REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 24, No. 2 (2023)
http://www.veterinaria.org
Article Received: 29 April 2023 Revised: 12 May 2023 Accepted: 25 May 2023

Determinants Of Savings In The Low And Middle Income Asian Countries

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Abstract: Savings rate in a country is the most important and sustainable propeller of economic growth and for structural transformation in developing countries. The Determinants of savings has been one of the most explored areas in economic research in terms of accessing the prospects of economic growth of a country. In this paper, we examined the determinants of savings in the low- and middle-income Asian countries. Panel data analysis is used for twenty-four countries for the duration of period 1991-2017. As per our analysis Income (GDP per capita), Taxes on income, Urban population and Gross fixed capital formation have a positive impact on domestic savings rate whereas Real interest rate and Trade have a negative impact in these countries. Age dependency ratio and Broad money are coming out to be insignificant in our study.

Keywords: Savings rate, development, investment, developing countries

1. Introduction

Economic models have been explaining growth of an economy by highlighting the importance of savings rate as a propeller of economic growth in a country. Solow's growth model, Harrod-Domar Model or endogenous models like that of Romer, all have highlighted the importance of savings rate in economic development of a country. They showed a positive relationship between savings rate and growth rate at least in the short run, since savings rate increase often leads to investment rise in a country that eventually leads to high economic growth given the demand for the products are also in sync with the economic progress of the countries. .

Saving is a fraction of current income that is not spent on current consumption. Domestic savings can be subdivided into private corporate savings, public sector savings and household sector savings of which household savings constitutes a larger part of an economy's aggregate savings. This culminates into investment and hence determines the rate of growth of future income and future consumption. Households make decisions between their current and future consumption baskets through the channel of savings that shifts their budget line. High savings rates of a country makes a way for more domestic funds to be available for lending, and hence supporting investment through a larger pool of financial resources. Foreign credit can also be used to finance the deficits in the economy, acting mostly as substitutes to domestic savings but not as complements. Fieldstein and Horioka (1980) shows that domestic savings and investment are highly correlated. Capital stock can be financed by foreign borrowing only in the short or medium run and in order to repay the debts, domestic savings have to rise in the long run.

Savings rates vary across the world: on average, some countries like Singapore (48%), China (47%), Philippines (44%) have saved more in 2017 of their gross national disposable income as compared to countries like Tajikistan (-.4%), Togo (6.3%) and Pakistan (6.8%) while India had a savings rate of around 29.5% (World Bank). As per the neo-classical theory, sustained growth is possible only if there is an increase in the propensity to save and invest. It is often argued that output per worker will grow if the savings rate exceeds the level that is required for both capital replacement and for absorption of any increase in the workforce.

Savings can make the economy self-reliant for capital formation and hence long-run growth. There are various theoretical models which highlight this relationship of savings rate and growth rate. Like in the Harrod Domar model, the importance of savings and investment in the growth rate of a country is highlighted. In this model, it is proved that a high savings rate allows more investment in physical capital. This investment will lead to an increase in production of goods and services in a country, therefore increasing growth. Similarly, in Solow's growth model, Robert Solow showed that there is a positive relationship between savings and growth rate in the short run. So governments offer numerous savings and investment schemes to promote savings. Such schemes save tax burden on individuals on one hand (since these are tax exempted in general) and pooling of funds make investments growth possible on the other hand.

The dominance of consumerism in modern society and availability of various opportunities of borrowing make individuals save less as well as stimulate debt creation. The rise of plastic money and digital banking has led to the ease and access to credit. Savings also face risk of inflation and stimulus spending due to government intervention. Stimulus spending is generally financed through additional sovereign debt which needs to be paid off by the future generations. Developing economies generally have low and volatile savings rates. The inefficient institutional set-up and higher rural population in developing countries lead people to save more to smoothen their consumption behavior. The larger informal sector leads people to save more as currency kept in cash faces higher risk of inflation. Moreover, the hoarding of currencies acts like leakage in the economy pulling out some of the financial resources out of the economy. So, in this paper we try to find the possible determinants of savings rate using a data set of 24 low- and middle-income Asian countries for the period of 1991-2017.

