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WHO RAN ON REPO?

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ABSTRACT

The sale and repurchase (repo) market played a central role in the recent financial crisis. From the second quarter of 2007 to the first quarter of 2009, net repo financing provided to U.S. banks and broker-dealers fell by about $1.3 trillion – more than half of its pre-crisis total. Significant details of this "run on repo" remain shrouded, however, because many of the providers of repo finance are lightly regulated or unregulated cash pools. In this paper we supplement the best available official data sources with a unique market survey to provide an updated picture of the dynamics of the repo run. We provide evidence that the run was predominantly driven by the flight of foreign financial institutions, domestic and offshore hedge funds, and other unregulated cash pools. Our analysis highlights the danger of relying exclusively on data from regulated institutions, which would miss the most important parts of the run.

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1. Introduction

Repo finance is a multi-trillion dollar market that plays a central role in the modern financial system.[1] From the second quarter of 2007 to the first quarter of 2009, net repo financing provided to U.S. banks and broker-dealers fell by about $1.3 trillion – more than half of its pre-crisis total. We argue in a series of papers (Gorton (2010), Gorton and Metrick (2010a, 2010b, 2012)) that this "run on repo" played a crucial role in the recent financial crisis. Significant details of this run remain shrouded, however, because many of the providers of repo finance are lightly regulated or unregulated cash pools. In this paper we supplement the best available official data sources with a unique market survey to provide an updated picture of the dynamics of the repo run. We provide evidence that the run was predominantly driven by the flight of foreign financial institutions, domestic and offshore hedge funds, and other unregulated cash pools. Our analysis highlights the danger of relying exclusively on data from regulated institutions, which would miss the most important parts of the run.

Repo is divided into two different components – "tri-party repo" and "bilateral repo" – with only tri-party having reliable data. In tri-party repo, a clearing bank stands between borrowers and lenders.[2] The tri-party segment is dominated by regulated institutions, and thus the data on tri-party repo is relatively complete. In contrast, bilateral repo is the home of hedge funds, many types of offshore institutions, and other unregulated cash pools. This data gap is significant, with an industry survey (discussed below) finding that bilateral repo was about three times as large as tri-party repo in 2004.

Section 2 uses Flow-of-Funds data to explore the dynamics of repo funding since 1999. These data combine all the main sources for tri-party repo with the available

[1] A repo contract is an arrangement in which one party, the depositor or lender, provides cash to the other party, the borrower or bank. The contract is often overnight and is collateralized. So, the borrowing bank provides bonds with a market equal to or great than the amount of cash the depositor is providing. If the deposit is overcollateralized, there is said to be "haircut." E.g., if the borrower deposits $90 million dollars and the backing bonds are worth a market value of $100 million, then there is a 10 percent haircut. Other aspects of the repo contract are described in Gorton and Metrick (2012).

[2] Industry terminology uses the terms "repo" and "reverse repo" to refer (not always consistently) to, respectively, the sender and receiver of collateral. In the interest of clarity, we will avoid these terms, instead using the traditional terms of "borrower" for the party that receives cash and provides collateral, and "lender" for the reverse. "Borrowers" then have "repo liabilities" and "lenders" have "repo assets".

sources for bilateral repo.[3] Because the borrowers are mostly banks and broker-dealers, the flow-of-funds data on total repo liabilities should be relatively complete, even from bilateral repo. In contrast, the lenders come from both regulated and unregulated sectors, so that the official totals for liabilities (borrowers) typically exceed those for assets (lenders), often by a significant amount. This "statistical discrepancy" was the single largest contributor to total repo lending on the eve of the crisis, with an almost $1 trillion difference between reported assets and liabilities. Over the subsequent seven quarters, this discrepancy completely disappeared. So, a first-order (unsatisfying) answer to "who ran on repo?" is that "the statistical discrepancy ran on repo". We will attempt to improve upon this unsatisfying answer in Section 3. But even without the discrepancy there are some interesting findings from the flow-of-funds. In particular, the reporting institutions from the "rest of world" reduced repo assets by about $400 billion, while money-market-mutual funds – the largest reporting category pre-crisis – actually *increased* repo assets by more than $100 billion from 2007Q2 through 2009Q1. Furthermore, gross funding by broker-dealers fell significantly more than did net funding, so that estimates of market size based only on net funding changes will understate the dislocations in repo markets during the crisis.

