

# Should Repurchase Transactions be Accounted for as Sales or Loans?

Justin Chircop, Paraskevi Vicky Kiosse, and Ken Peasnell

**SYNOPSIS:** In this paper, we discuss the accounting for repurchase transactions, drawing on how repurchase agreements are characterized under U.S. bankruptcy law, and in light of the recent developments in the U.S. repo market. We conclude that the current accounting rules, which require the recording of most such transactions as collateralized loans, can give rise to opaqueness in a firm's financial statements because they incorrectly characterize the economic substance of repurchase agreements. Accounting for repurchase transactions as sales and the concurrent recognition of a forward, as "Repo 105" transactions were accounted for by Lehman Brothers, has furthermore overlooked merits. In particular, such a method provides a more comprehensive and transparent picture of the economic substance of such transactions.

**Keywords:** repurchase agreements; repo market; collateralized loans; sale accounting.

**JEL Classifications:** M41; G21; G38.

**Data Availability:** Data are available from the public sources identified in the paper.

## INTRODUCTION

Repurchase transactions (repos) have been long established as a prime source of finance for financial institutions. The ability of repos to provide parties with secured short-term funding has resulted in such transactions becoming an essential part of the global financial system. Much has been written about repos and the role repos played in the 2007–2008 financial crisis (see, e.g., [Ong and Yeung 2011](#); [Dunne et al. 2011](#); [Tuckman 2010](#); [Martin et al. 2010](#); [Gorton 2010](#); [Fleming et al. 2010](#); [Gorton and Metrick 2009](#)). However, the accounting issues have received much less attention; with a recent exception of [Ong and Yeung \(2011\)](#), few commentators have questioned whether the current way of accounting for repos truly reflects the form and economic substance of these transactions. Given this, the objectives of the present paper are to

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analyze the current standards governing accounting for repos, to identify deficiencies in those standards, and to consider other methods of accounting for such transactions.

The accounting for repos came under the spotlight when Lehman Brothers created the so-called “Repo 105” transactions through their London offices in order to side-step extant applicable U.S. accounting standards. Against the background of the Financial Crisis, press commentary was highly critical; for example, it was stated by one commentator that “[t]he term ‘Repo 105’ will take its place in the annals of the big-brained, misguided Wall Street distortions” (Clark 2010). However, it would appear that such criticisms owed more to concern about the apparent dubious motivation behind such transactions, than as a result of a considered examination of the logic underlying the accounting used to record these transactions. We argue that, from an accounting perspective, this criticism may have been too hasty. Indeed, we demonstrate that the accounting employed by Lehman Brothers provides a better picture of the underlying economics of repos in general (not just Repo 105s), or at least those accounted for in the U.S.<sup>1</sup>

The structure of the remainder of this paper is as follows: the next section provides an introduction to repo transactions and highlights the economic significance of the repo market in the 2007–2008 financial crisis; the third section provides an overview of the current regulatory framework for accounting for such transactions and developments made in response to the recent financial crisis; while the fourth section presents arguments about why the current method of accounting for such transactions is deficient and may lead to opaque financial statements. The fifth section proposes another method of accounting for repos that could provide a better picture of the economic substance of these transactions. The sixth section shows the impact of different methods of accounting for repos on the statement of financial position of a major U.S. banking group, Citigroup, while the seventh section discusses possible additional disclosures to mitigate deficiencies in current accounting for repos.

## BACKGROUND TO THE REPO MARKET

### Defining Repurchase Transactions

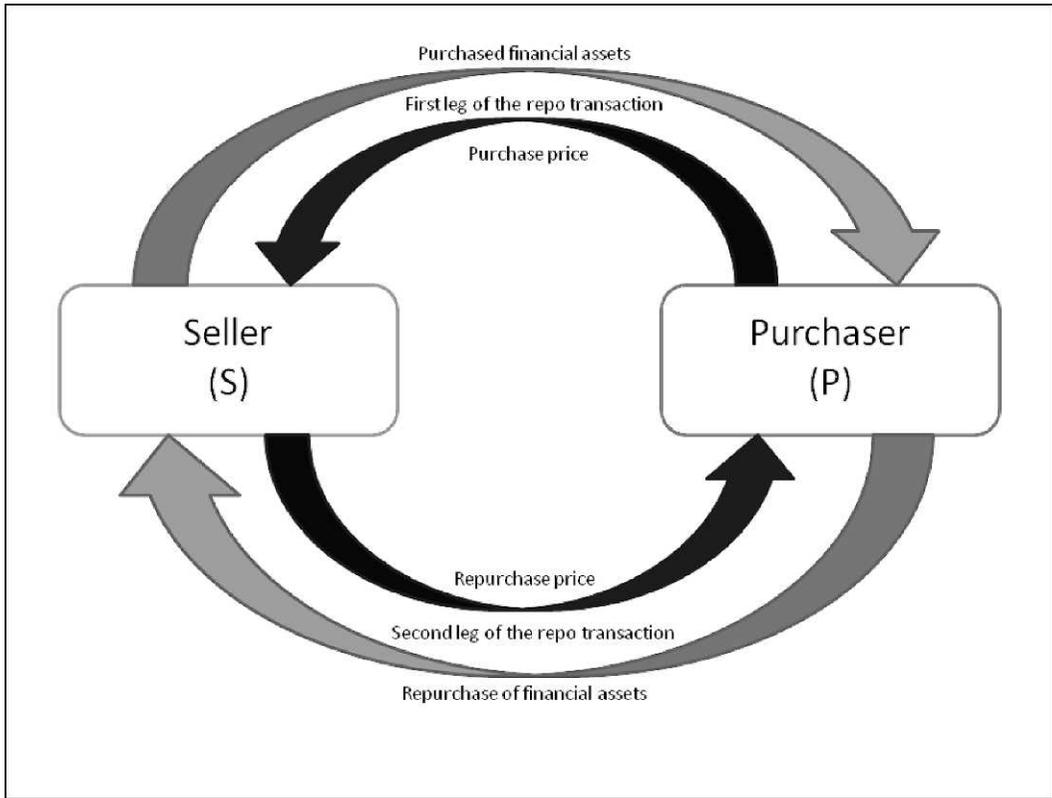
A repurchase agreement is the sale of financial assets with the simultaneous agreement by both parties for the buyer to sell these or similar securities back to the seller at a later date (Bowsher 1979). As shown in Figure 1, in this transaction, the party selling the financial asset, hereinafter S, is deemed to be entering into a repo transaction while the party undertaking the spot market purchase with a simultaneous agreement to resell the underlying asset to S at a later date, hereinafter P, is entering into a reverse repo transaction (Duffie 1996). Essentially, a repo can be viewed as a two-part transaction, each leg of which entails the transfer of funds and financial instruments from one party to the other (Gorton and Metrick 2011).<sup>2</sup> Moreover, any income earned by P on the securities purchased during the term of the repurchase agreement is subsequently returned to S.

Repos have generally been characterized for accounting purposes as securitized lending transactions where the financial assets transferred act as collateral for the funds “loaned” by the purchaser P to the seller S of the financial asset. The use of collateral has enabled parties, which

<sup>1</sup> This paper is primarily concerned with the accounting for repos within the U.S. legal framework. Different countries have different legal framework(s) for regulating repos, and hence, care needs to be exercised before extending the conclusions reached in this paper to other legal settings.

<sup>2</sup> Repos are generally based on “one of the established market standard agreements...[such as]...the Master Repurchase Agreement (MRA) published by the Securities Industries and Financial Markets Association (SIFMA) or the Global Market Repurchase Agreement (GMRA)” (Johansson 2009, 71) published by the Securities Industry and Financial Markets Association (SIFMA) and the International Capital Markets Association (ICMA). The use of the standard agreements provides for quicker execution of repos, standardized documentation, and measures to reduce both counterparty and legal risk (Ong and Yeung 2011).