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2. Literature Review

There are a bunch of research papers that discuss the importance of savings for economic growth and/or finding the determinants of savings. Here, we present some of the findings from a list of such papers. Das and Ray (2012) in their panel data analysis for the period of 1990-2007 for six developing Asian economies (which have high savings rates), finds that leading determinants of the savings rate for these six countries are high growth rates of GDP per capita, low age-dependency, the degree of financial deepening, presence of liquidity constraints, remittances, terms of trade shocks and human capital formation. Similarly, Gupta (1987) in his analysis for Latin America and Asia found that real interest rate and financial intermediation are important determinants of savings rate. Nominal interest rate affects savings positively for both the groups and suggests lifting the ceiling would improve savings and hence growth (Gupta, 1987). These arguments are also suggested by Raut and Virmani (1989) in their analysis for developing countries. Further, higher inflation rate means a higher uncertainty in economic behavior which makes the consumers to smoothen the consumption by increasing savings rate to maintain the capital stocks (Raut and Virmani, 1989). The effects of uncertainty in the behavior and unanticipated inflation vary for different groups (Kanhaya L Gupta, 1987). G. H. Wan, Q. H. Shi and S. Tang (2003) analyzed rural China, finding income as a driver of savings patterns as is evident with Engel's analysis. Athukorala and Sen (2001) analyzing determinants of private savings for India during 1954-1998 found that the level and rate of growth of disposable income increase the savings rate with the former having larger influence.

As per economic theory, institutions of a country determine various unanticipated economic environments by influencing the parameters that affect the behavior of agents exogenously and are found to be effective in the determination of savings rate due to the confidence and expectations of the agents. This is tested by Freytag and Voll (2013) analyzing the drivers of savings in developing and transition economies. The economic institutions influence savings formation as they capture uncertainty in savings behavior by households and hence capital accumulation for growth, while the political institutions play no such role for the determination of savings rate (Freytag & Voll, 2013). In particular, aggregate savings are influenced by indicators of country-specific institutions suggesting variations in behavior of agents.[1] The effect of quality of property rights is also estimated by various researchers to be positive, significant and consistent, emphasizing the importance of opportunities for investments.[2] Further, the rule of law and property rights make individuals accumulate capital stocks and hence it is more profitable to increase savings.[3]

Taking the rural economy in particular, due to inefficient financial institutions, as per economic theory, the behavior of agents vary with various economic determinants. Nimal A. Fernando (1991) in analysis of determinants of rural savings in Papua New Guinea finds that economic factors such as real interest rates, liquidity and transaction costs influence the savings patterns but it's difficult to rank relative significance of such factors. In rural settings, agricultural development and other non-farm rural activities can increase the savings rate.[4] The inclusion of people in formal institutions will make pooling of funds easier and hence more profitable for investments vis-à-vis savings.[5] On a similar background, Wan, Shi and Tang (2003) analyzing rural China, finds that culture is an important factor in determining the savings behavior and they found consumers to be liquidity-constrained because of low financial resources available to them. The effects of guaranteed income support by the government or state enterprises induce savings rather than reducing it. It is argued that the development of the rural credit market will enhance domestic consumption by stimulating domestic demand.[6] In developing countries, farmers tend to save more than non- farmers and informal credit is intrinsic to the rural economy of any developing economy.[7]

Urbanization and industrialization have a positive effect on savings, emphasizing more investment opportunities (Wan, Shi, Tang, 2003). This indicates that with a better set of alternatives of profits making, people tend to save more in an economy which accelerates growth, also suggesting a dual relationship. Education is seen as a driver of savings as well due to income earnings rising at one hand. On other hand, education enhances financial stability of the individuals and hence lower savings. There is no significant relationship found in education and savings rate for rural China (Wan, Shi, Tang, 2003).

