Drivers of Saving: A Literature Review

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Abstract

High saving rate generates high investable surplus in the economy that in turn, contributes to high economic growth. Aggregate saving is one of the key drivers of economic growth. Given the significance of saving in economic growth, it is desirable to examine existing literature that has looked at the possible drivers of saving. In national accounts, aggregate level saving is captured by the sum of household, private corporate, and government saving. This paper reviews seminal and recent papers on the determinants of different types of saving across the world, especially in India. It strives to present a comprehensive view on the drivers of saving namely, aggregate saving, household saving, and private corporate saving.

Keywords: Aggregate saving, household saving, corporate saving, economic growth.

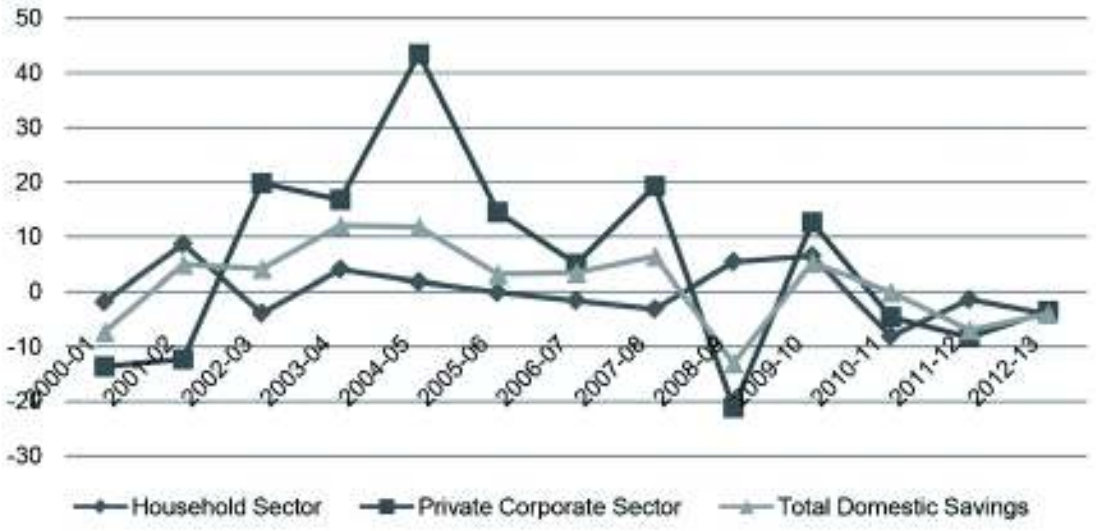
1. Introduction

Saving is given importance in economic growth theories (Domar, 1941; Harrod, 1939; Lewis, 1955; Solow, 1956). There have been specific studies to understand the relationship between saving and economic growth (eAghion, Comin, & Howitt, 2006; Carroll & Weil, 1994) in literature. Given the importance attributed to saving in economics literature, it would be interesting to explore what drives saving.

1.1 Motivation

Since 2000, composition of aggregate saving has begun to change across both developed and developing economies (Grigoli, Herman & Schmidt-Hebbel, 2014; Horioka & Terada-Hagiwara, 2013; IMF study, 2006). Generally, household saving constitutes the majority of aggregate national saving, but in recent years, private corporate saving has shown a rising trend and so has

Figure -1
Growth Rate of Saving in India



Source: RBI, Database on Indian Economy.
Note: Calculated at the absolute values of saving at current prices. For some years, total domestic saving is less than other components; that is because of the dissaving of government (public) saving.

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its share in total saving. Since early 2000, private corporate sector has become a net lender to rest of the economy in developed nations such as the USA (Karabarbounis & Neiman, 2014). In India also, growth rate of corporate saving is the most volatile (see Figure 1) among components of aggregate national saving. It is interesting to examine what drives such saving rates and such changes in the composition of aggregate saving.

The study presents a comprehensive literature review on determinants of saving. Current period saving can be defined as the excess of current income over current expenditure[1]. In economics terms[2], saving consists of deciding to defer today's consumption, and to store this deferred consumption as some form of asset, for future use. The following section discusses the way national saving is classified in India, to facilitate an understanding of the types of saving.

