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The MINT Countries: A Regression Analysis of the Selected Economic Features

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Abstract: The BRIC countries - Brazil, Russia, India, and China – are being considered as potential powerhouses of the world economy. These countries have formalized their cooperation, and later, with the joining of South Africa, became the BRICS. They are often perceived as proponents of a multipolar world, choosing multipolarity over unipolarity, and supporting political institutions and organizations, at the same time creating alternative financial institutions to the hegemonic ones (the IMF and the World Bank), still dominated by the developed economies of the Western countries. So, what about a different group of countries, called the MINT countries or simply the MINTs that are emerging, growing economies, are heterogeneous as BRICS, but not nearly as large and powerful, and are located on four different continents, with no formal cooperation between themselves such as the BRICS? This article analyses the basic economic trends in the MINT countries by analyzing the linear relationship between GDP as the dependent variable and household consumption, foreign direct investment and government consumption as the independent variables. The general model is as follows: $\Delta \log GDP_t = \alpha_0 + \alpha_1 \Delta \log FDI_t + \alpha_2 \Delta \log PC_t + \alpha_3 \Delta \log GC_t + \varepsilon_t$. The analysis was conducted using ordinary least squares (OLS) regression. By conducting this analysis, it is possible to conclude that the MINT countries have significant differences in regards to the statistical relevance of the chosen independent variables. One of the rare common traits of these four economies is that FDI does not seem to have a statistically significant impact on their development. This article concludes that the MINT countries may have a significant role in international relations as regional powers, but they do not have the economic or political traits necessary to challenge the BRICS countries significantly.

Keywords: The MINT Countries, OLS Regression Model, Foreign Direct Investment (FDI), GDP Growth

1. Introduction

Since 2001 the BRIC countries - Brazil, Russia, India, and China – are being considered as a potentially significant and influential block in international relations. They are often perceived as proponents of a multipolar world, choosing multipolarity over unipolarity, and supporting political institutions and organizations, at the same time creating alternative financial institutions to the hegemonic ones (the IMF and the World Bank), still dominated by the developed economies of the Western countries.

The Goldman Sachs economist Jim O'Neill, who has now identified the so-called MINT countries - Mexico, Indonesia, Nigeria and Turkey - as emerging economic giants, coined the term[1]. So, what about a different group of countries, called the MINT countries or simply the MINTs that are emerging, growing economies, are heterogeneous as BRICS, but not nearly as large and powerful, and are located on four different continents, with no formal cooperation between themselves such as the BRICS?Indonesia, Nigeria, and Turkey also have double-digit growth of between 11% and

[1] See: http://www.bbc.com/news/magazine-25548060 (Retrieved 16/03/2016).
Jim O'Neill also proposed the new term MIST, for Mexico, Indonesia, South Korea, and Turkey.
See: http://www.geopoliticalmonitor.com/backgrounder-mist-countries-4746/ (Retrieved 17/03/2016).

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15%. Mexico is the laggard at just over 7 percent, but this is still stronger than that worldwide figure of 4%. Again, these are measured in local currency – apart from Nigeria for which we record transactions in USD – as, in our view, local currency provides a clearer measure of actual investment inthe country. So clearly, the MINT nations are ones to watch, but our observatories also show strong growth in local spending on technical applications in, for example, Vietnam (16%) and South Africa (14%) - so do not be distracted by a convenient acronym[2].

Why are these countries then important for the world economy and the world in general then, and up to what level? The first question is, in other words, why should we analyze the MINT countries i.e. the MINT economies? There are a couple of reasons that need to be emphasized here – economic, demographic, and political. The second question, on which the quantitative analysis seeks to provide an answer, is the following: Is the classification of these countries as a group (from a perspective of economic science, as an object of study for the researchers primarily, since their formal cooperation is not significant) justified?

The MINT countries in 2014 comprised about 633 million people (Indonesia 254.5 million, Nigeria 177.5 million, Mexico 125.4 million, and Turkey 75.9 million[3]) with a tendency of steady, rapid growth. Median age population (2015 est.) for these countries shows that these countries have younger populations[4] (Indonesia 29.6 years, Mexico 27.6 years, Nigeria only 18.2 years, and Turkey 30.1 years) compared to that of the European countries (and even the P.R. China with 36.8 years, not to mention Russia with 39.1 years). There are various projections, but according to the Population Reference Bureau, in 2050, Nigeria should have 397 million people, and Indonesia 366 million[5]. So, in only these two countries, according to the projection, more than 330 million inhabitants should be added to their populations. This predicted occurrence of such a demographic "shock" in these countries, of so many young people that will seek jobs[6] and a better future, poses a serious threat to the living standard in these countries, which is even now well below the world average. Therefore, despite the fact the aggregate economies will grow in the next couple of decades, we can expect threats to the social cohesion, cramped living space, destruction of the natural habitats and resource extraction that could (and probably will) result in the continuance of the "resource curse" (especially in Nigeria)[7].

