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PAPER

The Macroeconomic and Demographic Determinants of Saving Behavior in Selected Countries of Asia

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Abstract This research study examines macroeconomic and demographic factors that affect the gross domestic savings of highly youth population countries of Asia by taking data from 1990 to 2019. The countries considered in our study are Pakistan, India, China, Indonesia and Bangladesh. For this purpose, long-run coefficients are estimated using the Fully Modified Ordinary Least Square (FMOLS) estimation method to calculate the coefficients of the variables with heterogeneous standard errors. According to the estimated results, all the variables significantly impact gross domestic savings. The study results revealed that macroeconomic and demographic determinants significantly affect the gross domestic savings of sampled countries. Macroeconomic variables like GDP per capita and interest rate positively affected savings. While inflation is negatively affecting them. Especially, demographic factors like the dependency ratio negatively affect the gross domestic savings in sample countries. While infant mortality rate and urbanization are reported as the positive determinants of savings.

Keywords: savings, demographic transitions.

JEL Classification: E6, J1, O1.

1. Introduction

Income has two components, savings and consumption (Mankiw, 2012). Basically, savings are that part of income that remains after consumption (S = Y - C). For every economy, savings play a vital role because a high saving rate means more investment

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as national income equilibrium savings are equal to the investment (Keynes, 2018). So, it could be said that more will be the investment, more will be the economic growth (Riaz & Riaz, 2018), as savings and investment are equal to each other.

If we talk about the general savings function, which is also discussed in many standard textbooks, it is a function of income and interest rate (Mankiw, 2012; Keynes, 2018; Romer, 2018), an increasing function. Many recent studies confirm this relationship (Aidoo-Mensah, 2018; Alper, 2018; Bofinger & Scheuermeyer, 2019). When an individual's income increases, it leads to an increase in the saving potential of that person and vice versa (Najarzadeh et al., 2014). Similarly, the interest rate also has a positive impact on savings (Mushtaq & Siddiqui, 2017), because an increase in interest rate will bring individuals in a position to earn more in the future, giving them a motive for willing forgoing consumption today.

Usually, by increasing life expectancy, savings can be increased (Epaphra, 2014). This is because a healthier population tend to save private medical expenses. Demographic changes are among the factors determining the saving patters (Kruger, 2004; Schultz, 2005). Demographic changes are related to the population, and it means the change in the living condition of the population regarding age, race, and sex[1]. The number of demographic changes can also be seen in society by increasing the population. Two reasons behind demographic transitions are considered, first, the increase of fertility is an important factor behind the demographic transitions (Galor, 2012), secondly, human capital (Lutz et al., 2019).

As discussed earlier, the importance of savings for an economy and demographic change impact it. For example, considering population growth, it also impacts savings due to an increase in population savings must increase proportionally (Epaphra, 2014). This disproportional increase may represent the economic imbalance in the economy. An increase in population has a dual effect on savings because if the number of independent increases, savings may increase. However, if dependents are increasing, savings may reduce (Cook, 2005). Some demographic variables[2] like dependency ratio, infant mortality rate and urbanization as demographic variables can directly affect the saving.

Similarly, people of different localities (like rural and urban areas) have different savings patterns (Hua & Erreygers, 2019). But usually increase labour force and graduates leads to an increase in the saving rate in every locality (Ceritoğlu & Eren, 2014). Different countries are affecting differently by the demography transition around the world (Martinez et al., 2012; Golley & Tyers, 2013), but the most important thing is that demographic changes affect the world. But some standard indicators of demographic change like urbanization and unemployment have a positive and negative impact, respectively on savings (Doker et al., 2016).

The role of the demographic transition in countries' youth population is prominent (Arif & Chaudhry, 2008). It is because the advantages of demographic transition concerning the rising share of youth in the total population have partially been translated by the development of their human capital and valuable improvement in the labour market domestically.

[1] https://www.investopedia.com/terms/d/demographics.asp

[2] https://www.cliffsnotes.com/study-guides/sociology/population-and-urbanization/population-and-demographic-variables

Considering the role of demography has some benefits because age distributions help to explain the contrasting saving patterns for different regions (Curtis et al., 2017).

