The Relationship of Economic Growth With Consumption, Investment, Unemployment Rates, Saving Rates and Portfolio Investments In The Developing Countries

Gelişmekte Olan Ülkelerde Ekonomik Büyüme, Tüketim, Yatırım, İşsizlik Oranları, Tasarruf Oranları ve Portfolyo Yatırımları Arasındaki İlişki

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Abstract

The Keynesian macroeconomic model implies that household expenditures, investments, and savings have significant impacts on economic growth by affecting total expenditures. Therefore, policymakers should determine and apply appropriate policies to maintain these variables. For this purpose, the relationship of economic growth with consumption, investment, unemployment, portfolio investments and saving rates in the Brazil, Russia, India, South Africa and Turkey are analyzed with the panel data method using annual data for the period 2005-2016. Saving rates appear to have the most impact on economic growth in accordance with the estimation results of Prais-Winsten Panel Correlated Standard Errors and Feasible Generalized Least Squares which take cross-section dependence into consideration. A 1% increase in saving rates increases economic growth by 0.50%. An increase of 1% in consumption expenditures increases economic growth by 0.41%. While an increase of 1% in investment expenditures increases economic growth by 0.25%, the increase in portfolio investments is insignificant, eventhough its impact on economic growth is positive. An increase in unemployment rates negatively affects economic growth in compliance with the theory.

Keywords: Consumption, investment, economic growth

Öz

Keynezyen makroekonomik model hane halkı harcamalarının, yatırımın ve tasarruf oranlarının toplam harcamaları etkileyerek ekonomik büyüme üzerinde önemli etkilere sahip olacağını belirtmektedir. Bu nedenle politika yapıcılar bu değişkenleri yönetebilmek için uygun politikalar belirlemeli ve uygulamalıdır. Bu amaçla çalışmada Brezilya, Rusya, Hindistan, Güney Afrika ve Türkiye ekonomilerinde ekonomik büyüme, tüketim, yatırım, işsizlik, portföy yatırımları ve tasarruf oranları arasındaki ilişki, 2005-2016 dönemi için yıllık veriler kullanılarak, panel veri yöntemiyle analiz edilmiştir. Yatay kesit bağımlılığını, dikkate alan Prais-Winsten Panel Düzeltilmiş Standart Hatalar ve En Uygun Genelleştirilmiş En Küçük Kareler tahmin sonuçlarına göre ele alınan değişkenlerden ekonomik büyümeyi en fazla etkileyen tasarruf oranlarıdır. Tasarruf oranlarındaki 1%'lik bir artış ekonomik büyümeyi 0.50% arttırmaktadır. Tasarruf oranlarının ardından tüketim harcamaları gelmektedir. Tüketim harcamalarındaki 1%'lik bir artış ekonomik büyümeyi 0.41% arttırmaktadır. Yatırım harcamalarındaki 1%'lik bir artış ekonomik büyümeyi 0.25% arttırırken, portföy yatırımlarındaki artışın ekonomik büyüme üzerindeki etkisi pozitif olmakla beraber, önemsizdir. İşsizlik oranlarındaki bir artış ise teori ile uyumlu bir şekilde ekonomik büyümeyi olumsuz etkilemektedir.

Anahtar Kelimeler: Tüketim, yatırım, ekonomik büyüme

Introduction

For nearly two centuries since the time of Adam Smith, economists have been questioning the elements that make some countries rich and some poor. However, the mystery of economic growth has not been fully solved. Why the standards of living tend to vary greatly among the world's countries? And Why some countries are enriched faster, others are enriched more slowly? In some countries, the standards of living constantly diminish over time. The Keynesian macroeconomic model implies that household expenditures, investment and saving rates have significant effects on economic growth by affecting total expenditures. Due to this reason, policymakers should determine and apply appropriate (monetary and fiscal) policies for managing these variables.

The main reason why economic growth has to be solved as the most basic problem in terms of countries relates to the significance of the *relative income* concept which is also mentioned by Duesenberry (1949). As Marx said almost a century ago, *"A house may be large*

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or small; As long as the surrounding houses are equally small, it satisfies all social demands for a dwelling. However, if a palace rises beside the little house, the little house shrinks into a hut" (Hirata, 2011).

As Easterlin (1974) stated, in testing their happiness, people are likely to compare their current situation with a norm stemmed from their present and past experiences set by the society. This norm involves common features due to the common experiences shared by people belonging to the same communities and cultures. Individuals who are above the determined norm tend to feel much happier than the ones who are below it. Where the individuals would be at regarding the norm is closely related to the economic performance of the country of residence. Therefore, the policy-makers always take economic growth into consideration as one of the top-priority economic problems to be resolved.