Section 3 attempts to shed light on the statistical discrepancy by comparing the flow-of-funds data with survey evidence from the Bond Market Association (BMA). The BMA surveyed its members on their use of repo as of June 30, 2004. This survey asked major market participants about the identity of their counterparties, and then provided estimates of market size by counterparty-type. Counterparty data is not available in the flow-of-funds. The BMA did not distinguish between borrowing and lending and did not reveal its methodology for its market-size estimates, so it is not possible to make a direct comparison to aggregate data in the flow-of-funds. Nevertheless, the survey is invaluable for the view it gives into the composition of counterparties, particularly those that do not report through official sources. For our purposes, the key findings from the survey – subject to caveats explained in Section 3 – are (1) bilateral repo is about three times the

[3] Our focus is on repo where at least one counterparty is from the United States. European repo is also substantial, but is not covered by a government source as comprehensive as the Federal Reserve flow-of-funds. For an industry-based survey of European repo, see International Capital Market Association (2010).

size of tri-party repo; (2) money-market mutual funds comprise only about two percent of bilateral repo; and (3) hedge funds and other unregulated capital pools represent a significant fraction of the counterparties to dealers in bilateral repo. Section 4 concludes the paper, and an appendix supplements the text with a summary of data sources used for repo in the flow-of-funds.

Since the financial crisis, there have been several proposals for reform of repo markets, and a nascent debate about the role of repo in the financial system.[4] The most related paper to ours is Krishnamurthy, Nagel and Orlov (2012), who perform a detailed analysis of the tri-party and securities-lending market, focused most extensively on money-market mutual funds. Analyzing the same raw data that is used to build the summary statistics in the flow-of-funds, they find that money-market funds did not run on repo during the crisis. Based on this evidence, they conclude that repo runs were not central to the financial crisis, dismissing other possible contributors because "our own cursory investigations of other possible repo lenders has not turned up any other significant sources of funding" (p. 7). The evidence in our paper shows that this conclusion is premature, as it ignores the role of non-reporting institutions. Since money-market mutual funds make up only about two percent of the bilateral market, and the bilateral market is the main contributor to the $1 trillion statistical discrepancy that disappeared during the crisis, it is not possible to draw conclusions about the repo run by focusing only on money-market mutual funds and other regulated institutions.

2. Flow-of-Funds Evidence

The Federal Reserve flow-of-funds is the most comprehensive available source of repo data. Table L.207 from the flow-of-funds provides summary data from each of the following sectors: securities brokers and dealers, banks, rest of world, money market mutual funds, (all other) mutual funds, pension funds, insurance companies, nonfinancial corporate business, state/local governments, real-estate investment trusts, the monetary authority, and government-sponsored enterprises. In each category, flow-of-funds data is

[4] Important aspects of the role of repo in the financial crisis and proposals for reform are discussed in Adrian and Ashcraft (2012), Copeland, Martin, and Walker (2010,2011), Hanson et al. (2010), Hordahl and King (2008), Krishnamurthy, Nagel and Orlov (2012), Martin, Skeie, and von Thadden (2012), Perotti and Suarez (2011), Pozsar et al. (2010), Pozsar (2011), and Singh and Aitken (2010).

derived from a different primary source. For example, bank data is from call reports, mutual fund data is from SEC filings, and rest-of-world data is from the Treasury International Capital System. The appendix to this paper summarizes the sources used for each category of L.207.

The largest repo borrowers – collectively with the vast majority of all repo liabilities in all periods – are banks and broker-dealers. Exhibit 1 plots the combined level of net repo liabilities for these two groups since 1999.[5] After holding steady at about $1 trillion for the first few years of the 2000s, financing grew to be over $2.2 trillion by the eve of the crisis in the second quarter of 2007. During this buildup, broker-dealers had become very reliant on repo, with approximately 50 percent of their assets funded through these markets. Repo finance to broker-dealers and banks then fell in each of the next seven quarters, reaching a local minimum of $900 billion in the first quarter of 2009.

Exhibit 2 shows the main holders of repo assets in 2007Q2, just before the first panic phase of the financial crisis, and in 2009Q1, after the worst part of the post-Lehman panic phase was over. In 2007Q2, the largest category by far is the "statistical discrepancy", with just under $1 trillion. As discussed above, this discrepancy arises because official sources are much better at capturing repo liabilities (mostly at large regulated institutions) than repo assets (which occur at a wide variety of regulated and unregulated capital pools.) Later we will explore the possible sources of this discrepancy, for now we note only its very large size on the eve of the crisis. (The totals in Exhibit 2 are for all repo assets, and thus do not match the totals in Exhibit 1 for the liabilities of just banks and broker-dealers.)

Of the remaining categories, the two largest are money market mutual funds (MMFs) at $426 billion and rest-of-world (ROW) at $422 billion. MMFs are the main domestic funders of repo, with such funding taking place almost exclusively in the tri-party market, where transactions are intermediated by clearing bank. The ultimate source of ROW data in the flow-of-funds is the Treasury International Capital System, which is itself compiled from a variety of sources. As with other parts of the flow-of-funds, the ROW data necessarily rely on regulatory filings, and will not capture information from

[5] For broker-dealers, gross repo liabilities are much greater than net repo liabilities, as there is significant interdealer trade. Gross liabilities are discussed later in this section.

unregulated capital pools. Thus, any missing data from ROW will end up counted as part of the discrepancy.

