

Macroeconomic Dynamics on Rural and Urban Household Consumption Divide in BRICS Nations: A Comparative Study

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Abstract

Objectives: Consumption as a whole in an economy is a function of income. In other words the household aggregate consumption in an economy largely depends on its Income. This study examines basically the consumption pattern at rural and urban level in BRICS nations. **Methodology and Analysis:** The study also evaluates the influence and relationship of macroeconomic variables on rural and urban consumption. For the purpose of the study, World Development Indicators (WDI) data from World Bank is used. The time series data of BRICS nations for a period from 1991-2014, on rural and urban consumption, and its relationship with variables like, Gross National Income (GNI), Industrial Production Rate (IPR), and Inflation Rate (IR), Bank Credit (BC), Bank Lending Interest Rate (BLIR) are analysed using Multiple Regression model and Co-integration analysis. **Findings:** From the above analysis it may be observed that there is divergence in the rural and urban household final consumption in BRICS nations before and after becoming as a group. There exists inequality in the influence of macroeconomic variables and their relationship between BRICS nations. **Applications/Improvements:** The analysis gives scope for further study of consumption pattern in other regions and can be improved by adding other influencing variables.

Keywords: Co-Integration JEL Classification: B22, C55, E21, E31, E43, Macroeconomic Variables, Multiple Regression Model

1. Introduction

Emerging economies like Brazil, Russia, India and china formed a group referred to as BRIC nations. The demographic features of these nations and their swift economic growth were rated as largest in 21 century across the world's nations and the most vibrant economies among other developing countries. The economic performance of these countries in the recent years and its trajectory shows that they possess the capabilities to realizing their potentials. The original BRIC nations together constitute a population of more than 2.8 billion which accounts for around 40% of global population, covering a land space of a quarter and above of the global land area and it con-

tributes to 25% and above towards GDP out of the world's total GDP¹.

The acronym BRICs originated in 2001 which was developed by Goldman Sachs to describe and predict that the emerging economies of Brazil, Russia, India and China will overtake the developed economies like (US, Japan, UK, Germany, France and Italy) by 2050 in terms of GDP.

In 2010 China invited to South Africa to join BRIC nations and the formal announcement of its joining was made in the conference convened by China in 2011. It was observed that the core factors like macroeconomic stability, openness, education and institutions would facilitate BRICS nations to achieve the predicted development².

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1.1 Scenario of Rural and Urban Household Final Consumption

In the present study the rural and urban household final consumption inequality is considered for analysis. The World Development Indicator (WDI) of World Bank data, on total household final consumption is apportioned based on the rural and urban population data and the consumption pattern is presented below:

Figure 1 depicts the rural (BHFCR) and urban (BHFCU) household final consumption of Brazil. Figure 2 shows the rural (RHFCR) and urban consumption (RHFCU) of Russia. Even though the urban consumption has out beaten the consumption pattern of rural consumption in both the countries, the rural and urban consumption has gradually increased over a period of time in Russia.

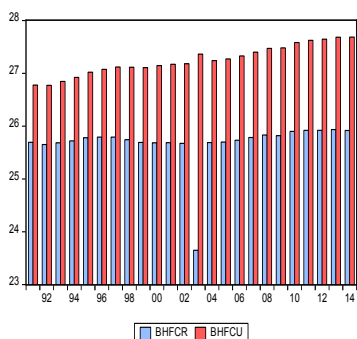


Figure 1. BHFCR and BHFCU.

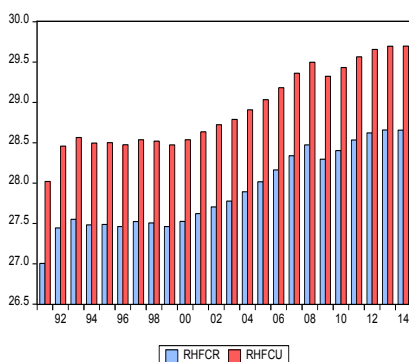


Figure 2. RHFCR and RHFCU.

The Figures 3 and 4 shows the rural and urban household final consumption pattern in India and China. The rural household consumption in India (IHFCR) has exceeded the urban household consumption (IHFCU). In China, it appears that the rural consumption (CHFCR) had grown excessively over the urban consumption

(CHFCU) till 2008. However it remained the same in the subsequent years.