Athukorala and Sen (2001) examined the determinants of private savings for India during 1954-1998 and found that the real interest rates on bank deposits had a positive effect. The effect of the spread of banking facilities (suggesting better economic scopes of savings) and rate of inflation (capturing uncertainty) have positive effects.[8] While external terms of trade and migrant remittances have negative effects on private savings suggesting all the extra income earned is consumed by the individuals.[9] India maintains a higher savings rate relative to the rates as per its economic performance (Athukorala and Sen, 2001). The terms of trade and inward remittances have negative effects on savings (Athukorala and Sen 2001).

[1] Freytag & Voll (2013)
[2] Ibid.
[3] Ibid.
[4] Nimal A. Fernando (1991)
[5] Ibid.
[6] Wan, Shi and Tang (2003)
[7] Ibid.
[8] Athukorala and Sen (2001)
[9] Ibid.

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Building upon the findings above, we try to investigate the determinants of aggregate domestic savings in Asian developing countries.

3. Methodology and Data

Our data is heterogeneous and hence the countries have heterogeneous variances for the variables. If OLS regression is used it may lead to biased and inefficient estimates because the assumption of homoscedasticity is violated. To counter this, we use the Generalized Least Squares method to estimate the regression coefficients with country specific fixed effects, we have also controlled for time fixed effects in our model.

The equation for the same can be written as:

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \ldots + \beta_k X_{k,it} + \gamma_2 E_2 + \ldots + \gamma_n E_n + \delta_2 T_2 + \ldots + \delta_t T_t + u_{it}$$

Where

–Y_{it} is the domestic savings rate for i-th country in t-th year.
–$X_{k,it}$ represents a matrix of independent variables,
–β_k is the coefficient for the independent variables,
–u_{it} is the error term
–E_n is the dummy variable for country n.
–γ_n is the coefficient for the dummy regressors (countries).
–T_t is the trend dummy.
–δ_t is the coefficient for the trend dummy.

In this study the analysis was made with the unbalanced panel data set. The data is collected from **World Development Indicators by the World Bank**. We have taken data for 24 Low- and middle-income Asian countries which are Afghanistan, Bangladesh, Cambodia, Georgia, India, Mongolia, Philippines, Sri Lanka, Vietnam etc. for the period 1991-2017.

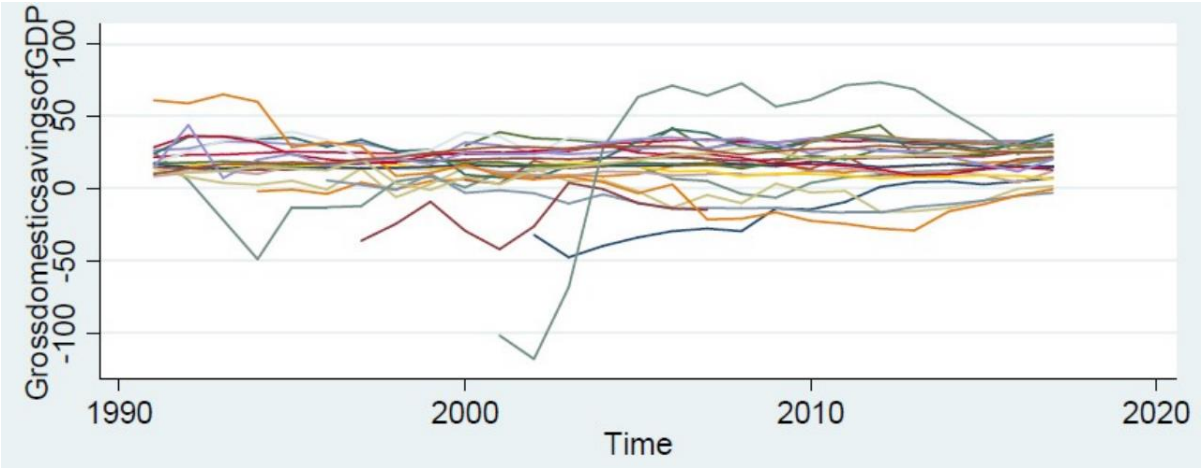

Figure: The graph depicts homogeneity in the gross domestic savings rate of selected countries.

We have taken Gross domestic savings (% of GDP) as dependent variable and GDP per capita growth, Gross Fixed Capital formation, Trade (% of GDP), Urban Population (% of Total population), Age dependency ratio (% of working-age population), Real interest rate, Taxes on Income and the Broad Money as our independent variables based on literature.