1.2 Classification of saving in India

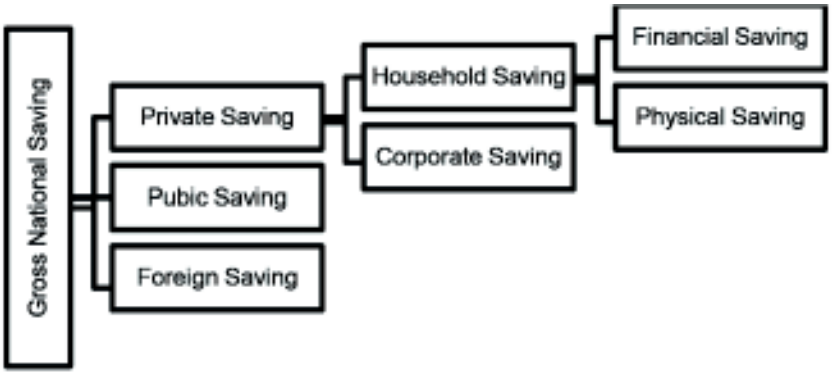
In India, saving and investment data is prepared by Central Statistical Organisation, Government of India (CSO). At the broadest level, total saving is classified as domestic and foreign saving, followed by a bifurcation of domestic saving as private and public saving. For data-estimation, the domestic economy is classified into three broad institutional sectors, namely, public sector, private corporate sector and household sector (see Figure 2). Public sector includes government administration, departmental enterprises and non-departmental enterprises.

Private corporate sector comprises all non-governmental financial / non-financial corporate enterprises and co- operative institutions. Household sector comprises individuals, all non-government non-corporate enterprises (sole proprietorships and partnerships owned and / or controlled by individuals) and non-profit institutions. Household sector saving further comprises of physical and financial saving. Total saving of these three sectors constitutes the Gross Domestic Saving (GDS). Foreign saving, calculated from balance of payment accounts, is added to GDS to obtain Gross National Saving (GNS). (Athukorala & Sen, 2002; CSO Sources and Method Report, 2012).

1.3 Significance of study

Saving has always been an important element of economic growth. Traditional economic growth models such as Lewis's (1955) and Harrod-Domar growth models specified domestic saving as the key factor in promoting economic growth. The neoclassical models like Solow (1956) also proposed that the increase in saving rate (after considering the increasing returns to scale of technology) boosts steady-state output by more than its direct impact on investment. The increase in income level raises the saving level that leads to a

Figure2
Classification of Saving



Source: Conceptualised from Athukorala and Sen (2002)

1 Year 2012-13; Source: Planning Commission 'http://planningcommission.nic.in/data/datatable/1203/table_3.pdf', retrieved on January 11, 2015.
2 http://www.econlib.org/library/Enc/Saving.html, accessed on January 11, 2015

further rise in investment activities. Jappelli and Pagano (1994) also suggested that saving can contribute to higher investment and higher GDP growth (in the short-run). However, Aghion et, al. (2006) found that such positive causation from saving to growth is only true for countries that are not close to the technological frontier. Interestingly, Carroll & Weil (1994) (Carroll-Weil hypothesis) proposed the opposite - that it is economic growth that drives saving, not the other way round. Their argument links high economic growth, which brings rise in income level, with the ability to save more, keeping the consumption level same as past consumption.

In the Indian context, there are a few empirical studies on the role of saving and investment in promoting economic growth. For illustration, Sinha (1996) checked the causality between growth rates of gross domestic savings and economic growth, and found that there was no causality in either direction. Mühleisen (1997) reached a different conclusion - a significant causality from economic growth to saving, but rejected the other direction of causality from saving to growth, for all forms of saving.

Sinha and Sinha (2008) tested the relationships among time-series variables such as, growth rates of GDP, household saving, public saving and corporate saving, for the period 1950 to 2001 and found that economic growth produced saving in various forms. Verma (2007) used the autoregressive distribute lag (ARDL) co-integration (a time-series approach) to determine the long run relationship among variables GDS, GDI and GDP for the period 1950-51 to 2003-04 and supported the Carroll-Weil hypothesis that growth causes saving. Singh (2010) found bidirectional causality between saving and growth in the short-run, but in the long-run, he found saving causes higher income. Agarwal, Sahoo and Dash (2010) found that higher income per capita and improved banking accessibility improved saving in India, and there is one-way causation from income per capita to saving rate.

