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RELATIONSHIP BETWEEN EXTERNAL DEBT AND ECONOMIC GROWTH: PANEL DATA ANALYSIS FOR BRIC COUNTRIES

The BRIC countries are the four largest emerging economies, accounting for a quarter of the world's total GDP. The external debt stock of the BRIC countries (3938 billion USD) corresponds to 46.22% of the total foreign debt stock of the developing countries (8520 billion USD). The role of foreign debt in the economic development of a country is one of the most discussed and interesting topics in macroeconomics among researchers and politicians. Therefore, in this study, the relationship between foreign borrowing and economic growth in BRIC countries was examined. The data set used in the study belongs to the years 1990-2021 and panel cointegration method was used. As a result of the Westerlund (2007) panel cointegration test applied, a long-term relationship was found between foreign borrowing and economic growth variables in BRIC countries. The long-run cointegration vector was estimated with the panel FMOLS estimator. According to our results; The long-run regression coefficient between external debt and economic growth in BRIC countries is -0.1108. This means that when the external debt stock in these countries increases by 1%, economic growth decreases by 0.11%. When evaluated on the basis of countries, the relationship between foreign debt and economic growth is positive for China, while the relationship is negative for Brazil, Russia and India.

Key words: BRIC, External debt, economic growth, panel data analysis.

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Сыртқы қарыз және экономикалық өсу байланысы: БРИК елдері үшін панельдік деректерді талдау

БРИК елдері әлемнің жалпы ЖІӨ-нің төрттен бірін құрайтын төрт ірі дамушы елдердің экономикасы болып табылады. БРИК елдерінің сыртқы қарыз қоры (3938 млрд. АҚШ доллары) дамушы елдердің жалпы сыртқы қарыз қорының 46,22%-ын (8520 млрд. АҚШ доллары) құрайды. Елдің экономикалық дамуындағы сыртқы қарыздың рөлі макроэкономикадағы зерттеушілер мен саясаткерлер арасында ең көп талқыланатын және қызықты тақырыптардың бірі болып табылады. Сондықтан да, мақаладағы зерттеулерде БРИК елдеріндегі сыртқы қарыз алу мен экономикалық өсу арасындағы байланыс қарастырылды. Зерттеуде пайдаланылған деректер жинағы 1990-2021 жылдарға тиесілі және панельдік коинтеграция әдісі қолданылды. Вестерлунд (2007) коинтеграциялық панельдік тестілеу нәтижесінде BRIC елдеріндегі сыртқы қарыз алу мен экономикалық өсу айнымалылары арасында ұзақ мерзімді байланыс анықталды. Ұзақ мерзімді коинтеграция векторы панельдік FMOLS бағалаушысы арқылы бағаланды. Біздің нәтижелеріміз бойынша, БРИК елдеріндегі сыртқы қарыз бен экономикалық өсу арасындағы ұзақ мерзімді регрессия коэффициенті -0,1108. Бұл елдердегі сыртқы қарыз қоры 1%-ға өссе, экономикалық өсу 0,11%-ға төмендейді деген сөз. Елдер бойынша бағалағанда, сыртқы қарыз бен экономикалық өсу арасындағы байланыс Қытай үшін оң болса, Бразилия, Ресей және Үндістан үшін теріс.

Түйін сөздер: БРИК, сыртқы қарыз, экономикалық өсу, панельдік деректерді талдау.

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Взаимосвязь между внешним долгом и экономическим ростом: панельный анализ данных по странам БРИК

Страны БРИК являются четырьмя крупнейшими странами с развивающейся экономикой, на долю которых приходится четверть совокупного ВВП стран с развивающейся экономикой. Объем внешнего долга стран БРИК (3938 млрд долларов США) соответствует 46,22% от общего объема внешнего долга развивающихся стран (8520 млрд долларов США). Роль внешнего долга в экономическом развитии страны – одна из самых обсуждаемых и интересных тем макроэкономики среди исследователей и политиков. Поэтому в данном исследовании была рассмотрена взаимосвязь между внешними заимствованиями и экономическим ростом в странах БРИК. В статье использовался набор данных за 1990–2021 годы, а также метод панельной коинтеграции. В результате применения панельного теста коинтеграции Вестерлунда (2007) была обнаружена долгосрочная связь между внешними заимствованиями и переменными экономического роста в странах БРИК. Долгосрочный вектор коинтеграции оценивался с помощью панельной оценки FMOLS. По нашим результатам, коэффициент долгосрочной регрессии между внешним долгом и экономическим ростом в странах БРИК составляет $-0,1108$. Это означает, что когда объем внешнего долга в этих странах увеличивается на 1%, экономический рост снижается на 0,11%. При оценке по странам взаимосвязь между внешним долгом и экономическим ростом является положительной для Китая и отрицательной для Бразилии, России и Индии.

