

**THE CORPORATE, REAL ESTATE,
HOUSEHOLD, GOVERNMENT AND
NON-BANK FINANCIAL SECTORS
UNDER FINANCIAL STABILITY**

COMPLETE VOLUMES ON THEORY AND PRACTICE OF FINANCIAL STABILITY

- Volume 1: Understanding Financial Stability
- Volume 2: The Banking Sector under Financial Stability
- Volume 3: The Corporate, Real Estate, Household, Government and Non-bank Financial Sectors under Financial Stability
- Volume 4: Economic Areas under Financial Stability
- Volume 5: Tools and Techniques for Financial Stability Analysis

Praise for *The Theory and Practice of Financial Stability*

Indranarain Ramlall's proposal is a great attempt at giving a comprehensive view of financial stability from a theoretical, practical and policy perspective. It aims at providing future students with the tools to understand the framework in which financial stability is assessed and understood today by international organisations and central banks across the world. To my knowledge, this is the only book that covers such a wide range of topics related to financial stability. It, therefore, has the potential to become a good reference book on the topic. I believe that Indranarain Ramlall has made a great proposal to provide a 'big picture view' on financial stability. I look forward to reading the textbook!

Celine Tcheng, Central Bank of France

Financial stability has become a major concern for central banks, after the 2008 global financial crisis. More and more research is tackling topics regarding the role of the financial system in macroeconomic models and the implementation of macroprudential policy. Therefore, a comprehensive overlook of financial stability issues, such as the one offered by *The Theory and Practice of Financial Stability* can prove particularly useful for experts working in the financial system, central bankers included. The textbook covers a diverse set of topics from policy matters to risk assessment analysis.

Elena Banu, Central Bank of Romania

This book is a comprehensive work on one of the most actual topics in the aftermath of the Great Recession. It covers a wide range of topics on financial stability complementing theoretical frameworks with practical examples.

Starting with a conceptual description on financial stability, the book overviews a history of the major financial crises and Basel regulation rules. Particularly useful is an inquiry of the financial stability perspectives across different asset classes and economy sectors. Another beneficial feature of this book is a complete oversight of stress testing methodologies.

The book is a thorough compilation of topics on financial stability and definitely deserves a place on the bookshelves of central bankers, government and private institutions' officials.

Vaidotas Sumskis, Bank of Lithuania

Dr Indranarain's book is an actual textbook for interpreting interrelations between all aspects and sectors of the international economy and will surely be a highly useful tool for credit institutions, investors, practitioners as well as academics. From a Central Bank's point of view this book provides an integrated approach to macroeconomic environment and the interactions between the various factors and an actual tool for assessing and measuring leading circumstances and indicators that affect financial stability and may cause vulnerabilities.

Vasiliki Vlachostergiou, Central Bank of Greece

This is a monumental work! I didn't find anything missing. I think it will be useful for students, economic and finance professionals and policymakers.

Christophe Andre, OECD

Financial stability was always a priority for financial sector regulators and it has surpassed other objectives since the global financial crisis. Given various complexities associated with the financial stability and rapid developments over time, existing literature tends to deal with specific aspects of financial stability. It is very difficult to get a comprehensive book dealing with the wide range of concepts, different segments of financial sector, ever increasing variety of financial instruments and regulations associated with financial stability. The current book is a very good attempt to fill this gap through its comprehensive coverage of almost the entire gamut of financial stability related topics. This book should be useful for financial sector regulators, related ministries in the governments, researchers, multilateral institutions, other financial sector stakeholders and general public who are interested to know the complexities of the financial sector and financial stability.

Ajay Prakash-an expert in Financial Stability

THE THEORY AND PRACTICE OF FINANCIAL STABILITY
VOLUME 3

THE CORPORATE, REAL ESTATE, HOUSEHOLD, GOVERNMENT AND NON-BANK FINANCIAL SECTORS UNDER FINANCIAL STABILITY

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Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2019

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British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-1-78756-838-9 (Print)

ISBN: 978-1-78756-837-2 (Online)

ISBN: 978-1-78756-839-6 (Epub)