The three categories of "discrepancy", MMFs, and ROW constitute about 80 percent of the total repo assets. Together, the remaining categories contribute approximately $500 billion, with the largest components from domestic municipalities ($154 billion), GSEs ($146 billion), and other (non-money-market) mutual funds ($129 billion). We note that the contributions are relatively small from non-financial corporations ($9 billion), insurance companies ($6 billion), and pension funds ($53 billion).

The last set of columns in Exhibit 2 shows analogous information from 2009Q1. The three main categories from 2007Q2 all show striking changes. First, the discrepancy has changed sign, with a $992 billion positive discrepancy in 2007Q2 completely eliminated and turned into a $7 billion *negative* discrepancy in 2009Q1. Essentially, $1 trillion of financing from non-reporting sources disappeared during the financial crisis.

The other major category with a large reduction is ROW, which dropped from $422 billion in 2007Q2 to $33 billion in 2009Q1. This drop represents only the reporting component of the ROW, with any non-reporting capital pools (foreign and domestic) swept into the discrepancy. In contrast, MMFs actually *increased* their repo funding during the panic phases of the financial crises, with $426 billion in 2007Q2 rising to $562 billion in 2009Q1. At first glance, the increased funding from MMFs may appear inconsistent with the near-runs that occurred in MMFs themselves following the Lehman bankruptcy in September 2008. A resolution of this puzzle is easier with a more dynamic picture of the repo funding during the crisis. Exhibit 3 illustrates this dynamic for the three major categories of MMFs, ROW, and the "discrepancy".

Looking first at MMFs, we see a gradual rise in repo funding from about $200 billion in 2000 to over $400 billion just before the crisis. Then, during the crisis, MMF dynamics were closely intertwined with panics in other short-term debt markets. The first panic, in August 2007, manifested itself most clearly in runs in asset-backed commercial-paper (ABCP) markets, as documented by Covitz, Liang, and Suarez (2012). As MMFs were major holders of ABCP, many funds faced pressure to maintain par value, and at least 44 funds received material support from their sponsors (McCabe, 2012).

After that support, MMFs appeared to be a safe haven and received an inflow of cash that was exiting other short-term investments. Some of that inflow made it into repo. In the panic that followed the Lehman bankruptcy, however, such sponsor support was insufficient. When the Reserve Fund was unable to maintain parity on September 16 and thus "broke the buck" by falling below $1 per share, an incipient run on MMFs was only averted by unprecedented government intervention. When this intervention arrived, the MMF industry stabilized, with its repo funding still above its 2007Q2 levels.

As with MMFs, funding from the ROW peaked in 2007Q2, in this case at $422 billion. This funding fell steadily during the crisis to be $33 billion as of 2009Q1. Repo funding from the ROW turned later to a deficit in 2009Q3, and reached a nadir of negative $120 billion in 2010.

In addition to the net funding losses coming from the ROW and the discrepancy, repo markets also suffered large reductions in gross interdealer funding. Exhibit 4 shows both repo assets and repo liabilities for broker-dealers. Repo liabilities peak over $3 trillion in 2007Q2, and stay above that threshold for the next four quarters before falling steadily during the crisis to below $2 trillion in 2009Q1. At the same time, repo assets also drop. Standing at $1.59 trillion in 2007Q2, assets rose to $1.78 trillion in 2008Q2 during the first phase of the crisis before dropping to $1.29 trillion following the Lehman failure in 2008Q3. These dynamics are consistent with an initial shift from unsecured (commercial paper) funding to repo funding in interdealer markets following the first panic in August 2007, with even the secured repo funding facing a run after Lehman.

All together, the flow-of-funds data shows a significant drop in repo funding to banks and broker-dealers during the financial crisis. The drop was rapid, with net funding to banks and broker-dealers falling from $2.2 trillion in 2007Q2 to $900 billion in 2009Q1. This drop came in part from a reduction in funding from the "Rest-of-World", which reduced its overall repo funding (not just to banks and broker-dealers) by $400 billion during this period. In contrast, money-market mutual funds actually increased their funding to repo by more than $100 billion, as they saw assets surge after the first panic of August 2007. Also, although it is washed out in the net funding numbers, broker-dealers reduced both gross repo assets and gross repo liabilities, with the former

dropping by about $500 billion just in 2008Q3, the quarter of the Lehman failure. So broker-dealers contributed to the run on liabilities by withdrawing funding themselves.

Notwithstanding the large drops in reported repo funding from the institutions reporting in these categories, the most significant drop occurred for non-reporting cash pools. These pools end up as part of the statistical discrepancy in the flow-of-funds accounts, which saw a drop of about $1 trillion from 2007Q2 to 2009Q1. These non-reporting pools could be both foreign and domestic, and it is necessary to turn to non-official sources to get some sense of the composition of these pools. We turn to this task in the next section.