Given the importance of saving in causing and sustaining economic growth, it calls for a comprehensive understanding of what drives it. The following sections provide a holistic overview of possible determinants of aggregate saving and its types by highlighting the seminal papers and recent papers in the globa land Indian contexts. For identifying the relevant studies in this domain, an exhaustive EBSCO[3] search was conducted with specific key words[4].

The following section presents a review of literature on drivers of aggregate saving, drivers of household saving, and drivers of private corporate sector saving.

2. Drivers of Aggregate Savings

Existing literature has identified that GDP growth, real interest rate, inflation rate, demographic variables, political instability, financial deepening, public debt to GDP and pension systems are important determinants of private saving. A few studies worth mentioning are listed in Table1. Even after such comprehensive empirical studies, the effect of some variables namely, real interest rate, fiscal policy and pension systems, on aggregate saving remains ambiguous.

The effects of various determinants on total saving can be summarised as:

Higher income/GDP growth can increase total available wealth and end up having a positive effect. Macroeconomic uncertainty has generally been captured by inflation rates and it positively effects saving rates. Rise in inflation generates considerable momentum for precautionary saving in the economy. Another important variable is demographics, which is largely captured by 'young and old-age dependency ratio'. Large total dependent population in a country leads to less aggregate saving. The Life Cycle Model (discussed below) predicts a hump-shaped pattern of saving levels along the life cycle of a consumer. For capturing the effect of financial depth, a largely used proxy in literature is private sector credit by banks, to GDP. A well-developed financial market with sophisticated financial lending products has a negative effect on saving.

In the Indian context, Athukorala (1998) studied the nexus of interest rate, saving and investment in India for the period 1955-1995 and found that high real interest rate has resulted in increased level of total saving, promoting private investment in India. Loayza and Shankar (2000) studied the time-series data of

3 EBSCO discovery services and Google Scholar was used for searching existing studies.

4 For illustration, list of keywords used for Section 3 (Drivers of aggregate saving) were 'aggregate saving', 'total private saving', and 'determinants of total private saving'. Similar sets of keywords were used for other sections. The same was repeated by adding the word 'India'.

private saving in India for the time period of 1960-1995 and found that the behaviour of private savings rate is positively related to per capita income and share of agriculture in GDP, and negatively related to dependency ratio, real interest rate and financial depth. Athukorala and Sen (2004) studied the time-series data of private savings in India for the period of 1954-1998 and found that income growth, spread of banking facilities, inflation rate and real interest rate positively affect private savings rate. These studies also highlighted the role of financial intermediaries as proposed by McKinnon (1973) and found that the level of financial deepening was quite significant; this explains the rise of households' financial saving within the total private saving. Huge bank branch expansion was promoted by Government and RBI through formulation of policies for unbanked areas and effectively focussing on semi- urban and rural areas of India (Burgess & Pande, 2003; Panagariya, 2006).

3. Drivers of Household Saving

Consumption models were developed for understanding income, consumption and saving patterns of individuals, wherein current period saving was defined as current income minus current consumption. These consumption models explained well the saving behaviour of household individuals. The traditional theories proposed to explain saving behaviour are 'the permanent income hypothesis' (Friedman, 1957) and 'the life-cycle hypothesis' (Ando & Modigliani, 1963; Modigliani, 1986). Permanent income is defined in terms of the long-term income expectation that will determine saving and consumption behaviour of an individual. However, according to life-cycle model[5],

> "As income tends to fluctuate systematically over the course of a person's life, saving behaviour is crucially determined by one's stage in the life- cycle.