**FIGURE 1**  
**A Schematic Diagram Representing the Main Elements of a Repurchase Transaction**



In this transaction, the Seller (S) is undertaking a repurchase transaction, while the counterparty, the Purchaser (P), is undertaking a reverse repurchase transaction.

would have been otherwise unable to access unsecured markets, such as the federal funds markets, to be parties in the repo market. In the repo market, there is no size or locational discrimination: “the smallest banks are the largest net purchasers of funds in the repo market, when net purchases are measured as a percentage of assets” (Allen et al. 1989, 515).

In a repo transaction, S pays interest to P. The interest paid is not based on the yields on (or changing market prices of) the securities transferred from S to P, but is calculated from the nominal value of the transaction, the term of the repo, and the so-called repo rate (Ewerhart and Tapping 2008; Bowsher 1979). The role of the securities transferred is simply to act as collateral to P. In a typical repo, so-called General Collateral (GC) repos, P accepts a variety of financial instruments as collateral, from Treasury securities to agency mortgage-backed securities.<sup>3</sup> In such a transaction, P benefits by earning interest on the funds lent and having possession of high-quality collateral, which can be sold with minimal transaction costs should S default (Fleming et al. 2010).

<sup>3</sup> A wide variety of different types of financial assets may be transferred in a repo transaction. Such collateral may include “federal government debt instruments, commercial paper, eligible certificates of deposit and bankers’ acceptances and mortgage-backed securities issued by quasi-governmental financing entities such as Ginnie or Fannie Mae, but, theoretically any type of security could be used” (Schroeder 2002, 571).

An important feature of repos is that repurchase agreements have special privileges under bankruptcy law, similar to those for derivatives. In cases where one of the parties to the transaction defaults, the non-defaulting party has the option to walk away from the transaction retaining either the cash or the collateral (Gorton and Metrick 2011). As this aspect of repos is central to our argument, we discuss it in greater detail later.

In a world where the values of the collateral are fixed and determinable, and there are no transaction costs, the repo rate would be equal to the risk-free rate (Gorton and Metrick 2011). In the event of either party defaulting, the other party may walk away from the transaction without incurring any additional costs. However, in reality, the value of collateral can be uncertain, and collateral may be illiquid, which could result in P incurring substantial transaction costs. Given lender sensitivity to the value of the collateral and the relevant transaction costs, the overnight repo rate is usually set above the risk-free rate but below the federal funds rate.

A “haircut” is usually applied to contain the risk that the liquidation values of the collateral fall short of the lenders’ claim (Ewerhart and Tapking 2008). The haircut is the percentage difference between the nominal value of collateral pledged and the funds lent.<sup>4</sup> A haircut of 2 percent implies that, for each \$100 nominal value of collateral pledged, \$98 is forwarded by P to S. The size of the haircut is influenced by the credit risk of S as well as the quality of the collateral pledged (Fleming et al. 2009). Increases in haircuts require borrowers to pledge increasing amounts of collateral to obtain the same amount of funds (Gorton and Metrick 2011). Lenders typically set haircuts high enough so as not to have to undertake detailed analysis of the underlying collateral, thereby reducing transaction costs (Krishnamurthy 2010; Gorton and Metrick 2011).<sup>5</sup>

It has been assumed previously for exposition purposes that S is initiating the repurchase transaction as a result of S’s need for funds. However, the repo market is not only open to parties in need of funds but also to investors in a specific security, resulting in many repos being driven as much by the need of P to acquire particular financial instruments as by S’s need for funds. Such transactions are different from GC repos as the type of financial instruments transferred from one party to the other will determine how and whether the repo is undertaken (Bartolini et al. 2011). The motive with which the parties approach the transaction is revealed early in the negotiation, as it reflects the cost to the parties of undertaking the transaction (Ewerhart and Tapking 2008).

The importance and need for high-quality financial instruments to act as collateral has led to an increase in “rehypothecation.”<sup>6</sup> In a repo, P acquires the legal title to the financial instruments pledged as collateral by S. This legal title gives P the unencumbered right to use the collateral in another unrelated transaction, thus potentially forming a whole chain of independent transactions in which the same collateral is pledged again and again. This use of collateral is referred to as rehypothecation and is at the core of many security market mechanisms (Bottazzi et al. 2011; Gorton and Metrick 2011). This aspect of repos is of potentially crucial importance to accounting that is addressed in detail later.

<sup>4</sup> The haircut applied on the collateral is not the result of collateral mispricing but is purposely applied to protect the lender of funds from the risk that the value of the collateral falls short of the lenders’ claim.

<sup>5</sup> Further reduction in counterparty risk is obtained through the use of margining where, to safeguard against the possibility of significant changes in the value of collateral, parties to the transaction have the right to initiate margin calls, where collateral pledged is repriced to market value and adjusted so as to bring the amount loaned in line with the current value (taking into account any haircuts) of collateral pledged (Griffiths and Winters 1997).

<sup>6</sup> Over the years, the term “rehypothecation” has obtained a number of different meanings. It is being used in this paper to “describe the collateral-taker’s use of collateral as security in a separate transaction” (Johansson 2009) with a third party.

## The Repo Market

It needs to be understood that repo transactions are not simply a minor esoteric backwater of the financial system for which rough and ready accounting will suffice. The repo market is at the heart of the global financial system. In the U.S., a variety of institutions supply funds to the market, including municipalities and nonfinancial firms, thereby enabling them to earn a low-risk return from otherwise idle funds.<sup>7</sup> Conversely, many financial institutions finance their operations through repo funding (Gorton and Metrick 2011).

Demiralp et al. (2006, 71) note that the “repo market is reportedly far larger than the markets for federal funds and overnight interbank Eurodollars.” Precise statistics on the size of the whole U.S. repo market are not available; so we need to refer to statistics on parts of the repo market to gain an understanding of the size and economic significance of this market. For example, SIFMA (2008, 9) reports that the average daily trading volume in the repo market reached \$2.3 trillion in 2008. In contrast, the average trading volume on the NYSE in 2008 was less than \$80 billion (NYSE 2008).

Further evidence of the considerable scale of the repo market can be obtained from statistics on the size of the tri-party repo market, an increasingly popular market where a designated clearing bank (either JP Morgan Chase or The Bank of New York Mellon) acts as a settlement agent between the two parties in a repo transaction. Taking into account the fact that the tri-party repo market accounts for around 15 percent to 20 percent<sup>8</sup> of the total repo market (Gorton 2009) and the size of the tri-party repo market as reported by Martin et al. (2010) was around \$2.8 trillion in 2008, the total size of the repo market was around \$14 trillion in 2008. To put this figure into perspective, it is worth noting that it is more than three times the GDP of China for 2008 and more than the total GDP of all countries in the Eurozone area in the same year (The World Bank 2011).

## The Repo Market and the 2007–2008 Financial Crisis

An insight into the economics of repos can be gleaned from their role in the 2007–2008 financial crisis. The repo market became severely impaired in the crisis as suppliers of funds to the repo market became concerned about the quality of the collateral pledged in repo transactions. Repo rates became substantially more volatile and generally increased significantly; for example, Fleming et al. (2009) report that, in the first two months of 2008, the spread in the repo rate between agency debt securities<sup>9</sup> or agency mortgage-based securities and Treasury securities rose by 49 and 55 basis points, respectively. The increase in financing costs resulted in financial institutions such as Bear Stearns finding it difficult to access the repo market and, as a consequence, being unable to finance their operations. This caused substantial de-leveraging with financial institutions selling assets to finance their operations. The fire sale of substantial assets resulted in a decrease in the value of the assets, some of which were being used as collateral in other repurchase agreements (Hördahl and King 2008). The decrease in value of the collateral caused lenders to initiate margin calls, resulting in more borrowers de-leveraging. This initiated a cycle of repo market withdrawals, which was only alleviated through a Federal Reserve intervention.