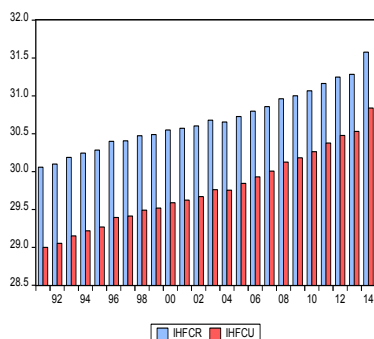


Figure 3. IHFCR and IHFCU.

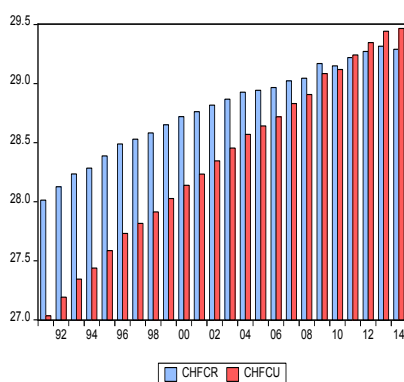


Figure 4. CHFCR and CHFCU.

The rural (SHFCR) and urban (SHFCU) consumption pattern in South Africa, shown in Figure 5. The above graph shows that the urban consumption in South Africa has been gradually increasing since 1991 and it has started reaching its peak from 2011.

2. Literature Review

The study found out the extent to which the demographic component of decreasing dependency ratio, in BRICS countries, impacts the development and growth of emerging economies in comparison with few selected developed economies. The potential growth of BRICS economies is largely dependent on its skill formation capacity of its population, particularly working age population³.

In a study, it was observed that the chosen factors like Gross Capital formation, Currency value, infrastructure, Labour cost, Market size, were the potential drivers of Foreign Direct Investment inflows of BRICS countries.

And in their study, it concluded that the divergence in processes and effects of producing between China and the other BRICS⁴.

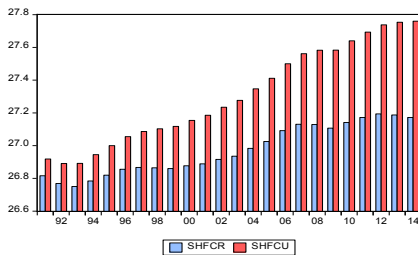


Figure 5. SHFCR and SHFCU.

In a research work observed that microfinance an important mechanism to generate income and employment opportunities to a larger section of underprivileged population and plays a key role in poverty alleviation in developing nations⁵. The growing political and economic significance of emerging economies such as BRICS countries provide a general context for the future of microfinance⁶. In a research paper, the problems and perspectives of urban-rural interdependence were studied, with special reference to the means by which these variables are influenced by the existing and prevalent cultural and socio-economic transitions⁷.

A research report concluded that the changes in health and social and economic inequalities were significantly present internally and externally among the nations called as BRICS between 1990 and 2001⁸. A research work focused on the upcoming economic level of the BRICS countries by examining different factors and the study also examined the comparative analysis with the China economy⁹. In an explorative study, the convergence and divergence in the performance and its fluctuations within BRICS economy with other counterpart and the interdependence of each market were analysed. The objective of this research work was to evaluate the influence of the economic development in BRICS nations on major financial changes in other developing nations¹⁰.

A report discussed the about different models of economic development of the individual BRICS countries, with a special focus on their external relations and on likely future developments and explored the future challenges and opportunities for EU competitiveness¹¹. A paper presented reviewed the individual experience of urbanization in each of the BRICS countries with the object of comparing the policies, trajectories and impacts of this process¹².

3. Data and Methodology of Analysis

The time series data of BRICS nations for a period from 1991-2014, on rural and urban consumption, and its relationship with variables like, Gross National Income (GNI), Industrial Production Rate (IPR), and Inflation Rate (IR), Bank Credit (BC), Bank Lending Interest Rate (BLIR) are analysed using Multiple Regression model and Co-integration analysis.

3.1 Objectives of the Study

- To examine the relationship of rural and urban consumption with macroeconomic regressor variables of the respective nations like Bank Credit (BC), Bank Lending Interest Rate (BLIR), Industrial Production (IPR), Inflation Rate (IR) and Gross National Income (GNI).
- To evaluate the influence of macroeconomic variables on rural and urban consumption in BRICS nations.
- To analyse the long term effectual dynamics of the macroeconomic variables on rural and urban household consumption.