We have considered three demographic indicators infant mortality rate, urbanization, and dependency ratio that are presented below from figure 1 to 3 to understand the time trend along with savings in a comparative way. These graphs consider highly youth populated regions of Asia. As shown in Figure 1, the dependency ratio reduces through time while savings are improving. Hence, it is representing the average trend of these countries. So, Figure 1 is reflecting the inverse relation between savings and the dependency ratio.

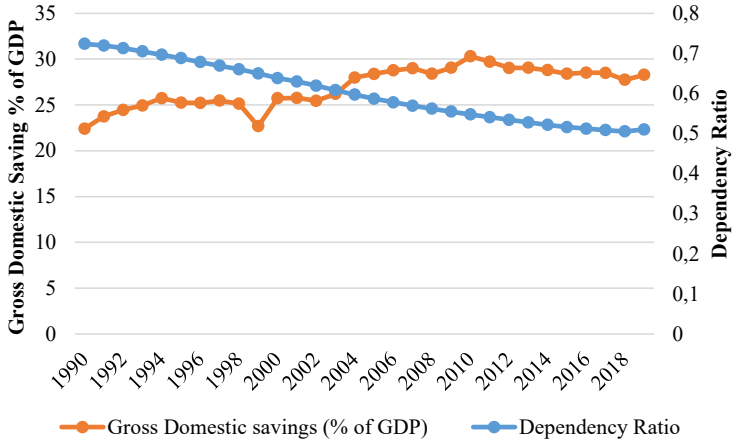

Figure 1. Savings and Dependency Ratio Trend
Source: WDI

Figure 2 shows the average time trend of savings infant mortality rate (per 1,000 live births). The noticeable thing is that the infant mortality rate has decreased very sharply, and it is a positive sign. Comparatively, savings are increasing but at a plodding pace. This increase can be seen from 2000 to 2010. However, after that there is no increase, in fact from 2010 onward it can be seen a slight decrease.

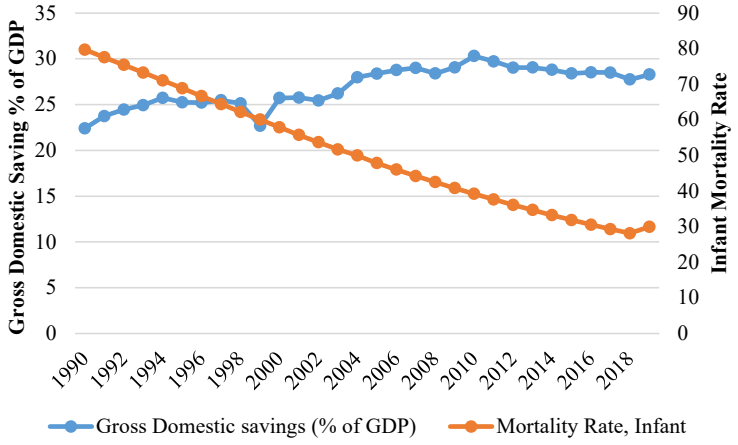

Figure 2. Savings and Mortality Rate, Infant Trend
Source: WDI

In the exact context Figure 3 contains average savings and urbanization time trend. In this graph, urbanization is very fast, straight and smooth, which means that people migrate from rural to urban areas very fast. By comparison, savings increasing till 2010 but after starts to decline slowly. Savings are not increasing smoothly as urbanization, there are fluctuations.

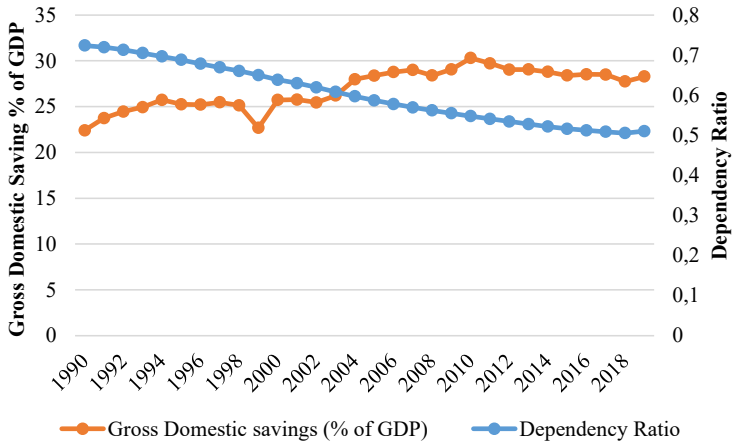

Figure 3. Savings and Urbanization Trend
Source: WDI

Three graphs were presented for the comparative outlook towards savings with dependency ratio, infant mortality rate, and urbanization. One evidence is clear; these demographic transitions are smooth and consistent with respect to time. But the savings have fluctuations; sometimes it shows an increasing trend and sometimes decreases.