According to the Goldman Sachs, in 2012, Mexico was the 14th world economy, Indonesia 16th, Turkey 17th, and Nigeria 39th. If we accept the World Bank data for 2014 on GDP at market prices (current US$)[8], the position of Nigeria was much better, putting it on the 21st place in the world. Turkey was 17th, Indonesia 16th, and Mexico 15th world economy, according to the same database. The projections for 2050 predict that Mexico will be the eighth economy in the world, Indonesia 9th, Nigeria 13th, and Turkey 14th. Therefore, it is evident that the relative position (as well as the absolute size of course) of the MINT economies should improve. Hence, it is measured in absolute indicators (GDP); the demographic growth will also play an invaluable role in this continuous growth. Nevertheless, it

[2] http://www.cambashi.com/contentmgr/showdetails.php/id/2513/page/3 (Retrieved 20/03/2016).
[3] http://data.worldbank.org/indicator/SP.POP.TOTL/countries/1W?display=default (Retrieved 16/03/2016).
[4] Based upon Duroteye (2004:100): ″One of the main determinants of classifying the MINT countries as potential economic power blocs is the young population of these countries, which is considered an asset both at the present and in the future. Youth are expected at the forefront of global social, economic and political developments. In addition to their intellectual contribution and their ability to mobilize support, young people bring unique perspectives that propel any society to greater heights. The progress of any society is based therefore, among other elements, on each society's capacity to involve young women and men in building and designing the future. However, the youth of the MINT countries face many challenges, which the governments, the private sector and civil society organizations should deal with if the youth would become an asset and engine of economic growth.″
[5] http://money.cnn.com/2015/08/18/news/countries-with-biggest-populations/ (Retrieved 16/03/2016).
[6] Accirding to Duroteye, (2014b:124): ″Unemployment among Indonesia's youth aged 15 to 24 is at an unusually high level of 21.6%. Turkey's youth unemployment rate stands at 17%. Nigeria's youth unemployment rate is well over 50% as will be shown later in this paper. Interestingly, Mexico's figure of youth unemployment rate stands at less than 10%.″
[7] Watts, M. (2004). Resource curse? Governmentality, oil and power in the Niger delta. *Geopolitics*, 9 (1) 50-80.
Kurečić, P., Kozina, G. (2014). Natural Resources Management as a Factor of Underdevelopment and Social Inequality in the Gulf of Guinea Region. *Proceedings of the eighth International Scientific Conference on Economic and Social Development and fourth Eastern European ESD Conference: Building Resilient Economy*, Zagreb, Croatia: 118-127, http://www.esd-conference.com/Book_of_Proceedings_esd_ZG_2014.pdf.
[8] http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/1W?display=default (Retrieved 16/03/2016).

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would be fascinating to see what will be the GDP per capita, GINI index, and HDI in these countries (especially Nigeria and Indonesia) and how will it position them in 2050[9].

Nevertheless, the prices of commodities in general, and especially fuels (oil and gas) have decreased sharply since 2014, and there are no credible signs that it will grow significantly anytime soon. Nigeria, as a "mono economy" entirely dependent on oil as its practically only export product is suffering the most. Mexico is a significant oil exporter as well, albeit it is far from being dependent on oil exports like Nigeria. It is the sixth largest oil-exporting nation in the world and along with Canada is the largest foreign source of oil to the United States. Indonesia was the only Asian member of the Organization of Petroleum Exporting Countries (OPEC) outside of the Middle East until 2008 and is currently a net oil importer (Durotoye, 2014: 101). Turkey, on the other hand, profits from the cheap oil and gas, since it is a large net importer. Concurrently, on the downside, its tourism suffers because of terrorism and the War in Syria. The mid-term projections about the growth of the MINT economies must take all these trends and realities into consideration[10]. Therefore, long-term projections should probably be more optimistic than the short- and mid-term ones.

