

A PRIMER ON THE GCF REPO[®] SERVICE: INTRODUCTION

1. BACKGROUND

Repurchase agreements, or repos, are widely used by financial entities to access money markets. Primary dealers, for example, reported financing \$1.9 trillion of securities using repo on July 31, 2013.¹ This primer, which consists of this introduction and two articles, focuses on a particular type of repo, the General Collateral Finance Repo (GCF Repo[®]). The Fixed Income Clearing Corporation (FICC) introduced this financial service in 1998² as a cost-effective way for securities dealers to exchange securities and cash (Fleming and Garbade 2003).

The two articles in this primer concentrate on different aspects of the GCF Repo service. The first article, “The Financial Plumbing of the GCF Repo Service,” focuses on how GCF Repo trades are cleared and settled and describes how GCF Repo is affected by the current reforms to the settlement of repos. In particular, the authors lay out the various ways that intraday credit was used pre-reform to

¹ See the August 8, 2013, release of the Primary Dealer Statistical Releases, published by the Federal Reserve Bank of New York, available at <http://www.newyorkfed.org/markets/primarydealers.html>.

² GCF Repo[®] is a registered service mark of the Fixed Income Clearing Corporation.

facilitate the settlement of GCF Repo trades and why this use of credit was problematic. They then describe the reforms that have been, or are scheduled to be, implemented and the effect of these reforms on the use of intraday credit.

The second article, “An Empirical Analysis of the GCF Repo Service,” focuses on how dealers use this financial service. After describing the various strategies that dealers may employ, the authors quantify the predominance of these strategies. For example, they describe the types of dealers seeking funding through GCF Repo and the amount of cash typically borrowed. They also explain how dealers use GCF Repo in conjunction with their other repo transactions, in normal times and during periods of stress.

Although the two articles focus on different aspects of GCF Repo, they are complementary, because the strategies that dealers may follow in trading GCF Repos are influenced by the clearance and settlement procedures in place. Furthermore, in order to gauge the risks of potential changes to the clearance and settlement of GCF Repo, it is important to take into account how GCF Repos are traded.

Both articles rely upon a basic understanding of GCF Repo, so we provide an overview of the topic in this introduction (see also Ingber [2003]). We begin by broadly describing repurchase agreements and then focus on the institutional details of GCF Repo. We end by summarizing the main benefits of GCF Repo.

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2. REPURCHASE AGREEMENTS

Repos are essentially a pair of separate but related transactions between two entities: an agreement to buy a security now (which constitutes the opening leg of the repo), joined with an agreement to sell back the same security in the future at a specified price (the closing leg).³ Apart from their treatment under bankruptcy, repos often resemble collateralized loans, with the difference in the price of the security across the two legs of the repo transaction translating into an interest rate. In addition to their use in sourcing funds, repos are also used to invest temporary cash balances, for arbitrage purposes, and as a tool for implementing a variety of other strategies. Adopting the view of a repo as a collateralized loan, we designate the entity purchasing (and then reselling) the securities as the cash investor. The other entity is labeled the collateral provider.

Two important elements of the repo agreement are negotiating which securities can be posted as collateral and negotiating the total value of securities to be posted as collateral. When repos are used for funding, which is the more usual case, industry practice is for the value of collateral to exceed the amount of cash.⁴ This difference is called the margin, and it measures the amount by which a repo is overcollateralized. The margin protects the cash investor in the event that the collateral provider defaults on its repurchase agreement, by providing a buffer against fluctuations in the value of the securities posted as collateral or a loss in value associated with the quick liquidation of securities.⁵

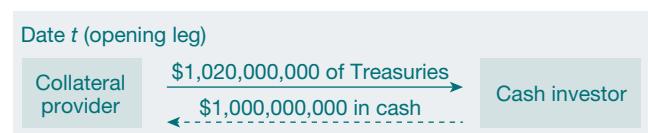
In Exhibit 1, we present a repo between a collateral provider and a cash investor. The trade terms are a loan of \$1 billion, secured by U.S. Treasury securities, of overnight maturity, with an interest rate of 10 basis points and a margin of 2 percent. In settling this repo, the collateral provider delivers \$1.02 billion in U.S. Treasuries to the cash investor at date t in exchange for \$1 billion in cash. Then at date $t+1$, the investor releases the Treasuries back to the collateral provider in return for \$1,000,002,777.78 in cash (where $\$2,777.78 = \$1 \text{ billion} \times 1/360 \times 10 \text{ basis points}$).

³ Technically, under the master agreements for repos, the requirement is to repurchase the same or equivalent securities, where “equivalent” means fungible.