This study aims to check the role of demographic changes on savings in the selected Asian countries while controlling for the standard economic indicators of savings rate. To this end, the majority of youth populated nations are selected from Asia. This study has focused on dependency ratio, infant mortality rate, and urbanization to test the role of demographic transition. This study also aims to propose a suitable policy that may become crucial overtime when the population distributions shift to an economically active population.

After a detailed introduction about demographic transitions and savings, this study has formulated a review of some related literature to strengthen the subject matter. Subsequently, the estimated results and economic reasoning are discussed after data and methodology. In the end, the conclusion and policy recommendations are discussed.

2. Literature Review

The economic literature bundle of work can be seen regarding savings, investment, and consumption, from classical economists till now (Mankiw, 2012). Later, many economists put some light on the subject matter according to their vision, like Obwona and John (1998) explored the reasons for savings in Uganda by taking the microdata. The study results reported that the savings are driven to fulfil the meagre needs of

health and education requirements. Considering some recent literature, Chowa et al. (2012) investigated the determinants of savings in low-income individuals of rural Uganda. The study suggested that savings can increase if the financial barriers to savings can be removed.

Furthermore, financial incentives and financial education have a role in determining savings. Beckmann et al. (2013) studied the drivers of savings in Central, Eastern and Southeastern European countries between 2010 and 2011. The study results revealed that the individuals' age, education, and income are the main drivers of savings in these countries. Ayalew (2013) tested domestic savings behaviour by using the data of various determinants for the period 1970 to 2010. The ARDL bounds testing approach confirmed the long-run cointegration relationship. The study results show that the inflation rate, GDP growth rate and depositing interest rates significantly affect the domestic savings in Ethiopia.

Mishi (2014) explored the reasons for savings in South Africa. The study results show that the level of income, financial development and uncertainty about inflation are the key factors impacting the savings level in South Africa. Samantaraya and Suresh (2014) applied the ARDL approach to the determinants of savings for Indian data. The study considered the various variables that are affecting savings. It was found that dependency ratio, inflation and interest rate are the significant variables affecting savings in India. Furthermore, the ARDL approach also confirmed the existence of a long-run relationship among the variables.

Finlay and Price (2015) investigated the reasons for the increase in savings in Australia from 2003-04 to 2009-10, and the results suggested that the rise in household savings was driven by changes in the saving behaviour rather than changes in the population characteristics. Ndirangu and Willy (2015) tested the effect of various factors on Kenya's savings by taking the data from 1970 to 2013. The study results depicted that gross domestic product, inflation and age dependency ratio are the key variables affecting the savings in Kenya. Ahmed (2015) used time-series data of Pakistan regarding the determinants of saving from 1972 to 2012. The study results suggested that dependency ratio, fiscal development and financial development affected the savings in Pakistan. Kolasa and Barbara (2015) compared the determinants of the savings of Poland with the Organization of Economic Cooperation and Development (OECD) countries. The financial deepening process was the main reason for deviations between Poland and OECD countries' saving determinants.

Ozioma et al. (2016) have explored the determinants of gross domestic savings for this purpose. They have applied the vector error correction model from 1980 to 2015 for Nigeria. According to the long-run results, financial development, consumption, and interest rate positively related to savings, but GDP per capita has negative. Perciun et al. (2017) studied the dynamics of savings for the Republic of Moldova's case. The study finding suggests that a trim level of savings indicates the downfall trend in economic growth. The study further specified that the estimates of the National Bank of Moldova indicate that a minimal amount of legal export of capital occurs during the process of export of capital. Patra et al. (2017) identified the causal relationship

between economic growth and the behaviour of savings in the case of India by using data from 1950-51 to 2011-12. The study has also used the structural break for analyzing the causal behaviour of savings and economic growth. The study confirmed the existence of a long-run relationship between both variables and indicates that in both pre and post-structural break period, savings are causing economic growth. However, economic growth is causing savings in the pre-break period only.