Ключевые слова: БРИК, внешний долг, экономический рост, анализ панельных данных.

Introduction

The role of foreign debt in the economic development of a country is one of the most discussed and interesting topics in macroeconomics among researchers and politicians. Especially in developing countries, when foreign borrowing encourages growth by increasing investment and technology transfer, it will have a significant contribution to the economic development process of these countries. When it is not used efficiently, the increasing external debt burden will negatively affect economic development and growth (Nath, 2020: 60). External debt can have non-linear effects on the economy. Therefore, at low levels of borrowing, an increase in the external debt-to-GDP ratio can stimulate economic growth; in high indebtedness levels, an increase in this rate may harm the economy. In periods when the ratio of external debt to GDP is high, the economic growth stimulated by the decrease in the real exchange rate causes the transfer of domestic resources to abroad due to external debt service and, as a result, a decrease in savings (Casares, 2015: 222). It is not always possible to make a positive or negative characterization for the net effect of external debt on economic growth. This effect depends on the level of interest rates and the efficient use of foreign resources, and if external debt is used efficiently and borrowing costs are not at high levels,

economic growth is expected to revive. However, if the interest rates on foreign debts are high and these debts are not spent on investments that can meet debt service payments, foreign borrowing will reduce the rate of economic growth.

This study aims to investigate the short-term and long-term effects of the external debt of BRIC countries, which have 54% of the external debt stock of developing countries, on economic growth. The term BRIC refers to the growing markets (Brazil, Russia, India, China) that are expected to be the strongest economies in the world in the next 40 years. BRIC countries have 25% of the world's surface area, 40% of foreign currency and gold reserves, 41% of the world's population and 44% of the workforce. It is estimated that the focus of capital flow, foreign direct investment and global economic dynamics in goods and services trade will shift from OECD countries to BRIC countries in the coming years (Syzykova, 2018). In the study, the external debt structure and dynamics of the BRIC countries are analyzed based on the available statistical data. In the analysis part of the study, the relationship between external debt and economic growth was examined by Westerlund (2007) cointegration test, using the data of 2000–2020 in BRIC countries. The panel FMOLS method was used to estimate the long-term coefficients between the variables.

Literature Review

How and to what extent external debt affects economic growth is a highly debated issue in the literature. The theoretical literature on this subject has developed mostly due to the debt crisis that occurred in Latin America in the 1980s (Presbitero, 2006: 2). The general theory is that external debt will reduce economic growth. While many of the empirical studies on this subject confirm this theory, some studies have found a meaningless relationship.

Reinhart and Rogoff (2010) examined the effects of external debt on the growth and inflation of countries in developed and emerging markets. As a result of the study, they argued that there is a non-linear relationship between external debt and economic growth. In the study using data from 1946-2009, it was determined that for both country groups, if the external debt exceeds 90% of the GDP, the GDP growth rate decreases. On the other hand, when external debt decreases, the relationship between external debt and growth weakens. Herndon et al. (2013) argue that the effect of external debt on economic growth does not differ above or below any threshold value, in their study of the same period.

Erataş and Başçı Nur (2013) examined the relationship between foreign borrowing and economic growth for 8 emerging economies (Argentina, Brazil, China, Indonesia, Republic of South Africa, India, Mexico and Turkey) with annual data for the period 1990-2010. In the study, panel cointegration analysis was performed to analyze the long-term relationships between the variables, and then the long-term coefficients were estimated. As a result, a negative relationship was determined between foreign borrowing and economic growth in countries other than South Africa and China. This means that external debt affects economic growth negatively.