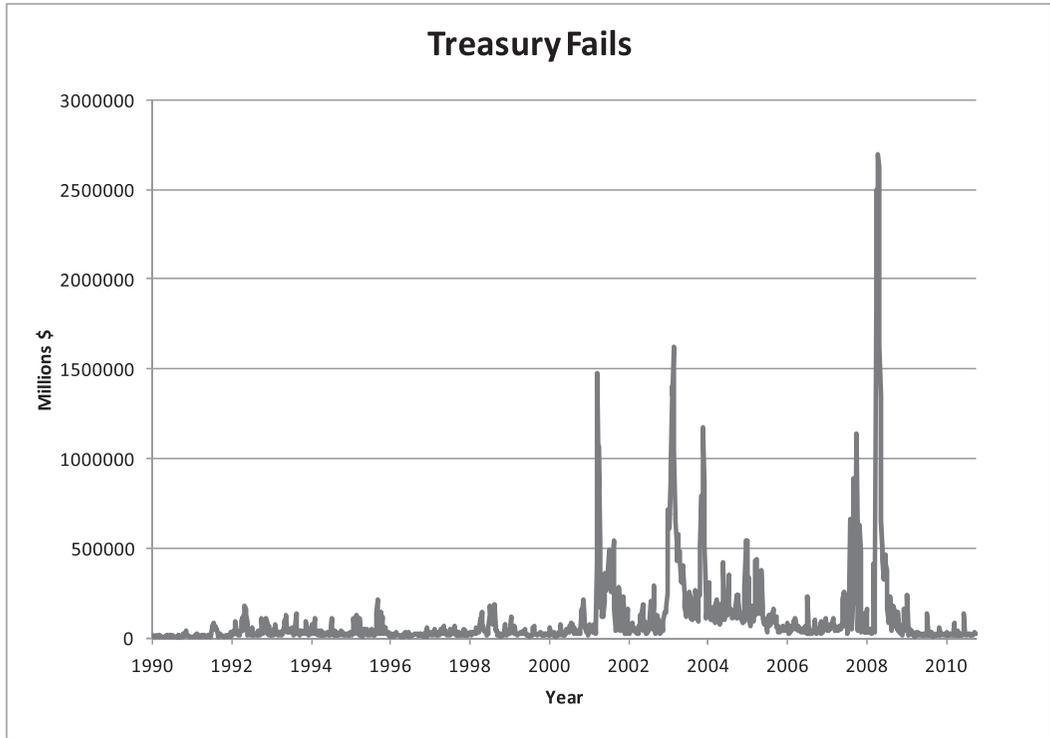
A symptom of this stress in the repo market is evident from statistics on “repo fails” (Gorton 2009). A “repo fail” occurs when one of the parties to the repurchase agreement is unable to honor its obligations in the second leg of the repo. “Repo fails” may occur for a number of reasons,

<sup>7</sup> Moreover, given the relatively short-term nature of repos, such institutions may easily withdraw funding by not rolling over such transactions (Bowsher 1979).

<sup>8</sup> Given the lack of statistics about the size of the repo market, such estimates are at best rough estimates of the actual size of the tri-party repo market.

<sup>9</sup> Agency debt securities refer to obligations of Federal government agencies or government-sponsored agencies.

**FIGURE 2**  
**Nominal Value of Treasury Fails as Reported by Primary Dealers for Period July 4, 1990 to March 30, 2011**



Source: Federal Reserve of New York

including when collateral pledged becomes so special that the specials rate<sup>10</sup> approaches 0, and the incentive to deliver becomes less compelling (Fleming and Garbade 2002). In the 2007–2008 financial crisis, the increased concern about the quality of collateral resulted in suppliers of finance lending only against collateral of the highest quality, such as Treasury securities. As can be seen from Figure 2, Treasury fails increased during the 2007–2008 financial crisis more than in any other previous period. The increase in Treasury fails caused repo market players who had previously pledged Treasury securities as collateral to withdraw such securities, as the repo rates available were not enough to compensate them for the risk of a Treasury fail<sup>11</sup> (Hördahl and King 2008).

<sup>10</sup> Certain collateral may become special when “those owning the collateral are inhibited, whether from legal or institutional requirements or from financial costs, from supplying [that specific] collateral into repurchase agreements” (Duffie 1996, 493). The demand for special collateral (for example, by parties who need to cover short positions) results in a repo rate, referred to as the “specials rate,” that may be significantly lower than the general collateral repo rate. This lower rate “reflects the general character of special collateral [repo] as a device for borrowing and lending securities” (Fleming and Garbade 2002). In other words, the need of lenders for specific collateral that is in short supply will cause borrowers (lenders) to demand (offer) a lower repo rate, provided the counterparty pledges the required collateral.

<sup>11</sup> The prevalence of Treasury fails indicates that collateral pledged is not perfectly fungible, and thus, substitution of collateral pledged is problematic.

## CURRENT ACCOUNTING FOR REPURCHASE TRANSACTIONS

### Current Accounting for Repos

Accounting for repos under U.S. GAAP is primarily regulated by SFAS140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, and SFAS166, *Accounting for Transfers of Financial Assets—An Amendment to SFAS140*. Under both standards, it is the party having control of the financial asset that must recognize the asset in its financial statements.

In this respect, §9 of SFAS140 (FASB 2000) as amended by SFAS166 (FASB 2009) maintains that the transferor (S) has surrendered control if all the following conditions are met:

- (a) The transferred financial assets have been isolated from S. This is achieved if the financial assets are put beyond the reach of S, its creditors, or agents acting on its behalf, even in case of bankruptcy or receivership.
- (b) Each transferee (P) “has the right to pledge or exchange the assets it received and no condition both constrains the transferee from taking advantage of its right to pledge or exchange and provides more than a trivial benefit to the transferor.”
- (c) S does not maintain effective control over the transferred financial assets. “Examples of a transferor’s effective control over the transferred financial assets include, but are not limited to: (a) an agreement that both entitles and obligates the transferor to repurchase or redeem them before their maturity; (b) an agreement that provides the transferor with both unilateral ability to cause the holder to return specific financial assets and a more-than-trivial benefit attributable to that ability other than through a cleanup call; or (c) an agreement that permits the transferee to require the transferor to repurchase the transferred financial assets at a price that is so favorable to the transferee that it is probable that the transferee will require the transferor to repurchase them.”

SFAS140 §47 provides that effective control on the transferred assets is maintained in an agreement that both entitles and obligates S to repurchase the transferred assets from P, when all the following conditions are satisfied:

1. The financial assets to be repurchased are the same or substantially the same as those transferred. For the financial assets to be the same or substantially the same, they must have “all of the following characteristics:
  - (a) The same primary obligor;
  - (b) Identical form and type so as to provide the same risks and rights;
  - (c) The same maturity;
  - (d) Identical contractual interest rates;
  - (e) Similar assets as collateral;
  - (f) The same aggregate unpaid principal amount or principal amounts within accepted ‘good delivery’ standards for the type of security involved.”
2. S is able to repurchase or redeem the transferred financial assets on substantially the agreed terms. This is achieved if at all times during the contract S has “obtained cash or other collateral sufficient to fund substantially all of the cost of purchasing replacement financial assets from others.” Professional judgment is required to interpret “substantially all,” however, §218 provides that “arrangements to purchase or lend readily obtainable securities with as much as 98 percent collateralization . . . valued daily and adjusted up or down frequently for changes in the market price of the security transferred and with clear powers to use that collateral quickly in the event of default, typically fall within that guideline.” As

discussed further later, this criterion was withdrawn by the Financial Accounting Standards Board (hereinafter FASB) through the publication of the Accounting Standards Update No. 2011-03 (FASB 2011a).

3. The agreement is to repurchase or redeem the transferred financial assets before their maturity at a fixed or determinable price.
4. “The agreement is entered into contemporaneously with or in contemplation of the transfer.”