Kim et al. (2017) used the annual data of Vietnam from 1986 to 2015 to identify the effect of savings on economic growth. The study results indicate that savings and investment are positively and significantly impacting economic growth, while the dependency ratio has a negative and significant impact on economic growth in the long run. Bolarinwa and Obembe (2017) studied the causal relationship between economic growth and domestic savings for the case of 06 Sub Saharan African countries by using data from 1981 to 2014. The study results revealed that the direction of the causal relationship is mixed type as for some sample courtiers it is running from economic growth towards saving, while, for some countries, causality is running from savings towards economic growth.

Bui (2018) researched to check the impact of fiscal policy for specific variables like net tax and government expenditures on savings of 23 Asian economies by employing data from 1990 to 2015. The study results suggested that tax policy is suitable during the recession period while government spending is found to be effective during an economic slowdown. Dash and Kumar (2018) conducted a study to check the impact of inflation on variations in savings for the case of India. The study results revealed that inflation is significantly and negatively causing savings. Nwosu et al. (2019) conducted this study to find out the micro determinants of savings in the case of Nigeria. For this purpose, the analysis was conducted on the household survey of Nigeria. The study results indicated that the significant determinants of savings are land ownership, occupation, marital status, availability of infrastructure and availability of electricity.
Joshi et al. (2019) researched the relationship between the three critical variables, i.e., saving economic growth and investment for Nepal, by taking data from 1975 to 2016. The structural break was introduced in the variable of economic growth, and long-run cointegration was validated among the selected variables. The study findings suggested that investment is significantly and positively related to economic growth. While saving negatively impacts economic growth, savings are not channelized towards economic growth. Nagawa et al. (2020) conducted this study to explore the key determinants of gross savings of Uganda by taking data from 1980 to 2017. The study results revealed that economic growth, Broad money and foreign direct investment are the key significant variables that are positively related to savings.

Specifically, some demographic variables affect savings. There are many demographic variables, for example, dependency ratio, usually, when it increases, it reduces the savings some studies like Samantaraya and Suresh (2014), Ndirangu and Willy (2015) and Kim et al. (2017) have discussed in their study that dependency ratio falls the savings. If people are conscious about the future, they will focus on precautionary savings, usually an increase in the mortality rate responsible for

precautionary savings. Some studies like Hau (2001), Hsu (2013), Salm (2010), Nardi et al. (2016), Boar (2020) and Jordà (2020). In the savings literature regarding demographic transition, some studies like Matur et al. (2012), Doker et al. (2016) and Khan et al. (2016) have used urbanization and found it as a significant demographic variable with savings.

The above-discussed studies have tried to cover the subject of savings well but there are still some missing aspects which this study have tried to fulfil. This study has focused on five high youth populated countries of Asia that these studies have ignored regarding demographic transitions and savings. Undoubtedly, many studies have explored the impact of demographic transitions related to urbanization and dependency ratio on savings but how mortality is affecting savings was also a missing aspect that this study tried to fulfil.

3. Data and Methodology

This study has tried to determine some key factors of savings and some demographic determinants using secondary data. This study focused on five highly youth populated countries of Asia (Bangladesh, China, India, Indonesia and Pakistan) from 1990 to 2019. All the series are collected from world development indicators (WDI) except interest rate collected from International Financial Statistics (IFS). Moreover, table 1 contains the full description of variables and the source and definition.

Table 1. Description of the Variables

Symbol	Definition	Source
SAV	Natural log of gross domestic savings (% of GDP)	WDI
ECG	Natural log of GDP per capita (constant US$)	WDI
INF	Natural log of consumer price index	WDI
INT	Natural log of annual interest rate	IFS
DRO	Natural log of Ratio of dependent population to working population	WDI
IMR	Natural log of infant mortality rate (per 1,000 live births)	WDI
UBR	Natural log of urban to rural population ratio	WDI

This study proposed four regression models. Model 1 is the basic model that contains some traditional variables like economic growth, inflation and interest rate. But model 2 to 4 contains demographic variable like dependency ratio, infant mortality rate and urbanization. In all the models β_1, β_2 and β_3 are the coefficients of economic growth, inflation and interest rate respectively. In model 2 to 4, β_4 represents the coefficients of dependency ratio, infant mortality rate, and urbanization. While e_{it} is the normally distributed error term. These models are estimated using Fully Modified Ordinary Least Square (FMOLS). Basically, FMOLS considered those issues about endogeneity, intercept term and removes the missing variables biases and homogeneity restrictions