Table 1: The BRICS and the MINTs: main similarities and differences

The BRICS	**The MINTs**
There were four BRIC countries, and later with the joining of South Africa; they became the five BRICS countries.	There are four MINT countries.
The BRICS countries are located on four continents (Asia, Europe, Africa, and South America).	The MINT countries are located on four continents (Europe, Asia, North America, and Africa).
Three BRICS countries are net natural resource exporters (Brazil, Russia, and South Africa), and two are net large natural resource importers (India, and the P.R. China). At the same time, India and the P.R. China are among the biggest exporters of industrial products.	Three MINT countries are net natural resource exporters (Indonesia, Mexico, and especially Nigeria). Turkey is net natural resource importer, at the same time being crucial and booming exporter of industrial products.
Demographically, the BRICS countries are comprised of three very young and dynamic populations (South Africa, India, and Brazil), one mature population (the P.R. China), and one aging, stagnating population (Russia).	The MINT countries have very dynamicpopulations, whose median age puts them in the group of young populations. A very high population growth is expected even in the next couple of decades.
As of 2014, according to the World Bank data on GDP in market prices, the BRICS comprised the world's second (the P.R. China), seventh (Brazil), ninth (India), tenth (Russia), and 30th (South Africa) economy.	As of 2014, according to the World Bank data on GDP in market prices, the MINTs comprised the world's 15th (Mexico), 16th (Indonesia), 17th (Turkey), and 21st (Nigeria) economy.

There are not many academic studies that are specifically devoted to the MINT countries (and the MINT economies as well), especially compared to the number of the studies dedicated to the BRICS. This is quite reasonable, if we consider the time (much sooner than the MINTs) when the BRIC(S) emerged as a "bloc," the overall importance of their economies, their military power, and political influence. We emphasize the study of Akpan, Salisu, and Asongu (2014) that examines the determinants of FDI in Fast-Growing Economies, comparing the BRICS and the MINTs. Also, we have to point out two short, mainly descriptive studies by Durotoye (2014a, b), that explore the prospects and challenges of the MINTs as an "emerging economic power bloc", and the crisis of youth unemployment in the MINT

[9] As of 2012, in terms of wealth the situation is the following: In terms of wealth, Mexico and Turkey are at about the same level, earning annually about $10,000 (£6,100) per head. This compares with $3,500 (£2,100) per head in Indonesia and $1,500 (£900) per head in Nigeria, which is on a par with India. They are a bit behind Russia - $14,000 (£8,500) per head - and Brazil on $11,300 (£6,800), but still a bit ahead of China - $6,000 (£3,600).
http://www.bbc.com/news/magazine-25548060 (Retrieved 16/03/2016).

[10] http://www.theneweconomy.com/business/is-mint-the-next-bric (Retrieved 17/03/2016).

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countries. Öztürk and Yildirim (2015) have performed a research studying environmental Kuznets curve[11] in the MINT Countries, by testing evidence of long-run panel causality test, and obtained ambiguous results. They also stated that "According to (Jim) O'Neill, MINT countries have some advantages that could potentially propel them to the world's ten largest economies in three decades (177). A study done by Simplice (2015) is focused on the drivers of growth in fast emerging economies, providing us with the comparison between the BRICS and the MINT countries. Simplice uses a dynamic instrumental quantile approach, in which the instrumental variable (IV) quantile regression approach is complemented with two-stage-least-squares and IV least absolute deviations[12].

Nevertheless, contrary to the statement that "the MINTs are the new BRICS"[13], we do not share this opinion, and some of the reasons are found in the sheer numbers pointed out in the introduction, as well as in the quantitative research that makes the backbone of this paper.

2. Methodology

The data were extracted from the World Bank database, the values of GDP in current dollars, and the value of household consumption, general government consumption and the net inflow of FDI in current dollars for the past 25 years. The data was then corrected for inflation using the GDP deflator, also acquired from the World Bank database.[14] Based on this data, the log difference[15] of the four variables was calculated to obtain statistically significant results regarding variable stationery. In this model, the log difference of real GDP (Δ log GDP) is the dependent value, while the explanatory variables are the log difference of FDI net inflow (Δ log FDI), the log difference of household consumption (Δ log PC) and the log difference of government consumption (Δ log GC). From that point, the models for Tukey, Nigeria, and Mexico are considered.[16]

The general model is as follows:

$$\Delta \log \mathrm{GDP}_t = \alpha_0 + \alpha_1 \Delta \log \mathrm{FDI}_t + \alpha_2 \Delta \log \mathrm{PC}_t + \alpha_3 \Delta \log \mathrm{GC}_t + \varepsilon_t \quad (1)$$

The model for Indonesia is slightly different because the FDI net inflow value for several years was negative. To preserve the methodology used for the other countries, a constant was added before calculating the log difference in a view to making the value of the FDI net inflow positive. That same value was added to all of the other variables for that country in the model to preserve the possible linear relationship between the variables.