Most repurchase agreements currently fail to satisfy these criteria for accounting as sales, and thus, are accounted for as secured borrowings. §12 provides that when accounting for repurchase agreements as secured borrowings, S shall continue to report the transferred financial assets in its statement of financial position with no change in their measurement. As shown in Figure 3, when accounting for repos as secured borrowings, it is only journal entries to account for the transfer of funds from one party to another that are recorded because financial instruments held by P are effectively portrayed as assets of S, even though the legal title has passed to P. Conversely, as shown in Figure 3, when repos satisfy the requirements for accounting as sales, §11 provides that S shall derecognize the asset transferred, recognize and measure at fair value any assets obtained and liabilities incurred in the sale, and recognize in earnings any gain or loss on the sale.

The liability created on the balance sheet of S when accounting for repos as secured borrowings reflects the funds to be repaid (including interest), and such value will not fluctuate with changes in the fair value of the securities transferred under agreements to repurchase. Conversely, when accounting for repos as sales, changes in the fair value of the securities transferred under agreements to repurchase will give rise to changes in the value of the forward asset. Any changes in the value of the forward will be recognized as a gain/loss in the income statement.

### Lehman Brothers Accounting for Repurchase Agreements

Accounting for repos was put in the limelight after the U.S. court appointed examiner criticized the now-defunct investment bank, Lehman Brothers, for undertaking accounting arbitrage so as to portray a favorable picture of its financial position (Reuters 2010). By undertaking repos with deliberately high haircuts, Lehman Brothers took advantage of current regulations set out in §218 of SFAS140 and accounted for such transactions as sales. Due to haircuts as high as 5 percent (Repo 105) and 8 percent (Repo 108), it became increasingly difficult to ascertain that the transferor (Lehman Brothers) retained the ability to repurchase the transferred financial assets on substantially the agreed terms, and thus effective control of the financial assets transferred was deemed lost by the transferor.

By characterizing the Repo 105 as sales, Lehman Brothers was able to reduce its debt by \$38.6 billion in the fourth quarter of 2007 and by around \$50 million in each of the first two quarters of 2008 (Skeel and Jackson 2011). Had Lehman Brothers accounted for these transactions as secured borrowings instead of sales, it would have retained the financial assets transferred on its balance sheet, recognizing the cash transferred and, also, the corresponding short-term liability payable to its counterparty, in its statement of financial position. The use of funds received by the counterparty to pay other short-term debt would have had the effect of reinstating the balance sheet as prior to the undertaking of the repos. Given this, had Lehman Brothers been required to account for Repo 105 and Repo 108 transactions as secured loans, no reduction of reported debt would have taken place (Pounder 2011).

As a result of the revelations of Lehman’s accounting arbitrage, in late March 2010, the Securities and Exchange Commission (SEC) sent a “Dear CFO” letter querying several public companies on their accounting for repos (Pounder 2011). Most of the companies questioned claimed that they accounted for such transactions as secured borrowings. Among the exceptions

**FIGURE 3****Journal Entries Showing the Accounting for the Opening Leg of a Repurchase Transaction**

## Accounting for Repurchase Transactions as Secured Borrowings (Opening Leg)

<i>Transferor</i>		\$ million
Debit	Current Asset: Cash a/c	100
Debit	Income Statement: Expense on federal funds purchased and securities sold under agreements to repurchase	1.5
Credit	Current Liabilities: Federal funds purchased and securities sold under agreements to repurchase	101.5
<i>Transferee</i>		
Debit	Current Assets: Federal funds sold and securities purchased under agreements to resell	101.5
Credit	Income Statement: Income on federal funds sold and securities purchased under agreements to resell	1.5
Credit	Current Asset: Cash a/c	100

## Accounting for Repurchase Transactions as Sales (Opening Leg)

<i>Transferor</i>		\$ million
Debit	Current Asset: Cash a/c	100
Debit	Forward Asset	2
Credit	Available for sale securities	99
Credit	Income Statement: Gain on sale of financial assets	3
<i>Transferee</i>		
Debit	Available for sale securities	102
Credit	Current Asset: Cash a/c	100
Credit	Forward Liability	2

In this hypothetical example, financial assets recognized at \$99 million with a fair value of \$102 million are transferred to the transferee for \$100 million in cash, implying a haircut of \$2 million. The transferor is obliged to repurchase the financial assets transferred, for \$101.5 million in six months' time. Thus, the repo rate applied in this transaction is 3 percent pa. Under the sales approach, the transferor recognizes a forward asset, which on the opening leg of the transaction is equal to the value of the haircut applied. Given that the value of the financial assets transferred may change during the repo term, the values of both the forward asset and the forward liability need to be periodically reviewed to ensure that their value reflects the difference between the value of securities transferred and funds transferred on the opening leg of the transaction. The gain on the sale of financial assets recognized by the transferor of \$3 million relates to the difference between the fair value and recognized value of the assets transferred.

were Citigroup, which claimed that they accounted an average of \$5.4 billion in repos as sales each quarter between 2007 and 2009, and AIG, which claimed that it was forced to account for some repos as sales because during the financial turmoil of the 2007–2008 financial crisis, it undertook certain transactions that did not satisfy the requirements set out in §218 (Christodoulou 2010).

In response to possible inconsistencies in the accounting for repos on November 3, 2010, FASB issued a proposed accounting standards update, *Transfers and Servicing (Topic 860): Reconsideration of Effective Control for Repurchase Agreements*. Under this amendment, FASB proposed to remove from the assessment of effective control “the criterion requiring the transferor to have the ability to repurchase or redeem the financial assets on substantially the agreed terms; even in the event of default by the transferee” (FASB 2010a). The purpose of this proposed change was to remove the loophole through which Lehman was able to account for repos as sales. Moreover, in the FASB meeting held on March 22, 2011, FASB affirmed that all firms would be expected to apply the revised guidelines prospectively as from December 15, 2011 (FASB 2011b). The Accounting Standards Update was subsequently issued at the end of April 2011 (FASB 2011a).

On its part, the SEC on September 17, 2010, issued Release 33-9143, *Short-Term Borrowings Disclosure*, with the main objective of increasing disclosure on short-term borrowings in light of the possible large fluctuations of such borrowings at quarter-end. Among other disclosures, registrants will be required to calculate and report “maximum amounts outstanding and average amounts outstanding during the reporting period” (SEC 2010). Interestingly, the SEC has not prohibited transactions similar to Repo 105 but has sought to address the problem by mandating additional disclosures for such transactions (Pounder 2011).

These responses by U.S. standard setters have been mirrored by the International Accounting Standards Board (IASB). In the Derecognition Exposure Draft published in April 2009, the IASB suggested that the current accounting for repurchase transactions may be suboptimal (IASB 2009a, 71). In the October 2009 Staff Paper, the IASB Staff discussed its motivations for suggesting to the Board that “repos should be treated as sales with a forward (derivative) to repurchase the underlying” (IASB 2009b, 15). Following the October IASB meeting in which “some Board members expressed the view that not all repos are sale agreements, but not all are financing agreements” (IASB 2010c), in the February 2010 Staff Paper, the IASB Staff discussed different accounting methods that can be used to account for repos<sup>12</sup> (IASB 2010c). In the February 2010 IASB meeting, a majority voted in favor of the effective control approach, thus confirming the current accounting for repos as collateralized loans. The decision seems to have been primarily motivated by the need to concur with the FASB’s approach (IASB 2010b).<sup>13</sup>

## INADEQUACY OF CURRENT REPO ACCOUNTING

### Opacity in Current Accounting for Repos

The most important deficiency that arises from the current regulations for accounting for repos is that they possibly result in opacity in the firms’ financial statements. Such opacity results from the practice that only the transfer of funds is recorded in the statement of financial position of

<sup>12</sup> The accounting methods discussed were the collateralized loan approach (effective control approach), the gross forward presentation approach, and the sales approach (original alternative approach). These accounting methods are discussed in further detail later in this paper.