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List of Acronyms

BIS	Bank for International Settlement
ECB	European Central Bank
GDP	Gross Domestic Product
IMF	International Monetary Fund
SDRs	Special Drawing Rights
IADB	Inter-American Development Bank
MDGs	Millennium Development Goals
WACC	Weighted Average Cost of Capital
DSCR	Debt Service Coverage Ratio
CCA	Contingent Claims Analysis
DB	Distress Barrier
FDI	Foreign Direct Investment
FVCs	Financial Vehicle Corporations
SPVs	Special Purpose Vehicle
FSB	Financial Stability Board
ACE	Allowance for Corporate Equity
LTV	Loan To Value
DTI	Debt To Income
DeMPA	Debt Management Performance Assessment
REITs	Real Estate Investment Trusts
HIPC	Heavily Indebted Poor Countries
NPV	Net Present Value
PD	Probability of Default
DSTI	Debt Service To Income
TFFS	Task Force of Finance Statistics

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Preface

Sound financial stability assessments necessitate intensive analysis of different sectors, namely, the banking sector, the household sector, the corporate sector, the real estate sector, the government sector and the non-bank financial sector. Based on the fact that most economies are imbued with a bank-based financial system, a meticulous approach is adhered to when analysing the banking sector. Micro-prudential and macro-prudential regulations are widely discussed as they constitute core ingredients to ensure a sound and smooth functioning financial system. Households represent important players in any economy. For example, household debt represents a coveted economic indicator because it is often linked to the building up of financial instability pressures. The real estate sector is often related to the prevalence of financial crises through asset price bubbles. The corporate sector constitutes another important sector for financial stability risk analysis. For example, the balance sheets of the corporate sector are widely examined to uncover feasible risks to financial stability. The government sector is also given due consideration with particular emphasis being laid on public debt management. The non-bank financial sector has gained prominence worldwide as it ensures that deleveraging by banks does not gnaw at the level of economic activities. In a nutshell, a systematic approach to risk assessment is being undertaken for each sector. In general, this book undertakes a complete analysis of all sectors which fall under the purview of financial stability risk assessments.

The book has been written as a reference material to cater for the needs of both new and experienced professionals such as central bankers, researchers, economists and policy-makers who are involved in the field of financial stability. As a matter of fact, many central banks now have a financial stability unit or a department but so far there is no textbook which weaves through the various aspects of financial stability. Central bankers can use the book to beef up the analytical part of their financial stability reports by incorporating new tools of assessments. The book appeals to courses/programmes on financial stability as provided by Yale School of Management (Macroprudential Policy or Financial Stability Regulation/Master of Management studies in Systemic Risk), Goethe Business School (Financial Stability and Regulation/Executive Education course) and Florence School of Banking and Finance (Banking and Financial Stability course). To date, there are no textbooks or referenced materials which undertake an intensive and coherent approach to financial stability. For example, there is no such framework as to how financial stability, as a process, should be performed. This book attempts to provide all key issues in a highly comprehensive and critical manner. In that respect, the book is expected to be widely used worldwide, both by professionals and researchers.

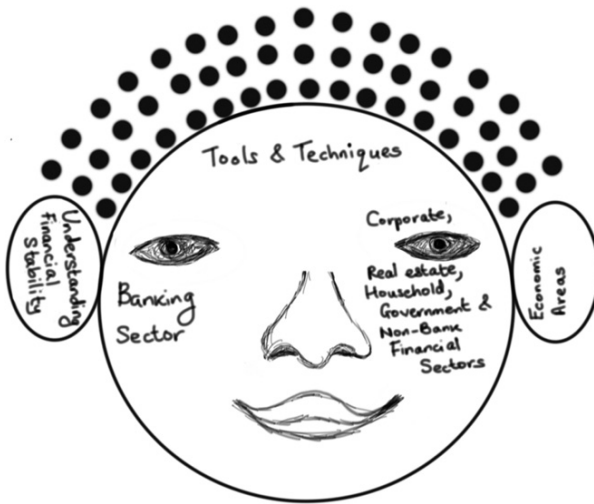
The author expects the book to be particularly useful to economists, policy-makers, researchers and students in effectively gaining insight on financial

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stability. As at date, there is no textbook on financial stability which weaves through all aspects of financial stability from theory to practice. This series of five books on financial stability attempts to fill in such a vacuum. Comments and suggestions can be made to i.ramlall@uom.ac.mu/iiramii3@gmail.com.

The author seizes this opportunity to thank an anonymous referee from the London School of Economics for his suggestions and reviews made by professionals from central banks and reputable organisations.