The model for Indonesia is as follows:

$$\Delta \log (\mathrm{GDP}_t + \beta) = \alpha_0 + \alpha_1 \Delta \log (\mathrm{FDI}_t + \beta) + \alpha_2 \Delta \log (\mathrm{PC}_t + \beta) + \alpha_3 \Delta \log (\mathrm{GC}_t + \beta) + \varepsilon_t \quad (2)$$

[11] The environmental Kuznets curve hypothesis (EKC) urges that there is an inverse-U-shaped relationship between carbon dioxide emission per capita and income per capita. So the EKC argument seeks an answer for
the question of "does economic growth need to be slowed in order to avoid increasing harm to the environment" (Carson 2010, 3). In: Öztürk and Yildirim (2015: 176).

[12]The following conclusion are reached by Simplice (2015): first, while ″Gross FDI has a negative effect on economic growth, the impact of Net FDI is positive, with a higher magnitude in top quantiles of the distributions. Second, the positive effect of natural resources is more apparent in countries with low initial growth levels. Third, the impact of telecommunications infrastructure is not very significant. Fourth, whereas the incidence of bank credit is positive for GDP growth, it is negative for real GDP output. Fifth, while trade openness is positive in bottom quantiles of GDP growth, but for the highest quantile in real GDP output, it is consistently negative on real GDP output. Sixth, while the incidence of political stability is negative on GDP growth, it is positive on real GDP output, with the negative (positive) effect apparent only in top (bottom) quantiles of GDP growth (real GDP output).″

[13] http://www.tmf-group.com/en/media-centre/news-and-insights/january-2014/refreshing-economic-news-mint-is-the-new-brics (Retrieved 20/03/2016).

[14]Using the formula variable$_t$ * GDP deflator $_{\text{base year}}$ / GDP deflator $_t$ where the base year was the value of the GDP deflator for 2014 and t are the value of the years from 1991-2014.

[15]A commonly used technique, calculating the first difference of logarithms is becoming as commonplace for achieving stationarity in times series models as percentage points. In this paper, the natural logarithm (base e) was calculated for all values.

[16] In the paper, it was attemptedat first to construct an average model for the MINT countries by averaging the values of GDP, net inflow and government and household consumption. The issue with the constructed model was that two of the variables presented issues regarding variable stationary. Therefore, it was concluded that individual testing for each of the MINT countries would be more representative and provide more statistically significant results rather than change the methodology of the paper.

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In these models, aside from the variables that were previously explained, α_0 is the constants, $\alpha_{1,3}$ are the trends and ε_t is the error term and t represents the time period that was observed in the paper. The β coefficient[17] is the value that was necessary to make the net FDI inflow have a positive value for Indonesia. To test the stationary of the independent and explanatory variables, the Augmented Dickey-Fuller (ADF) test, introduced by Dickey and Fuller (1979), was used. After performing the tests on the variables to confirm their stationary, the Ordinary least squares (OLS) method was used to obtain the values of α coefficients. The models were then tested for the presence of autocorrelation and heteroscedasticity. This was determined by testing the models for autocorrelation by interpreting the Durbin Watson statistic and using the Breusch–Godfrey serial correlation Lagrange multiplier, while the presence of heteroscedasticity was tested by White's General test for heteroscedasticity. All of these tests were conducted using the Gnu Regression, Econometrics, and Time-series Library (GRETLE) software. Upon confirming that the models do not exhibit signs of autocorrelation and heteroscedasticity and establishing the statistical significance of the α coefficients at 0=0.05[18].

The period observed by this paper is relatively limited but is in line with the aims of this article. Another issue is perhaps that the overall multiplicative effect of FDI on the economy might be underestimated, yet the net inflation corrected values were considered for all four variables observed in the model. Adding a constant to the values for Indonesia is perhaps the simplest solution that still preserves the linear relationship between the variables, but by adding a constant, it complicates any contribution this model might have in hypothesis testing or making statistically significant predictions.

