Annotated Bibliography: Flow of Funds

Survey of Literature and FFAs as Descriptive Data Source


This paper presents a model to explain the stylized fact observed from flow of funds accounts that the corporate sector in the United States changed from a net borrower in the 1970s and 1980s to a net saver in the 2000s. Over this same time period, firms shifted from debt to equity financing.


The purpose of this paper, in addition to presenting the history of flow of funds analysis, is to guide potential analysts interested in using these accounts. The author addresses the main advantages and drawbacks of using flow of funds analysis. Finally, he presents and explains several approaches which have been adopted in the past that might be useful for macroeconomic, financial, and statistical analyses.


This paper examines the facts and myths about how the financial crisis of 2008 affected the economy as a whole. Conventional analyses of the financial crisis focus on interest rate spreads. The authors argue that such analyses may lead to mistaken inferences about the real costs of borrowing and argue that, during financial crises, variations in the levels of nominal interest rates might lead to better inferences about variations in the real costs of borrowing. In addition, this report uses flow of funds analysis to model the structural financial data of the non-financial corporate sector.


Using International Financial Statistics (IFS) and Government Finance Statistics (GFS) data from the IMF, this paper constructs rough quarterly flow of funds accounts for Thailand. It looks at how funds flowed from the rest of the world to each sector within the country and is a good example of how flow of funds accounts can be informative to policymakers.

1 An updated version of this paper can be found at http://faculty.arts.ubc.ca/vhnatkovska/Research/AH.pdf

This paper provides a good summary of flow of funds accounts and instruction for how to look at the information contained within them. It is structured like an executive summary of the economic environment.


This paper gives a comprehensive survey of literature related to flow of funds accounts. It also discusses problems with the construction of flow of funds accounts and the lack of work in this area, before proposing some research ideas.


This paper proposes a framework for flow of funds accounts that can be compiled from the IMF database. Examples of the flow of funds accounts under the framework for several developing countries are also presented.


This paper builds a model to study the effects of a credit crunch through the channel of a household’s balance sheet: reductions in consumption, deleveraging, and increases in precautionary saving. The authors use data on the household sector in flow of funds accounts to calibrate for parameters such as the aggregate bond supply to households and the borrowing limit.


Identifying material from flow of funds accounts that makes it possible to analyze the movement of relevant mortgage rates, this paper seeks to understand the financing of capital formation in real estate. The objective is to create linkages between the three major interrelated accounting statements: national income and product accounts (NIPA), the input-output tableaux, and flow of funds accounts. These connections are fundamental for a greater understanding of the mortgage market when some macroeconomic fundamentals -- such as Money Market Rates -- vary.


This paper proposes a new database which will be helpful in assessing risk in financial systems. The database is, in a sense, an extension of flow of funds accounts. The paper includes a section explaining a flow of funds account and what lacks in it, e.g. the sectors holding non-agency asset-backed securities and hedge funds’ portfolios.

This paper exploits data on the household sector in flow of funds data, first, to show stylized facts about the movement of household wealth and portfolio shifts from equities to real estate in the United States in the 1970s and, second, to calibrate for parameters in their overlapping generations (OLG) model to explain the stylized facts. The authors also use the micro-level “Survey of Consumer Finances” to supplement the flow of funds accounts.


This paper presents a search model for the housing market and studies the impact of a small group of optimistic households on the market prices of real estate. The authors use an aggregated value of residential real estate from flow of funds accounts and housing service expenditures from NIPA to calculate the price-dividend ratio for housing.


This paper observes the stylized fact that the post-crisis interest rates of developed and developing economies move in opposite directions. In a developing economy, we usually see interest rates increase after financial crises. The author attempts to explain the logic behind this fact but argues that people usually ignore flow of funds feedback following interest rate hikes in developing economies. Increasing interest rates can have an impact on firms’ balance sheets and imposed borrowing limits from financial intermediaries.


This book utilizes a flow of funds approach to investigate the sources and uses of financing, as well as the incentives and organizational structure of the health care system. It takes a macroeconomic perspective to explore the change dynamics within the health care system and to explicitly consider the determinants of national health spending and the role of governments in public and private health.


This paper compares numbers on some assets and liabilities from the household sector of the flow of funds accounts, with survey-based estimates from the 1989, 1992, 1995, and 1998 Survey of Consumer Finances (SCF) in the United States. The main contribution of this study is the adjustment of the flow of funds accounts and SCF measures to place them on a comparable basis.


This study analyzes whether financial constraints are more severe for independent firms as compared to members of large national business groups and subsidiaries of foreign multinational corporations. Using estimations of flow of funds equations, the authors compare the effects that financial restrictions have for these two different categories of firms. The results obtained for a panel of Italian companies imply that independent and small firms are much more affected by financial constraints.