(Cavallo & Pedemonte, 2016; Garcia, 2019; Ertuğrul, & Gebeşoğlu, 2020).

$$SAV_{it} = \beta_0 + \beta_1 ECG_{it} + \beta_2 INF_{it} + \beta_3 INT_{it} + e_{it} \quad (1)$$

$$SAV_{it} = \beta_0 + \beta_1 ECG_{it} + \beta_2 INF_{it} + \beta_3 INT_{it} + \beta_4 DRO_{it} + e_{it} \quad (2)$$

$$SAV_{it} = \beta_0 + \beta_1 ECG_{it} + \beta_2 INF_{it} + \beta_3 INT_{it} + \beta_4 IMR_{it} + e_{it} \quad (3)$$

$$SAV_{it} = \beta_0 + \beta_1 ECG_{it} + \beta_2 INF_{it} + \beta_3 INT_{it} + \beta_4 UBR_{it} + e_{it} \quad (4)$$

3.1. Theoretical Model

In this study, gross domestic savings as a dependent variable (Abusomwan & Ezebuihe, 2016; Bolarinwa & Obembe, 2017; Ashish & Singh, 2018; Nwosu et al., 2019 Nagawa et al., 2020). Moreover, several independent variables are used in this study: GDP per capita (Ozioma et al., 2016; Kim et al., 2017; Ashish & Singh, 2018; Joshi et al., 2019; Nagawa et al., 2020). Regarding GDP per capita as economic growth, this study hypothesized that its increase could also increase gross domestic savings. Inflation has also directly related to gross domestic savings (Ndirangu & Willy, 2015; Khan et al., 2017; Kumar, 2018). Regarding inflation, this study hypothesized that its increase could reduce gross domestic savings. Interest rate also directly related to gross domestic savings (Mushtaq & Siddiqui, 2016; Ozioma et al., 2016; Aizenman et al., 2019; Nagawa et al., 2020). Regarding the interest rate, this study hypothesized that its increase can increase gross domestic savings.

This study has incorporated some demographic variables to check their impact on gross domestic savings. In this context, the dependency ratio is used as one indicator of demographic transitions (Samantaraya & Suresh, 2014; Ndirangu & Willy, 2015; Kim et al., 2017). Regarding demographic changes, this study firstly hypothesized that its increase can rise the gross domestic savings. This study has incorporated the infant mortality rate with gross domestic savings to capture the precautionary aspect of savings (Boar, 2020; Jordà, 2020). This study secondly hypothesized that an increase in infant mortality causes a decrease in gross domestic savings. This study also incorporated urbanization as a demographic indicator (Matur et al., 2012; Doker et al., 2016; Khan et al., 2016). Regarding urbanization, this study thirdly hypothesizes that an increase in urbanization leads to an increase in gross domestic savings.

3.2 Results and Discussion

In estimated results, Table 2 contains some summary statistics, which contains some descriptive analysis of the variable. This table firstly presented the mean and median of all the series, reflecting the mean point of each variable. Later minimum and maximum value demonstrating the rage of each series. The last thing is the standard deviation about the dispersion of series from the mean point. The mean value is greater than the standard deviation of all the series except the dependency ratio, which means that these all variables are under dispersed.

Table 2. Summary Statistics

	SAV	ECG	INF	INT	DRO	IMR	UBR
Mean	3.209	7.242	4.229	1.953	-0.551	3.728	-0.585
Median	3.278	7.028	4.385	2.016	-0.563	3.761	-0.682
Maximum	3.945	8.956	5.195	4.140	-0.112	4.666	0.370
Minimum	1.755	6.176	2.538	0.761	-1.008	2.002	-1.240
Std. Dev.	0.488	0.684	0.625	0.530	0.235	0.610	0.391

To strengthen the analysis, figure 4 to 9 presents the graphical association of all independent variables with the dependent variable. Figure 4 shows the positive association between GDP per capita and savings. A weak negative association is found with savings and interest rate in figure 5, and a positive association is found in price level and savings in figure 6.

