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Estimating Private Savings Behaviour in China

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Abstract

Purpose: This study is intended to approximate the private savings rates in China which is based on the period of 1991-2011. *Methodology:* The regression equation model is established considering the economic and demographic factors. Time series data is taken and the OLS technique is applied to the model for the purpose of becoming aware about the relationships between dependent and independent variables. *Findings:* Inflation Rate, Real Interest Rate and Old Age Dependency Ratio have significantly negative impact on Private Savings Behaviour. Liquidity Constraint is positively associated with Private Savings but insignificant. *Research Limitations/Implications:* The main limitation of the study is data enlargement which cannot be continuously found from 2012 and onwards. *Originality/Value:* This study was conducted to estimate the impact of different macroeconomic factors like interest rate, inflation rate and liquidity constraint on private savings behaviour of China.

Keywords

Private Savings, Inflation Rate, Interest Rate, Financial Liberalisation

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1. Introduction

Every Country's economic growth is fundamentally direct by its home investment. Home investment is fundamentally made through its domestic savings. Expansion of economy is effectively strong-minded by the enough increased rate of public saving (Athukorala & Sen, 2004). The sources of Investment of a country is essentially provided by the savings of the country itself (Ozcan, Gunay, & Ertac, 2003). Many studies are conducted to estimate the private savings behaviour (Athukorala & Sen, 2004; Baliamoune & Chowdhury, 2003; Hondroyiannis, 2004; Loayza, Schmidt-Hebbel, & Servén, 2000; Masson, Bayoumi, & Samiei, 1998; Ozcan, et al., 2003). All these studies tried to approximate the activities of private savings among different developing countries independently or using cross-sectional data of various developing countries. The results of all the studies didn't provide a comprehensible understanding of the private saving behaviour determinants. Therefore, those results could not be implemented for different strategy decision making (Hondroyiannis, 2004). Some studies are done on specific countries like (Cárdenas & Escobar, 1997) (for Colombia), (Ozcan, et al., 2003) (for Turkey), (Kraay, 2000) (for China), (Baliamoune & Chowdhury)(for Morocco), (Cermeño, Roth, & Villagómez, 2008) (for Mexico). Every developing country has different factors and situations which directly bear upon its actions of saving. The Macroeconomic factors of each country react in different ways from other countries. Thus, we cannot generalize the findings of cross-sectional studies on individual countries. Thus, this emphasises on the need of individual country analysis of private saving activities determinants.

Very few studies are conducted on the savings behaviour in China. The two basic research gaps in the previous studies which the researcher identified and going to address in this study are: First one is that the former studies on savings behaviour in china covers period till 2006. We are going to fill this gap by including the recent period data also from 1991-2011. Second one is that all those studies tried to relate different factors with savings behaviour like pension plans (Bailliu, 1998), investment opportunities (Molho ,1986) and

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economic growth (Odhiambo, 2009; Suto & James, 1999). No study was conducted to estimate the impact of different macroeconomic factors like interest rate, inflation rate and liquidity constraint on private savings behaviour of China which we are going to fill here through this study.

The intention of this study is to approximate the private savings rates in China which is based on the period of 1991-2011. Data for all the variables are availed from World Development Indicators (2011) Publication of the World Bank. The objectives of the study are:

- To estimate whether Private Savings are positively or negatively affected by Demographic Factors.
- To analyze whether Private Savings are negatively influenced by Inflation Rate.
- To ascertain whether Private Savings are positively or negatively affected by Interest Rate.
- To assess whether Private Savings are positively influenced by Liquidity Constraints.

This study is ordered in the following manner. First of all the model is established showing the relationship between private savings and old age dependency ratio, inflation rate, real interest rate and liquidity constraint on which the data is collected from different sources. Secondly, the multiple regression analysis is applied to the model for the purpose of becoming aware about the relationships between dependent and independent variables. In the third step, the results of the multiple regression analysis are described.

2. Literature and Theoretical Framework

There is a huge literature present on the determinants of private saving behaviour. Many researchers had finished broad studies on the individuals behaviour of savings (Athukorala & Sen, 2004; Baliamoune & Chowdhury, 2003; Hondroyiannis, 2004; Loayza, Schmidt-Hebbel, & Servén, 2000; Masson, Bayoumi, & Samiei, 1998; Ozcan, et al., 2003). This part in brief discussed the private saving behaviour determinants and the proposed theoretical model is given below:

2.1. Demographic Factors and Private Savings

A high rate of private savings exists in communities in which a large proportion of the population is in the work age as they save more for their old age. Population belonging to this group save less to finance their expenditures, due to which there is a decrease in the ratio of savings when it reaches the age of retirement. Population with high proportion of younger age less than 15 years plus above 65 years are associated with lower saving (Edwards, 1996). Dependency of increased ratio of dependents on the group of working people might impose a restriction on the whole societies prospective for savings. Old age population (65 or above) have negative influence on private savings (Leff, 1969). Private savings are negatively affected by dependency ratios (Loayza, et al., 2000). Any country with a comparatively high proportion of dependency ratio (i.e. immobile young and old) comparative to the working population will also experience comparatively lower savings(Bailliu & Reisen, 1998).Increase in age dependency and urbanization has negative but significant impact on private savings behaviour (Cárdenas & Escobar, 1997).