Dr Indranarain Ramlall
June 2018



Financial Stability as a field of its own.
Dr. I. Ramiall 20/09/18

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Chapter 1

Household Sector

1.1. Household Debt

Over the last decades, household debt underwent substantial increases though results vary among countries. For instance, as per the BIS (2009), in 2007, household debt to GDP was merely of 7% in Indonesia but of 82% in Korea while for both the US and the UK, it was beyond 100%. Both demand and supply forces account for the burgeoning level of household debt. On the demand side, there exist different forces such as high economic growth, low and stable inflation, robust asset prices (such as asset price bubbles) and mortgages, declining interest rates and demographic changes. On the supply side, deregulation of financial markets, financial innovations, banks' desire to diversify their loan portfolios, low demand for corporate loans, government policies (taxes or government support for household loans) and technological advancements spurred the demand for household debt. In most economies of the world, housing loan (mortgage debt) accounts for a lion's share of the total level of household debt. The household sector acts as an intermediary sector in the economy as it links to other different sectors. The composition of household debt is depicted in Figure 1.1.

Household debt can consist of housing loan, motor vehicles loans, credit cards, educational loans and personal loans. Two main functions are attached to the use of credit cards, namely for payment purposes and to borrow regularly

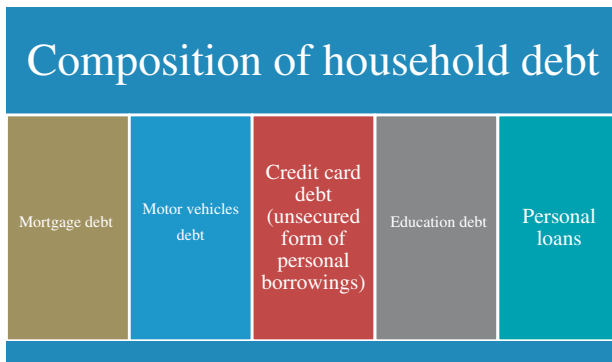


Figure 1.1: Composition of Household Debt. *Source:* Author's illustration.

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and pay interests accordingly. The credit card business model usually involves large fixed costs due to setting up of proper infrastructures so that once these investments are effected, the marginal cost of adding new accounts becomes low.

In Korea, the credit card business represents one of the fastest growing areas of unsecured retain finance with associated risks to financial stability. Indeed, Korean card issuers rely heavily on wholesale funding through securitisation to buttress their business activities so that they tend to package risky card loans off their balance sheets and to sell them to less informed third-party investors—a practice which resembles the US subprime crisis events. Such ‘originate-to-distribute’ model reduced incentives of Korean credit card companies to screen their borrowers. Alternatively stated, the Korean monocline credit card operations were same as those of the US subprime crisis ‘originate-to-distribute’ model.

The decomposition of household debt is useful as it helps to undertake specific boom–bust analysis of the various components which make up the total level of household debt. As per the permanent income hypothesis, the chief objective of savings is to smooth consumption; when current income falls below permanent income, this implies that households withdraw money from banks to be spent on consumption.

1.2. Drivers of Household Debt

- Debele (2004) pointed out that low interest rates and less liquidity constraints helped to stimulate household debts worldwide. Abundant global and local liquidity conditions drive down the cost of borrowing.
- IT or technological innovations which trigger strong productivity tend to contribute towards lower levels of interest rates.
- Low interest rates in advanced economies also act as a base for low interest rates in other countries based on the interest rate parity conditions.
- Demographic changes such as ageing of the baby boom generation also drive up household debt.
- Securitisation helps banks to reduce their credit risk as to stimulate them to engage more into household debt which can then be used to push for mortgage-backed securities. In a parallel manner, a vibrant secondary market for loans enable banks to have higher levels of loanable funds which can be used to provide more and more loans to the household sector.

1.2.1. Benefits of Higher Household Debt

- Stimulates a better standard of living.
- Enables households to smooth consumption patterns over time.
- Enables bank to diversify their loans portfolio.
- Stronger household debt can in the long-run incite the local demand function as to rely less on external trade to boost the economy. Indeed, household debt constitutes a core driving force which propels the economic activities of an economy.

- The actions of households following interest rate changes consolidate the interest rate channel of the monetary policy transmission mechanism.
- Households via their loans encourage securitisation under mortgage-backed securities which exist in Europe, Asia and Australia, thus helping banks to diversify their credit risk level.

