Using Flow of Funds to Explain the Financial Markets Crisis

David Nawrocki, Villanova University

Abstract

This paper presents a short explanation of the flow of funds system and its importance in our economy. It then uses the flow of funds to trace the problem in our current financial market crisis and shows how the crisis has impacted the Fed's Flow of Funds report. The approach is intuitive and systematic and provides students with a better understanding of flow of funds without wading through the Fed's documents. It can be covered within one classroom period.

Introduction

The Flow of Funds in the economy is the linchpin that keeps the economy functioning smoothly maintaining full employment of resources, however, it is difficult to convey the idea to students. In addition, according to *The Economist* in July 2009, one of the major weaknesses in financial economics and macroeconomics is the lack of worrying about the workings of financial institutions.

The purpose of this paper is to lay out a logical approach to teaching flow of funds to students without bogging down into the Fed's flow of funds accounting reports.

Free to Choose

The economic system in the United States consists of millions of economics units that are typically grouped into three groups: households, businesses, and government. As these economic units go about their day-to-day business, they make decisions to lend and to borrow. As a result, in order to facilitate these decisions, we have to move funds from lenders to borrowers. In fact, economies are highly dependent on the flow of funds from lenders to borrowers.

The logic works as follows:

If I produce $1000 worth of goods, then I have $1000 in income and I have the right to trade my goods for other goods ($1000 worth). However, I don't have to consume all of my income all at once. I can choose to defer my consumption to a later date, by doing so, I have chosen to save. Another household may choose to move future consumption up to the present, thus wishing to borrow. The key is to move my savings over to the borrower.

The fact that each economic unit has a decision to choose between future consumption and present consumption is important. Friedman (1980) called this the freedom to choose. By giving each economic unit this choice, each unit has the ability to maximize its economic happiness (utility). This freedom to choose is the real beauty of the (capitalist) financial market

system. However, for the benefits of this freedom to accrue, we have to have a mechanism to move funds from savers (surplus units) to borrowers (deficit units). Essentially, we have surplus and deficit units looking as follows:

$$Y = C + S \quad \text{(Surplus unit)}$$
$$Y = C - S \quad \text{(Deficit unit)}$$

Where Y is the unit's production of goods and services (income), C is the unit's consumption of goods and services, and S is the savings (+) or disavings (-) of the economic unit.

Let's assume a two economic unit system with two households A and B (typically called a Robinson Crusoe economy). In Table 1, we see that A has produced $1000 in income and wishes to save $200 deferring consumption to the future. B would like to move future consumption to the present and would like to consume $1200 now. In order for both households to be happy, A has to lend $200 to B which is the flow of funds from surplus units to deficit units. Later when A wishes to consume $1200, B will repay the $200 loan and only consume $800. Both are happy because A has deferred consumption and B has moved future consumption to the present.

Table 1 – A functioning flow of funds system with two economic units

Household A		Household B
$1000	Income (Y)	$1000
800	Consumption	1200
$200	Savings	-$200

Flow of Funds

$$Y = C + S \longrightarrow Y = C - S$$
Lender   **Borrower**

Now what happens if the flow of funds system is not allowed to move funds from the surplus unit to the deficit unit? In Table 2, we see that A still wishes to consume less this period but the $200 of savings remains with A in the form of unconsumed goods. B in the meantime is unable to consume $1200 and has to make do with only $1000 in consumption. We no longer have both economic units completely happy.

Table 2 – Flow of Funds are blocked

Household A		Household B
$1000	Income (Y)	$1000
800	Consumption	1000
200	Savings	0

Flow of Funds Blocked

The problem to the economy now can occur if A decides to only increase its consumption to $1000 in the next period. Because of the leftover savings (or inventory) of $200, A may decide to only produce $800 worth of goods in the next period. This has the unfortunate result where the production of goods and services declines from $2000 to $1800 providing us with our first recession in our little economy (Table 3)

Table 3 – Household A reduces production to work off excess inventory

Household A		Household B
$800	Income (Y)	$1000
1000	Consumption	1000
0	Savings	0

Flow of Funds Blocked

As we can see, providing the freedom to choose to the economic units but not allowing them to move funds from the surplus to deficit units may result in a decrease in production. The key takeaway is that in order to maintain a given level of production of GNP, it is imperative that the flow of funds operates.