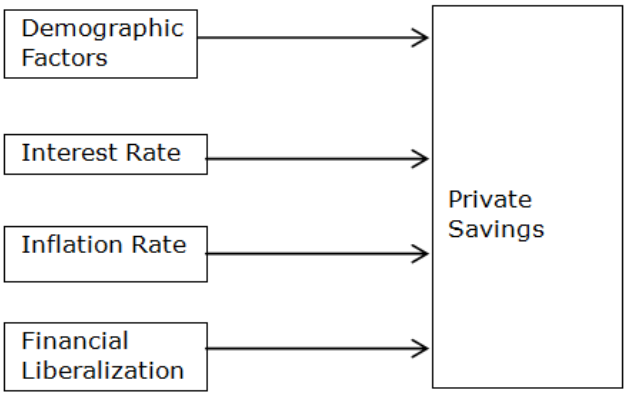

Figure 1. Proposed Theoretical Model.

2.2. Real Interest Rate and Private Savings

The impact of real interest rate on private saving behaviour is ambiguous. Industrial countries has significantly positive impact of real interest, but developing countries have insignificantly negative impact (Masson, et al., 1998).Private savings can be associated with real interest rate either positively or negatively depending on the comparative magnitudes of the effects of income and substitution (Bailliu & Reisen, 1998). Loayza, et al., (2000) found in their study on "What drives private saving across the world? The review of economics and statistics" that interest rate negatively impacts private savings. In another study of measuring savings behaviour in different South Asian countries the Interest Rate has negative but significant effects for India and Pakistan, insignificant effects for Sri Lanka and positive but significant results for Nepal and Bangladesh (Agrawal, et al., 2009). In the study of Jongwanich (2010) on the determinants of household and private savings in Thailand, it is found that the Real Interest Rate coefficient with savings is positive but insignificant.

2.3. Inflation Rate and Private Savings

The effects of inflation rate on private savings are ambiguous

and can be positive or negative. On average, countries under study are adversely affected by inflation but the effects varies from country to country (Lahiri, 1989). Inflation covers the instability of macroeconomic volatility and the sign of the coefficient of the variable is negative (Edwards, 1996). Inflation rate negatively impacts private savings (Loayza, et al., 2000). Holding other factors constant, inflation has negative effect on savings behaviour (Loayza, et al., 2000). Athukorala & Sen (2004) concluded that the private savings are positively affected by the inflation rate in India. Jongwanich (2010) in their study on the determinants of household and private savings in Thailand also found positive relationship between Inflation Rate and private savings.

2.4. Financial Liberalisation and Private Savings

The importance of the liquidity constraints on the private savings is emphasized by the various researchers. The financial liberalisation has unfavourable effects on private savings. Liquidity constraints are used as the proxy for financial liberalisation by the researchers (Hondroyiannis, 2004). Bailliu & Reisen (1998) used private sector domestic credit as the proxy for financial liberalization and found that the development of credit markets eased the borrowing constraints which should negatively impact savings. Increased credit availability reduces private savings(Loayza, et al., 2000). Financial liberalization may sometimes reduce private savings (Bandiera, Caprio, Honohan, & Schiantarelli, 2000). Japelli & Pagano (1994) in their study on saving, growth, and liquidity constraints found that liquidity constraints on households increase the rate of saving.

3. Data and Methodology

This study estimates the private savings behaviour in China. The dimensions used to measure the saving behaviour are different macroeconomic factors: demographic factors, interest rate, inflation rate and financial liberalization. Data for all the variables are availed for the period of 1991-2011 from World Development Indicators (2011) Publication of the World Bank. The multiple regression analysis is applied to the model for the purpose of becoming aware about the relationships between dependent and independent variables.

The following equation is applied using demographics as an explanatory variable and other macroeconomic variables based on the previous literature.

$$SAGNDY = \beta o + \beta_1 INFR + \beta_2 RINTR + \beta_3 LCONST + \beta_4 DEPR$$

where the Dependent Variable SAGNDY is the Ratio of Private Savings to Gross National Disposable Income. Private savings is estimated as the difference between gross national disposable income and final consumption expenditure. Gross national disposable income is calculated as the gross national income plus net current transfers from abroad. Source: World Bank (WDI, 2011).