3. Survey Evidence

The Bond Market Association (2005) conducted a dealer survey in September 2004 of bilateral repo, tri-party repo, and securities lending and borrowing. The Bond Market Association sent questionnaires to all the primary dealers, asking them to estimate their outstanding volume by counterparty as of June 30, 2004 for bilateral repo, tri-party repo, and direct institutional securities lending. Fifteen primary dealers responded.[6] The Bond Market Association (2005) explained that:

> The survey focused on activity in the U.S. market, distinguishing between U.S. and non-U.S. counterparty types. As the survey is U.S.-focused, the survey asked for finer distinctions and thus more categories for U.S. than was requested for non-U.S. counterparties. The level of detail also reflects efforts to minimize the reporting burden on participating institutions.
>
> The U.S. counterparty types identified in the survey were dealers, agent banks, the Federal Reserve Bank, U.S. government agencies, state and local governments, corporations, ERISA pension funds, non-ERISA public pension funds, hedge funds, insurance companies, foundations and endowments, and a miscellaneous "other category." Non-U.S.

[6] The identities of the responding parties was not revealed. Separate concurrent surveys, focused on securities lending only, were also sent to member banks of the Risk Management Association. These securities-lending results are not discussed in this paper.

> counterparties included supranational, sovereign governments and central banks, sub-sovereign government entities, off-shore hedge funds and the miscellaneous category. (p. 4)

Exhibit 5 reproduces the summary data from the survey. We first note that the total market for secured borrowing is estimated at $7.838 trillion in June 2004. This total includes bilateral repo, tri-party repo, and securities lending. The securities-lending category is conceptually and legally similar to repo, but occupies a different table in the flow of funds and is not included in the totals discussed in the Section 2. We focus instead on the totals for bilateral and tri-party repo, which are estimated as $3.857 and $1.350 trillion, respectively. In the flow-of-funds data, assets (lending) and liabilities (borrowing) are counted separately, but the BMA survey does not distinguish between them and thus can have some double counting in the totals. Given this limitation, we cannot directly compare the survey aggregates with the flow-of-funds. Instead, we focus on the percentages of the total, particularly for the non-dealer categories, where the ratios of borrowing to lending are likely to be similar across counterparties. Under any reasonable assumption for the proportion of borrowing and lending by counterparty, there is significantly more bilateral than tri-party repo. For example, even if there is no double-counting of tri-party repo and full double-counting for bilateral repo, the latter would still be nearly 50 percent larger than the former.

Within bilateral repo, interdealer transactions count for 40.6 percent of the overall total and about 56 percent of the domestic total. Outside of dealers, the largest category is "Other Investment Managers, Hedge Funds", with 9.0 percent of the total. If we also include off-shore hedge funds (8.3 percent), then more than 17 percent of bilateral repo comes from hedge funds and other unregulated investment managers. These hedge funds may represent a significant component of the statistical discrepancy from the flow-of-funds, because hedge funds do not report their repo activity and are swept as a residual into the household sector of the flow-of-funds accounts.

The other major categories of bilateral repo are "Other U.S." (6.8 percent) and "Other Non-U.S." (15.9 percent). "Other U.S." represents all domestic counterparties that have been left unspecified by survey respondents. "Other Non-U.S." is a catch-all

category intended to lower the paperwork burden on survey respondents, by asking for less detail in the foreign section than the domestic section. This category includes foreign affiliates, foreign dealers, corporations, insurance companies, and managed funds. In general, most of these capital pools would not be captured in the underlying flow-of-funds data, and would also show up as part of the statistical discrepancy.

Overall, 40 percent of the bilateral repo in the BMA survey is in the categories of hedge funds or "other", with more than half of this amount coming from foreign sources. Very little (if any) of this amount comes from known sources in the flow-of-funds. The statistical discrepancy of $1 trillion in the flow-of-funds repo accounts 2007Q2 is also about 40 percent of the total repo liabilities from reporting sources.

4. Conclusion

This paper analyzes the "run on repo" during the recent financial crisis using data from the Federal Reserve flow-of-funds, supplemented by a unique market survey done by the Bond Market Association. Among banks and broker-dealers, repo liabilities fell by about $1.3 trillion from 2007Q2 through 2009Q1. The only part of this decline that is clearly captured in the flow-of-funds is a $400 billion reduction in funding from the "rest-of-world". The remaining decline shows up as a reduction in the "statistical discrepancy" between repo assets and liabilities. Evidence from the BMA survey suggests that the flow-of-funds is missing about 40 percent of the bilateral repo market, which (in dollar terms) is approximately the same magnitude as the statistical discrepancy. This missing data comes predominantly from foreign and domestic hedge funds and other unregulated capital pools. The run on net funding from these sources was also exacerbated by a $500 billion reduction in gross repo assets by broker-dealers in just the third quarter of 2008.

Our analysis demonstrates the danger of relying exclusively on official sources of data for repo markets. While it is tempting to focus where the data are strongest, such analyses can be misleading. For repo, the best data are for tri-party transactions, and the most detailed tri-party data exist for money-market mutual funds. As it turns out, MMFs were not at all representative during the crisis, with repo assets actually increasing for MMFs by more than $100 billion at the same time that overall repo liabilities were falling by $1.3 trillion.