<sup>13</sup> In October 2010, the IASB issued *Disclosures—Transfers of Financial Assets* (Amendments to IFRS7), which provides for additional disclosures for annual periods beginning on or after July 1, 2011 (IASB 2010a). The additional disclosures seek to enable users of financial statements to understand “the relationship between transferred financial assets that are not derecognized in their entirety and the associated liabilities and to evaluate the nature of, and risk associated with, the entity’s continuing involvement in derecognized financial assets” (IASB 2010a, 6).

the parties. For example, in its annual report for the financial year 2010, Citigroup reports in Note 28 to the financial statements that the fair value of securities transferred under agreements to repurchase, excluding allowable netting, amounted to \$228 billion. These securities, which amounted to around 12 percent of Citigroup total assets, still appeared on the group's consolidated balance sheet (Citigroup Inc. 2011a), and no information is given on the characteristics of the securities transferred under the repurchase agreements.

The current inability of investors to distinguish between securities that have been transferred under agreements to repurchase and securities that are under the firm's control is highlighted in the findings of Bartolini et al. (2011), which document that different types of securities have different collateral values in the Repo GC market. In this regard, Bartolini et al. (2011, 275) report that "holders of Treasury securities enjoy a considerable advantage in that they can borrow at considerably favorable rates relative to holders of securities issued by government-sponsored agencies and mortgage-backed securities."

The debate as to whether repos should be accounted for as sales or as secured loans stems from the difficulty in characterizing such transactions. This can be mainly attributed to the fact that such transactions have elements of both sales and secured loans as both the transferor (S) and the transferee (P) retain continuing rights and obligations in the financial assets transferred (IASB 2009b; FASB 2000). In this regard, Schroeder (2002, 576) suggests that repos are best considered as *sui generis*<sup>14</sup> as they do not fit comfortably "into the traditional categories of sales and security interests." To obtain a clear understanding of the economics of repo transactions, it is important to understand how repos are treated under bankruptcy law.<sup>15</sup>

### Repurchase Agreements Under Bankruptcy Law

Repos are privileged under U.S. bankruptcy law. Among the privileges, such transactions are excluded from the two main pillars of bankruptcy law, "the automatic stay and the trustee's power to avoid preferential transfers" (Skeel and Jackson 2011, 7). The exclusion from automatic stay is of primary significance as it enables the non-defaulting party in a repo to "close out" the agreement upon the other party's default. "Close out" means that the non-defaulting party is able to retain collateral transferred and walk away from the transaction upon the default of the counterparty. As evident in *Calyon New York Branch and Debtors v. American Home Mortgage Corp.*, the Court determined that if a repo satisfies the plain meaning of Section 101(47) of the Bankruptcy Code, it does not have to look further into the contract and determine whether it is a true repo or a disguised secured financing. For transactions that satisfy Section 101(47), the safe harbor provisions which allow for "close out" as laid down in Sections 555 and 559 of the Bankruptcy Code apply (Sontchi 2008; Schweitzer et al. 2008). A recent case, in which the safe harbor provisions were put in practice, occurred when JP Morgan, which often acted as the counterparty in repos with Lehman, froze pledged collateral as Lehman filed for bankruptcy (Skeel and Jackson 2011).

<sup>14</sup> Something is said to be *sui generis* when it is so unique (or so particular) that it is difficult to compare.

<sup>15</sup> A consideration of tax law can also yield useful insights. Repos have been traditionally viewed as secured financing under U.S. tax law (Blasi 2008). In this regard, in *Nebraska Department of Revenue v. Lowenstein*, the U.S. Supreme Court ruled that the income from a reverse repo of federal funds was not eligible for state tax exemption as the taxpayers' profit from the transaction was tied to the cash and not to the securities transferred. Such a characterization of repos has been largely based on the assumption that the lender of funds retains the collateral purchased for the duration of the repo (Chip 2002). Repos with the subsequent rehypothecation or sale of collateral to a third party have not as yet been subject to case law; however, looking at case law for securities lending, one may conclude that the buyer of the financial assets would be viewed as the ultimate owner of the assets for tax purposes. In this regard, Solicitor Memorandum 428122 concluded that "when a borrower of stock sells the stock to a customer, the dividend belongs to the customer, not the borrower or the lender" (Chip 2002).

The exemptions given to repos under the bankruptcy law distinguish such transactions from other types of secured borrowings and make them more akin to sale transactions. Such characterization is of utmost importance as “the effects of characterizing a repo as a security interest would be disastrous to the multi-trillion dollar repo market” (Schroeder 2002).

### Accounting for Repo Transactions and the FASB Conceptual Framework

The traditional view of repos is that such transactions are undertaken as a tool for the provision of short-term financing. While standard setters have recognized that there are various other reasons<sup>16</sup> for undertaking such transactions, we are more interested in studying their economic substance rather than the associated management intentions.

We suggest the current accounting for repos is at odds with the FASB’s Conceptual Framework. In particular, a question may be raised as to whether it possesses the qualitative characteristics laid out in Chapter 3 of the Statement of Financial Accounting Concepts (SFAC) No. 8. Faithful representation and relevance are the two fundamental characteristics that need to be exhibited by financial information for it to be useful.<sup>17</sup> “Neither a faithful representation of an irrelevant phenomenon, nor an unfaithful representation of a relevant phenomenon, helps users make good decisions” (FASB 2010b, 19). To be faithfully represented, the accounting for repo transactions must be “complete, neutral, and free from error” (FASB 2010, 17). FASB has acknowledged that concern arose during the 2007–2008 financial crisis as to whether current accounting for repos provides all of the information necessary for the user to understand the economic substance of repo transactions (FASB 2010, 18).

Moreover, a question may also be raised as to whether the collateral, which under current regulations is shown as an asset on the statement of financial position of the transferor, satisfies the definition of an asset as laid out in SFAC No. 6, which sets out the three characteristics required for an item to be recognized as an asset: “(a) it embodies a probable future benefit that involves a capacity, single or in combination with other assets, to contribute directly or indirectly to future net cash flows, (b) a particular entity can obtain the benefit and control others’ access to it, and (c) the transaction or other event giving rise to the entity’s right to or control of the benefit has already occurred” (FASB 2008).

### Repos as Sales versus Repos as Collateralized Borrowings

As in a sale transaction, a secured loan transaction commences with the transfer of rights over an asset from one party to another. In a secured loan transaction, such as a conventional real estate mortgage, limited property interests, known as security interests are transferred from one party to another: “an individual who grants a general security interest in an asset retains possession and use of the asset but pledges to relinquish it upon the occurrence of a contingency—default” (Jackson 2001, 265), and thus retains property rights over the asset transferred. The lender in a conventional

<sup>16</sup> Other reasons for undertaking repos, besides that for the provision of short-term financing, include: (1) repos provide investors with the opportunity to earn returns on otherwise idle financial assets; (2) repos sometimes provide an opportunity to parties to complete delivery in case of a shortfall of a particular asset; (3) repos sometimes provide an opportunity to cover short positions when such financial assets are in short supply; and (4) repos are used by central banks in their monetary policy by injecting or draining liquidity from the banking system. Because no statistics are available as to the motivation(s) for undertaking repo transactions, it is not possible to gauge the fraction of repo transactions motivated from funding needs as opposed to other reasons.

<sup>17</sup> Other qualitative characteristics, referred to in the Conceptual Framework as Enhancing Qualitative Characteristics, are important in enhancing “the usefulness of information that is relevant and faithfully represented” (FASB 2010b). The Enhancing Qualitative Characteristics are comparability, verifiability, timeliness, and understandability.

secured loan transaction does not obtain unencumbered rights to deal in the collateral. The right of the secured party to possess the collateral is conditional on the default of the counterparty, and it is only in such instance that the secured party may have recourse to the pledged collateral to satisfy the unfulfilled obligation. Moreover, should the pledged collateral realize funds in excess of the unfulfilled obligations, such excess funds would have to be transferred to the estate of the defaulter. Conversely, should the funds realized fall short of satisfying the unfulfilled obligation, the secured party may (in some jurisdictions) have recourse to the defaulters' estate for the shortfall, with the same rights and obligations as other unsecured creditors to the estate. In such a scenario, it is clear that the pledged collateral satisfies the requirements of SFAC6 for continued recognition of an asset by the transferor of security interests.