Table1
Drivers of Aggregate Saving

Authors; (year)	Contribution
Grigoli, Herman and Schmidt-Hebbel (2014)	Studied saving data of 165 countries over a time period of 1981 to 2012 using dynamic panel analysis. The exhaustive study extended previous theoretical and empirical research on a larger dataset and an exhaustive list of variables andfound that composition of total saving has begun to change.
Ozcan, Gunay and Ertac (2012)	Found that for the period of 1975-2008, in Turkey, inflation, income level, terms of trade, real interest rates, credits, young dependency ratio, urbanization rate, economic crisis and political instability increased private saving while financial depth, income growt h, current account deficit, old dependency ratio and life expectations decreased it.
Loayza, Schmidt-Hebbel and Serven (2000)	Studied determinants of private saving rate across 150 countries in the span of 1965-1994 using dynamic panel analysis. Identified multiple macroeconomic and policy variables that could determine private saving, domestic borrowing constraints, rate of return uncertainty (interest rate, inflation rate, measure of political instability), financial depth, fiscal policy, pension system, demographic variables, and income and wealth distribution.
Masson, Bayoumi, and Samiei (1998)	Studied a large sample of 23 industrial countries and 40 developing countries, and worked with both time-series cross-sectional estimates. Found that demographic variables and GDP growth are important determinants of private saving rates, while interest rates and terms of trade also have positive effect on private saving.

5 Life cycle model suggests that current period consumption depends on the expected lifetime income (not on the current income which was proposed by Keynesian model).

> Individuals smooth consumption over their life-times, and are consequently, net savers during their working years and dis-savers during retirement." Modigliani (1986).

In other words, life-cycle model of saving identified that household individuals save for smoothening of their consumption level over a life span. Individuals prefer to save in one period based on expected future income, and then utilize those savings in the second period when they retire from their income generating work.

Apart from these theoretical models, researchers have empirically explored saving behaviour of household individuals. Deaton (1989; 1990) has identified significant differences among cross countries saving behaviour. He proposed a notion, later accepted as theory of precautionary motives, especially for households in developing economies. This theory suggests that individuals in developing countries tend to save high because their future income is highly uncertain. Such uncertainty lies in the volatile income stream or unavailability of market credit or some unforeseen family emergency. Also, individuals of developing countries face difficulties in borrowing from markets, they do not have sufficient mortgage capacity and have a volatile income stream; thus individuals save for precautionary motives. Kimball (1990) asserts this theory and relates it with Arrow-Pratt measure of risk aversion. He also found that absolute risk aversion will result in lower marginal propensity to consume, thus resulting in higher saving.

Later Carrol (1997) explained the difference between precautionary saving motive and impatience given the income uncertainty. He proposed 'Buffer Stock Model' as the suitable and better way to capture the impatient household in an uncertain environment than the permanent income or life cycle hypothesis. As per the buffer stock saving behaviour-

> "Buffer-stock savers have a target wealth-to- per-manent-income ratio such that, if wealth is below the target, the precautionary saving motive will dominate impatience, and the consumer will save, whereas if wealth is above the target, impatience will dominate prudence, and the consumer will dis-save." Carrol (1997).

The consumption based models were focussed towards determining the determinants of household saving. Whereas, as already discussed above, an economy has broadly three types of agents namely, household, private corporate and government, that could generate saving (see Figure 1). These three agents face different sets of budget and financing constraints; hence their saving patterns differ. Government or public saving is defined as the excess of current revenue receipts over current expenditure and it is obtained by analyzing the budget documents (CSO- Sources and Method report, 2012). Budget could be driven with social and political motives, and the government manages budgetary items. To the best of given knowledge, there is no such study that explored the behaviour of public saving, given its autonomous nature.

Traditionally, household saving constitutes the largest portion of aggregate saving, which is driven and influenced by multiple theories, as discussed above - Keynesian theory of consumption (Keynes, 1936), permanent income hypothesis (Friedman, 1957), life-cycle hypothesis (Modigliani, 1986), precautionary motives (Deaton, 1989; 1990), and buffer stock models (Carroll, 1997). However, recent studies (see Table2), in the context of developing countries, suggest that factors such as, dependency ratio, income level and pension reforms, could determine household saving rate in the context of developing countries.