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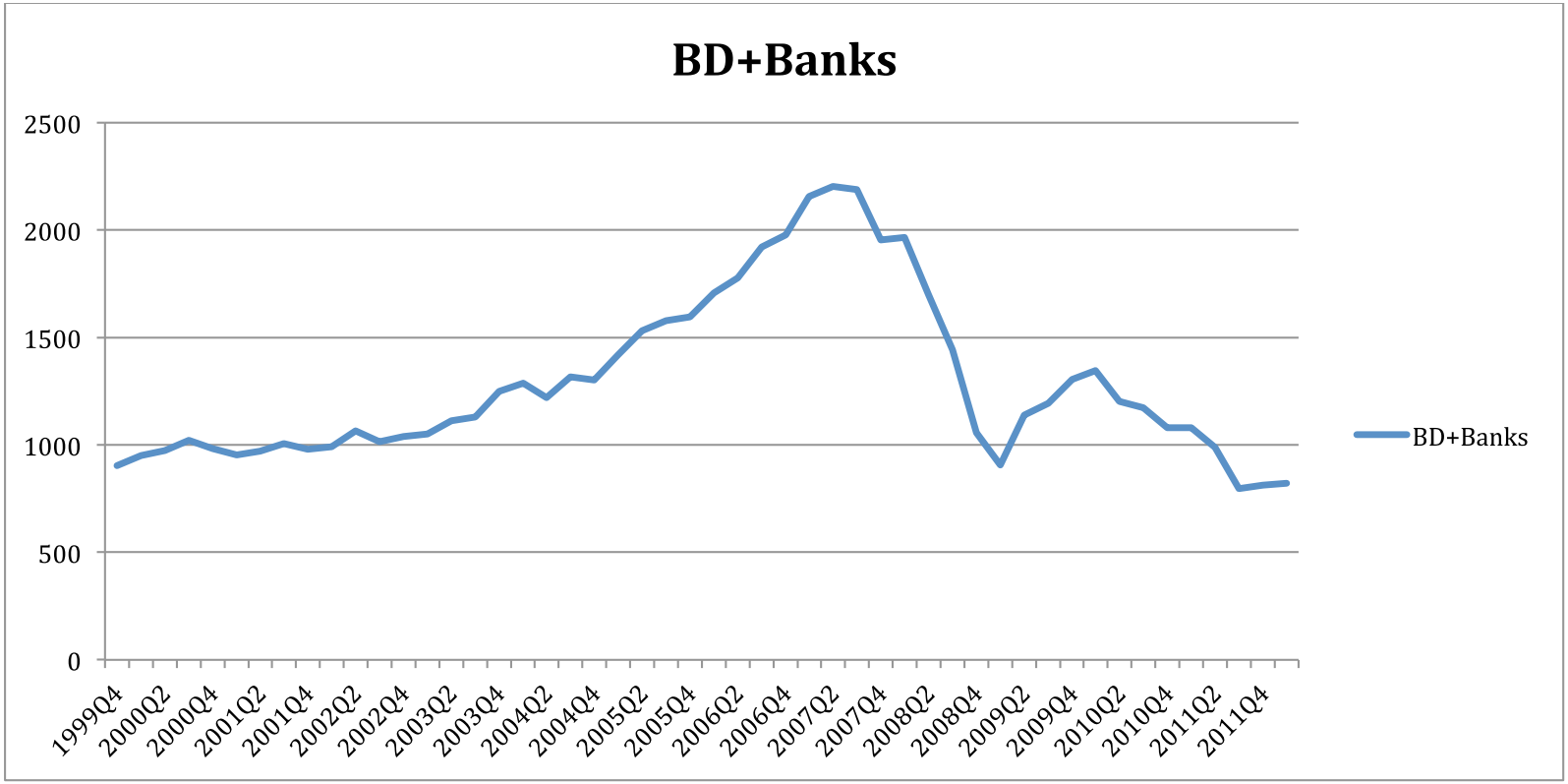
Appendix: Flow of Funds Definitions