As a side note, there is an idea that I call the Merrill Lynch school of economics that states that financial markets create economic growth. This is not true. Economic growth requires increases in resources, labor, and technology. However, once this growth has occurred, financial markets provide the means to maintain this level of production.

Next, when we have only two economic units, it is quite easy to put A and B together for the $200 loan and have the flow the funds work to maintain the current level of production. However, we have millions of economic units and the problem of putting millions of lenders and borrowers together in order to maintain production levels in our economy of millions of units. This is where financial markets and financial institutions come into play. In Figure 1, we see a systems chart of the flow of funds system with three types of financial institutions (Polakoff, 1970). First, the markets are organized around broker/dealers who bring lenders and borrowers

together into transactions with each other. However, this places a burden on the lender to figure out the credit worthiness of the borrower which makes the loan fairly risky. The answer is a financial institution that specializes in lending to borrowers and borrowing from savers. Institutions use the economies of large scale operation to provide lower risk and lower return financial instruments to the surplus units. In Table 4, we see the sources of these economies of scale. Institutions can provide specialized financial instruments to surplus units more efficiently at a lower cost and lower risk than surplus units can achieve on their own.

Table 4 - The Economic Basis of Financial Institutions

Economies of Large Scale Operation in Financial Markets
1. Pooling of information costs across large investments.
2. Pooling of transaction costs across large investments.
3. Pooling of information analysis costs across large investments.
4. Pooling of savings of small surplus units into large amounts to lend to deficit units.
5. Diversification to reduce the risk of holding financial assets.

Returning to Figure 1, there are two types of financial institutions – monetary institutions and nonmonetary institutions. Monetary institutions lend to deficit units and borrow from surplus units by issuing money to the surplus units. This process is known as monetizing debt whereby the debt of deficit units is converted to money that is then used within the economy. Monetary institutions supply money in the form of paper bills, coins, and checkable deposits. A nonmonetary institution also borrows from surplus units and lends to deficit units, however, the securities provided by the nonmonetary institution to the surplus units do not act as money but rather are indirect securities issued as a liability of the financial institution. However, these securities do meet specialized needs of the surplus units by providing insurance, pensions, mutual funds, trust accounts, etc. These indirect securities help provide a rich and diverse menu to the surplus units to encourage them to participate in the flow of funds by lending to deficit units.
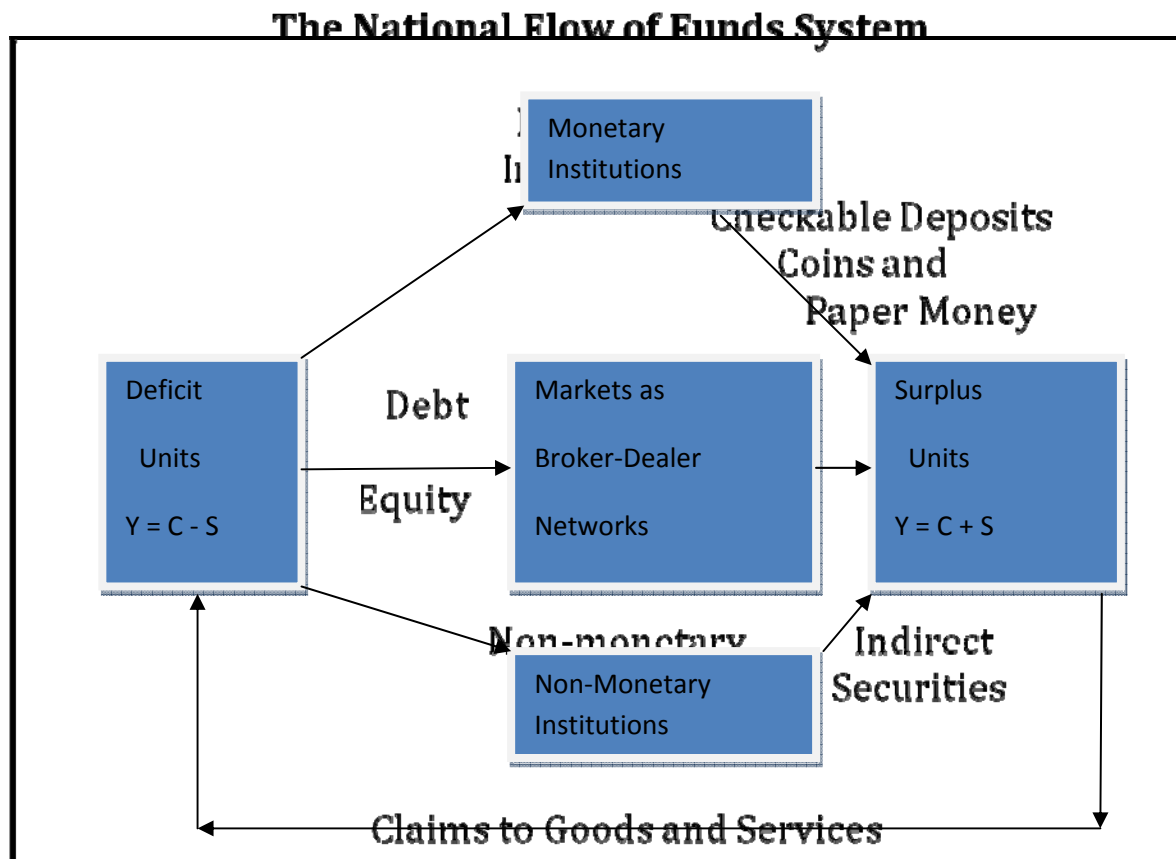
The National Flow of Funds System