As per economic theory, households own corporations and should adjust their saving plans to offset the saving done by corporates on their behalf (Auerbach & Hassett, 1991; Poterba, Hall & Hubbard, 1987). However, a variety of factors related to constraints on consumer and corporate financial behaviour may, in practice, lead to imperfect substitutability between household and corporate saving (Bernheim, 2002). Households may have a lower marginal propensity to save out of increased market wealth (if earnings are retained by companies) rather than out of increased disposable income (if dividends are distributed by companies). There is another view that suggests that the value of firm (shareholders' wealth) may not change simultaneously with retained earnings, reflecting problems in corporate governance and imperfect observability, or it could be the other way round where value of the firm might increase much higher than expected (Jensen, 1986). So households and corporates are two distinct entities with respect to

Table2
Drivers of Household Saving

Authors; (year)	Contribution
Chamon, Liu and Prasad (2013)	Found that, for Chinese urban households over the period of 1989-2009, income uncertainty and pension reforms resulted in higher saving rates of younger and older households, quite significantly. These two factors account for two-thirds of the increase in China's urban household saving rate with a U-shaped age-savings profile.
Liu and Hu (2013)	Studied the increase in China's household saving over the period 1990 -2009 using data at the provincial level and found that income uncertainty and longer life expectancy are the primary drivers of saving. Found that precautionary saving motivation is a better explanation than either Keynesian theory or life-cycle theory.
Ang (2009)	Compared household saving behaviour of India and China for the periods 1950-2005 and 1963-2005 respectively, using the time-series approach (ARDL). Found that income growth is positively related while age dependency is negatively related to household saving. Also found that expected pension benefits increased household saving in India while the same decreased household saving in China.
Horioka and Wan (2007)	Studied the rising household saving of China using provincial level data for the period 1995-2004, employing a dynamic panel analysis. Found that lagged saving rate, income growth rate, real interest rate and inflation rate are the key determinants of household saving rate. Their results donot support either life-cycle or permanent income hypothesis.

their saving and consumption behaviour.

They also differ in terms of financing and liquidity constraints (IMF, 2006).

4. Drivers of Private Corporate Saving

Keynes (1936) proposed that, in the presence of financing frictions, firms would also exhibit precautionary demand for cash saving. Firms perform cost-benefit analysis of financing sources, and prioritise between internal and external funds from markets (debt or equity) (Modigliani & Miller, 1958). Also, a firm's investment decision depends on the firm's ability to access external sources of financing. In other words, if firms face financing constraints due to asymmetric information in capital markets, then external financing will be costly (e.g. Fazzari, Hubbard & Petersen, 1988; Kaplan & Zingales, 1997). In such a scenario, it is useful for financially constrained firms to save for future investment activities. Pecking order theory also suggests that firm's internal funds (retained earnings) are the least costly source for financing (Myers & Majluf, 1984).

Earlier literature has not focused on corporate saving because it constituted a minimal portion in the total domestic savings. However, since early 2000s, studies began to focus on the rising trend of corporate saving. Hsieh and Parker (2006) found that corporate saving in Chile rose mainly because of low corporate tax rates. 1984-86 tax reforms reduced corporate tax rates from 50% to 10%, and in an under developed financial market, this tax-rate reduction gave a boost to corporate saving, followed by impressive investment surge and GDP growth rates. In India, there were no such corporate rate tax cuts, but still corporate saving showed a rising trend from 2000 to 2009. This rise may be attributed inter alia to robust sales and profitability growth[6].

However, for US corporate sector, Falato, Kadyrzhanova and Sim (2013) found that rise in intangible capital causes rising corporate saving and results in declining debt capacities. Also, with heavy

6 Report of the High Level Committee on Estimation of Saving and Investment, 2009 http://mospi.nic.in/HLC_report_25mar09.pdf, accessed on January 11, 2015.

reliance on equity financing since early 2000s, US non-financial sector has become a net lender. With rising corporate saving, the composition of corporate investment has been skewed towards financial assets and these firms are accumulating these financial assets with precautionary motives (Armenter & Hnatkovska, 2013; Karabarbounis & Neiman, 2014). An exhaustive list of research papers on corporate saving in global context is presented here (see Table 3).

Karabarbounis and Neiman (2014) found a global trend of rising share of corporate saving in the total saving; they mention that this share of corporate saving reaches more than 20% of total saving. However, only a few studies namely, Hsieh and Parker (2006) for Chile, Bayoumi, Tong, and Wei (2012) for China, Armenter and Hnatkovska (2013) for the United States, and Brufman, Martinez and Artica (2013) for developed countries, have focussed on understanding this recent trend of rising corporate saving (gross savings defined as retained earnings plus depreciation).