⁴ Repos can also be used to access the collateral markets. In these cases, industry practice in setting margins and interest rates is different from that described in this article, reflecting the different motivation driving the transaction (see Garbade [2006]).

⁵ Cash investors cannot make gains when selling these securities. Proceeds from any sale above the principal amount of the repo are returned to the trustee managing the estate of the defaulted dealer. Furthermore, if the proceeds from the sale do not cover the principal, the cash lenders get an unsecured claim on the estate of the defaulted dealer.

EXHIBIT 1 Settlement of a Repo



Repo trade details	
Term: overnight	Rate: 10 basis points
Collateral type: Treasuries	Margin: 2 percent
Principal: \$1 billion	

Note: $\$1,000,002,777.78 = \$1,000,000,000 + (\$1,000,000,000 \times 1/360 \times 10 \text{ basis points})$.

Repos are flexible enough that cash investors can specify that a particular security be posted as collateral. It is common, however, for a cash investor to specify only that the security underlying the transaction belong to a general asset class (as in the example in Exhibit 1). In these *general collateral* repos, the cash investor agrees to lend cash against a class of securities, such as U.S. Treasuries, agency debentures, or investment-grade corporate bonds.

In the United States, repo trades typically settle in one of two ways. The first is on a bilateral basis. In this case, the collateral provider and cash investor negotiate the repo agreement, which specifies the principal amount, interest rate, margin, term, and class of acceptable collateral. Here, each entity needs to have procedures in place to ensure proper settlement.

In particular, on the opening leg of the repo, the cash investor has to ensure that the collateral provider has sent the securities in the agreed-upon asset class and that the value of the securities satisfies the margin requirement. Tracking and valuing the securities posted as collateral is a major task, especially given the multitude of securities available for use as collateral.⁶

A second way to settle repos, called tri-party, is by using a settlement service provided by a third party—namely, a clearing bank. Tri-party repo services are offered by JPMorgan Chase (JPMC) and Bank of New York Mellon

⁶ For example, according to statistics provided to the author by the Federal Reserve Bank of New York, there were over one million mortgage-backed securities outstanding and almost ten thousand agency debt securities outstanding in the Fedwire® Securities Service as of December 2012.

(BNY Mellon), the two institutions that provide clearing and custodial services to the large securities dealers in the U.S. market. Just as in the bilateral case, tri-party repos are negotiated between the collateral provider and the cash investor. Once the terms are agreed upon, the settlement details are transmitted to the clearing bank. The clearing bank then settles the repo agreement on its books, taking care to ensure that the details of the repo agreement are met. In particular, the clearing banks track and value the securities used as collateral and ensure that the proper margining requirements are fulfilled when settling a trade. The clearing banks do not broker transactions or help negotiate the terms; their role is limited to the clearance and settlement of these trades.⁷

Tri-party repos are almost always general collateral repos and they are used by securities dealers to raise funds from cash investors, such as money market mutual funds and investment managers.⁸ According to market participants, tri-party repo is one of the main tools through which dealers fund themselves. Indeed, more than \$1.6 trillion of collateral was posted for tri-party repo trades on July 10, 2013.⁹

The GCF Repo service exists alongside the tri-party repo market, but is dependent on it. In the next section, we describe the institutional details of this financial service. We then discuss the tight connection between GCF Repo and tri-party repo trades.

3. THE GCF REPO® SERVICE

GCF Repo differs from standard repos in a number of ways. Because it is offered by the Fixed Income Clearing Corporation, only institutions deemed eligible by FICC can negotiate GCF Repo trades.¹⁰ While GCF Repo could potentially involve different types of participants, it is used primarily by securities dealers. For expositional clarity, then, we refer to institutions trading GCF Repos as securities dealers, or dealers. GCF Repos are negotiated through interdealer brokers (IDBs) on a blind basis.¹¹ Dealers tell an IDB the terms under which they

⁷ See Copeland, Martin, and Walker (2014) for more details on tri-party repo.

⁸ See Alkan et al. (2013) for more information on cash investors.

⁹ The Federal Reserve Bank of New York publishes aggregate statistics on tri-party repo and GCF Repo trades on the Tri-Party Repo Infrastructure Reform webpage available at https://newyorkfed.org/banking/tpr_infr_reform.html.

¹⁰ Visit <http://www.dtcc.com/about/businesses-and-subsidiaries/ficc.aspx> for more information about FICC.