Physical capital, human capital, natural resources, and entrepreneurship are among the conventional determinants of economic growth for all countries. Entrepreneurs produce output by combining production factors within the framework of numerous technological information. Following the quantitative growth-oriented approach of the neoclassical growth theory which prevailed until the 1980s by supporting the notion that the state should pursue a limited role in economic life, nowadays some new approaches have emerged based on economists such as Smith, Schumpeter, Kaldor, and Arrow. An economic growth structure which particularly prioritized Schumpeter's concepts of the invention, innovation, creative destruction, entrepreneurship and technological development has emerged.

The technological level can be defined as the sum, or the "stock," of the knowledge and experience regarding the production process, the product *per se*, the organization of production and management, marketing, and post-sales services in the broadest sense. For this stock increase – *e.g.,* technological development to be defined significantly in economic terms, it must be implemented as an innovation by a firm that would incur losses as well as yielding profits.

Besides education and technology policies that the policy-makers implement to foster economic growth and to directly affect the level of technology; economic behaviors such as public spending and consumption/savings rates of the household can also have a direct impact on growth.

The household and public expenditure play an essential role when it comes to supplying the economy with enough spending to generate growth. Consumption is what households and governments' spending which includes goods and services.

Consumption is a vital factor of the gross domestic product (GDP). The total expenditure in an economy calculated as the sum of households and public expenditures is very important in terms of its contribution to economic growth. Consumption is, therefore, one of the most crucial components of GDP. Since consumption cutbacks in either private or public sector would reduce revenues of the firms, tax revenues from both direct and indirect taxes will eventually decrease. Since companies that act with the goal of profit maximization would employ fewer employees at lower wages due to their diminishing revenues, they will also cause an economic recession.

In recent literature, much attention has been devoted to the impact of investment [especially foreign direct investment (FDI)] on economic growth. Theoretically, the neo-classical growth theory stimulates economic growth by increasing investments, investment volume, and investment efficiency. The technology that is the source of sustainable growth in the endogenous growth models would spread from developed countries that develop technology towards developing countries by means of foreign direct investments (Li and Liu, 2005). As a

result of the realization of investments in either public or private sector, it is thought that these investments would increase the national income and lead to the development of the country along with the assumption that the production of goods and services would increase in the economy.

Unemployment is one of the most important economic problems that create pressure on the emerging markets. Theoretically, the deceleration of economic growth in a majority of developing countries is the main source of the increase in unemployment rates.

However, in the long-run the determinants of unemployment, there are two broad sets of factors that determine equilibrium unemployment. The first one these involves disturbances in the price and wage mechanism and the second is the incompatibility of the qualifications demanded and supplied in the labor market. Unemployment can oscillate around the equilibrium value in the short-run. The traditional hypothesis argues that this oscillation can be influenced by monetary and fiscal policies (Calmfors and Holmlund, 2000). The literature focuses on the negative macroeconomic impacts of unemployment. Negative consequences of unemployment are comprised of such psychological and economic disadvantages as underemployment of labor, the idle human capital, frustration, depression, poverty, income inequality and crime involvement.

Saving is to give up or sacrifice today's consumption in order to consume more in the future. Therefore, savings that developing countries have to make in order to achieve their development goals and savings-development relationship are increasingly attracting more attention in the academic field, especially in developing countries. It is a well-known fact that the economies of today's developing countries which save more tend to grow faster than of developed countries which save less. The level of savings rate for these economies is a very important macroeconomic variable that must be monitored.

The body of literature on the relationship between savings and economic growth proceeds along three main axes. The first one among these axes is the field in which the sources of economic growth and the impact of the basic macroeconomic variables on savings are examined. The second one is the field of studying the sources of savings and the impacts of income and growth on savings. The third and the final axis is the field that examines the causality relationship between saving rates and growth (Singh, 2010). In this study, the relationship among economic growth, consumption, investment, unemployment, portfolio investments and saving rates in Brazil, Russia, India, South Africa and Turkey (BRIS-T)[1] are analyzed with panel data method using annual data for the period 2005-2016. Upon reviewing the relevant literature, it is understood that an abundant number of studies have examined the relationship between economic growth and a single variable; hence a deficiency exists in the literature in relation to multivariate studies. Since the most distinctive feature of this study involves the interaction of economic growth with many variables in economic life, more than one variable is considered in performing econometric analysis to eliminate the deficiency in the literature.

In the second part of the study, selected literature review is given; the data set, information about the method is given in the third part; in the fourth part econometric model and empirical results are presented; and in the fifth and final part, the conclusion and policy recommendations are made.

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[1] China is excluded due to the lack of analyzed data.