3. Results and Discussion

The ADF test was conducted and all variables are stationary at p=0.1. The null hypothesis of the ADF test is non-stationary and as such, if the test statistic value is significant it is possible to reject the null hypothesis of non-stationary and accept the alternative hypothesis of stationary. In the values for all of the variables that were observed in this model, the asymptotic p-value of the test statistic is smaller than 0.1. This leads to the conclusion that at p=0.1, it is possible to reject the null hypothesis of non-stationary and confirm the alternative hypothesis of stationary. A summarized table is provided, while the full output provided by GRETL may be found in the Appendix.

Table 2: Summary table of the ADF test

Variable	*Number of lags*[19]	*Test statistic value*	*Asymptotic p-value*	*Conclusion*
Δ log GDP Turkey	2	-3.55496	0.05792	Stationary at p=0.1
Δ log FDI Turkey	2	-4.06519	0.02148	Stationary at p=0.05
Δ log PC Turkey	2	-3.58145	0.05511	Stationary at p=0.1
Δ log GC Turkey	2	-3.57845	0.05542	Stationary at p=0.1
Δ log GDP Mexico	2	-4.32216	0.002845	Stationary at p=0.01
Δ log FDI Mexico	2	-7.84663	6.206 e-012	Stationary at p=0.01
Δ log PC Mexico	2	-4.22862	0.003983	Stationary at p=0.01
Δ log GC Mexico	2	-6.52514	5.248 e-008	Stationary at p=0.01
Δ log GDP Nigeria	2	-4.91629	0.000262	Stationary at p=0.01
Δ log FDI Nigeria	2	-5.56339	0.0009571	Stationary at p=0.01
Δ log PC Nigeria	2	-4.22845	0.01544	Stationary at p=0.05
Δ log GC Nigeria	2	-6.23776	0.0002351	Stationary at p=0.01
Δ log GDP Indonesia	2	-4.70369	0.005532	Stationary at p=0.01
Δ log FDI Indonesia	2	-7.25802	2.962 e-005	Stationary at p=0.01
Δ log PC Indonesia	2	-5.14814	0.002293	Stationary at p=0.01
Δ log GC Indonesia	2	-4.58779	0.007381	Stationary at p=0.01

Source: Authors' calculation and GRETL output

[17]Thevalue of the β coefficient is 16608121666, and the exact absolute value that was needed to make all of the FDI net inflow values positive was 16608121665.908.
[18]Seeing, as the purpose of this article is to compare the value of the coefficients in the model rather than to predict any statistically significant results, there is no need to test for normality of residuals. The test was conducted despite the previously stated fact in order to test further potential of the models.
[19]The number of lags was automatically chosen by GRETL. The low value of the first order autocorrelation coefficient that can be viewed in the Appendix, clearly displays that the correct number of lags was used.

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The stationarity of all of the variables was confirmed, and the OLS models for all of the MINT countries can, therefore, be considered. As can be seen in Model 1, the only α coefficient that is statistically significant is α_2, which indicates an absolute value of private consumption for the GDP growth of Turkey. White's test for heteroscedastic confirms the null hypothesis at p=0.05 meaning that heteroscedasticity is not present; the LM test confirms that there is no presence of autocorrelation, and the errors are normally distributed.

Model 1: OLS, using observations 1992-2014 (T = 23) Turkey Dependent variable: ld_GDP

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−0.00452279	0.00588235	−0.7689	0.4514	
ld_FDI	0.00803372	0.00861503	0.9325	0.3628	
ld_GC	0.0554345	0.063884	0.8677	0.3964	
ld_PC	0.924105	0.0666338	13.8684	<0.0001	***[20]

Mean dependent var	−0.233896	S.D. dependent var	0.318080
Sum squared resid	0.009672	S.E. of regression	0.022562
R-squared	0.995655	Adjusted R-squared	0.994969
F(3. 19)	1451.198	P-value(F)	1.31e-22
Log-likelihood	56.76578	Akaike criterion	−105.5316
Schwarz criterion	−100.9896	Hannan-Quinn	−104.3893
rho	−0.136241	Durbin-Watson	2.165066