In contrast, in a standard repo, interests over and above security interests are transferred from one party to another. Most importantly, the transferee (P) has unencumbered control and possession rights over the asset transferred. Given this, P may sell or otherwise trade in the asset purchased so as to earn returns independently from the original repurchase agreement. In this regard, the obligations laid down by the repurchase agreement on P are not restrictions regarding reselling and further transferring the financial assets originally transferred, but rather to impose an obligation to deliver to the transferor (S) financial assets, which are "substantially the same" as the assets originally transferred. Moreover, P is not required to account to S, or else to transfer to S any profits or losses realized in the rehypothecation or sale of the assets originally transferred. In addition, and possibly most importantly, P is not required to retain possession of the original assets transferred or "substantially the same" assets for the benefit of S for the duration of the repo.

The unencumbered right of P to dispose of the transferred financial asset renders repos inconsistent with the characterization of such transactions as secured loans. One of the minimum requirements for a secured loan, namely that P retains a security interest for the duration of the secured loan, is not satisfied once P sells the pledged asset to a third party. In a sale to a third party, the entire property interests of P pass to the third party, resulting in both parties to the repurchase agreement having no rights over the transferred asset. In this regard, the unencumbered right to rehypothecate or sell the transferred collateral makes repos more akin to sales than secured loans.

A repo, unlike a secured loan, exposes both parties involved in the transaction to counterparty risk. In a secured loan transaction, the party lending the funds is unilaterally exposed to the credit risk of the borrower, and thus collateral is pledged so as to mitigate this risk. In a repo, there is a two-sided credit risk, where P is exposed to the credit risk that S will not honor its obligations, in the event that the value of collateral decreases below the value of funds transferred, and S is exposed to the credit risk that P will not honor its obligations when the value of collateral increases above the value of funds transferred. As it had become apparent from the Drysdale failure in 1982, in which "it was quickly evident that firms that had lent securities to Drysdale were inadequately margined and were going to be left with far less cash than the replacement cost of their securities" (Garbade 2006), both parties should (and indeed generally do) exercise extreme care in choosing the counterparties with whom to enter into a repurchase agreement.

Further inconsistencies in the characterization of repos as secured loans arise from the economic exposure of the parties to the collateral pledged and the instance at which the liability is extinguished. In a repo where the asset transferred between the parties is subsequently transferred to a third party through a sale or rehypothecation, the transferee (P) is exposed to the risk that the price of the asset rises, and a holding loss is incurred in acquiring an equivalent asset so as to honor its obligations under the repurchase agreement. Conversely, in a conventional secured loan transaction (e.g., a mortgage), the lender of funds does not have the right to deal in the collateral pledged; it is only the transferor who is exposed to economic risks attached to the asset. Under a secured loan transaction, the borrower of funds retains the valid obligation to repay the lender throughout the

duration of the contract. However, in a repurchase agreement, the transferor (S) is not required to repay P until the end of the repurchase agreement, at which point S has the obligation of purchasing the assets originally transferred for an agreed sum. "The repo seller's obligation to tender payment under ... [the repo agreement] ... is conditioned on the repo buyer's tender of delivery of the security specified in the repo agreement" (Schroeder 2002, 587). Throughout the duration of the repo, the counterparties are just parties to a forward contract, and S is not obliged to make any payment to P unless at the end of the repo P tenders S the original or "equivalent" assets transferred in the first leg of the transaction (IASB 2009b).

Furthermore, given that in a secured loan the borrower retains most of the property rights of the collateral, the borrower is directly entitled to any income arising from the pledged asset. In a repo, S is entitled to the equivalent of the income arising from the pledged asset and not to a direct right to the income itself. Thus, in the case of interest income, the entity issuing the underlying asset will issue such interest to P, and P is subsequently obliged to transfer this interest to S. Moreover, in the case of rehypothecation or sale of the underlying asset to a third party, P is required to "manufacture" any income arising from the asset and transfer such income to S (IASB 2009b).

Taking this into account, it is evident that, in a repo, P has a higher degree of control over the transferred assets than S. On this reading, the asset transferred fails the requirements laid down in SFAC6 for recognition of an asset in the S's statement of the financial position. Given this, it seems that from a purely control rights perspective,<sup>18</sup> the current accounting for repos not only possibly increases financial statement opaqueness but also incorrectly characterizes repos as collateralized obligations.

### ALTERNATIVE METHOD OF ACCOUNTING FOR REPOS

Various critics of the sales approach have argued that sale accounting fails to account for the financing motivation for entering into a repo (IASB 2010c). The obligation to repurchase the assets transferred is effectively rendered off-balance sheet.

An alternative approach to sales accounting would be to disentangle the accounting for the sale of collateral from the financing transaction. In this approach, a gross-up presentation of the forward contract is required, where the asset is derecognized by the S, an asset is recognized showing the right to receive the asset at a future date, and a liability is recognized showing the obligation to pay cash at a future date. Conversely, as shown from the journal entries in Figure 4, P recognizes the asset acquired, an asset to show the right to receive cash at a future date, and a liability to show the obligation to tender financial assets in the future (Chip 2002; IASB 2010c).

This approach has the major advantage of showing a comprehensive picture of the economic substance of undertaking a repo on the statement of the financial position. Nonetheless, it has two disadvantages: it grosses up the statement of financial position, thereby possibly hindering readability; and should any of the disaggregated parts of the forward contract be measured at amortized cost, the net position would no longer faithfully represent the fair value of the forward contract. The latter disadvantage could be dealt with by initially and subsequently measuring the disaggregated parts of the forward contract at fair value, thus maintaining a net position equal to the fair value of the forward contract (IASB 2010c).

<sup>18</sup> The intentions of the parties in the transaction are independent of the actual control rights over the collateral that is actually transferred from one party to the other. Thus, while in many instances the intention of the parties is to undertake a purely short-term funding transaction, the legal implications of the transfer of control is not consistent with this interpretation.

**FIGURE 4**  
**Journal Entries Showing the Opening Leg of a Repurchase Agreement Using the Gross Forward Approach**

Gross Forward Approach (Opening Leg)

<i>Transferor</i>		\$ million
Debit	Current Asset: Cash a/c	100
Debit	Receivables (right to receive financial assets)	102
Debit	Income Statement: Expense on securities sold under agreements to repurchase	1.5
Credit	Available for sale securities	99
Credit	Short-term borrowings (obligation to pay cash)	101.5
Credit	Gain on sale of asset	3
<i>Transferee</i>		
Debit	Available for sale securities	102
Debit	Receivables (right to receive cash)	101.5
Credit	Current Asset: Cash a/c	100
Credit	Short-term borrowings (obligation to return financial asset)	102
Credit	Income Statement: Income on securities purchased under agreements to resell	1.5

In this approach, the transfer of funds is disentangled from the transfer of financial assets, and both transfers are accounted for separately. In this example, financial assets recognized at \$99 million with a fair value of \$102 million are transferred to the transferee for \$100 million in cash, implying a haircut of \$2 million. Repo interest of 3 percent pa is applied in the transaction, thus, obliging the transferor to repurchase the financial assets transferred, for \$101.5 million in six months' time. The gain on the sale of financial assets recognized by the transferor of \$3 million relates to the difference between the fair value and recognized value of the assets transferred.