Treating missing values-

Data points for some variables for some years were missing. The missing values are replaced with the point value approximated by the interpolation using **KNN algorithm** in Stata.

3.1 Preliminary Analysis

3.1.1 Testing for Stationarity and Co-Integration

Since we are dealing with panel data, we began our econometric analysis by checking for stationarity and cointegration in the determinants of savings rate. We used two different techniques for checking the stationarity in the variables, namely, Fisher-type Dickey Fuller with zero lags and Fisher-type Dickey Fuller with four lags unit root tests. The basic autoregressive model on which the test is based can be expressed formally as:

$$y_{it} = \rho_i y_{i,t-1} + z_{it}\,\gamma_i + \varepsilon_{it}$$

Where y_{it} is the series under analysis, i = 1, ..., N indexes panels and t = 1, ..., T indexes time. ε_{it} is an idiosyncratic stationary error and z_{it} represents panel specific means and a time trend (i.e. the fixed effects). We test the null that Ho :

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$\rho_i = 1$ against the alternative Ha : $\rho_i < 1$, for example, we test that all panels contain a unit-root against the null that at least one panel is stationary.

Table 1: Stationarity Test

Test Type	Fisher Dickey fuller lag(0)						Fisher Dickey fuller lag(4)					
Variable	dfuller	trend	demean	drift	drift demean	trend demean	dfuller	trend	demean	drift	drift demean	trend demean
Gross domestic savings (% of GDP)	1	1	1	1	1	1	0	0	0	1	1	0
GDP per capita growth	1	1	1	1	1	1	1	1	1	1	1	1
Gross Fixed Capital formation	1	1	1	1	1	1	0	0	1	1	1	0
Trade (% of GDP)	1	1	1	1	1	1	0	0	0	1	1	0
Urban Population(% of Total population)	1	1	1	1	0	1	0	1	1	1	1	1
Age Dependency (Old)	0	0	0	0	0	1	0	0	0	1	1	1
Taxes on Income	0	1	0	1	1	1	0	0	1	1	1	0
Broad Money	0	1	1	1	1	1	0	0	0	1	1	0
Real interest rate	0	1	1	1	1	1	0	0	0	1	1	1

*where 0 = non-stationary roots and 1 = stationary roots present

We found evidence of stationarity in 'levels' for almost all variables in at least one of the tests, like some variables are stationary only when we include 'trend' component in the unit root equation and some are stationary when we 'demean' the time-series which means the standard regression techniques will be unbiased. The results in table 1 indicate that variables in level forms are stationary for the majority of the tests and hence the savings rate can be estimated using level variables with time trends. Turning to Co-integration, we found evidence of no cointegration between savings rate and any of its determinant variables. If we had found the evidence of co- integration, we would need to use the Fully Modified OLS (FMOLS) estimator; otherwise we need to differentiate the series according to their degree of integration.

3.1.2 Test for Fixed vs. Random Effect

We used the Hausman test to check whether there is a correlation between error components and independent variables. If there is no correlation, then both fixed effects and random effects can be used to estimate parameters. However, if there is correlation then only a fixed effects estimator is appropriate.

Table 2: Hausman Test

$\chi 2$	388.47
Prob> $\chi 2$	0.0000

In this test, the null hypothesis is defined in the way that there was no correlation and we found evidence of Correlation so only a fixed effect model can be used.

4. Analysis Results

In this section, we present estimates of our model using the generalized least squares method. Transformed regression in our model remedies the problem of heterogeneity, transforming the variables such that the error term has the same variance. Table 3 shows respective coefficients of the determinants on domestic savings rate.