White's test for heteroscedasticity -
Null hypothesis: heteroscedasticity not present
Test statistic: LM = 15.8384
with p-value = P(Chi-square(9) > 15.8384) = 0.0703337
LM test for autocorrelation up to order 1 -
Null hypothesis: no autocorrelation
Test statistic: LMF = 0.353533
with p-value = P(F(1. 18) > 0.353533) = 0.55952
Test for normality of residual -
Null hypothesis: error is normally distributed
Test statistic: Chi-square(2) = 1.5421
with p-value = 0.462527

Source: Authors' calculation and GRETL output

In Model 2, the value of the coefficients for Mexico was considered. A similar trait is that Mexico and Turkey are highly dependent upon private consumption. For Turkey the only coefficient that was statistically significant at p=0.1 was private consumption, implying its very high relevance for the Turkish economy. While private consumption has a very significant effect on the Mexican economy, at p=0.05 the α_3 coefficient is also statistically significant. Therefore, while the Turkish economy is mostly dependent upon private consumptions[21], the Mexican economy is also dependent – albeit to a lesser degree, both in the private and government consumption. The R-squared value for these models displays that the explanatory variables were appropriately selected, and the explanatory value of the chosen model is very high. [22] White's test for heteroscedasticity confirms the null hypothesis at p=0.3869, meaning that heteroscedasticity is not present. The LM test, as well as the value of the Durbin-Watson statistic, clearly display that the model does not have autocorrelation issues.

[20] Indicates level of significance at the respected 0.1, 0.5 and 0.01 levels.
[21] Out of the three chosen explanatory variables.
[22]The R-squared value is the ability of the model to predict how changes in the independent variables – in the case of these models FDI, private and government consumption, affect GDP change. Therefore for these two models 0.9957 and 0.9949 of the changes can be explained by these models.

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Model 2: OLS, using observations 1992-2014 (T = 23) Mexico Dependent variable: ld_GDP

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−0.00223632	0.00270695	−0.8261	0.4190	
ld_FDI	−0.00691364	0.00778145	−0.8885	0.3854	
ld_GC	0.0804238	0.0381248	2.1095	0.0484	**
ld_PC	0.848133	0.0382026	22.2009	<0.0001	***

Mean dependent var	−0.038236	S.D. dependent var	0.163043
Sum squared resid	0.002986	S.E. of regression	0.012535
R-squared	0.994895	Adjusted R-squared	0.994089
F(3. 19)	1234.273	P-value(F)	6.07e-22
Log-likelihood	70.28320	Akaike criterion	−132.5664
Schwarz criterion	−128.0244	Hannan-Quinn	−131.4241
rho	−0.005032	Durbin-Watson	1.840216

White's test for heteroscedasticity –
Null hypothesis: heteroscedasticity not present
Test statistic: LM = 9.56371
with p-value = P(Chi-square(9) > 9.56371) = 0.386945
LM test for autocorrelation up to order 1 –
Null hypothesis: no autocorrelation
Test statistic: LMF = 0.000537784
with p-value = P(F(1. 18) > 0.000537784) = 0.981754
Test for normality of residual –
Null hypothesis: error is normally distributed
Test statistic: Chi-square(2) = 1.31648
with p-value = 0.517762

Source: Authors' calculation and GRETL output

Model 3: OLS, using observations 1992-2014 (T = 23) Nigeria Dependent variable: ld_GDP

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−0.0254586	0.0292826	−0.8694	0.3955	
ld_FDI	−0.0686506	0.0717877	−0.9563	0.3509	
ld_GC	0.183209	0.085131	2.1521	0.0445	**
ld_PC	0.617862	0.125847	4.9096	<0.0001	***

Mean dependent var	−0.057564	S.D. dependent var	0.226800
Sum squared resid	0.339159	S.E. of regression	0.133606
R-squared	0.700293	Adjusted R-squared	0.652971
F(3. 19)	14.79841	P-value(F)	0.000033
Log-likelihood	15.85737	Akaike criterion	−23.71475
Schwarz criterion	−19.17277	Hannan-Quinn	−22.57245
rho	−0.041131	Durbin-Watson	2.004275

White's test for heteroscedasticity -
Null hypothesis: heteroscedasticity not present
Test statistic: LM = 10.9583
with p-value = P(Chi-square(9) > 10.9583) = 0.278576
LM test for autocorrelation up to order 1 -
Null hypothesis: no autocorrelation
Test statistic: LMF = 0.0377467
with p-value = P(F(1. 18) > 0.0377467) = 0.848129
Test for normality of residual -
Null hypothesis: error is normally distributed
Test statistic: Chi-square(2) = 2.35119
with p-value = 0.308635