Security brokers and dealers; federal funds and security repurchase agreements (net); liability		
+ FL662150003.Q	Security brokers and dealers; federal funds and security repurchase agreements; liability	FOCUS and FOGS
+ FL663168063.Q	Security brokers and dealers; bank loans payable; liability	FOCUS and FOGS
- FL662050003.Q	Security brokers and dealers; federal funds and security repurchase agreements; asset	
- FL723067003.Q	U.S.-chartered commercial banks; security credit; asset	Call report, Loans for purchasing or carrying securities (secured and unsecured), Federal funds and Securities Repo that is not with other commercial banks
- FL753067000.Q	Foreign banking offices in the U.S.; security credit; asset	
- FL663168005.Q	Security brokers and dealers; bank loans not elsewhere classified; liability	Primary Dealer Credit Facility (PDCF) and AMLF from Monetary authority
Rest of the world;		
Level from TIC, calculated as form BL-1 Report of U.S. Dollar Liabilities of Depository Institutions, Bank Holding Companies/Financial Holding Companies, Brokers, and Dealers to Foreign-Residents, column 9 "Of Which" Items, Repurchase Agreements, row Grand Total (code 9999-6); less form BC Report of U.S. Dollar Claims of Depository Institutions, Bank Holding Companies/Financial Holding Companies, Brokers, and Dealers on Foreigners, column 9 "Of Which" Items, Resale Agreements, row Grand Total (code 9999-6). Unadjusted flow is the change in the level; data for the most recent ten years show no significant seasonality.		
TIC: Treasury International Capital System		
Money market mutual funds		
Investment Company Institute (ICI)		
Mutual funds		
Level is calculated as approximately 50 percent of ICI Supplementary Data available by subscription, table Composition of Net Assets for Equity, Hybrid, and Bond Funds, Cash and Receivables Minus Liabilities; less an adjustment for variable annuity plans which are included in FOF life insurance sector. The adjustment is calculated from ICI data available by subscription, Monthly Trends Supplement, table 30B Variable Annuity, column Total Long-Term Funds, Total Net Assets; multiplied by the one half the portion of the 2001:Q3 total that is in cash. Unadjusted flow is the change in the level; data for the last ten years show no significant seasonality.		
Government-sponsored enterprises		
Four GSE's balance sheets		

Nonfinancial corporate business
Level is calculated from the QFR, Table 70.1 - Balance Sheet for Corporations in the NAICS Manufacturing Sector, Total Assets $25 Million and Over, line U.S. Treasury and Federal agency securities, Subject to agreements to sell; multiplied by one plus the ratio of line Total Assets from the SOI, Corporation Income Tax Returns, Returns of Active Corporations, Table 6 - Balance Sheet, Income Statement, Tax, and Other Selected Items, by Major Industry, Services sector, to line Total Assets from the QFR, Table 1.1 - Balance Sheet for Corporations in the NAICS Manufacturing Sector, All Total Asset Sizes. The services sector includes the following industries from the SOI : Information; Professional, scientific, and technical services; Administrative and support and waste management and remediation services; Educational services; Health care and social assistance; Arts, entertainment, and recreation; Accommodation and food services; and Other services. Unadjusted flow is the change in the level; data for the most recent ten years show no significant seasonality.
State and local governments, excluding employee retirement funds; federal funds and security repurchase agreements; asset
Level is calculated as approximately 7 percent of total financial assets (FOF series FL214090093) based on detailed data for fiscal year 2003 on security RPs from CAFRs for the largest state and local governmental units. Unadjusted flow is the change in the level; data for the most recent ten years show no significant seasonality.
Savings institutions OTS reporters; federal funds and security repurchase agreements; asset
Level from OTS, Thrift Financial Report, schedule SC - Consolidated Statement of Condition, Federal funds sold and securities purchased under agreements to resell (series SVGL0439). Unadjusted flow is the change in the level; data for the most recent ten years show no significant seasonality.
Property-casualty insurance companies; federal funds and security repurchase agreements; asset
Level from financial statements compiled by and purchased from SNL Financial. Series from Supplemental Investment Risk Interrogatories, Question 20, net admitted assets subject to reverse repurchase agreements plus dollar reverse repurchase agreements. Unadjusted flow is the change in the level; data for the most recent ten years show no significant seasonality.
Life insurance companies; federal funds and security repurchase agreements; asset
Level from financial statements compiled by and purchased from SNL Financial. Series from Supplemental Investment Risk Interrogatories, Question 20, net admitted assets subject to reverse repurchase agreements plus dollar reverse repurchase agreements. Unadjusted flow is the change in the level; data for the most recent ten years show no significant seasonality.