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Table 3: GLS Regression coefficients

Explanatory Variable	**Coefficient**
GDP per capita growth (annual %)	*0.078*** *(0.031)*
Gross fixed capital formation (% of GDP)	*0.203*** *(0.089)*
Trade (% of GDP)	*-0.098*** *(0.041)*
Urban population (% of total)	*0.755**** *(0.182)*
Age dependency ratio (% of working-age population)	*0.743* *(0.729)*
Real interest rate	*-0.179**** *(0.056)*
Taxes on income, profits and capital gains (% of total taxes)	*0.399*** *(0.065)*
Broad money (% of GDP)	*-0.048* *(0.049)*
Constant	*-23.808*** *(10.874)*
Wald χ2	*327.46*
Prob > χ2	*0.0000*

A constant term of -23.808 which is significant also depicts a dis-saving when all the determinants like income, trade, taxes are zero in an economy. A negative constant term implies selling of assets, government bonds or any other form of saving for consumption as income is zero. It represents in a sense the minimum level of aggregate consumption or subsistence level of consumption a country undertakes when the income from all other variables are zero or at their minimum. Savings as a percentage of GDP will fall by 23.808% in a one shot depression if the economy collapses down to a zero income level. Similarly, as GDP per capita growth rate rises, the marginal propensity to save, which is 7.8% from our analysis, leads to an increase in domestic savings as predicted by the permanent income hypothesis, that income is diversified to the current and future consumption. A one percent increase in GDP per capita growth leads to a 0.078% increase in domestic savings of a country which further leads to increase in investment so GDP expands.[10] As this is a positive coefficient which highlights the significance of inter temporal consumption behavior between current and future consumption. A high GDP per capita growth not only leads to a rise in current consumption by 100-.078= 99.922% but also increases the possibility of high consumption due to a positive relation between domestic saving and GDP per capita growth. So, economic agents spend a fraction of increased income on current consumption and save the remaining to be consumed in future periods. In our estimate, as GDP per capita growth of a nation increases by 1% per annum, the savings rate is expected to rise by 0.078% in a year, controlling for other effects. So, the rising affluence of an economy leads to higher savings rate due to increased investments and rising market demand.

Trade as measured by sum of exports and imports as proportion of GDP show a coefficient (0.098). Most of the low and middle Asian countries have an unfavorable trade balance. So a rise in trade imbalance leads to a fall in savings as more is spent on foreign goods so a lesser proportion of income is left for saving. Low income developing countries are highly dependent upon development for their day to day needs as well as for machinery and other production equipment. In our estimates one percent increase in trade leads to a fall in domestic saving by 0.098%.

In urban areas financial markets are considered to be stronger than rural areas. Larger urban population means more financial inclusion and more opportunities for savings and hence it is expected to have a positive effect on savings. Numerous profitable saving instruments such as Public Provident Fund, Treasury-Bills, Post office savings, Mutual funds etc. are easily available to households for investment. An increase in urban population is likely to have a positive impact, since, an increase in population in these areas means an increase in the number of savers so we found this in our results, the coefficient of urban population is positive and significant with a coefficient of 0.755. In our analysis, as the urban

[10] Accelerator and multiplier effects make the economy to expand in case of higher investment and higher growth

population increases by 1 unit as a proportion of total population, the domestic savings rate as a percentage of GDP is expected to rise by 0.755 percentage points.

As per the relationship between high interest rates and private savings postulated in 1973 by Ronald McKinnon and Edward Shaw, high real interest rates have two opposing effects on savings rate- income and substitution effects. As per the substitution effect, the savers postpone the current consumption to future consumption while the income effect implies higher consumption in the current period at the expense of savings. In our analysis, a 10% increase in real interest rate will reduce savings by 1.79% implying the dominance of income effect on substitution effect. This can be attributed to the behavior of economic agents in developing countries who prefer current consumption over future consumption either expecting more formalization and better opportunities in the economy in future or utilizing the resources to build up skills to enhance the earning potential.

Government wants to promote saving so they provide incentives for savers to save more like rebates in taxes. Tax exemptions to some upper limit like in India Public Provident Fund account holders have up to Rs 1.5 lakh exemptions for savings. So, a rise in taxes on income gives an incentive to save more as it will decrease their tax obligations. In our estimates, we found a coefficient of Taxes on income, profits and capital gains (% of total taxes) to be positive and significant as was expected from the literature. If the government increases 1% tax on income or profit, it leads to a 0.399% increase in domestic savings rate. Broad money affects employment, interest rates, income and other economic variables that affect savings rate. But its coefficient is highly insignificant which highlights that in low- and middle-income Asian countries people don't respond much to the Central Bank's monetary policy because they think changes are either for only short term or the Central Bank has a credibility issue.