¹¹ In December 2012, 120 entities were eligible to trade GCF Repos. A list of eligible financial entities can be found at <http://www.dtcc.com/client-center/ficc-gov-directories>. Look in the “FICC GSD Member Directory” for those

are willing to borrow or lend cash. The IDB then tries to broker a trade while maintaining each dealer's anonymity. Once a trade has been brokered, the IDB submits the trade details to FICC, which, acting as a central counterparty, interposes itself and becomes the legal counterparty to each side of the repo transaction for settlement purposes. In this way, GCF Repo provides a way for dealers to anonymously negotiate repos among themselves. Furthermore, dealers do not face counterparty risk from one another, because of FICC's role as a central counterparty.

To protect itself against the risk of a dealer default, FICC, in addition to having eligibility requirements, requires dealers trading GCF Repo to post collateral to a clearing fund.¹² Because dealers post collateral to the clearing fund and because of the guarantee provided by FICC, GCF Repo trades do not include a separate margin requirement. Rather, the value of securities posted as collateral is equal to the amount of cash lent.

To improve liquidity for these trades and to simplify settlement, FICC standardizes GCF Repo trades by defining the acceptable classes of securities used as collateral. Dealers negotiating a GCF Repo transaction are limited to ten general asset classes for collateral (see Table 1). Currently, however, only nine collateral classes are traded, because there are no longer any securities that fall into the FDIC-Guaranteed Corporate Bonds collateral class.¹³

FICC provides netting services for dealers that negotiate GCF Repo contracts. At the end of each trading day, FICC computes for each dealer and each of the general collateral categories the value of securities the dealer has promised to deliver and the value that has been promised to the dealer. The difference between these two values, the net position of a dealer in a collateral category, is settled.

In Exhibit 2, we provide an example of GCF Repo between dealer A and dealer B, to highlight the differences between GCF Repo and the standard repo described in Exhibit 1. In the first step, the dealers negotiate, anonymously, through an IDB. The IDB then sends settlement instructions to FICC,

Footnote 11 (continued)

members with the “Repo Netting” and “GCF” service designations. The IDBs are also listed; look for those members with “Broker Account” tags next to their name.

¹² The formula used to determine how much collateral a dealer needs to deliver into the clearing fund is laid out in FICC's government securities division rulebook, which is posted on FICC's Rules and Procedures webpage, available at <http://www.dtcc.com/legal/rules-and-procedures.aspx>.

¹³ The Federal Deposit Insurance Corporation's Debt Guarantee Program, developed during the recent financial crisis, generated this special class of corporate bonds. This program is no longer active. For more information, see <http://www.fdic.gov/regulations/resources/TLGP/>.

TABLE 1
General Collateral Classes in GCF Repo

Fannie Mae and Freddie Mac adjustable-rate MBS
Fannie Mae and Freddie Mac fixed-rate MBS
FDIC-guaranteed corporate bonds ^a
Ginnie Mae adjustable-rate MBS
Ginnie Mae fixed-rate MBS
Non-MBS U.S. agency securities
U.S. Treasuries with maturities of ten years or less
U.S. Treasuries with maturities of thirty years or less
U.S. Treasury inflation-protected securities
U.S. Treasury STRIPs

Source: Depository Trust and Clearing Corporation (DTCC).

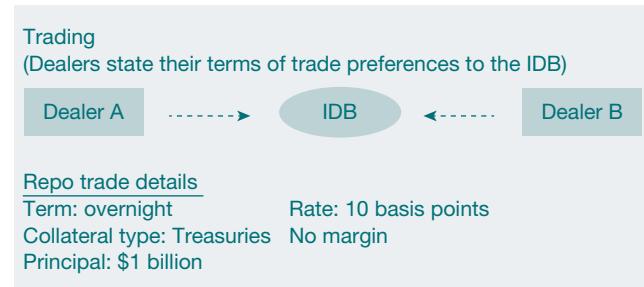
Notes: MBS is mortgage-backed securities; FDIC is Federal Deposit Insurance Corporation; STRIP is separate trading of registered interest and principal. An example of a non-MBS U.S. agency security is agency debentures.

^a FDIC-guaranteed corporate bonds are no longer a collateral class in GCF Repo.

which novates the trade (in other words, substitutes the old contract for a new one), becoming the legal counterparty to both dealer A and dealer B for settlement purposes. In this example, at date t , dealer A sends \$1 billion in Treasury securities to FICC in return for \$1 billion in cash. FICC then sends the \$1 billion in Treasury securities to dealer B in return for \$1 billion in cash. On date $t+1$, these flows are reversed, with the securities being returned to dealer A and the cash plus interest being returned to dealer B, with FICC acting as intermediary. This example is highly stylized; the details of GCF Repo settlement are provided in “The Financial Plumbing of the GCF Repo Service.”