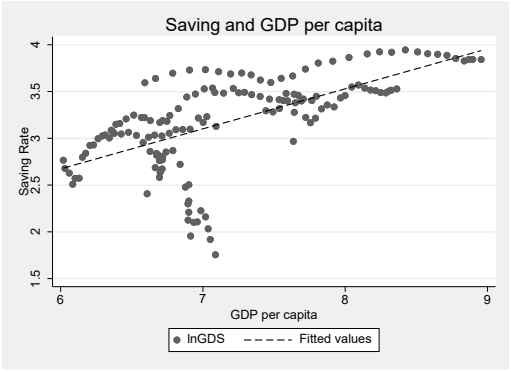

Figure 4. Linear fit of saving and GDP per capita

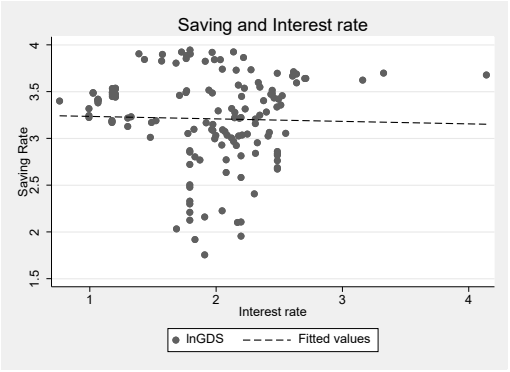

Figure 5. Linear fit of saving and interest rate

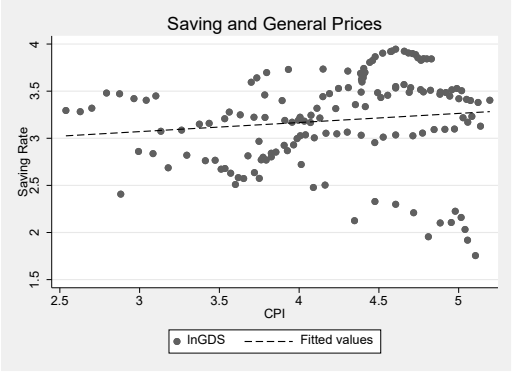

Figure 6. Linear fit of saving and general prices

Similar graphical associations are presented in graphs 7 to 9; these graphs are related to demographic transitions. In figure 7 to 8 the scatter plots sbow the association between demographic variables and saving, respectively. So, figures 7 and 8 represent the negative association of dependency ratio and infant mortality rate with savings. However, urbanization is positively associated with the savings of the sampled countries.

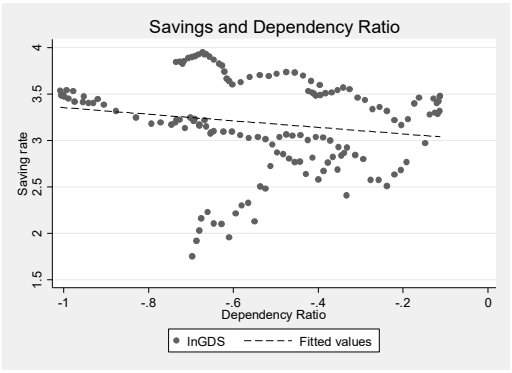

Figure 7. Linear fit of saving and dependency ratio

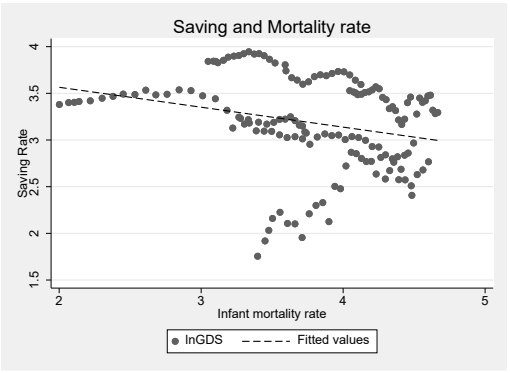

Figure 8. inear fit of saving and mortality rate

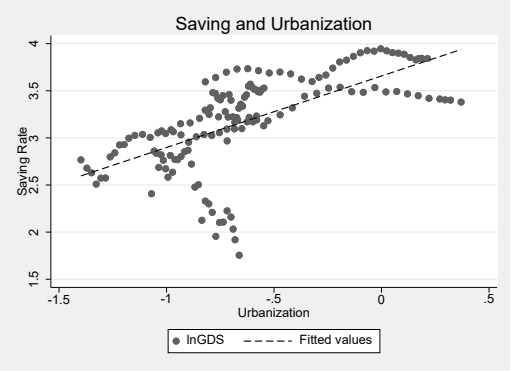

Figure 9. Linear fit of saving and urbanization

To test whether the series are having any trend or follow any specific pattern or unit root issue, two-panel unit root tests are applied, these are Levin Lin and Chu (Levin et al., 2002) and Fisher ADF, which is also known as Augmented Dickey-Fuller statistics (Maddala & Wu, 1999). Basically, ADF is a commonly used unit root test in time series and panel data, but Levin Lin and Chu (LLC) is specifically for panel unit root test, and this test incorporated lags of the dependent variable and follow the below presented equation 7. The unit root test is applied using no intercept and trend specification.