Increase in Age- dependency ratio as proportion of working age population can have positive effects on savings rate as working members have to save more in order to finance future needs of dependent family members which are either children or old age senior citizens. Moreover, their needs are expected to grow with age like hospital expenses or schooling cost, therefore the earning members need more funds to fulfill their needs hence, the current savings are expected to rise with an increase in Age- dependency ratio as proportion of working age population and also households tend to save more for unanticipated economic environment changes to smoothen their consumption. Hence, age-dependency ratio can have a positive and significant effect on savings rate. On the other hand, higher age-dependency ratio means higher consumption demand in the current period and hence less proportion of income left for savings or investments, that is, higher age-dependency ratio may mean a low savings rate. Our estimates favor the former explanation i.e. a positive but insignificant relationship between age-dependency ratio and savings rate.

Country fixed effects are statistically significant showing variations in institutional set-up and policies in the sample countries. Time dummies come to be insignificant till 2007 while there is significant decline in savings rate (controlling for other factors) thereafter. This signifies the effects of the global economic crisis of 2008 which was detrimental for these countries and the mitigation effects for this crisis that demanded various economic changes through regulation of financial and non-financial institutions.

5. Policy Implication and Concluding remarks

In this paper, we found GDP per capita growth, gross fixed capital formation, trade, urban population, taxes on earned income and real interest rate as important determinants of savings. Monetary policy affecting real interest rate and financial policy affecting trade, income, taxes etc. are effective instruments in determining the savings rate in a country. This emphasizes the role of the central bank and the government to act wisely in building up investments in developing countries.

Foreign Direct Investment being a determinant of capital formation can affect savings rate and hence, the role of government in its foreign and economic policies comes to play an important role. FDI affects trade balance as well and hence, its impact can be analyzed in further research of savings rate determination. Sub-optimal debt having higher economic costs than its benefits could be detrimental for these economies. The countries in our sample are loan borrowers and hence they should try to catch-up the optimal debt and minimize the costs on interest payments.

The developing countries have lower formalization of institutions as opposed to developed nations. The formalization of institutions leads to lower levels of corruption, better financial opportunities as is evident from effects of nationalization of banks in various countries. The public investment in building roads and formalization of markets can raise the investment opportunities for private and public sector capitalizing more funds and hence can affect savings rate positively. The investment in social services of education and healthcare can lead to higher earning potential and higher income which in effect can raise the savings rate.

The developing countries of Asia have rising trends of the services sector and if the secondary sector grows at the same pace, then output per capita can increase over time and this productivity rise would raise the income that will raise the savings rate. The larger share of employment in the primary sector for these countries highlights much more chances of raising the capital formation (since labor productivity in this sector is lower) and hence the savings rate. All the countries in our sample have similar trends of savings rate that implies homogeneity in the behavior of economic agents in these countries. In effect, the countries can learn from better experiences of one-another in setting their economic parameters.

Higher unemployment rate in middle and low-income countries points that the economy is not performing at its best. The change in unemployment rate due to government policy can affect income and real interest rate (through inflation) that can be effective in savings rate determination and hence the economic position of a country needs special attention. Urban

population affecting savings rate positively highlights the need for more financial inclusion through further institutionalization in rural areas. This would in effect raise the savings opportunities and deprived sections could also improve their financial constraints. The various schemes like Jan-Dhan-Yojana in India can affect the savings rate positively. There seems to be an improved savings rate in these countries in the future as there has been improvements in political and economic institutions. Moreover, the stability of economic institutions is vital for channelisation of savings into investment and Retail Direct Scheme of India is one step in the right direction. This entails the convergence between the growth rates of all countries with the effects from the convergence in savings and investments once the savings and investment gaps are filled.