Source: Source: Authors' calculation and GRETL output

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In Model 3, the economy of Nigeria was considered. The first thing that should be noted is that the explanatory value of the model is not as high as in the cases of Mexico and Turkey. With the R-squared value of 0.700293, the model can predict only about 70% of the changes that occur on the regression line based upon the changes of the independent variable. Taking into account the economy of Nigeria and its high dependence on oil export, perhaps adding a variable that measures net export might enhance the explanatory value of the model. Viewing the model in the context of the other MINT countries, Nigeria does not seem to have a statistically significant effect of FDI on GDP growth, while the most significant variable in predicting GDP change is private consumption, with a far more significant influence of government use on GDP change than in Mexico and Turkey.

The final model considers the economic growth of Indonesia. The explanatory value of the model is as high as was the case with Turkey and Mexico, which indicates that despite the comparatively small value of R-squared for the Nigerian model, the explanatory variables were adequately selected. FDI does not have a statistically significant positive impact on GDP growth in any of the considered models. The regression results for Indonesia suggest that government consumption and private consumption have approximately the same impact on GDP growth, which differs significantly in comparison to the other MINT countries. No issues regarding heteroskedasticity or autocorrelation were detected based upon the LM test, White's test and the Durbin-Watson statistic value.

Model 4: OLS, using observations 1992-2014 (T = 23) Indonesia Dependent variable: ld_GDP

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−0.00197728	0.00684776	−0.2887	0.7759	
ld_FDI	−0.00293508	0.000942654	−3.1136	0.0057	***
ld_GE	0.549943	0.0889609	6.1819	<0.0001	***
ld_PE	0.512784	0.0829793	6.1797	<0.0001	***

Mean dependent var	−0.032087	S.D. dependent var	0.303251
Sum squared resid	0.020043	S.E. of regression	0.032479
R-squared	0.990093	Adjusted R-squared	0.988529
F(3. 19)	632.9616	P-value(F)	3.29e-19
Log-likelihood	48.38631	Akaike criterion	−88.77262
Schwarz criterion	−84.23064	Hannan-Quinn	−87.63033
rho	−0.127502	Durbin-Watson	2.235174

White's test for heteroscedasticity -
Null hypothesis: heteroscedasticity not present
Test statistic: LM = 16.0979
with p-value = P(Chi-square(9) > 16.0979) = 0.0648659
LM test for autocorrelation up to order 1 -
Null hypothesis: no autocorrelation
Test statistic: LMF = 0.572017
with p-value = P(F(1. 18) > 0.572017) = 0.459244
Test for normality of residual -
Null hypothesis: error is normally distributed
Test statistic: Chi-square(2) = 2.16058
with p-value = 0.339497

Source: Source: Authors' calculation and GRETL output

4. Conclusion

The MINT economies represent emerging and rapidly growing economies, albeit with very significant differences. These countries will be more and more important for the world economy and the world in general. The crucial geostrategic position of Turkey will always boost its significance. The strategic value of Nigerian oil will exist as long as there is oil in Nigeria. Besides that, Nigeria is the only country that fulfills the role of stabilizer in the Western Africa and the Gulf of Guinea region. The central, albeit also disperse geographic position of Indonesia in the part of the Asia-Pacific Rim between South-East Asia and Australia, due to the increased Chinese ambitions and the US

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presence in this maritime region means that Indonesia is vital, strategically and politically, even now. Mexico can position itself as a land bridge between North and South America, and use its resources and relatively cheap labor force to boost its development. However, the MINT is not the new BRICS, and they never will be. They just lack the size, as well as the economic, political, and military power. The MINT countries can (and very likely will be) be regional powers and the economic powerhouses among the emerging economies, but hardly anything more than that, which is nevertheless a remarkable improvement if we compare it to their relative political significance and economic power from a couple of decades ago.

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Appendix

The first set of ADF tests for the variables for Turkey.