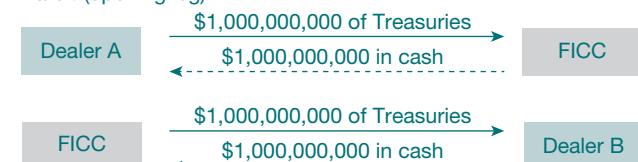
GCF Repo is tightly connected to tri-party repo. The opening leg of both types of trades is settled same day on the books of the clearing banks. Further, GCF Repo is settled before tri-party repo, allowing dealers to easily rehypothecate collateral obtained from GCF Repo into tri-party repo—in other words, reuse it for their own borrowing.

EXHIBIT 2 Trade Negotiation and Settlement of a GCF Repo

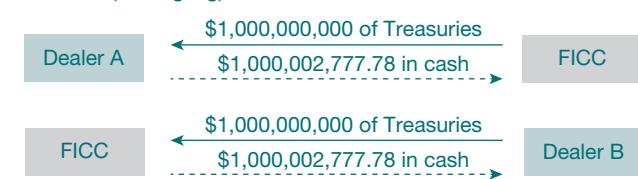


Settlement (IDB submits trade details to FICC for settlement)

Date t (opening leg)



Date $t+1$ (closing leg)



Notes: IDB is independent broker dealer. FICC is Fixed Income Clearing Corporation. $\$1,000,002,777.78 = \$1,000,000,000 + (\$1,000,000,000 \times 1/360 \times 10 \text{ basis points})$.

4. BENEFITS OF GCF REPO

We conclude with an enumeration of the benefits of the GCF Repo service. A primary benefit of the GCF Repo service is its enhancement of intermediation. As described in more detail in the second article in this series, “An Empirical Analysis of the GCF Repo Service,” dealers use GCF Repo to intermediate between cash investors and other dealers. In particular, dealers that can access funding at a low cost may borrow more than they need from cash investors and then lend these extra funds in GCF Repo to dealers with a high cost of funding, taking advantage of the benefit that FICC provides as a central counterparty.

This intermediation is beneficial because it lowers dealers' cost of funding when investors are reluctant to lend to them directly. Without this intermediation, the dealers with a high cost of funding would otherwise need to raise funds through other (more expensive) means, or delever. A lower cost of funding makes dealers more competitive and likely results in lower prices of financial services for households and nonfinancial firms.

An additional benefit of this intermediation occurs in times of stress. In discussions, market participants state that a stressed dealer is likely to rely more upon GCF Repo as a source of funds, taking advantage of FICC acting as a central counterparty. This benefit, however, depends crucially upon FICC managing its risks appropriately.

Two other general benefits associated with GCF Repo are the reduction in transaction costs and the enhancement of

liquidity in the interdealer repo market.¹⁴ As described in Fleming and Garbade (2003), relative to standard bilateral repo arrangements, the design of GCF Repo provides these benefits by allowing 1) both legs of the repo to be netted, 2) the repo dealer to decide which collateral to deliver fairly late in the day, and 3) collateral to be substituted easily. The combination of these benefits should spill over and enhance the liquidity of the larger dealer-customer repo market.

¹⁴ Ingber (2003) provides a longer and more detailed list of benefits provided by GCF Repo. In particular, he notes that GCF Repo allows for a longer period of time during the day to trade general collateral repos, lowers the costs of settlement, and allows for "expanded access to the general collateral market to encompass a wider range of financial entities" (p. 48).

REFERENCES

- Alkan, L., V. Chakrian, A. Copeland, I. Davis, and A. Martin.* 2013. "Magnifying the Risk of Fire Sales in the Tri-Party Repo Market." LIBERTY STREET ECONOMICS, July 13. Available at <http://libertystreeteconomics.newyorkfed.org/2013/07/magnifying-the-risk-of-fire-sales-in-the-tri-party-repo-market.html>.
- Copeland, A., A. Martin, and M. Walker.* 2014. "Repo Runs: Evidence from the Tri-Party Repo Market." JOURNAL OF FINANCE 69, no. 6 (December): 2343-80.
- Fleming, M., and K. Garbade.* 2003. "The Repurchase Agreement Redefined: GCF Repo®." Federal Reserve Bank of New York CURRENT ISSUES IN ECONOMICS AND FINANCE 9, no. 6 (June).
- Garbade, K.* 2006. "The Evolution of Repo Contracting Conventions in the 1980s." Federal Reserve Bank of New York ECONOMIC POLICY REVIEW 12, no. 1 (May): 27-42.
- Ingber, J.* 2003. "Gets Confusing Fast: A Review of the GCF Repo® Service." RMA JOURNAL 85, no. 8 (May): 46-51.

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