In the Indian context, in recent times, only Bhole and Mahakud (2005) for the years 1966-67 to 2000-01, and Jangili and Kumar (2011) for the years 1998-99 to 2006-7, have attempted to understand the determinants of corporate saving; both have considered retention ratio (retained profit divided by profit after tax) as saving. Both have studied firm-level determinants of corporate saving with an objective to identify the firm level determinants that can increase the retention ratio. These studies have found profit after tax, cost of external borrowing, capital formation ratio and growth rate of firm are positively related to retention ratio whereas, corporate tax rate, depreciation ratio and cost of equity are negatively related to retention ratio. (Table 3)

5. Conclusion

This study presents a holistic overview of the possible determinants of aggregate saving, household saving and private corporate saving. Key drivers of aggregate saving have been identified as GDP growth, real interest rate, demographic variables, political instability and financial deepening, among other variables. Key drivers of household level saving have been identified as dependency ratio, income level and inflation rate. Key drivers of private corporate saving have been identified as profitability, capital formation, Tobin's q, and size of the firm. The following text presents observed issues and contradictions, and directions for future research.

5.1 Issues and Contradictions

As discussed above, existing theories on saving (life-cycle theory, precautionary motives theory) were developed for house-hold individuals. The theoretical framework of life-cycle theory cannot be applied to corporate entities. House-hold individuals and firms differ largely on financing constraints and accessibility of market credit (Bernheim, 2002; IMF, 2006). There have been studies explaining determinants of total savings (see Grigoli, Herman &Schmidt-Hebbel, 2014) and private savings (household plus corporate saving) (see Loayza, Schmidt-Hebbel & Serven, 2000). There are established theories (Modigliani, 1986; Deaton, 1989; Carroll, 1997) and multiple studies that explain the determinants of household saving (e.g. Ang, 2009; Horioka & Wan, 2007). However, research is scant on determinants of corporate saving.

Interestingly, results on the relationship between economic growth and saving (discussed in Section2) are contradictory to each other, a few supporting the classical growth theory, and a few agreeing with the Carroll- Weil hypothesis; some do not support either of these. One possible reason of such contradictions is that none of these studies tried to capture the dynamic nature inherent in saving decisions. Today's saving level depends on past habits although past income may or may not be a good predictor for today's income level. Such dynamics need to be accounted for before assessing the causality of saving and income growth.

The effect of real interest rates depends on whether the consumer is a net creditor or a net debtor. In case of a net creditor (a net holder of financial assets), a rise of interest rates brings positive substitution and wealth effect, but negative income effect; so the final effect of real interest rates on total savings is ambiguous. In the case of net debtor, the effect will be positive because income effect will be positive. Effect of real interest rate remains ambiguous on private saving in India also. Athukorala and Sen (2004) found a positive relation whereas Loayza and Shankar (2000) found a negative relation, of real interest rate with private saving. This controversy a rises from methodological differences as well as the definition of saving that is used.