Literature Review

Theoretically, unemployment rate, saving rate, consumption, investment and portfolio expenditures are concerned to impact economic growth directly. Many researchers have been investigated these relations. However, the results are varying. The differentiation of the sample period involved in the analysis and a change in the selected estimation can be considered the main reasons for the different empirical results obtained. Table 1 presents several researchers on the general relationship between the analyzed variables.

Table 1: Selected literature review

Author(s)	Countries	Data interval	Method	Findings
Borensztein et. al. (1998)	69 developing countries	1970-1989	Seemingly Unrelated Regression	FDI contributes to economic growth only when a sufficient absorptive capability of the advanced technologies is available in the host economy.
Li and Liu (2005)	84 countries	1970-1999	Single and simultaneous equation methods	A significant relationship between FDI and economic growth.
Aizenman et al. (2013)	100 countries	1990-2010	Baseline estimation	The relationship between growth and lagged capital flows depend on the type of flows, economic structure, and global growth patterns.

Table 1: Continued

Agbloyor et al. (2014)	Africa	1990-2007	GMM	Private capital flows, thus, promote economic growth in the presence of strong domestic financial markets.
Albulescu (2015)	13 Central and Eastern European countries	2005-2012	Panel method estimation	Both direct and portfolio investments exert an influence on the long-term economic growth.
Singh (2010)	India	1950-2002	OLS and Bound Testing approach	Saving has a significant effect on income.
Tang and Tan (2014)	Pakistan	1971-2011	Cointegration and Granger causality	Econometric results suggest the existence of a direct correlation between savings and economic growth.
Akeju and Olanipekun (2014)	Nigeria	1980-2011	ECM and Johansen cointegration tests.	Empirical findings show that there is both the short- and the long-run relationship between unemployment rate moreover, output growth in Nigeria.

Aktar et al. (2009)	Turkey	2000:1-2007:4	VAR	Unemployment The rate is sensitive to change in GDP.

Data Set and Methodology

The variables included in the analysis to examine the relationship of consumption expenditures (CON), investment expenditures (INV), unemployment rate (UE), saving ratio (SV) and portfolio investments (PINV) with economic growth (GDP) in BRIS-T countries are obtained annually from the World Bank's database as percentages of the gross national income for the period 2005-2016. The descriptive statistics for the variables are given in Table 2.

Gross national expenditure is the sum of household final consumption expenditure and general government final consumption expenditure. Investment expenditures consist of government nonfinancial assets includes fixed assets, inventories, valuables, and nonproduced assets. Nonfinancial assets are stores of value and provide benefits either through their use in the production of goods and services or in the form of property income and holding gains.

Unemployment rate refers to national estimates the share of the labor force that is without work but available for and seeking employment. Saving ratio refers to gross national income less total consumption, plus net transfers. Portfolio investment covers transactions in equity securities and debt securities. And lastly economic growth refers annual percentage growth rate of GDP at constant 2010 U.S. dollars.

Table 2: Descriptive statistics

Variables	Min.	Max.	Mean	Std. Dev.
GDP	-7.82	11.11	4.13	3.97
CON	86.30	108.13	100.18	4.95
INV	-0.28	8.12	1.36	1.39
UE	3.45	25.92	10.26	7.41
SV	15.80	38.33	25.44	6.10
PINV	-4.69	5.14	1.71	8.03

A panel data analysis method is used to examine the relationship between the variables considered in the study. The presence of both the cross-section and the time-series are among the most important and distinguishing features of the panel data system. The time-series feature is represented by the subindex t, while the cross-section feature is denoted by the subindex i. Therefore, the number of observations in a panel data set equals to the number of cross-sections (i) times the number of time-series (t). In this way, working with a higher number of observations and degrees of freedom within a shorter time interval is allowed. Hsiao (2003) reported various benefits of using the panel data analysis method. The first of these benefits pertains to controlling heterogeneity of cross-sections, while neither the time-series nor the cross-sectional analyses control heterogeneity due to the risk of ending up with biased outcomes.

The second advantage of panel data sets is related to their usefulness in examining dynamic variables that would be adapted to economic policy changes such as unemployment, trade, and income change. Thirdly, it is possible to work on certain issues, which cannot be determined merely by time-series or cross-sectional analyses, via panel data analysis. The fourth advantage of panel data analysis involves its convenience for studies conducted especially in developing countries, while the presence of the short-term data series due to lack of statistical data renders the time-series-based econometric analyses impossible.

Since using the panel data analysis method is preferred for the study, the cross-section dependency (CSD) between the series needs to be explicated first. Because one of the main assumptions in the panel data models is that error terms being independent regarding units,

however, it can be seen that errors along with cross-sectional units have a simultaneous correlation. In this case, as in the autocorrelation and the heteroscedasticity, it prevents the correlation matrix from being a unit matrix. For this reason, Breusch-Pagan Lagrange Multiplier Test, Pesaran CSD Test, Friedman CSD Test and Frees CSD Test would be applicable in the study.