Eberhardt and Presbitero (2015) examined the linear and non-linear relationship between public external debt and economic growth with data for the period of 1961-2012. They included a total of 118 countries, including 22 low-income, 27 lower-middle-income, 33 upper-middle-income and 36 high-income countries. After performing the panel cointegration analysis, the long-term coefficients were estimated with the CCE (Common Correlated Effects) estimator. As a result, a negative relationship was found between public external debt and long-term growth, and the degree of this relationship differs from country to country.

Table 1 – Literature Summary of Empirical Studies

Author	Period	Country/Country group	Results
Kumar and Woo (2010)	1970–2007	38 developed and developing countries	If the ratio of public debt to GDP increases by 10%, economic growth slows down by 0.2%. This negative relationship is lower in developed countries.
Patillo et al.(2011)	1969-1998	93 developing countries	A non-linear (within an inverted U) relationship was found between external debt and economic growth. In addition, the positive effect of public debt on growth turns negative as soon as the public debt/GDP ratio reaches 30-40%.
Cecchetti et al.(2011)	1980-2010	18 OECD countries	It has been determined that public debt has a positive effect on economic growth, but turns negative when it reaches the 85% threshold.
Checherita-Westphal and Rother (2012)	1970-2008	Eurozone	The positive effect of public debt on economic growth is limited. It has been determined that the effect turns negative when the ratio of public debt to real GDP exceeds 90%.
Calderon and Fuentes (2013)	1970-2010	136 developed and developing countries	Public debt negatively affects economic growth in the relevant period.
Ushahembavd.(2016)	1981-201	Nigeria	Unidirectional causality running from external debt to economic growth was found.
Quadah (2016)	2004-2014	Jordan	Long-term relationship and bilateral causality were found.

Table continuation

Author	Period	Country/Country group	Results
Kazakova and Inaba (2018)	1981-2015	117 Developing and Emerging Countries	The result of the research revealed a non-linear relationship between external debt and economic growth. The threshold value for external borrowing, which causes an economic slowdown or a decrease in growth rate in developing countries, is 61.3% of GDP, while the threshold value for public and publicly guaranteed external debt is 30 percent of GDP.
Nath (2020)	1970-2018	India	When external debt service is evaluated as an indicator of external debt, the long-term effect of external debt on economic growth is positive.
Daud, (2020)	2005-2016	53 developing countries	The effect of high external indebtedness (External Debt Stock/GNP ratio above 46.56%) on economic growth is negative. However, the improvement in institutional quality reduces this negative effect.
Ehikioya et al.(2020)	2001-2018	43 African Countries	External borrowing above a certain level has a negative effect on economic growth in the long run.
Felix (2020)	1990-2016	15 ECOWAS Countries	The relationship between foreign debt and economic growth is positive in the short and long term, up to the threshold value it has determined at different rates.
Zhang et al.(2020)	1995-2019	18 Selected Developing Asian and Transition Economy Countries	There is a bidirectional causality relationship between foreign debt and economic growth in the short and long run.

Note – compiled by the authors

Emergence of BRIC Countries and Their Place in the World Economy. The BRIC countries are the four largest emerging economies, accounting for a quarter of the world's total GDP. The acronym BRIC was first used in an article by Goldman Sachs economist Jim O'Neill in 2001, where he announced that these countries would emerge as economic powers. Differences in their economic performance, demographics, and geopolitical interests raise questions about the future performance of these countries, both individually and as a group.

BRIC countries, the political regime, showing significant differences in many aspects, such as the development model and economic interests, China, India, Russia, Brazil and other emerging markets is to be treated as a separate group from the reason behind may be pronounced to be among the 10 countries with the highest income in the world. It can also be emphasized that categorizing these countries as a separate group does not mean that these countries have similar dynamics to each other or have the potential to create an economic or even political identity, as has been recently concerned. The importance of the BRIC countries is due to their economic size. Among non-OECD countries,

no other developing countries, except for the BRIC countries, have an annual GDP of more than USD 1 trillion.

Table 2 shows the economic size of the BRIC countries. Accordingly, as of 2020, the BRIC countries have 41% of the world's population and account for 52.49% of the world's GDP.

Table 3 shows the GDP data of the BRIC countries and the G7 countries for the years 2000 and 2020.

