292 **-5.629***	0.181 **3.388***	-0.082 -1.513	-0.017 -0.322	1				
GCF	0.489 **10.334***	-0.355 **-6.983***	0.441 **9.046***	0.063 1.167	0.670 **16.615***	0.665 **16.394***	0.530 **11.517***	-0.078 -1.445	-0.459 **-9.516***	0.233 **4.411***	0.437 **8.936***	0.060 1.107	1			
IU	-0.192 **-3.594***	-0.379 **-7.549***	-0.496 -	-0.012 -0.218	0.124 **2.294***	0.088 1.622	0.173 **3.237***	0.001 0.011	0.346 **6.801***	-0.056 -1.025	0.212 **3.996***	0.129 **2.393***	-0.090 -1.664	1		
IGD	-0.043 -0.790	0.136 **2.525**	0.074 1.369	0.\012 0.223	-0.123 **-2.274***	-0.105 -1.948	-0.341 **-6.670***	-0.036 -0.657	0.084 1.552	-0.176 **-3.290***	-0.316 **-6.140***	-0.082 -1.508	-0.167 **-3.112***	-0.192 **-3.598***	1	
LE	-0.025 -0.465	-0.285 **-5.479***	-0.235 **-4.443***	0.005 0.084	0.094 1.748	0.070 1.286	0.077 1.426	-0.013 -0.243	0.156 **2.904***	0.311 **6.019***	0.074 1.357	0.161 **3.013***	0.018 0.337	0.514 **11.024***	-0.126 **-2.345***	1
MR	0.032 0.586	0.513 **11.002***	0.500 **10.642***	0.013 0.242	-0.043 -0.793	-0.020 -0.360	-0.088 -1.622	-0.053 -0.973	-0.225 **-4.246***	-0.152 **-2.823***	-0.083 -1.529	-0.219 **-4.134***	0.104 1.919	-0.600 -	0.082 1.512	-0.832 -

***Note*:** Each cell represents the correlation coefficient (first value) and the T-statics value (second value). T-statistics values greater than 1.96 is considered significant.