1.2.2. Drawbacks of Household Debt

- Generates contagion risks in the case of mortgage-backed securities along with collateralised debt obligations. Securitisation spurred by higher household debts act as a strong channel for transmission of contagion risks. In fact, if the securities are sold abroad, local problems will impact on both the local and foreign economies as witnessed in the case of the US subprime crisis.
- Increases financial stability risks to the economy—defaulted households on loans may significantly scale up the non-performing loans levels of banks.
- The margin of manoeuvre in consumption by households should be larger to ensure a potent monetary policy changes in interest rates do elicit changes in consumption. However, if there is already high level of household indebtedness in an economy, this automatically gnaws at such a margin of manoeuvre. In a nutshell, the structure of the mortgage market helps to determine the effectiveness of monetary policy in an economy. In the same vein, variable-rate mortgage loans help to ensure a fluid interest rate transmission channel for monetary policy.
- Adverse shocks in the economy can trigger high levels of financial casualties by households as to incite financial stability risks.

1.2.3. Channels via which Household Debt Impacts on Different Components of Aggregate Demand

- Consumption is affected via debt servicing costs as interest rates alter.
- Borrowing constraints imposed by financial institutions gnaw at the consumption patterns of households.
- Household debt acts as the cross-roads of consumption and savings.
- Higher household debts exert strains on the level of net worth of households to thereby increase the cost of borrowing as to negatively impact on consumption and on the business cycle dynamics.

1.3. Country Features Pertaining to Household Debt

In this section, focus is laid on the country features with respect to household debt. As a matter of fact, household debt is never the same for different countries, mainly explained by the fact that different countries exhibit different structural economic conditions.

Australia and Japan have higher levels of household debts while China, India and Indonesia have lower levels of household debts and Korea, Malaysia, Taiwan and Thailand have in middle levels of household debts. The driving

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force pertaining to the growth in housing loans in China relates to the development of the housing market and improved standard of living of the Chinese people. The government also undertook measures to increase the supply of affordable housing and low-cost rentals.

In Australia, the majority of Australian asset-backed securities comes from prime (not subprime) residential mortgage-backed securities so that the Australian housing market stayed healthy despite the presence of the US subprime crisis. High levels of household debts in Australia are mainly propelled by mortgage debt. Drivers for high household debts in Australia are low interest rates, increased availability of house funding and strong demand for debt from investors. Davies (2009) pointed out that 'Several factors have contributed to the strong growth in housing debt over recent years, the principal one being that lower interest rates in Australia allow households to borrow more when they take out their housing loan'. The increase in funding for household debt emanated from the entry of specialist mortgage originators (non-bank lenders who do not accept deposits and thus rely heavily on securitisation to fund their housing lending) into the Australian housing loan market. Household debt to disposal income hovered around 157% in 2007 in Australia. The household disposable income is computed as income after tax but before the deduction of interest payments. The Australian household debt is dominated by housing debt. Nonetheless, for the same time period, the level of non-performing loans (loans past due 90 days (nearing default mode) plus impaired loans (default mode) over total value of loans outstanding) was below 0.4%. Strong pass-through mechanism for interest rate channel of monetary policy manifests in the case of a larger chunk of household housing loans being held at variable rates. For instance, around 85% (see Davies, 2009) of outstanding Australian housing loans were at variable rates.

Household debt in Korea rose from KRW 200 trillion in 2000 to KRW 450 trillion in 2002, a substantial increase. The reasons behind such an increase comprise of financial institutions enlarging their businesses aggressively to the household sector, low interest rates and increasing housing prices.

Nakagawa and Yasui (2009) stated that Japanese households were inclined to put about half of their financial assets in cash and deposits while US and European households tended to put merely 16% and 25% to 33% of their financial assets in safe and liquid products. They argued that cultural features such as saving constituted a virtue in Japan along with the existence of considerable level of down payment in the case of a house purchase in Japan.