Looking at Table 3, the total world GDP, which was 33.7 trillion US dollars in 2000, increased by approximately 250% in 2020 and reached a total of 84.5 trillion US dollars. While the BRIC countries accounted for only 7.7% of the world's total GDP in 2000, this ratio reached 52.5% by 2020. Therefore, the share of BRIC countries in total world GDP has increased by approximately 681.72% over a 20-year period. Looking at the G7 countries, it is seen that in 2020, its share in the total world GDP decreased by 51.5% compared to 2000 and fell to 47.5%. As a result, it is noteworthy that the total GDP of the BRIC countries has increased by 8 times and the total GDP of the G7 countries has increased by 2.5 times over a 20-year period.

Table 2 – Macroeconomic indicators of the BRIC countries (2020)

	Brazil	Russia	India	China
Population, total	212,56	144,10	1380,00	1402,11
GDP (current USD)	1444,73	1483,50	2622,98	14722,73
GDP growth (annual %)	-4,06	-2,95	-7,96	2,30
GDP per capita (current USD)	6796,84	10126,72	1900,71	10500,40
Current account balance (% of GDP)	-1,67	2,29	1,26	1,86
Exports of goods and services (BoP, current USD)	239,18	379,12	484,95	2732,37
Imports of goods and services (BoP, current USD)	227,44	304,68	493,18	2362,69
Total reserves (includes gold, current USD)	355,61	596,77	590,23	3357,24
Unemployment, total (% of total labor force) (national estimate)	13,69	5,59	4,68	..
Inflation, consumer prices (annual %)	3,21	3,38	6,62	2,42

Source: World Bank World Development Indicators, 2021.

Table 3 – GDP Data of the BRIC Countries and the G7 Countries (USD billion)

Country and Country Groups		2000	2020	Change (%)
BRIC Countries	Brazil	655,42	1444,73	220,43
	Russia	259,71	1483,50	571,21
	India	468,39	2622,98	559,99
	China	1211,35	14722,73	1215,40
Total BRIC Countries		2594,87	20273,95	781,31
The share of GDP in the world (%)		7,70	23,96	311,16
G7 Countries	United States	10252,35	20936,60	204,21
	Germany	1943,15	3846,41	197,95
	France	1362,25	2630,32	193,09
	United Kingdom	1658,19	2707,74	163,29
	Italy	1143,83	1886,45	164,92
	Japan	4968,36	4975,42	100,14
	Canada	744,77	1644,04	220,74
Total G7 Countries		22072,90	38626,97	175,00
The share of GDP in the world (%)		65,48	47,51	-27,75
World Total GDP		33703,53	84577,96	250,95

Source: World Bank World Development Indicators, 2021

Total External Debt of BRIC countries. The external debt structure of a country expresses the size of the country's external debt stock, its course over time, by which segments the borrowing is made, the maturity of the debts and from whom it is borrowed. Information

on the external debt of the BRIC countries is presented in Table 4. The data in the form of total external debt stocks related to external debts and their ratios to the GDP of the relevant countries were collected from the World Bank statistics.

Table 4 – External debt data of BRIC countries

Series Name	Brasil	Russia	India	China
External debt stocks, total (DOD, current USD)	549,23	475,52	564,18	2349,39
External debt stocks (% of GNI)	38,76	32,82	21,71	16,07
External debt stocks, long-term (DOD, current USD)	476,09	409,98	454,92	1103,09
External debt stocks, short-term (DOD, current USD)	68,98	57,37	103,53	1236,23
External debt stocks, public and publicly guaranteed (PPG) (DOD, current USD)	194,24	212,46	192,79	414,84
External debt stocks, private nonguaranteed (PNG) (DOD, current USD)	281,86	197,51	262,13	688,25
Debt service on external debt, total (TDS, current USD)	131,35	97,61	76,24	273,80
Debt service on external debt, public and publicly guaranteed (PPG) (TDS, current USD)	32,22	47,94	25,82	33,21

Source: World Bank World Development Indicators, 2021.

The external debt stock of the BRIC countries (USD 3938 billion) corresponds to 46.22% of the total external debt stock of the developing countries (8520 billion USD). Among the BRIC countries, Brazil and Russia have higher external indebtedness levels than India and China. In 2020, the country with the highest share of short-term external debt in the total external debt stock is China with 52%, while the countries with the lowest share are Russia and Brazil with 12%. When the distribution of public sector and private sector external debt stock within the long-term external debt stock in the BRIC countries in 2020 is analyzed, the private sector external debt ratio is higher than the public sector external debt ratio in countries other than Russia. In Russia, public sector debt is 52%, private sector debt is 48%, while in other BRIC countries, public sector debt is generally about 60%, while in China, private sector debt is 62%.