This paper briefly describes the flow of funds accounts and shows how the data can be used to interpret major financial trends among households and nonfinancial corporate businesses.

Flow of Funds in General Equilibrium Framework


In this paper, the authors argue for explicit recognition of the essential interdependence of markets in theoretical and empirical specifications of financial models, which, at the time of publication, had been greatly ignored. A general equilibrium model is developed to acknowledge these facts. In the model, flow of funds reflect adjustment of asset holding to get closer to equilibrium demand, and adjustment in one asset affects others. The paper uses flow of funds data in a simulation to estimate equilibrium asset demand functions. Using simulations of this theoretical economy, the authors are able to identify some empirical downsides of contemporary econometric estimations.


The objective of this paper is to model the process of asset accumulation and economic activity and to estimate models for the United States. Using the framework of Brainard and Tobin (1969), the authors emphasize how financial markets and institutions permit the systematic examination of financial policies and innovations and of the financial consequences of other policies and developments. Consistent tracking of asset stocks is necessary to answer questions about the long-run impacts of short-run cyclical fluctuations and stabilization policies on capital accumulation.


The purpose of this paper is to use an extended version of the model developed in Brainard and Tobin (1969) to examine in an integrated manner households’ allocation of income to financial and real expenditures for the United States from 1954 to 1980.


This paper provides a preliminary report on a flow of funds framework based on the model presented in Brainard and Tobin (1969). The author estimates the model using monthly data for the period 1972 to 1977. The framework follows the general equilibrium approach in including a complete set of asset demands and supplies. It distinguishes between long-run and short-run demands and, in some cases, between short-run notional and effective demands. Simulations are reported for comparison with related models.


This paper studies the flow of funds and portfolio behavior of Indian banks from 1951 to 1994. Working with an expanded version of the model developed by Brainard and Tobin (1969), the authors estimate a system of demand functions using the Almost Ideal Demand System framework, which incorporates the reserve ratio
regulations. The model provides parameter estimates for prices and other variables. The authors conclude that a standard portfolio model can be applied to the study of financial behavior in a developing economy, and a number of interesting policy implications can be drawn.


Using the Almost Ideal Demand System framework, this paper estimates a version of the model developed by Brainard and Tobin (1969) for the household sector in India and examines the demand for money and the substitution effects between money and other financial assets. The restricted long-run model provides a stable equilibrium relationship between variables and broadly satisfies the axioms of rational choice in consumer demand theory. The main findings are that financial sector reforms exert a significant impact on the interest rate structure and household portfolio preferences, while the exchange rate strongly influences the demand for money.


This paper applies stochastic methods to a system-wide flow of funds model based on Brainard and Tobin (1969), for India for 1951 to 1994. The main finding is that there is considerable variation in policy risk depending on the policy instrument and the policy regime. Interest rate risks are greater in the controlled regime; quantity risks are greater in the decontrolled regime. Outcomes also depend on controls on intermediaries, as more heavily controlled banks respond differently from other less heavily controlled financial intermediaries.


The main contribution of this paper is the introduction of a model in which stocks and flows are integrated in the Pitfalls model. In a sense, this helps to solve problems in the presence of adjustment costs. Therefore, this paper generalizes the model introduced by Brainard and Tobin (1969) in order to treat savings and portfolio decisions in an integrated fashion.


This commentary criticizes some of the conclusions of Purvis’ model. In particular, the author disagrees with the finding that the integrated model presented by Purvis is actually a generalization of the Pitfalls model.


The paper models household and commercial bank asset choice for the Indian economy and integrates it with a two-sector framework for the real sector using the Pitfalls model. The idea is to simulate policies that constitute India’s ongoing stabilization and structural adjustment program. Some of the findings are that contractionary monetary policy has weak effects on output and prices, but deflationary fiscal policy has strong negative effects. Financial sector reform, on the other hand, has positive effects on investment and output.

This paper strongly criticizes the work of authors Kevin Clinton and Mark Ladenson and supports the original Pitfalls model developed by Brainard and Tobin (1969). It develops the model and shows errors made by Clinton and Ladenson, suggesting that they seriously misinterpret and modify the original model in an obscure maze of unnecessary mathematical techniques and notation.


This paper addresses the estimation problem that is typical in linear expenditure systems used to describe consumption and portfolio decisions. In particular, the author proposes an alternative method to identify a full prior covariance matrix. This is a useful input to obtain Bayesian parameter estimates.


This paper is a recapitulation of the framework that, at the time of publication, was shared by many monetary economists. The author standardizes these models and creates a general equilibrium model of macroeconomics including money, capital accounts, and government.