Augmented Dickey-Fuller test for ld_GDP including one lag of (1-L)ld_GDP (max was 2. criterion AIC) sample size 21 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -0.821038 test statistic: tau_ct(1) = -3.55496 p-value 0.05792 1st-order autocorrelation coeff. for e: -0.052	Augmented Dickey-Fuller test for ld_FDI including 0 lags of (1-L)ld_FDI (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -0.934727 test statistic: tau_ct(1) = -4.06519 p-value 0.02148 1st-order autocorrelation coeff. for e: 0.005

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Augmented Dickey-Fuller test for ld_GC including 2lags of (1-L)ld_GC (max was 2. criterion AIC) sample size 20 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -0.820811 test statistic: tau_ct(1) = -3.57845 p-value 0.05542 1st-order autocorrelation coeff. for e: -0.038	Augmented Dickey-Fuller test for ld_PC including one lag of (1-L)ld_PC (max was 2. criterion AIC) sample size 21 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -0.836146 test statistic: tau_ct(1) = -3.58145 p-value 0.05511 1st-order autocorrelation coeff. for e: -0.037

Source: Authors' calculation and GRETL output

The second set of ADF tests for the variables for Mexico.

Augmented Dickey-Fuller test for ld_GDP including 0 lags of (1-L)ld_GDP (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + ... + e estimated value of (a - 1): -1.3662 test statistic: tau_ct(1) = -4.32216 asymptotic p-value 0.002845 1st-order autocorrelation coeff. for e: -0.128	Augmented Dickey-Fuller test for ld_FDI including one lag of (1-L)ld_FDI (max was 2. criterion AIC) sample size 21 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + ... + e estimated value of (a - 1): -2.49415 test statistic: tau_ct(1) = -7.84663 asymptotic p-value 6.206e-012 1st-order autocorrelation coeff. for e: 0.153
Augmented Dickey-Fuller test for ld_GC including one lag of (1-L)ld_GC (max was 2. criterion AIC) sample size 21 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + ... + e estimated value of (a - 1): -1.322 test statistic: tau_ct(1) = -6.52514 asymptotic p-value 5.248e-008 1st-order autocorrelation coeff. for e: -0.276	Augmented Dickey-Fuller test for ld_PC including 0 lags of (1-L)ld_PC (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + ... + e estimated value of (a - 1): -1.37453 test statistic: tau_ct(1) = -4.22862 asymptotic p-value 0.003983 1st-order autocorrelation coeff. for e: -0.112

Source: Authors' calculation and GRETL output

The third set of tests for the variables for Nigeria.

Augmented Dickey-Fuller test for ld_GDP including one lag of (1-L)ld_GDP (max was 2. criterion AIC) sample size 21 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + ... + e estimated value of (a - 1): -0.715347 test statistic: tau_ct(1) = -4.91629 asymptotic p-value 0.000262 1st-order autocorrelation coeff. for e: -0.012	Augmented Dickey-Fuller test for ld_FDI including 0 lags of (1-L)ld_FDI (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -1.24033 test statistic: tau_ct(1) = -5.56339 p-value 0.0009571 1st-order autocorrelation coeff. for e: -0.019

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Augmented Dickey-Fuller test for ld_GC including 0 lags of (1-L)ld_GC (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -1.3434 test statistic: tau_ct(1) = -6.23776 p-value 0.0002351 1st-order autocorrelation coeff. for e: -0.110	Augmented Dickey-Fuller test for ld_PC including 0 lags of (1-L)ld_PC (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -0.974853 test statistic: tau_ct(1) = -4.22845 p-value 0.01544 1st-order autocorrelation coeff. for e: -0.076

Source: Authors' calculation and GRETL output

The final set of tests considers the stationary of the variables for Indonesia.

Augmented Dickey-Fuller test for ld_GDP including 0 lags of (1-L)ld_GDP (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -1.07987 test statistic: tau_ct(1) = -4.72674 p-value 0.005532 1st-order autocorrelation coeff. for e: -0.023	Augmented Dickey-Fuller test for ld_FDI including 0 lags of (1-L)ld_FDI (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -1.46982 test statistic: tau_ct(1) = -7.25802 p-value 2.962e-005 1st-order autocorrelation coeff. for e: -0.138
Augmented Dickey-Fuller test for ld_GC including 0 lags of (1-L)ld_GC (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -1.04536 test statistic: tau_ct(1) = -4.58779 p-value 0.007381 1st-order autocorrelation coeff. for e: -0.031	Augmented Dickey-Fuller test for ld_PC including 0 lags of (1-L)ld_PC (max was 2. criterion AIC) sample size 22 unit-root null hypothesis: a = 1 with constant and trend model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e estimated value of (a - 1): -1.16532 test statistic: tau_ct(1) = -5.14814 p-value 0.002293 1st-order autocorrelation coeff. for e: -0.019

Source: Authors' calculation and GRETL output

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