3.2 Hypothesis

- H_0 : There is no significant relationship between regressor variables on the rural and urban household final consumption.
- H_0 : There is no significant joint and individual influence of regressor variables on the dependent variable of rural and urban household final consumption.
- H_0 : The country wise regressor variables are not co-integrated.

4. Analysis and Interpretation

The rural and urban household consumption divide is analysed by comparing the results of descriptive statistics. From Table 1, it is observed that the average urban consumption in BRICS nations is more than the level of consumption in rural consumption except in Russia.

The rural and urban consumption pattern is divergent in countries like Brazil, China, India and South Africa. It is also observed that the skewness is positive in countries like Russia, India and South Africa and the Kurtosis is less

3 in all countries except rural household final consumption in Brazil (BHFCR), indicating that the distribution is flat relative to normal.

Table 1. Descriptive statistics

Countries	Mean	S.D	Skewness	Kurtosis
BHFCR	25.68	0.44	-4.2667	20.22
BHFCU	27.25	0.28	-0.0129	2.04
RHFCR	27.89	0.48	0.2332	1.76
RHFCU	28.92	0.49	0.2492	1.76
IHFCR	30.68	0.40	0.3908	2.42
IHFCU	29.76	0.49	0.3525	2.62
CHFCR	28.78	0.38	-0.3928	2.09
CHFCU	28.35	0.74	-0.1408	1.87
SHFCR	26.97	0.15	0.1654	1.49
SHFCU	27.30	0.30	0.1325	1.60

Table 2. Correlation analysis

Countries	BC	BLIR	GNI	IPR	IR
BHFCR	0.24	-0.33	0.32	-0.14	-0.68
BHFCU	0.97	-0.89	0.97	0.03	-0.04
RHFCR	0.95	-0.72	0.98	-0.17	-0.76
RHFCU	0.95	-0.72	0.98	-0.17	-0.76
IHFCR	0.98	-0.82	0.98	0.81	-0.03
IHFCU	0.99	-0.83	0.99	0.80	-0.02
CHFCR	0.99	-0.74	0.98	0.15	-0.35
CHFCU	0.99	-0.71	0.99	0.10	-0.31
SHFCR	0.97	-0.84	0.99	-0.88	-0.34
SHFCU	0.98	-0.86	0.99	-0.89	-0.36

The outcome of the correlation analysis as given in Table 2 shows that the variables like Bank Credit and Gross National Income (GNI) have positive correlation with the rural and urban household consumption in all BRICS nations. It is also observed that the variables like Bank Lending Interest Rate (BLIR) and Inflation Rate (IR), are negatively correlating to the dependent variables like rural and urban household final consumption in all BRICS nations.

In case of the variable, Industrial Production Rate (IPR) it is clear from the above result that there is positive correlation with rural and urban household final consumption in countries like India and China whereas the same are negatively correlated in other countries.

The results of regression analysis as shown in Table 3 indicate that there is a good fit of the regression model as

the R^2 value is more than 80% in all BRICS nations and it is also observed that there is joint influence of regressor variables as the p value of F statistics is < 0.01 .

Table 3. Results of regression analysis.

Dependent Variable	Regressor Variable	t - statistic	Prob.	R - squared	Prob(F-statistic)
BHFCR BHRCU	BBC	-2.782	0.0194	0.9544	0.0000
	BBLIR	0.122	0.9049		
	BGNI	7.790	0.0000		
	BIPR	-3.175	0.0099		
	BIR	0.477	0.6437		
RHFCR RHRCU	RBC	-2.5367	0.0261	0.9999	0.0000
	RBLIR	-2.5964	0.0234		
	RGNI	1.9785	0.0713		
	RIPR	0.5575	0.5874		
	RIR	1.3444	0.2037		
IHFCR IHRCU	IBC	-2.6028	0.0186	0.9998	0.0000
	IBLIR	-1.1098	0.2825		
	IGNI	-1.3858	0.1837		
	IIPR	-1.2341	0.2340		
	IIR	-0.4837	0.6347		
CHFCR CHRCU	CBC	1.5439	0.1410	0.9976	0.0000
	CBLIR	-0.0310	0.9756		
	CGNI	-1.2483	0.2288		
	CIPR	5.4295	0.0000		
	CIR	-2.4872	0.0236		
SHFCR SHRCU	SBC	3.029	0.0080	0.995	0.0000
	SBLIR	2.387	0.0297		
	SGNI	1.319	0.0260		
	SIPR	0.368	0.7183		
	SIR	0.463	0.6492		

However there is divergence in the influence of individual regressor variables on the rural and urban household consumption in all BRICS nations. The null hypothesis of no significant influence is rejected in case of Brazil's Bank Credit, GNI and BIPR as p value < 0.05 which means that these variables have significantly influenced the dependent variables of rural and urban consumption. However the null hypothesis of other regressor variables cannot be rejected.