1.4. Balance Sheet Approach to Household Financial Stability Assessment

The aim of the balance sheet approach to gauge on financial stability risks is to focus on stock variables (see Allen, Rosenberg, Keller, Setser, & Roubini, 2002) of key sectors in the economy such as the banking sector, the corporate sector, the public sector (government and central bank) and the household sector. In essence, national balance sheets can be employed to undertake a holistic

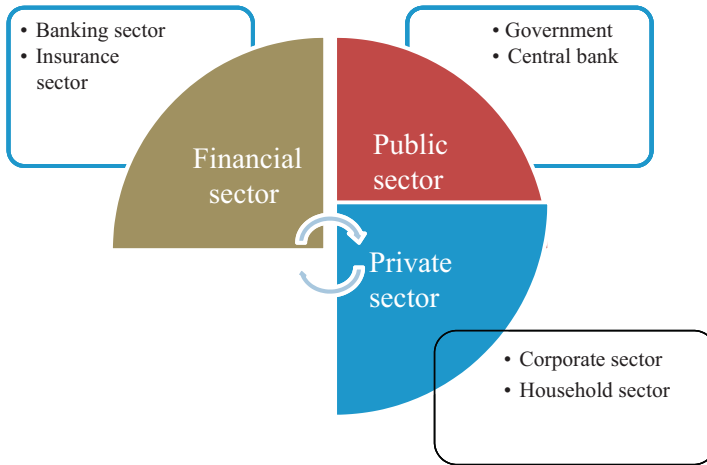


Figure 1.2: Three-pronged Classification of National Balance Sheets. *Source:* Author's illustration.

approach to financial stability risk assessment in an economy. The national balance sheets can be split into three broad categories as illustrated in Figure 1.2.

Allen et al. (2002) pointed out four specific cases of balance sheet mismatches which can assist in determining the repayment capacity of an economy when it is buffeted by a shock. These four cases comprise of maturity mismatches, currency mismatches, capital structure problems and solvency problems. Maturity mismatches manifest when a sector is not able to cover its short-term liabilities on the back of insufficiency of liquid assets. Currency mismatches occur whenever there are net positive or net negative exposures (long over short) to distinct types of currencies. Capital structure problems emanate from over-reliance on debt in the funding structure of the sector so that this increases the probability of the sector being subject to financial distress costs. Finally, solvency problems occur when the present value of assets is not enough to cover the present value of liabilities (all assessed under cash inflows/outflows) so that there is an erosion in equity value of the sector.

Table 1 provides a snapshot of the balance sheet for the Indonesian's household sector. The main shortcoming related to household's balance sheet is that data are still not available for many economies.

The ultimate focus under household balance sheet assessment is to ensure that households have assets in excess of their liabilities. It came out that in Indonesia (see Santoso & Sukada, 2009¹), households put their money in banks

¹A chapter in Household debt: implications for monetary policy and financial stability, 2009, vol. 46, pp. 58–74 from the Bank for International Settlements

6 Household Sector Under Financial Stability

Table 1.1: Balance Sheet of Indonesia's Household Sector.

Assets	Liabilities
Financial assets	Bank loans
Cash	Loans from non-bank financial institutions
Bank deposits	Other loans
Insurance, cooperatives, post-office deposits	
Accounts receivable	
Stock, bond, mutual fund investments	
Pension funds and other investments	
Non-financial assets	
Gold and jewellery	
Vehicles	
Houses and buildings	
Land	Net worth (assets minus liabilities)

Source: BIS (2009): Household debt: implications for monetary policy and financial stability, p. 63.

in form of bank deposits² in spite of a decline in interest rates. Above all, Indonesian households had low exposure to financial assets so that they tended to be mainly involved with the banking sector. Thus, there are strong relationships between the household sector and the banking sector in Indonesia.

1.5. Interaction of Household Sector with Other Sectors in an Economy

As shown in [Figure 1.3](#), the household sector never works in isolation but instead interacts with other sectors in the economy. As a matter of fact, the key strength of the household sector is that it is inherently connected to the corporate sector both in terms of labour force supply and product demand. Consequently, in the case of a higher chunk of unemployed households, this will also entail an undermined level of household consumption which subsequently feeds into a lower level of aggregate demand in the economy.

²Bank deposits consist of current account deposits, demand deposits, savings and time deposits.