Methodology

The aim of this study is to examine the relationship between foreign debt and economic growth in BRIC countries. An empirical model was created within the scope of panel data analysis by using the external debt stock and growth figures of the 4 countries (Brazil, Russia, India and China) for the period 1990-2020.

The empirical model created is as follows:

$$\ln growth_{it} = \alpha_{it} + \beta_{it} externaldebt_{it} + \varepsilon_{it} \quad (1)$$

The $i=1, \dots, 4$ countries in the equation and $t=1990, 1994 \dots 2020$ show the time period. In

represents the natural logarithm of the variables.

In the study, the dependent variable expressed as "growth" is the GDP of each country in dollar terms, while the "externaldebt" variable is the foreign debt of each country in dollar terms. The data on the variables were obtained from the official website of the World Bank. Stata 14 package program was used in the estimation of the empirical model created within the scope of panel data analysis.

Analysis Findings. Cross Section Dependency Test. The cross-section independence test is important for the series forming the panel. Cross-section dependence can be defined as instantaneous correlation between individuals. The statistical significance of these correlations is tested with the Breusch and Pagan (1980) LM test:

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij}^2 \quad (2)$$

The Lagrange multiplier test statistic has the distribution $\chi_{N(N-1)/2}^2$ asymptotically. The $\hat{\rho}_{ij}^2$, i in equation (2) is the instantaneous correlation between the i and j units and is estimated by the least squares (LMS) method. Under the null hypothesis that there is no dependency between cross-sections, the LM shows a chi-square distribution when n is constant and t goes to infinity.

Pesaran (2004) derived the test statistic called CD_{LM} for cases where N and T are large:

$$CD_{LM} = \sqrt{\frac{2}{N(N-1)} \sum_{i=1}^{N-1} \sum_{j=i+1}^N \frac{(T-K)\hat{\rho}_{ij}^2 - \mu_{Tij}}{\sigma_{Tij}}} \quad (3)$$

Results and Discussion

The results regarding the cross-section dependency are presented in Table 5.

According to the results, the null hypothesis expressing the cross-section independence for the growth and external debt variables in the model is rejected. Accordingly, there is a dependency between the cross-section units that make up the growth and external debt series. It would be unrealistic to assume that the cross-section units that make up the panel are never affected by each other in the face of a shock to the series.

Unit Root Test results. Since there is a cross-section dependency in the series used in the study, the second generation unit root test was applied, taking this into account. Pesaran's CADF test was used for this type of analysis. Pesaran (2007), in his study, suggested the surrogate variables method instead of estimating self-inference and factor predicates for cases where cross-sectional dependence was detected. This method is called "Horizontal Section Generalized Dickey Fuller (CADF)" since the ADF is extended by the delayed cross-sectional means of the regression. The results are given in Table 6.

Table 5 – Cross Section Dependency Test Results

Variables	LM (Breusch,Pagan 1980)		CD _{LM} (Pesaran 2004)	
	Test Statistic	Probability value	Test Statistic	Probability value
<i>Ingrowth</i>	-0.888	0.008	-3.793	0.001
<i>lnexternaldebt</i>	46.672	0.011	53.769	0.009

Table 6 – Pesaran Panel Unit Root Test Results

Variables	Level		First difference	
	\bar{t}	%5	\bar{t}	%5
<i>Ingrowth</i>				
Constant	-1.936	-2.330	-5.081**	-2.330
Constant and trend	-2.528	-2.830	-5.504**	-2.830
<i>lnexternaldebt</i>				
Constant	-2.193	-2.330	-5.237**	-2.330
Constant and trend	-2.604	-2.830	-4.560**	-2.830

As a result of the unit root test, it can be seen from Table 6 that the level values are not stationary even if the series includes the trend, one of the deterministic components. This means that the shock effects on the series do not disappear over time. When the first difference of the variables is taken, they become stationary according to all statistical test values, that is, they carry the I (1) process. Since the same order of stationarity is detected, cointegration analysis can be started.