In case of Russia and India, the excepting Bank Credit and Bank Lending Interest rate, the null hypothesis that there is no significant influence of other regressor variables cannot be rejected.

It is observed from the values of China that Industrial Production rate and Inflation rate are the regressor variables that influenced the household consumption than the other variables. In case of South Africa, it is found that its Bank Credit, Bank Lending Interest rate and Gross

National Income, has significantly influenced the dependent variables of rural and urban consumption.

In order to study the cointegration of the macroeconomic regressor variables, the Engle-Granger Cointegration Test is employed. Before performing the cointegration test, a group unit test is applied to check stationarity of the regressor variables. The results of the unit root test are stated in the Table 4. The results of the test show that the data is non-stationary.

Table 4. Summary of group unit root test.

Group Unit root test of country wise regressor variables	ADF Fisher Chi-square	PP Fisher Chi-square	Prob.*
Brazil	92.49	127.731	0.0000
Russia	64.86	198.268	0.0000
India	53.02	79.213	0.0000
China	58.3	86.445	0.0000
South Africa	53.65	59.175	0.0000

*Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution.

Since p value of Bank Credit (BC), Bank Lending Interest Rate (BLIR), Inflation Rate (IR) in Brazil as mentioned in Table 5, is less than 5% level, the null hypothesis of there is no cointegration can be rejected, which means that these variables have long term relationship with the dependent variables of rural and urban household final consumption. In case of Russia there is long term association between rural and urban household final consumption and Industrial production rate as per Table 6.

Country Wise Results of Engle-Granger Cointegration Test

Table 5. Brazil

Regressor variables	Z – Statistic	Prob.
BBC	15.628	0.0001
BBLIR	18.781	0.0001
BGNI	-15.4051	0.7281
BHFCR	-16.0538	0.6543
BHFCU	-13.9723	0.8323
BIPR	-13.6834	0.8537
BIR	25.9723	0.0001

Table 6. Russia

Regressor variables	Z – Statistic	Prob.
RBC	-21.65907	0.1530
RBLIR	-15.5978	0.6569
RGNI	-17.11891	0.5043
RHFCR	-25.1288	0.0185
RHFCU	-25.08405	0.0194
RIPR	-51.61045	0.0001
RIR	602.4280	1.000

In case of India, it is observed that there is cointegration of variables like Bank Credit and Gross National Income as per Table 7. The null hypothesis of no cointegration cannot be rejected in case of the China macroeconomic variables as the p value of all variables are more than 5% of confidence level as mentioned in Table 8.

Table 7. India

Regressor variables	Z – Statistic	Prob.
IBC	-11.877	0.0001
IBLIR	-57.8579	0.9220
IGNI	-6.43169	0.0075
IHFCR	-13.24194	0.8706
IHFCU	-13.22201	0.8714
IIPR	-18.82711	0.5107
IIR	-20.74015	0.3685

Table 8. China

Regressor variables	Z – Statistic	Prob.
CBC	-10.20660	0.9632
CBLIR	-29.95332	0.0176
CGNI	-15.47014	0.7532
CHFCR	-12.47375	0.9017
CHFCU	-11.15118	0.9431
CIPR	-18.36805	0.5474
CIR	-21.18438	0.3397

Table 9. South Africa

Regressor variables	Z – Statistic	Prob.
SBC	-20.6289	0.3528
SBLIR	-18.02493	0.5525
SGNI	-22.79402	0.2143
SHFCR	-10.60500	0.9524

SHFCU	-13.57474	0.8469
SIPR	-24.46058	0.1338
SIR	-20.74068	0.3448

The results of cointegration test shown in Table 9 relating to South Africa indicate that there is no long term association between the macroeconomic regressor variables.

5. Conclusion

There is divergence in the rural and urban household final consumption in BRICS nations before and after becoming as a group. There exists inequality in the influence of macroeconomic variables and their relationship between BRICS nations.

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