In this Nobel lecture, Tobin explains the evolution of macroeconomics and the introduction of financial markets and flows of funds into models.


This study uses flow of funds concepts to compare the relationship between asset flow and performance in the retail mutual fund and fiduciary pension fund segments of the money management industry. It analyzes whether differences in client characteristics between these two industries translate into differences in the relation between manager asset flow and performance. Based on differences in the shape of the flow-performance relationship, pension fund managers have much less incentive to risk-shift than mutual fund managers.


This paper deals with two common problems in the estimation of flow of funds equations. The author first attempts to solve the problem with balance sheet restrictions that typically do not hold in an empirical estimation. In addition, because of the many interrelated effects of wealth, income, interest rates, and prices, the author addresses the problem of estimating too many parameters, empirically.

This paper offers a survey of the leading theoretical and empirical issues related to flow of funds: their meaning and origin, problems of construction, use in financial modeling, and role as a tool of analysis of intersectoral financial flows. It also discusses flow of funds analysis in the context of developing countries, concentrating on possible applications and methodologies, and the issue of data collection and organization.


This paper applies stochastic simulation methods to a flow of funds model based on Brainard and Tobin (1969) for India for 1995 to 1994. An interesting feature of this framework is that it allows stochastic estimates of the demand function by assuming a distribution rather than using point estimates. Two questions are studied; first, the impact of financial reforms on interest rates and loanable funds, and second, the robustness of policy where there is uncertainty about the true model.


This paper uses the pitfall model to derive and compare the money demand behavior of households and corporations in Korea. It also estimates the effects of changes in monetary instruments on money demand behavior, using official data starting from 1970.


In this paper, the capital inflow hypothesis – an increase in credit demand from the government is followed by capital inflows, which in turn make domestic credit supply more elastic - is tested by using flow of funds accounts. Estimates are based on dynamic simulations of a small econometric model of credit markets, using interest rate data from the United States. The results provide some support for the capital inflow hypothesis.


This paper provides the results of a five-sector, twelve-asset flow of funds model based on Brainard and Tobin (1969), estimated on monthly data for the period 1972 to 1977. The model follows a general equilibrium approach in including a complete set of asset demands and supplies. This report outlines the structure of the model and summarizes the initial parameter estimates. Some simulations are reported for comparison with other models.


This article examines the use of spatial allocation modeling techniques to evaluate the flow of funds within and between local financial markets. The authors review the structural dimensions of the methodology and discuss data needs for further empirical work.

This paper studies the flows of funds into and out of equity mutual funds. The authors point out that search costs seem to be an important determinant of fund flows. High performance appears to be most salient for funds that exert higher marketing effort, as measured by higher fees. Flows are directly related to the size of the fund's complex, as well as the current media attention received by the fund, which lower consumers' search costs.


This paper studies the relation between individuals' mutual fund flows and fund characteristics, establishing three key results. First, individual investors are reluctant to sell mutual funds that have appreciated in value and are willing to sell losing funds. Second, individuals pay attention to investment costs as redemption decisions are sensitive to both expense ratios and loads. Third, individuals’ fund-level inflows and outflows are sensitive to performance, but in different ways. Inflows are related only to “relative” performance, suggesting that new money chases the best performers in an objective. Outflows are related only to “absolute” fund performance, the relevant benchmark for taxes.


Informal lenders with access to markets or capital often find it attractive to delegate loan provision to downstream lenders who have an information or enforcement advantage in dealing with particular borrowers. This paper examines the conditions under which such an arrangement is preferred by two informal lenders, a landlord and a merchant. It is shown that credit layering is preferred only when tenants are sufficiently poor. As a consequence, a pattern of borrowing emerges in which relatively wealthy tenants borrow from merchants while poor tenants borrow mainly from their landlords.

**Time Series Analyses using Flow of Funds Data**


Using vector autoregressive analysis (VAR), this study addresses the impact of a monetary policy shock on the United States economy. The authors’ measures of contractionary monetary policy shocks are associated with a fall in monetary aggregates and a rise in the federal funds rate, declines in different measures of real activity, and sharp declines in commodity prices and a delayed decline in the GDP price deflator. In addition, net funds raised by the business sector increase for roughly a year, after which they fall. Finally, the authors find that households do not adjust their financial assets and liabilities for several quarters after a monetary shock.


The authors study the effects of monetary policy transmission to the economy on Italian flows of funds over the period 1980 to 2002. Following the same methodology used in Christiano, Eichenbaum and Evans (1996), they access Italian flow of funds data to analyze the patterns of financing and investment decisions for different
sectors in the economy in response to unexpected variations in the policy interest rate. The results shed new light on the role played by the financial decisions of these sectors in the transmission of monetary policy.