$$\Delta Y_{it} = \varphi Y_{i,t-1} + Z_{it}^{'}\gamma_i + \sum_{j=1}^{p}\theta_{ij}\Delta Y_{i,t-1} + \mu_{it}$$

Both tests have the same null hypothesis, that series has no unit root or trend. In the

light of probability values, the null hypothesis is rejected for the series like savings, economic growth and inflation because the test statistic values of LLC and ADF tests are significant at first difference. So these series are stationary at first difference. However, the interest rate is stationary at the level and first difference according to LLC and ADF, respectively. A similar case is also with dependency ratio, and it is stationary at level and at first difference according to ADF and LLC respectively. Infant mortality rate and urbanization both are stationary at level. Therefore unit root test is revealing mix order of integration. Therefore, the cointegration method of long-run estimates would be suitable.

Table 3. Unit Root Test

	At Level		At First Difference	
Variables	**LLC**	**ADF**	**LLC**	**ADF**
SAV	0.825	0.910	-7.111***	76.700***
ECG	2.954	2.942	-3.009***	25.849***
INF	2.867	0.894	-3.134***	22.261**
INT	-2.097**	12.317	-8.276***	77.064***
DRO	-0.929	21.784**	-2.347***	15.060
IMR	-4.061***	31.850***	-2.848***	18.093**
UBR	-3.434***	26.046***	-2.482***	14.747

***, **, *, is showing significance level; of 1%, 5% and 10% respectively

As the unit root test confirms, the mix order of integration provides a sound base for the cointegration method. This study has applied the Pedroni cointegration test (Pedroni, 1999). This test has the null hypothesis that there is no cointegration. In the 7 test statistics provided for model 1 to 4. At most, 3 out of 7 tests showed a significant presence of cointegration.

Table 4. Co-integration test

	Model 1	**Model 2**	**Model 3**	**Model 4**
Test		**Test Statistic**		
Panel v-Statistic	0.205	-0.166	-0.161	0.577
Panel rho-Statistic	-1.785**	-1.347*	-1.012	-1.239
Panel PP-Statistic	-4.932***	-5.573***	-4.148***	-5.242***
Panel ADF-Statistic	-1.184	-1.157	-0.217	-1.352*
Group rho-Statistic	0.231	0.538	0.852	0.839
Group PP-Statistic	-2.547***	-2.910***	-1.679**	-2.879***
Group ADF-Statistic	-0.647	-0.702	0.594	-0.865

***, **, *, is showing significance level; of 1%, 5% and 10% respectively

The main findings of this paper are presented below in table 5. Economic growth, inflation and rate of interest are the groundwork variable in each model, and the noticeable thing is these variables are showing the same results in all four models. According to these results, as increases in economic growth, savings also increases (Ozioma et al., 2016; Kim et al., 2017; Ashish & Singh, 2018; Joshi et al., 2019; Nagawa et al., 2020). Its reason is very simple: an increase in economic growth also increases the people's income and keeps in view the saving function increase in income also responsible for increasing savings.

Inflation and interest rate also showing desirable results. The negative coefficient sign of inflation is showing that savings decrease because of inflation (Ndirangu & Willy, 2015; Khan et al., 2017; Kumar, 2018). It is because an increase in inflation means a rise in the price level, and when people are paying more prices, their real income will fall. This fall in income is shown as decrease in savings (Mushtaq & Siddiqui, 2016; Ozioma et al., 2016; Aizenman et al., 2019; Nagawa et al., 2020). With the increase in interest rate, people can earn more by increasing their savings. The positive coefficient of interest rate in all the models indicates its compliance to theory.
Following the control variables, the demographic variables are discussed. Model 2 contains the coefficient of dependency ratio, and it's a negative coefficient which reveals that an increase in the dependency ratio causes savings fall (Samantaraya & Suresh, 2014; Ndirangu & Willy, 2015; Kim et al., 2017). This negative coefficient is also economically justified when the dependent people increases in a family caused to increases the expenditures. By increasing the expenditures, the real income of that family falls, and the direct impact on savings fall.