Figure 1 – The national flow of funds system

In Table 5, we see an overview of the financial institution system with a summary of their balance sheets that result from lending to deficit units while borrowing from surplus units. The institutions are divided into monetary institutions, broker/dealers, and nonmonetary institutions.

Looking at this table, we can see the location of various financial crises that have occurred in the US. The Penn Central bankruptcy in June 1970 manifested itself as a default of Penn Central's commercial paper (a debt instrument issued by a business). With Chrysler and Lockheed staring at the default of their commercial paper, the Federal Reserve intervened and loaned $10 billion to the banks who then made commercial loans to Chrysler and Lockheed in order to pay off their commercial paper when it came due. In the market crash of 1987, NYSE specialists are able to maintain orderly markets in stocks by financing their security inventories through call loans at banks. When the market declined by 10%, the banks did not like seeing their collateral decline and refused to make new call loans to the specialists. The specialists, in turn, had to walk away from the market and the decline in prices became a rout. The next day, the Federal Reserve pumped $6 billion into the banks and ordered them to make the call loans to the specialists. Only then, did the markets start to recover and price securities again. The savings and loan crisis in the late 1980s-early 1990s was the result of S&Ls moving rather late in the game into commercial real estate loans. Being late in the game, they could only get marginal loans and these were the first to go when real estate prices started to decline. This resulted in

another Federal government intervention into the S&Ls and the use of Resolution Trust to unwind around $240 billion of S&L commercial and residential mortgage portfolios.

Finally, look at the nonbank financials at the bottom of Table 5 and you will see the alphabet soup of the current financial crisis – CLO, CDO, CMO, RMBS, CMBS, CDS. (See Lewis 2009 article concerning CDS and AIG.) In Figure 2, we see the source of the crisis. I call it the "Rumpelstiltskin Gambit" by which financial engineers spin gold out of straw. Start with 100% non-investment grade loans (junk loans) and through the magic of diversification we can issue investment grade CLOs representing 90% of the portfolio of junk loans (investment grade is a BBB rating or above - junk is a BB rating or lower). Business Week in 2006 was fairly prescient by describing these securities as "explosive loans". Too bad no one listened to them.

The financial engineers went one step further and made these CLOs so complicated that they are almost impossible to unwind through a Resolution Trust as we did in the 1990s (See Scott and Taylor, 2009).