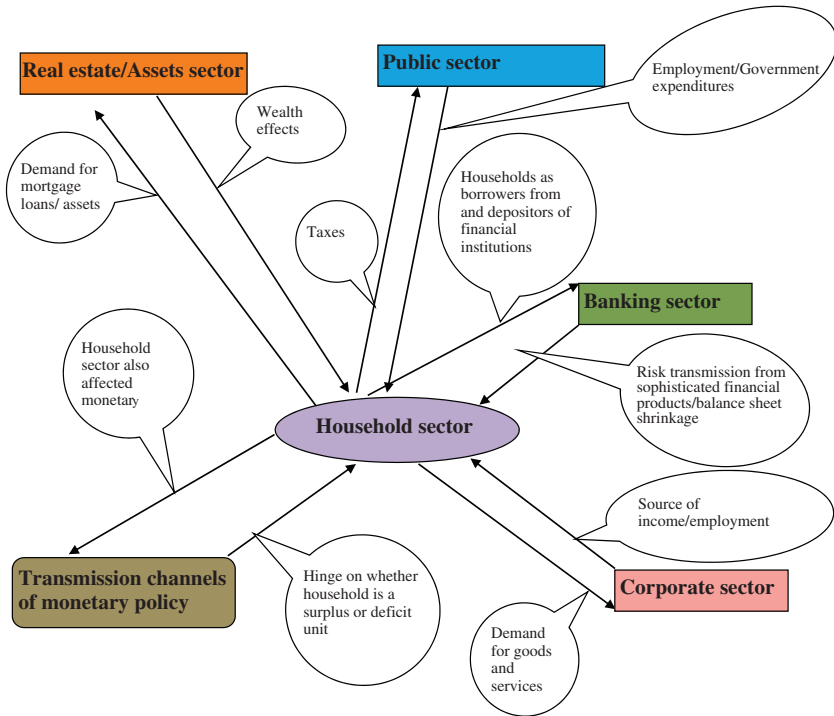


Figure 1.3: Interaction of the Household Sector with the Banking Sector, Public Sector, Corporate Sector and Real Estate Sector. *Source:* Author's illustration.

The real estate sector represents another important sector which directly impacts on the household sector. Burgeoning property prices act as enhanced wealth states for households as to induce an escalating force in the demand for products by households. Technically speaking, the real estate sector should unleash a larger impact on household's wealth than equities since housing wealth is more widespread among the population of an economy, chiefly for developing countries. As a matter of fact, weak equity democratisation coupled with low financial literacy levels act as major forces in unleashing low levels of equity holdings by households found in developing economies. The effect of the real estate sector on household's wealth becomes muted down in the case that homeowners leave their houses to their children in lieu of getting the benefits of escalating house prices-bequest motive dragging down on the positive consumption effects on the back of burgeoning house prices. With respect to asset price bubbles, Filardo (2009) argued the existence for both defensive and opportunistic strategies. Under defensive strategies, the whole focus is laid on policies to timely prick asset price bubbles to protect the economy from a more painful adjustment in the future. Under opportunistic strategies, central banks may

engage into asset price bubbles building up in order to spur an economy during the weak phase of the business cycle and to encourage negative bubbles during the strong phase of the business cycle. Endogenous feedback mechanisms are always embedded in asset price bubbles.

The public sector impacts on the household sector in the form of taxes and subsidies. For instance, negative income tax is likely to give a boost to consumption in the economy from the households side. The central bank does have a strong say on the actions undertaken by households. A central bank should properly conduct its monetary policy in order to mute down consumption volatility. Consumer loans rather than business or corporate loans are more sensitive to changes in the main stance of money policy interest rates. Financial stability implies putting greater relative weight on economic stability in lieu of inflation stability. Thus, this signifies that central banks' activities should tilt away from the narrow mandate of inflation stability to move towards a holistic approach to financial stability.

In order to diversify its credit portfolio, banks grant loans not only to corporates but also to households so that the health of the household sector entails direct effect on the profitability state of the banking sector. Deleveraging by banks not only impacts on the corporate sector but also impacts on household sector, that is, bank deleveraging entails both corporate sector deleveraging and household sector deleveraging.

1.6. Household Metrics

Alike any other sector in the economy, there is need to give consideration to the various metrics which are useful in analysing the household sector in an economy. This section attempts to provide important household metrics which can be employed by policy-makers to assess the building up of pressures or risks in the household sector.

- Focus on the deviation of household debt from its steady state ratio.
- Trend of housing price index and interest rates.
- Ratio of household debt to net disposable income.
- Ratio of household debt to GDP.
- Trends of household credit.
- Fall in household net savings rate indicates a gradual increase in the proportion of households who live from hand to mouth (that is, use of current income for current consumption).
- Ratio of hands-to-mouth households (use of current income for current consumption in lieu of increasing or decreasing savings in order to smooth consumption) to total households; as the ratio of hands-to-mouth households falls, this leads to greater volatility in consumption.
- Ratio of total credit card receivables to GDP.
- Household financial data as a percentage of disposable income.
- Household net wealth as a percentage of disposable income.