The independent variables and their expected signs of regression coefficients (given in parentheses) are:

INFR (-) the Rate of Inflation at which generally the prices of goods and services are increasing and subsequently the power of purchasing is decreasing. Source: World Bank (WDI, 2011).

RINTR (?) the Real Interest Rate which is adjusted for inflation in order to show the borrower the real cost of funds and to the lender of funds the real return. Source: World Bank (WDI, 2011).

DEPR (+) the old age dependency ratio measured as the ratio of the old age population above 65 years to the group of population which is working ranging between 15 and 64 years. Source: World Bank (WDI, 2011).

LCONST (?) the liquidity constraint proxied by the domestic credit of private sector as %age of GDP. Source: World Bank (WDI, 2011).

The variable old age dependency ratio is used to represent the demographic features of a country. Domestic credit of the private sector and real interest rate captures the features of financial sector. Inflation is an indicator of macroeconomic uncertainty.

The analysis is carried out using time series data of China for at least 21 years covering period 1991-2011. Data for the year 2012 for all variables was not available completely. Data for all the variables are availed from World Development Indicators and Publication of the World Bank. The model is estimated by applying Ordinary Least Square estimation techniques because OL Sufficiently shows the relationships and directions between dependent and independent variables.

4. Results and Discussion

The following equation is obtained when we applied the multiple regressions to the model.

$$SAGNDY = 1.379665 - \beta_1\ 0.0039594 - \beta_2\ 0.0045802 + \beta_3\ 0.0000745 - \beta_4\ 0.0418149$$

The table A represents the regression results of the variables Ratio of Private Savings (SAGNDY), Old Age Dependency

Ratio (DEPR), Inflation Rate (INFR), Real Interest Rate (RINTR) and Domestic Credit of Private Sector (LCONST).

Table A. Regression Analysis Results

Dependent Variable is SAGNDY	
Independent Variable	**Coefficient**
Constant	1.379665
INFR	-0.0039594
RINTR	-0.0045802
LCONST	0.0000745
DEPR	-0.0418149
R-squared	0.9079
F-test	0.0000

The interpretation of the results of multiple regressions can be done in this way that Inflation rate is significant but negatively associated with private savings which means a one unit increase in inflation rate will cause decline in private savings by 0.0039594. Real interest rate in also significant but negatively associated with private savings. Liquidity Constraint is positively associated with private savings but insignificant. Old age dependency ratio has significantly negative effect on private savings behaviour. As the value of R-squared show the explanatory power of the model, our value 0.9079 of R-square shows that our model perfectly explains the data. The results for Heteroskedasticity show that there is no presence of Heteroskedasticity in the data. The results of the mean VIF test show that there is no multicollinearity issue present in the data. The value of the DW-test is also within the specified range. Hence there is no problem of auto correlation.

This study estimates the private savings behaviour in China. Overall private savings of China have decreased from 95% in 1993, to 94% in 1994, to 93% in 1995-98, to 92% in 1999-2006, 91% in 2007, to 90% in 2008-09, to 89% in 2010, to 87% in 2011. China's old age dependency ratio is increasing significantly. The liquidity constraint ratio also increased gradually after certain fluctuations which show financial liberalization in China. Financial liberalization refers to decrease of any kind of rules on the monetary industry of a particular country means reducing obstacles on different form of financial lending institutions. The Inflation rate is also gradually decreased from 15% to 7% facing regular fluctuations. The Real Interest Rate is very low in China even in negative figures.

5. Conclusion and Policy Implications

This study estimated the private saving behaviour determinants in China for the period 1991-2011. A regression equation models that old age dependency ratio, inflation rate, liquidity constraints and interest rate is established and analysed. The findings hold up that the private savings function exists in China. Credit constraints and demographic factors affect the private savings behaviour over the period of long-run. Inflation rate is significant but negatively associated with private savings. Real interest rate is also significant but negatively associated with private savings. Liquidity Constraint is positively associated with private savings but insignificant. Old age dependency ratio has significantly negative impact on private savings behaviour.

The results can be applied for important policy decisions in China. Demographic conditions are changing in China. Old age dependency ratio is increasing for the time being. Policy reforms regarding pension plans have a significant impact on private savings. Better financial liberalisation and the lessening of liquidity constraints have decreased private saving behaviour. Inflation rate is negatively associated with private savings as decrease in inflation might increase development and as a result private saving is positively affected.

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