Table3
Drivers of Private Corporate Saving

Authors; (year)	Contribution
Karabarbounis and share Neiman (2014)	Identified that globally, corporate saving increasingly constitutes the larger in total saving, and in recent years global investment is funded primarily from corporate saving instead of household saving. Found that trends of rising corporate saving and declining cost of capital are inducing firms to shift away from labour and towards capital. Identified that, on an aggregate basis, 20% rise is corporate saving are accompanied by 5% reduction in aggregate labour share.
Armenter and Hnatkovska (2013)	Identified that the US non-financial corporate sector's total saving is high enough to lend finances to the rest of the economy. Modelled internal funds, external equity and investment to understand the rising external equity demand with rising internal funds; however, debt financing is found to be more advantageous over equity financing. Found that firms are issuing external equity to retain hedge against shocks, and firms are increasing their financial assets as a precautionary measure.
Brufman, Martinez and Artica (2013)	Studied excess saving (gross saving over capital formation) of 5000 listed manufacturing firms from Germany, France, Italy,Japan and the United Kingdom for the period 1997-2011. Identified that excess saving is rising with declining gross capital formation, with continuous deleveraging process and declining share of operating assets in total assets.
Horioka and Terada-Hagiwara (2013)	Studied corporate saving (changes in stock of cash) for 11 Asian economies for the period 2002-2011 using firm-level data. Found that Asian firms are borrowing constrained and save more for future investment opportunities. Small firm's propensity to save is positively related with Tobin's q and cash flow, signifying the borrowing constraint nature of firms. Also found that this saving propensity has declined after the 2007-8 financial crisis.
Bayoumi, Tong and Wei (2012)	Identified that increase in corporate gross savings in China is comparable with the global rise in gross savings of firms, especially in countries like US, UK, Japan, Germany, Korea and Australia. Corporate net savings remained negative for China while it was positive for the select set of countries. Found that there exists no significant difference between saving behaviour and dividend pay-outs of private and public firms in China.
Özmen, ?ahinöz and Yalç?n (2012)	Studied undistributed profit of non-financial firms in Turkey for the period 2002-2007, using dynamic panel analysis on both firm-level and macroeconomic level variables. Found that firms' saving rates increase significantly with profitability, firm size, Tobin's q, GDP growth rate and financial depth. It decreases with the ratio of tangible assets to total assets, leverage ratio, ratio of public debt to GDP and real exchange rate appreciation.
Riddick and Whited funds (2009)	Explored the phenomenon of why firms hold liquid assets instead of investing into physical investment. Studied non-financial firms of USA (from 1972 to 2006) and Canada, U.K, Japan, France and Germany (from 1994 to 2005). Found that a positive productivity shock increases both cash flow and marginal propensity to invest; firm dis-save some of its existing cash-saving to invest. So cash-saving is reduced with increase in cash-flow. Also found that firms tend to save more because of income uncertainty rather than the presence of external finance constraints

OECD study (2007)	Found that for the aggregate OECD corporate sector, net saving has been unusually high since 2002, which negatively affects net lending and results in low interest rates. Found that weak investment, relatively lower prices of capital goods, country level differences, lower dividend payments, rising share of buy-backs are leading to rise in corporate saving.
IMF study (2006)	Found that net saving of companies in G-7 countries (Canada, France, Germany, Italy, Japan, United Kingdom and United States) is increasing since early 2000s. Studied a sample of 10,000 public listed non-financial firms for the period 1996-2004 and identified that rising profitability, declining real capital investment, increase in repayment of piled up debt, increasing level of share repurchasing, larger firm size, increase in uncertainty in business environment, increasing level of asset-acquisition, rising share of intangible assets and higher Tobin's q lead to high saving.

Level of 'Public debt to GDP' depicts the state of fiscal policy, a higher public debt to GDP ratio actually suggesting the crowding out phenomenon that could reduce total loanable funds in the economy. Another measure to capture fiscal policy could be 'Public saving to GDP', a higher government saving given government investment could lower the total private saving in an economy. A well-functioning fully pension system, where individual contribution is mandatory, reduces voluntary saving; however, the overall saving may increase or be maintained. Due to data insufficiency issues, it becomes difficult to assess its effect on the total saving.

5.2 Future Research Directions

One possible area of empirical research in house-hold saving could be to identify the individual level variables that could influence house-hold saving behaviour, especially in India. Since 2000, in India (see Figure 1) the composition of total saving has changed, and with the advent of advanced financial products, financial saving of house-hold has increased manifold. Some survey based method or NSSO7 database can be useful for this. Also there is scope for examining state level saving behaviour, given the diversity of Indian states.

Recently there has been a surge of corporate cash management studies focussed on understanding corporate saving in the form of cash (cash & cash equivalent) hoarding in relation to financial constraints. 'Precautionary motives' has been found useful in explaining the cash holding behaviour of corporates in the presence of financial constraints (e.g. Almeida, Campello & Weisbach, 2004; Bates, Kahle & Stulz, 2009; Gao, Harford & Li, 2013). To the best of given knowledge, no study has used the definition of corporate saving per se 'retained earnings plus depreciation' by controlling financial constraint status of the firm. There is sufficient scope to employ advanced dynamic panel data techniques for estimation of such models.

There are studies that have considered macroeconomic level variables for explaining the determinants of total domestic saving or private saving (see Athukorala & Sen, 2004; Grigoli et al., 2014; Loayza et al., 2000). A study by IMF (2006) considered macroeconomic level variables for developed economies and Ozmen et al., (2012) have also looked at the same for Turkey for identifying the drivers of corporate saving. However, in India, there has not been any attempt to understand macroeconomic level variables that determine firm level saving.

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