### THE IMPACT OF A CHANGE IN ACCOUNTING FOR REPOS

After having discussed different methods of accounting for repos, it is worth analyzing the impact such methods would have on the statement of financial position. In this analysis, we are using the financial statements of a major player in the repo market, Citigroup Inc., for the financial year ending December 31, 2010. In the next discussion, it is assumed that the underlying financial assets are recognized in the financial statements at their fair value and thus no gain or loss arises on derecognition of collateral transferred. Moreover, to simplify the analysis, it is assumed that, under the three methods discussed, an equal amount of repo interest is earned and paid.<sup>19</sup>

#### Current Accounting for Repurchase Transactions

In accordance with the U.S. GAAP, Citigroup reports that “securities sold under agreements to repurchase (repos) and securities purchased under agreements to resell (reverse repos) generally do

<sup>19</sup> The fact that we have to make such assumptions itself demonstrates that current disclosures do not fully allow the reader to determine the underlying economics of the transactions.

not constitute a sale for accounting purposes of the underlying securities, and so are treated as collateralized financing transactions” (Citigroup Inc. 2011b, 141). As discussed previously, when repos are accounted for as collateralized financing, the party undertaking the repo recognizes the cash received and a liability in respect of the obligation to return cash received. Conversely, the counterparty derecognizes cash transferred and recognizes an asset in the form of a cash receivable. In this regard, as shown in Figure 5, Citigroup Inc. reports an asset of \$246,717 million in federal funds sold and securities borrowed or purchased under agreements to resell and a liability of \$189,558 million in federal funds purchased and securities loaned or sold under agreements to repurchase (Citigroup Inc. 2011b, 132–133). A breakdown of these figures reveals that securities purchased under agreements to resell amounted to \$129,918 million, while securities sold under agreements to repurchase totaled \$160,598 million (Citigroup Inc. 2011b, 184). Moreover, Citigroup reports leverage, calculated as total Tier 1 Capital (\$126,193 million) divided by total assets (\$1,913,902 million) of 6.6 percent (Citigroup Inc. 2011b).

### Proposed Method of Accounting for Repurchase Transactions

Under the method of accounting for repos proposed in this paper, all repos would be accounted for as sales. This entails derecognizing financial assets transferred and recognizing a forward asset. Conversely, when Citigroup enters into a reverse repo, it recognizes the asset purchased and recognizes a forward liability. An important element in accounting for repos using the sales method is the haircut applied to the collateral submitted since this will determine the value of the forward on the opening leg of the transaction. Companies are not required to publicly disclose haircuts applied, and no statistics in this regard are available for 2010. Nonetheless, as shown in Figure 6, a rough measure of Citigroup’s average percentage haircut can be calculated by dividing the difference between the value of repurchase agreements undertaken (\$215,280 million) and the fair value of assets pledged under the repurchase agreements undertaken (\$227,967 million; Citigroup Inc. 2011b, 257) by the value of the repurchase agreements (\$215,280 million). Both values exclude the effect of netting and, as shown in Figure 6, result in a haircut of 5.89 percent.<sup>20</sup> Assuming that the haircut of 5.89 percent was also used for securities purchased under agreements to resell, the fair value of securities purchased under agreements to resell would amount to \$195,479 million excluding the possible impact of netting.

As can be seen from Figure 7, the use of sale accounting would result in the derecognition of \$227,967 million trading account assets sold under repurchase agreements and in the recognition of \$195,479 million trading account assets purchased under reverse repurchase agreements. Moreover, it has resulted in the recognition of both a forward asset and a forward liability in respect to the differences between the fair value of assets transferred and actual cash transferred. The forward asset of \$12,687 million is calculated as the fair value of securities sold under agreements to repurchase (\$227,967 million) less the actual value of funds transferred (\$215,280 million). The forward liability of \$10,879 million is calculated as the difference between the fair value of securities purchased under agreements to resell (\$195,479 million) and the actual cash transferred to the counterparty (\$184,600 million). The value of both the forward asset and the forward liability will change with any change in the fair value of securities transferred under the repo and reverse repo transaction, respectively. Finally, the use of this method of accounting for repos has resulted in an increase in leverage to 7.2 percent.

<sup>20</sup> This is a rough estimate of the average haircut for repurchase transactions undertaken by Citigroup for the financial year 2010. This estimate is likely to be an overestimate of the actual average haircut and is calculated from publicly available information published in Citigroup’s Annual Report for the financial year 2010.

**FIGURE 5**  
**Consolidated Balance Sheet for Citigroup Inc. as of December 31, 2010, Under the Current Method of Accounting for Repurchase Transactions**

Current Method of Accounting for Repurchase Transactions: Collateralized Financing Transactions

Citigroup Inc.		2010	2010
Consolidated Balance Sheet as at December, 31		\$	\$
<i>In millions of dollars</i>			
<b>Assets</b>			
Cash and due from banks		27,972	844,968
Deposits with banks		162,437	478
Federal funds sold in domestic offices	227		28,482
Deposits paid for securities borrowed	116,572		<u>160,598</u>
<i>Securities purchased under agreements to resell</i>			
Federal funds sold and securities borrowed or purchased under agreements to resell	129,918		189,558
Brokerage receivables	246,717		51,749
<i>Trading account assets</i>	31,213		129,054
Investments	317,272		78,790
Total Loans (net)	318,164		381,183
Goodwill	608,139		72,811
Intangible assets	26,152		<u>1,748,113</u>
Mortgage servicing rights	7,504		
Other assets	7,504		165,789
<b>Total Assets</b>		<u>1,633,778</u>	<u>1,913,902</u>
<b>Liabilities</b>			
Brokerage payables			189,558
Trading account liabilities			51,749
Short-term borrowings			129,054
Long-term debt			78,790
Other liabilities			381,183
<b>Total Liabilities</b>			<u>728,113</u>
<b>Total Equity</b>			165,789
<b>Total Liabilities and Equity</b>			<u>1,913,902</u>
<b>Leverage</b>			6.6%

Leverage is calculated as total Tier 1 capital (\$126,193 million) divided by total assets. (Sources: Citigroup Inc. Form 10-K; Citigroup Inc. Form FY 9-C.)

**FIGURE 6**  
**Method Used to Calculate Fair Value of Securities Purchased Under Agreements to Resell**  
**and Fair Value of Securities Sold Under Agreements to Repurchase**

Calculating Citigroup's Haircut

	Ref.	\$ millions
Step 1		
Securities purchased under agreements to resell before netting	a	184,600
Securities purchased under agreements to resell after netting	b	<u>129,918</u>
Netting	c(a-b)	54,682
Step 2		
Securities sold under agreements to repurchase after netting	d	<u>160,598</u>
Securities sold under agreements to repurchase before netting	e(c+d)	215,280
Fair value of securities sold under agreements to repurchase before netting	f	227,967
Haircut (%)	g((f-e)/e)	5.89%
Step 3		
Securities purchased under agreements to resell before netting	a	<u>184,600</u>
Fair value of securities purchased under agreements to resell before netting	h(a*(1+g))	195,479
Securities sold under agreements to repurchase before netting	e	215,280
Fair value of securities sold under agreements to repurchase before netting	f	227,967

Figures a, b, d, and f were derived from the Citigroup 2010 Annual Report.

### Alternative Method of Accounting for Repurchase Transactions

The alternative method of accounting for repos is the gross forward approach, whereby, the repo is separated into two parts. The first part involves the accounting for the transfer of cash while the second part involves the accounting for the transfer of financial assets. As can be seen from Figure 7, this approach grosses up the balance sheet of both transferee and transferor and leads to a reduction in leverage to 5.8 percent before accounting for any allowable netting.

### ADDITIONAL DISCLOSURES

An alternative to changing the current accounting for repos would be to provide additional disclosures, which would provide the user with the information required to account for repo transactions under the different accounting methods mentioned earlier in the paper. After all, we have shown via our Citigroup example that it is possible (albeit with some guesswork) for the user to restate the numbers in various ways. We have argued that the economics are such that the transactions really are sales plus forwards. For the user to be able to understand this properly and to be able to analyze the impact on the financial statements had repos been accounted for using the



previously mentioned alternative accounting methods, the following subsections would at a minimum need to be provided.

### **Type and Amount of Financial Assets Transferred**

Given that each time a firm undertakes a repo transaction it is transferring control over the collateral to the counterparty, thus exposing itself to the risk of a “repo fail,” it is important for financial statement users to have information about the type of collateral transferred. Moreover, given that as demonstrated by [Bartolini et al. \(2011\)](#), different assets have different collateral values, firms should disclose information about the amount of each type (class) of financial assets transferred under repo agreements. Given that possibly the longer the repo term, the higher the counterparty risk, firms should disclose the weighted average repo term for each type of financial assets transferred.