Thus hypotheses are,

$$H_0 = \rho_{ij} = \rho_{ji} = cor\left(u_{it}, u_{jt}\right) = 0 \; for \; i \neq j$$

$$H_1 = \rho_{ij} = \rho_{ji} \neq 0 \; for \; i \neq j$$

Feasible Generalized Least Squares (FGLS) estimation may also be performed easily and will asymptotically result in more efficient estimator and more powerful tests than OLS (Hansen, 2007).

This procedure was first described by Parks (1967) and was popularized by Kmenta (1986), so it is usually known as Parks or Parks-Kmenta. For example, the estimation procedure of a data set which is heteroscedastic, cross-sectionally depended, and serially correlated, as described below:

- Firstly, the model is estimated with OLS,

- Residuals are used to build a consistent estimator of the errors covariance matrix,

- By using the autoregressive model, the data is adjusted, and model is re-estimated,

- Residuals are used to estimate the cross-sectional dependence,

- Missing part of the variance covariance matrix is completed by using the results of the former phase,

- Moreover, lastly, the model is estimated by using FGLS.

The Model and Econometric Results

The model to be analyzed in the study is as follows:

$$GDP_{i,t} = \beta_1 + \beta_2 CON_{i,t} + \beta_3 INV_{i,t} + \beta_4 UE_{i,t} + \beta_5 SV_{i,t} + \beta_6 PINV_{i,t} + \varepsilon_{i,t} \qquad (1)$$

Some coefficients ($\beta_2, \beta_3, \beta_5 \; and \; \beta_6$) of the equation above are expected to be positive, while β_4 is expected to be negative. At the first phase of the analysis, Breusch-Pagan, Pesaran, Friedman and Frees' CSD tests are performed. CSD test results are shown in Table 3.

Table 3: CSD Test results

Test	Statistic Values	Significance Level
Breusch-Pagan	28.762	0.0014
Pesaran	1.916	0.0455
Friedman	18.508	0.0010
Frees	0.887	*Q Distrubution Critical Values* 10% 0.2136 5% 0.2838 1% 0.4252

Since the significance levels in the first three tests are lower than 5%, the basic hypothesis is rejected, and CSD is detected. In the Frees' test, however, the basic hypothesis is rejected, and CSD is detected since the statistic value exceeds the 5% critical value. In short, CSD has been determined in the model that is covered by four tests.

The Modified Wald Test and *the Wooldridge Auto-correlation Test* are applied, respectively, to determine the heteroscedasticity and autocorrelation problems and to select correct and predictable time series estimator following the CSD tests. According to the test results, both heteroscedasticity and autocorrelation problems are present in the model. Estimation results of Prais-Winsten Panel Correlated Standard Errors (PCSE) and Feasible Generalized Least Squares (FGLS), which take cross-section dependency, heteroscedasticity and autocorrelation into consideration, are given in Table 4.

Table 4: PCSE and FGLS test results

Variables	PCSE		FGLS	
	Coefficient	Probability Value	Coefficient	Probability Value
CON	0.4135	0.001	0.4116	0.000
INV	0.2572	0.005	0.2180	0.002
UE	-0.1021	0.008	-0.096	0.015
SV	0.5038	0.000	0.4995	0.000
PINV	7.62e-10	0.002	6.46e-12	0.009

Conclusion And Recommendations

In this study, the relationship among economic growth, consumption, investment, unemployment, portfolio investments and saving rates in Brazil, Russia, India, South Africa and Turkey are analyzed with panel data method using annual data for the period 2005-2016.

In order to detect the correct estimator, cross-section dependence and time series properties (heteroscedasticity and autocorrelation problems) are investigated in the model. According to the results of Prais-Winsten Panel Correlated Standard Errors and Feasible Generalized Least Squares estimations which take cross-section dependency, heteroscedasticity and autocorrelation into consideration; the coefficients of all variables are statistically meaningful. However, the savings rates have the greatest impact on economic growth. A 1% increase in saving rates increases economic growth by 0.50%. Consumption expenditures follow the saving rates**.** An increase of 1% in consumption expenditures increases economic growth by 0.41%. While a 1% increase in investment expenditures raises economic growth by 0.25%, the impact of the increase in portfolio investments on economic growth is positive but insignificant. An increase in unemployment rates negatively affects economic growth in compliance with the theory.

The main policy recommendations that can be made as a result of the study can be listed under two main headlines. Firstly, saving rates and consumption expenditures have serious economic impacts on economic growth. Therefore, consumption incentives should not be ignored while incentives to increase saving rates are applied in the country. Secondly, the impact of portfolio investments on economic growth is positive, yet, insignificant.

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