Exhibit 1: Net Repo Funding to Banks and Broker-Dealers, $billions



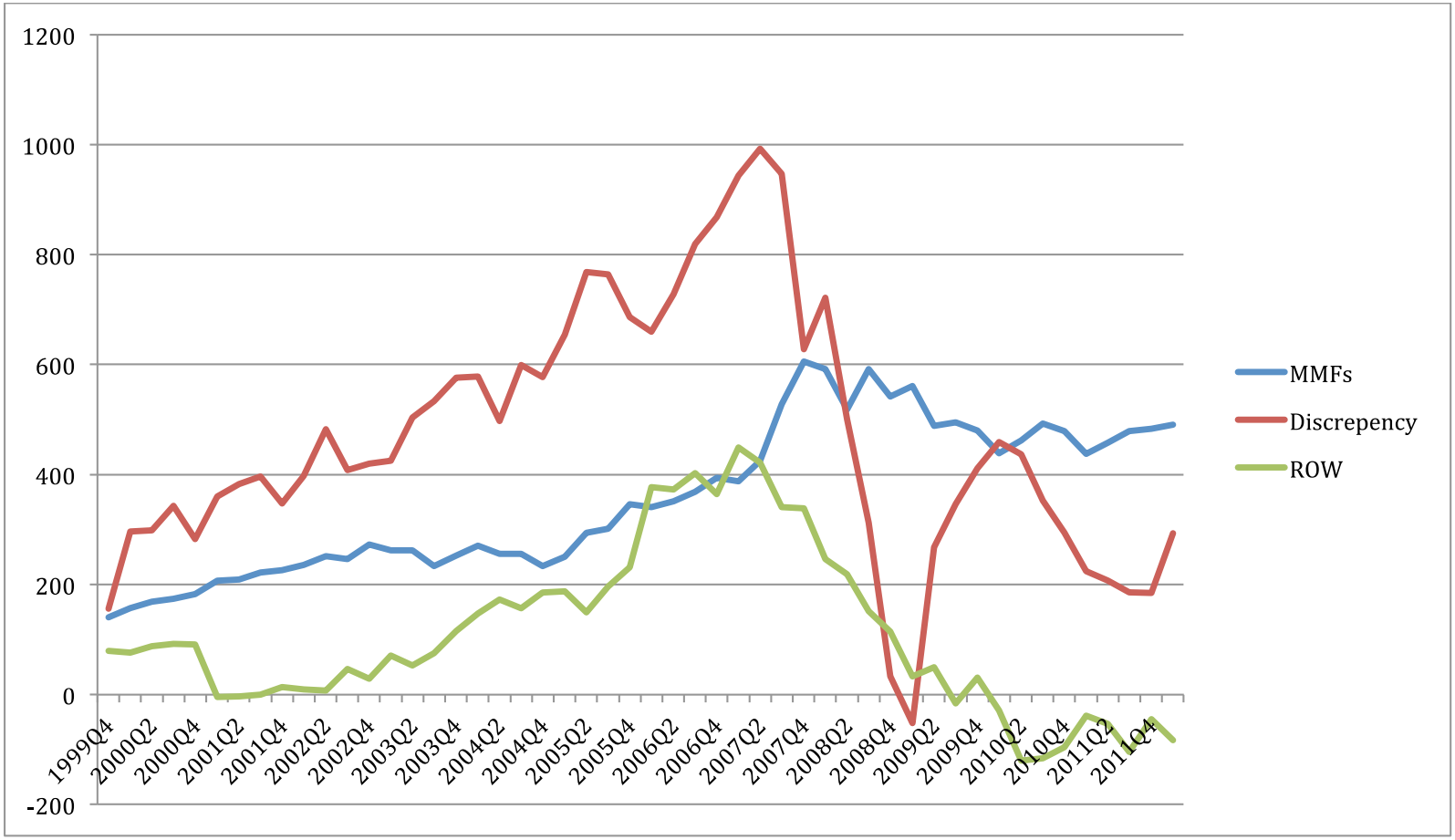
Source: Federal Reserve Flow of Funds

Exhibit 2: Net Repo Funding Sources, 2007Q4 and 2009Q1, $billions

	2007 Q2	% of total	2009Q1	% of total
corporate	9	0.4%	8	0.6%
municipal	154	6.5%	154	13.3%
rest-of-world	422	17.8%	33	2.8%
FRB	32	1.4%	71	6.1%
insurance	6	0.3%	17	1.5%
Pension	53	2.2%	60	5.2%
MMF	426	18.0%	562	48.4%
Other MF	129	5.4%	104	8.9%
GSE	146	6.2%	159	13.8%
Discrepancy	992	41.9%	-7	-0.6%
Total	2368		1159	