The disquieting issue in this current crisis is that previous financial crises were located in the monetary institutions. This crisis is centered on the non-bank financials located in the non-monetary institutions which is beyond the purview of the Federal Reserve (See Cooper, 2008). These institutions were deregulated when the Glass-Steagall Act was repealed. (Gramm-Leach-Bliley Act of 1999.) In addition, the Commodity Futures Modernization Act of 2000 failed to regulate the credit default swaps (CDS).

The results of the crisis to the flow of funds are disastrous. In the first half of 2009, total credit market borrowing fell by $232.6 billion (all numbers are seasonally adjusted annual rates). However, private sector borrowing fell by almost $2.3 trillion (See Federal Reserve Table F4). After increasing $1.108 trillion in the second half of 2008, bank loans dropped by $894.5 billion in the first half of 2009. To prevent a complete rout, the Treasury borrowed at a $2.117 trillion annual rate in the second half of 2008 and at a $1.670 trillion annual rate in the first half of 2009. That is no way to maintain the production of goods and services through a healthy flow of funds system.

According to McGlasson (2009), there are four lessons to be learned: (1) The Problem was 'De-Supervision' as regulators were not paying attention. (2) The bigger they are, the harder they fall. Bigger institutions mean bigger risks and therefore, they should be paying higher insurance premiums. (3) Regulate the right entities. It wasn't commercial banks that caused the problem. It was the unregulated mortgage industry, hedge funds, commodities markets, banks acting as investment banks and other non-bank financial institutions. (4) We're not out of the woods yet. There are $1 trillion in commercial real estate loans coming due in the next 12 months. We knew the market was overheated in 2005 and 2006 but it is tough to find regulators and bankers who want to stop the party, grab the punch bowl and turn off the lights.

In the banking area, we would like to see executive pay curbs, delinking commercial and investment banking, more stringent capital adequacy, and lower acceptable leverage ratios. It will be interesting to see how the G20 in Pittsburgh plays out this weekend with its policy recommendations for banking regulation.

Table 5 – Operations of Financial Institutions in US Flow of Funds System

Operations of Monetary Institutions

Assets	Institutions	Issue Liabilities
Taxing Power	U.S. Treasury	Token coins, US Notes
Treasury Debt	Federal Reserve	Federal Reserve Notes
Consumer Loans,	Commercial Banks	Checkable Deposits
Commercial Loans,	Savings and Loans	
Mortgages, Call Loans,	Mutual Savings Banks	
Credit Cards	Credit Unions	
Short Term	Money Market Mutual	Mutual Fund Shares
Securities	Funds	Checkable Deposits

Operations of Broker/Dealers

Assets	Institutions	Issue Liabilities
Securities	Broker/Dealers	Call Loans

Operations of Nonmonetary Institutions

Assets	Institutions	Issue Indirect Securities
Securities	Mutual Funds	Mutual Fund Shares
Real Estate	R.E.I.T.s	Mutual Fund Shares
Securities	Life Insurance Co.	Cash Deposits
Mortgages		Insurance Reserves
		Annuities
Securities	Property Insurance Co.	Insurance Reserves
Securities	Pension Funds	Cash Deposits
		Annuities
Securities, Real Assets	Trust Departments	Trust Accounts
Mortgages	FNMA	FNMA Bonds
Securities	GNMA	Insurance Reserve
Mortgages	GNMA Mutual Fund	Insured GNMA Bonds
Securities, Loans,	Non-Bank Finance	CMO, CLO, CDO, RMBS,
Credit Cards, Mortgages		CMBS, CDS

Garbage In, Gold Out

COLLATERALIZED LOAN OBLIGATIONS really do turn junk-rated loans into AAA-rated securities. One step is making sure the loans are from diversified borrowers. But the real transformation comes by ranking investors so that those at the bottom absorb losses before the rest lose a penny. Below is the pecking order a typical CLO follows as it collects and distributes money. In this simplified example, AAA investors won't lose unless the CLO loses 25% on its loans. AA investors won't lose until losses top 19%; A investors not until losses top 14%.

THE ASSETS THAT GO IN

» Corporate loans from about 85 borrowers.