Later, model 3 contains the coefficient of infant mortality rate, and this coefficient has a positive sign which means that an increase in infant mortality rate increases the savings (Boar, 2020; Jordà, 2020). This concept is related to precautionary savings. In case of an increase in infant mortality, people become more conscious about the future consequences, and that's why they start to save more for future perspective. The latest model 4 contains the coefficient of urban migration. Here the positive coefficient means that an increase in urbanization rises the savings (Matur et al., 2012; Doker et al., 2016; Khan et al., 2016). It means that after migration, people are earning more and utilizing some job opportunities. Secondly they are taking some precautions for the future, and as a result, their savings are increasing.

Table 5. Panel FMOLS Long-Run Estimates

	Model 1		**Model 2**		**Model 3**		**Model 4**	
Variables	**Coeff.**	**T-Stat**	**Coeff.**	**T-Stat**	**Coeff.**	**T-Stat**	**Coeff.**	**T-Stat**
ECG	0.273***	31.696	0.241***	27.363	0.268***	29.231	0.171***	19.528
INF	-0.156***	-29.584	-0.262***	-12.729	-0.111***	-9.909	-0.169***	-12.999
INT	0.068***	3.570	0.081***	4.164	0.093***	4.786	0.070***	3.673
DRO			-0.456***	-18.295				

	Model 1		Model 2		Model 3		Model 4	
Variables	**Coeff.**	**T-Stat**	**Coeff.**	**T-Stat**	**Coeff.**	**T-Stat**	**Coeff.**	**T-Stat**
IMR					0.035***	8.466		
UBR							0.224***	20.392
R^2	0.881		0.880		0.875		0.884	
Cross Sectional Dependence Test								
	Statistic [P-value]		Statistic [P-value]		Statistic [P-value]		Statistic [P-value]	
Pesaran CD	-1.380 [0.168]		-0.870 [0.384]		-1.161 [0.246]		-1.259 [0.208]	

***, **, *, is showing significance level; of 1%, 5% and 10% respectively

To test the dependency among selected cross-sections, table 5 also revealing the residual-based cross-sectional dependency test, which is known as the Pesaran CD test (Pesaran, 2004). This test work under the null hypothesis that there is no cross-sectional dependence. So, the test statistic has an insignificant probability value which means the selected cross-sections depend on each other.

4. Conclusions and Policy Implications

The study results revealed that economic growth, inflation, interest rate are the essential macroeconomic determinants of savings. Another important finding of the study is the inclusion of demographic variables to explain the variations in the saving behaviour of sample countries. In this regard, four different types of models are estimated. Three macro-economic variables i.e., economic growth, inflation and the interest rate are used in the first model. Economic growth and interest rate positively and significantly affect the savings, while inflation negatively affects the savings.

In the second model, the first demographic variable, i.e., the dependency ratio, reported a significant and negative relationship with savings. As the dependency ratio increases, it increases the consumption and less amount is allocated for saving. Thus the dependency ratio is reporting a negative relationship with saving behaviour. In the third model, the Infant mortality rate is introduced as another demographic variable, which reported positive and significant behaviour with savings. It indicates that the increase in infant mortality rate cautions individuals to move towards precautionary savings to protect uncertain future needs. In the fourth model, urbanization is included as the demographic variable, indicating that the increase in urbanization significantly increases the saving to cater to future needs.

As savings are the main drivers for investment and economic growth, such polices based on fiscal and monetary perspective are required to stabilize inflation and interest rates. Certainly, such policies will help stimulate economic growth, which implicitly will increase the overall level of savings. Simultaneously, the efficient management of demographic variables is also required to increase the saving level.

Efficient human resource management is essential to empower the youth and it will undoubtedly reduce the dependency ratio. The reduction in dependency ratio will increase the overall level of savings, which is the crucial pre-requisite for economic growth. Regulated urbanization is also very helpful in increasing the income and employment generation opportunities. Therefore, the properly regulated urbanization increases the people's interaction, generates more economic activity, and ultimately helps increase the overall saving level.

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