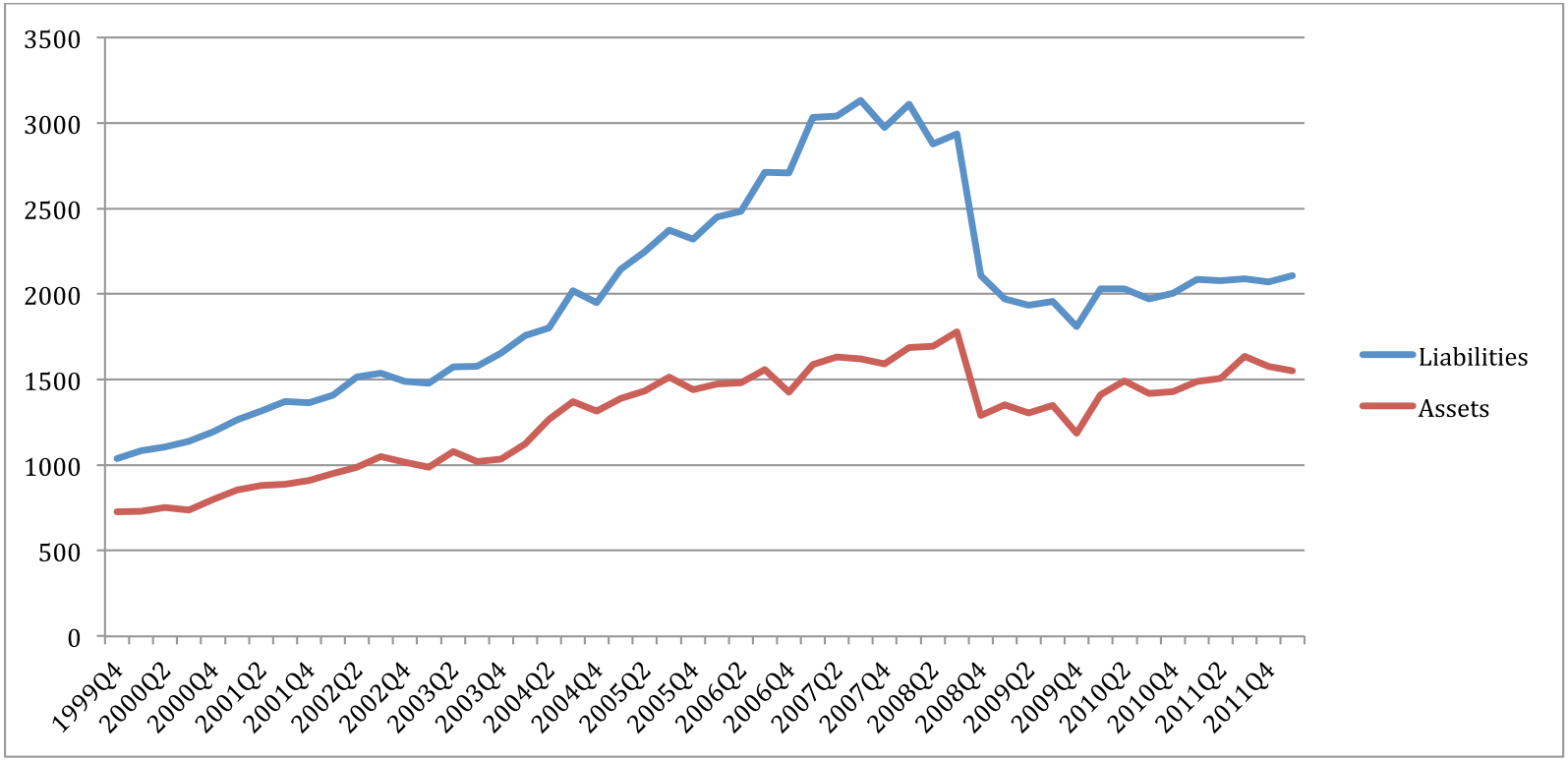
Source: Federal Reserve Flow of Funds

Exhibit 3: Major Holders of Repo Assets: 1999-2011, in $billions



Source: Federal Reserve Flow of Funds

Exhibit 4: Broker-Dealer Repo Assets and Liabilities, $billions



Source: Federal Reserve Flow of Funds

Exhibit 5: The Bond Market Association Survey, June 30, 2004

Participants in the Bilateral Repo Market				Secured Borrowing and Lending Markets		
US Counterparties	**$ millions**	**% of Total**			**$ millions**	**% of Total**
US Dealers	1,566,276	40.6%		Bilateral Repo	3,857,740	49%
Federal Reserve Bank	14,275	0.4%		Tri-party Repo	1,350,000	17%
US Agent Bank	112,773	2.9%		Securities Lending	2,355,413	30%
US Govt. Agencies	11,781	0.3%		NASD/NYSE	275,148	4%
US Municipal	23,430	0.6%		**Total**	7,838,301	100%
US Corporate	132,457	3.4%				
US ERISA Pension Funds	7,718	0.2%				
US Non-ERISA & Public Pension	7,025	0.2%				
US Insurance Companies	25,946	0.7%				
US Registered 40 Act Funds	60,280	1.6%				
Other US Investment Managers, Hedge Funds	348,393	9.0%				
US Foundations and Endowments	20,160	0.5%				
Other, Financial and Mortgage Companies	147,525	3.8%				
Other US*	260,484	6.8%				
Sub-Total	2,738,523	71.0%				
Non-US Counterparties						
Supranationals	12,970	0.3%				
Sovereign Govt. & Central Banks	158,820	4.1%				
Non-US Sovereign Govt Entities	14,033	0.4%				
Off Shore Hedge Funds	318,920	8.3%				
Other Non-US**	614,475	15.9%				
Sub-Total	1,119,218	29.0%				
		0.0%				
Grand Total	**3,857,741**	**100.0%**				
Total Hedge Funds, Investment Managers	667,313	17.3%				

*Type of counterparty was not specified. **Denotes foreign affiliates, foreign dealers, corporations, insurance companies, and managed funds.