» Loans are rated below investment-grade, usually BB down to CCC, with an average of B.

» Borrowers pay interest at the London interbank offered rate (LIBOR) plus 2.3 percentage points.

THE SECURITIES THAT COME OUT

SECURITY	SHELTERED FROM LOSSES BY	SHARE OF ASSETS	YIELD
AAA-rated notes	all classes below	75%	LIBOR + 0.25
AA-rated notes	next classes below	6	LIBOR + 0.43
A-rated notes	next classes below	5	LIBOR + 0.73
BBB-rated notes	next classes below	4	LIBOR + 1.45
BB-rated, junk-grade, notes	equity class below	3	LIBOR + 3.60
Equity, unrated	nothing	7	Maybe 13% or 14%*

* Based on weighted average payments to note holders of LIBOR + 0.43 and on uncertain assumptions of 2% constant annual default rate and 70% recovery rate on defaulted loans.

Figure 2 – The structure of a collateralized loan obligation (CLO) structured financial product. Source: Business Week, October 26, 2006.

Summary

This paper presented a systematic approach to understanding the flow of funds system within the US economy and discussed its role in the economy and our recent financial crises. It is hoped that this approach will prove superior to the traditional method of teaching the flow of funds through myriad balance sheets published by the Federal Reserve.

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F.4 Credit Market Borrowing, All Sectors, by Instrument
Billions of dollars; quarterly figures are seasonally adjusted annual rates ←

		2004	2005	2006	2007	2008	2008 Q1	Q2	Q3	Q4	2009 Q1	Q2	
1	**Total**	3132.1	3560.3	4022.9	4501.7	2651.1	2944.1	2116.2	3296.1	2247.9	-224.0	-241.1	1
2	Open market paper	106.2	245.1	317.1	-169.4	-189.0	23.4	-268.2	-594.2	83.0	-662.5	-735.2	
3	Treasury securities	362.5	307.3	183.7	237.5	1239.0	411.4	310.1	2080.2	2154.2	1442.8	1896.4	3
4	Agency- and GSE-backed securities	122.3	82.8	330.6	908.3	771.7	654.9	1322.0	705.0	405.0	37.0	-118.5	4
5	Municipal securities	130.5	195.0	177.4	215.6	64.1	95.5	57.6	97.9	5.3	129.5	221.8	5
6	Corporate and foreign bonds	830.9	865.0	1241.2	1223.6	-148.5	344.4	318.4	-709.7	-547.3	289.1	230.7	6
7	Bank loans n.e.c.	75.1	167.8	126.8	337.0	693.7	472.4	86.7	1376.0	839.7	-857.2	-931.3	7
8	Other loans and advances	130.5	156.9	157.3	545.0	97.7	304.7	60.2	465.2	-439.2	-468.1	-398.7	8
9	Mortgages	1257.1	1440.2	1393.4	1067.2	82.2	522.5	124.0	-140.9	-176.6	-39.3	-239.5	9
10	Consumer credit	117.0	100.3	95.3	136.9	40.2	115.0	105.4	16.6	-76.4	-95.3	-166.8	10
	Memo: *Funds raised through corporate equities and mutua...*												
11	**Total net issues**	578.8	182.3	-33.9	-99.0	330.1	194.3	855.9	-129.8	504.1	342.4	1205.4	11
12	Corporate equities	80.5	-77.9	-370.7	-464.3	324.0	29.8	263.5	67.1	935.5	440.8	440.9	12
13	Nonfinancial	-122.7	-343.1	-567.7	-790.1	-334.9	-431.8	-218.7	-341.9	-347.1	-122.9	88.0	13
	Foreign shares purchased by												
14	U.S. residents	84.8	186.7	137.3	147.8	1.3	111.6	89.1	-55.0	-140.4	7.3	148.9	14
15	Financial	118.5	78.5	59.7	178.0	657.6	350.0	393.2	464.0	1423.0	556.4	204.0	15
16	Mutual fund shares	298.2	260.2	336.8	364.7	32.1	164.5	592.4	-196.9	-431.5	-98.4	764.5	16

Private Borrowing   09Q1 -2112.4   09Q2 -2471.5