Panel Cointegration Test. After investigating the stationarity of the series forming the panel, the cointegration test to be applied is decided in the light of the information obtained. While the assumptions of panel cointegration tests are made, the stationarity degrees of the variables change the type of test to be

applied. The series considered in the study include cross-section dependence; therefore, Westerlund (2007) panel cointegration test was applied in the study. The results are in Table 7.

Looking at the results of the cointegration test, it can be concluded that there is a cointegration relationship between the series. In other words, tests with original values will not include spurious regressions. According to the results of the cointegration test, when the strong probability values of the test statistics taking into account the cross-section dependency in the BRIC countries are examined, it is concluded that there is a long-term relationship between foreign debt and economic growth at the 5% significance level in the long run.

Table 7 – Westerlund (2007) panel cointegration test results

	Test Statistical Value	z-value	p-value	Robust p-value
G_t	-2.689	-1.892	0.049**	0.112
G_a	-12.803	-0.808	0.109	0.203
P_t	-7.501	-1.236	0.008***	0.189
P_a	-12.702	-1.920	0.025**	0.173

Note – ** and *** Statistically significant at 5% and 1% significance level

Estimation of Long-Run Cointegration Coefficients. The long-term cointegration vector of the model, whose cross-sectional dependence and cointegrating relationship were determined by numerical expressions, was estimated with the FMOLS (Full Modified Ordinary Least Square) estimator developed by Pedroni (2000).

The FMOLS method stands out as a method that allows obtaining unbiased and consistent results by

correcting the deviations caused by problems such as OLS (Ordinary Least Squares) autocorrelation and varying variance in standard fixed-effect estimators. The FMOLS method, which allows for significant heterogeneity between individual cross-sections, also takes into account the existence of possible correlations between the constant term, error term, and differences of independent variables. The estimation results with the panel FMOLS method are as follows:

Table 8 – Panel FMOLS Results

Horizontal section	Coefficient	t-Statistics	Standard deviation
Brazil	-0.1204*	-30.05201	0.17257
Russia	-0.0936*	-9.02961	0.03980
India	-0.1109**	-12.03948	0.07820
China	0.0435	-4.13652	0.11008
Panel	-0.1108*	-1.70382	0.04989

Note – * and ** indicate 1% and 5% significance level, respectively

According to the results, the estimated long-run regression coefficient between external debt and economic growth is -0.1108. According to the empirical findings, there is an inverse relationship between economic growth and external debt, and results consistent with the theory were obtained. When the external debt stock increases by 1%, economic growth decreases by 0.11%. When evaluated on the basis of countries, the relationship between foreign debt and economic growth is positive for China, while the relationship is negative for Brazil, Russia and India.

Conclusion

Considering the relationship between external borrowing and economic growth in the literature, external borrowing positively affects growth to a certain level, and if this level is exceeded, the re-

lationship between economic growth and external debt dec reversed due to the effect of the phenomenon of excessive debt. In this study, the relationship between foreign borrowing and economic growth in the BRIC countries was dec by panel cointegration method. For this purpose, annual data for the years 1990-2020 were used.

As a result of the Westerlund (2007) panel cointegration test applied, a long-term relationship dec found between external borrowing and economic growth variables in BRIC countries. Then, the long-term cointegration vector was estimated with the panel FMOLS estimator. According to our results the dec-term regression coefficient between external debt and economic growth in the BRIC countries is -0.1108. This means that when the stock of foreign debt in these countries increases by 1%, economic growth decreases by 0.11%. When evaluated on a country-by-country basis, the

relationship between foreign debt and economic growth is positive for China, while the relationship in question is negative in Brazil, Russia, and India. The use of external debt in the Chinese economy has a positive effect on its economic growth. This means that China uses foreign debt in effective areas that will ensure economic growth. In addition, it is noteworthy that China is the country with the lowest foreign debt to GDP ratio among the BRIC countries. Among the BRIC countries, the country with the highest negative effect of external debt

is Brazil. In Brazil, when external debt increases by 1%, economic growth declines by 0.12%. Brazil has the highest external debt among the BRIC countries. While economic growth decreases by 0.9% when foreign debts increase by 1% in Russia, economic growth decreases by 0.11% when external debts increase by 1% in India. As a result, Brazil, India and Russia foreign debts should be used in effective areas that will contribute to economic growth. Otherwise, an increase in external debt will adversely affect economic growth.

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