This paper studies the effect of government debt on interest rates. The data on government debt and capital stock derived from the United States’ flow of funds accounts are used to conduct several time-series analyses including VAR and reduced-form regressions.


This paper uses a production-based asset pricing model to study financial market imperfections. A model is developed to estimate the stochastic Euler equation imposed on returns by optimal investment, using the generalized method of moments (GMM). The results suggest that financing frictions provide a common factor that improves the pricing of cross-sectional returns. In addition, the cost of external funds exhibits strong procyclical variation, so that financial frictions are more important in relatively good economic conditions.


This paper examines whether household or business sectors are more responsive to exogenous flow of funds. The data employed are from the flow of funds accounts of 17 countries, and the analysis is based on pooled regressions. Government and foreign sectors together are treated as the exogenous sector.


This paper attempts to measure asset substitutability between cash holding and deposits in Taiwan, a country where financial sector dualism exists: regulated and unregulated. The paper uses flow of funds to find money holdings and deposits for the household sector. Time-series analysis is carried out to estimate parameters to calculate the elasticity of asset substitution.

Other Model Applications in Empirical Models


This paper has two purposes. First, the authors want to present the compilation procedure of the Asset-Liability-Matrix (ALM) from the flow of funds accounts in the balance sheet. This allows them to utilize the assets of input-output analysis. Second, they want to demonstrate the application of ALM to the examination of the quantitative monetary policy introduced by the Bank of Japan (BOJ) in March 2001. By using the ALM framework of flow of funds analysis, they conclude that there was an error in the monetary policy adopted by the BOJ in terms of the combination of money market operations.

This paper is intended to analyze the so-called Quantitative Easing Policy, a monetary policy program launched by the Bank of Japan in March 2001. Using Asset-Liability-Matrix (ALM) derived from the flow of funds accounts, the authors evaluate the significance of the monetary policy. They conclude that ALM analysis is useful as a policy-evaluating tool under zero-interest rate and that the performance of this program is gradually improving in recent years.


Implementing a flow of funds model inspired by the work of Dhrymes and Kurz (1967)2, this paper explains aggregate research and development investment behavior using company-level data. The main contribution of this study is the generalization of previous models by allowing for simultaneous interaction between different uses of the firm's investment funds and between the sources and uses of investment funds.


This paper investigates the relationship between mutual fund flows and the real economy. The findings of this paper support the theory that the positive co-movement of flows into equity funds and stock market returns is explained by a common response to macroeconomic news. Variables that predict the real economy as well as the equity premium – such as the dividend-price ratio – are related to fund flows and can account for the correlation of flows and market returns.


The purpose of this paper is to employ the Federal Reserve Bank’s data on inter-regional flows of funds as a measure of economic integration among different parts of the United States. The results provide evidence which can be used to help researchers decide how closely different areas are economically related to each other and how to define a “region” for purposes of economic analysis.


The paper presents and estimates a cross-sectional flow-of-funds model of the budgetary behavior of Nigerian state governments for each of the four years of the country's civilian regime, 1980 to 1983. The study suggests that the pattern of utilization of federal allocations changed toward the election period in favor of recurrent (or consumption) expenditures and against capital expenditures, apparently to appease the voters.


This paper uses a flow of funds approach to analyze Ireland’s health care system and generates estimations using data for 2004. The framework traces the flow of public and private health resources from individuals to financial intermediaries, from there to health care providers and functions, and from there to individuals. The

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http://www.nber.org/chapters/c1243.pdf
flow of funds approach complements existing analytic methods and generates policy lessons for Ireland and international policy makers.


Evidence is presented for a large net capital outflow from the agricultural sector in Kenya between 1964 and 1972, increasing over the period. The financial and structural shifts underlying this flow are examined and interpreted in this paper. Because of the fragmented financial system in Kenya, most of the funds were not mobilized in a form readily available for re-investment in agriculture or elsewhere in the economy.


This empirical paper provides an example in which a developed external capital is not always needed for fast economic growth. This occurs because of the high productivity of small firms and the abundance of cash flows.


This work addresses empirically for 12 developing countries whether financial liberalization enhances investment allocation efficiency. The results suggest that in the majority of cases, financial reform has led to an increase in the efficiency with which investment funds are allocated.


This paper presents survey evidence from four countries on how informal financial agents serve market niches that banks cannot readily reach. It emphasizes the importance of informal financial institutions for mobilizing household savings and financing small businesses, and the authors recommend that informal finance be better integrated into financial development strategies.


This paper studies the effect of credit unions on savings and loans in Guatemala. Using data for small businesses, the authors emphasize the importance of these institutions on financial market efficiency in poor countries. This happens because credit unions relax credit constraints for a significant portion of those rationed by banks, but not for the poorest of households.