References

1. Athukorala, P.C. and Sen, K. (2001), THE DETERMINANTS OF PRIVATE SAVING IN INDIA, ASARC Working Papers, The Australian National University, Australia South Asia Research Centre
2. Athukorala, P.C. and Sen, K. (1995), "Economic reforms and the rate of saving in India: some observations", Economic and Political Weekly, 30 (1995): 2184-90; EPWRF (Economic and Political Weekly Research Foundation), "Economic reforms and rate of saving", Economic and Political Weekly, 30 (1995): 1021-1041.
3. Baliamoune-Lutz, Mina, Financial Development and Income in Developing Countries (May 20, 2010). ICER Working Paper No. 9/2010, Available at SSRN: https://ssrn.com/abstract=1612225 or http://dx.doi.org/10.2139/ssrn.1612225
4. Das, S., Ray, P. (2012). Does developing Asia save more? Evidence from a panel of high saving nations in Asia. The IUP Journal of Applied Economics, p. 29–55.
5. Feldstein, M., and C. Horioka (1980): "Domestic saving and international capital flows," Economic Journal, 90, 314–329.
6. Fernando Nimal A. (1991), "Mobilizing Rural Savings in Papua New Guinea: Myths, Realities, and Needed Policy Reform," Developing Economies, 29 (1), 44–53.
7. Friedman, M. 1957. "The Permanent Income Hypothesis," NBER Chapters, in: A Theory of the Consumption Function, pages 20-37, National Bureau of Economic Research, Inc.
8. Freytag, A., & Voll, S. (2013). Institutions and savings in developing and emerging economies. Public Choice, 157(3/4), 475–509. http://www.jstor.org/stable/24507624
9. Guo, G., Wang, H., Bell, D., Bi, Y., Greer, K. (2003). KNN Model-Based Approach in Classification. In: Meersman, R., Tari, Z., Schmidt, D.C. (eds) On The Move to Meaningful Internet Systems 2003: CoopIS, DOA, and ODBASE. OTM 2003. Lecture Notes in Computer Science, vol 2888. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-39964-3_62
10. Gupta, K. L. (1987). Aggregate Savings, Financial Intermediation, and Interest Rate. *The Review of Economics and Statistics*, *69*(2), 303–311. https://doi.org/10.2307/1927238
11. Gupta, Kanhaya L., "Financial Development and Economic Growth in India and South Korea," *Journal of Economic Development*, December 1986, pp. 41–62.
12. Greene, William. 2000. *Econometric Analysis*, 4th ed. Upper Saddle River: Prentice Hall Internat. [**Google Scholar**]
13. Greene, William. 2012. *Econometric Analysis*, 7th ed. Pearson Series in Economics; Boston and Munich: Pearson. [**Google Scholar**]
14. Hausman, Jerry A. 1978. Specification Tests in Econometrics. *Econometrica* 46: 1251–71. [**Google Scholar**] [**CrossRef**]
15. Hausman, Jerry A., and William E. Taylor. 1981. Panel data and unobservable individual effects. *Econometrica* 49: 1377–98. [**Google Scholar**]
16. Khatkhate, Deena R., "Assessing the Impact of Interest Rates in Less Developed Countries," *World Development*, May 1988, pp. 577–88.
17. McKinnon, Ronald *I., Money and Capital in Economic Development*, Washington, DC, The Brookings Institution, 1973.
18. Raut, Lakshmi Kanta. "Determinants of Consumption and Savings Behavior in Developing Countries." The World Bank Economic Review 3.3 (1989).
19. Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. Quarterly Journal of Economics, 70, 65-94. https://doi.org/10.2307/1884513
20. Wan, G. H., Shi, Q. H., & Tang, S. (2003). SAVING BEHAVIOR IN A TRANSITION ECONOMY: AN EMPIRICAL CASE STUDY OF RURAL CHINA. Savings and Development, 27(4), 399–420. http://www.jstor.org/stable/25830841
21. Witt, A., Kurths, J. (2002). Testing Stationarity in Time Series. In: Soofi, A.S., Cao, L. (eds) Modelling and Forecasting Financial Data. Studies in Computational Finance, vol 2. Springer, Boston, MA. https://doi.org/10.1007/978-1-4615-0931-8_15