### **Percentage Haircuts Applied**

To safeguard against the risk that the liquidation value of the collateral falls short of the value of funds transferred, the party undertaking a reverse repo usually applies a haircut on the collateral transferred between the parties. The haircut applied is usually expressed as the percentage difference between the funds and the value of the financial instruments transferred in the repo transaction. The magnitude of the haircut applied is largely dependent on the quality of collateral transferred from one party to the other, with the highest haircuts applied to the lowest quality collateral; but it may also be influenced by the credit risk of the counterparty. Banks are not currently required and do not disclose information in their financial statements about haircuts applied. As demonstrated in the Citigroup example, financial statement users have to guess the average haircut applied to an extent. The size of the haircut is important: under the sale accounting approach, it determines the value of the forward asset (forward liability for the party undertaking the reverse repo transaction) at inception of the repo transaction. Given that haircuts will vary from one repo transaction to another, disclosure of the weighted mean haircut applied for each class of financial assets would enable the reader to understand the economic effects of repos.

Additional disclosure is always a possible alternative to changing the recognition rules, but it comes at the cost of posing greater cognitive burdens on possibly less informed users of financial statements. The main justification for resorting to additional disclosure is when there are major anticipated measurement difficulties in improving the measurement criteria. Our suggested approach would require firms to fair value the forward positions. This might impose costly measurement burdens in that both counterparties would periodically need to measure the fair value of collateral transferred so as to be able to ascertain the value of the forward positions. Measuring the value of collateral transferred may be problematic, in particular for collateral in which there is no active market, and contentious, in that both parties need to agree on the value of the collateral so that for each transaction the value of forward asset will equal that of the forward liability.

## **CONCLUSION**

This paper suggests that the current method of accounting for repos is deficient in the sense of ignoring key aspects of the economics of such transactions. Moreover, as shown in the case of Lehman Brothers, under current regulations it may be relatively easy for a firm to design a repo in such a way to accomplish a preferred accounting treatment. For example, a firm wishing to account for a repo as a sale may easily design a bilateral repo with the option not to repurchase the assets should a particular highly unlikely event occur. Such an option would make the repo eligible for

sale accounting under SFAS140. In this regard, a standard uniform method of accounting for all repos would reduce the risk of such accounting arbitrage.

Various factors not considered in this paper have probably played a part in the current position adopted by the standard setters regarding repos, including the drive for convergence in accounting standards and the fact that participants in the repo market may be “unaccustomed to treating [repurchase] transactions as sales, and a change to sale treatment would have a substantial impact on their reported financial position” (FASB 2000). It would be a pity if the concerns associated with the circumstances surrounding Lehman’s use of Repo 105 prevented proper consideration being given to the possibility of treating all repos in the same manner, one that will reflect the key economic and legal features of repurchase agreements. As lawyers say, hard cases make bad law. But in this case, the Lehman’s accounting for its Repo 105 transactions does substantially reflect the economics and legal considerations involved, that is, a sale of an asset with an associated obligation to return a substantially similar asset at the end of the agreement. An alternative approach would be to stick with the current measurement rules but provide additional disclosures. We have offered some tentative suggestions as to what kinds of additional disclosures are needed.

## REFERENCES

- Allen, L., S. Peristiani, and A. Saunders. 1989. Bank size, collateral, and net purchase behavior in the federal funds market: Empirical evidence. *The Journal of Business* 62 (4): 501–515.
- Bartolini, L., S. Hilton, S. Sundaresan, and C. Tonetti. 2011. Collateral values by asset class: Evidence from primary securities dealers. *Review of Financial Studies* 24 (1): 248–278.
- Blasi, R. W. 2008. *U.S. Master Bank Tax Guide (2009)*. New York, NY: CCH Incorporated.
- Bottazzi, J. M., J. Luque, and M. R. Pascoa. 2011. Securities market theory: Possession, repo and rehypothecation. *Journal of Economic Theory* 147 (2): 477–500.
- Bowsher, N. N. 1979. Repurchase agreements. *Federal Reserve Bank of St. Louis Review* (September): 17–22.
- Chip, W. W. 2002. Are repos really loans? *Tax Notes* 95 (7): 1057–1064.
- Christodoulou, M. 2010. Do repos have a future? *Accountancy Age*. Available at: <http://www.accountancyage.com/aa/analysis/1808160/do-repos-future>
- Citigroup Inc. 2011a. *Citi 2010 Annual Report*. Available at: [http://www.citigroup.com/citi/fin/data/ar10c\\_en.pdf?ieNocache=442](http://www.citigroup.com/citi/fin/data/ar10c_en.pdf?ieNocache=442)
- Citigroup Inc. 2011b. *Form 10-K Annual Report Pursuant to Section 13 or 15(d) of The Securities Exchange Act of 1934 for the Fiscal Year ended December 31, 2010*, Available at: [http://www.sec.gov/Archives/edgar/data/831001/000120677411000316/citigroup\\_10k.htm](http://www.sec.gov/Archives/edgar/data/831001/000120677411000316/citigroup_10k.htm)
- Clark, A. 2010. Lehman Brothers: Repo 105 and other accounting tricks. *Business.guardian.co.uk*. Available at: <http://www.guardian.co.uk/business/2010/mar/12/lehman-brothers-repo-105-enron>
- Demiralp, S., B. Preslopsky, and W. Whitesell. 2006. Overnight interbank loan markets. *Journal of Economics and Business* 58 (1): 67–83.
- Duffie, D. 1996. Special repo rates. *The Journal of Finance* 51 (2): 493–526.
- Dunne, P. G., M. J. Fleming, and A. Zholos. 2011. Repo market microstructure in unusual monetary policy conditions. Research Technical Papers. Available at: [http://www.newyorkfed.org/research/conference/2010/cb/Dunne\\_Fleming\\_Zholos1.pdf](http://www.newyorkfed.org/research/conference/2010/cb/Dunne_Fleming_Zholos1.pdf)
- Ewerhart, C., and J. Tapking. 2008. *Repo Markets, Counterparty Risk, and the 2007/2008 Liquidity Crisis*. Frankfurt, Germany: European Central Bank.
- Financial Accounting Standards Board (FASB). 2000. *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*. Norwalk, CT: FASB.
- Financial Accounting Standards Board (FASB). 2008. *Elements of Financial Statements a replacement of FASB Concepts Statement No. 3. (incorporating an amendment of FASB Concepts Statement No. 2)*. Statement of Financial Accounting Concepts No. 6. Norwalk, CT: FASB.

- Financial Accounting Standards Board (FASB). 2009. *Accounting for Transfers of Financial Assets an Amendment of FASB Statement No. 140*. Statement of Financial Accounting Standards No. 166. Norwalk, CT: FASB.
- Financial Accounting Standards Board (FASB). 2010a. *Exposure Draft: Transfers and Servicing (Topic 860): Reconsideration of Effective Control for Repurchase Agreements*. Norwalk, CT: FASB.
- Financial Accounting Standards Board (FASB). 2010b. *Conceptual Framework for Financial Reporting*. Statement of Financial Accounting Concepts No. 8. Norwalk, CT: FASB.
- Financial Accounting Standards Board (FASB). 2011a. *Accounting Standards Update: Transfers and Servicing. (Topic 860) Reconsideration of Effective Control for Repurchase Agreements*. Norwalk, CT: FASB.
- Financial Accounting Standards Board (FASB). 2011b. *Transfers and Servicing—Repurchase Agreements*. Norwalk, CT: FASB.
- Fleming, M. J., and K. D. Garbade. 2002. When the back office moved to the front burner: Settlement fails in the Treasury Market after 9/11. *Federal Reserve Bank of New York Economic Policy Review* 8 (2).
- Fleming, M. J., W. B. Hrungr, and F. M. Keane. 2009. The term securities lending facility: Origin, design, and effects. *Current Issues in Economics and Finance* 15 (2).
- Fleming, M. J., W. B. Hrungr, and F. M. Keane. 2010. Repo market effects of the term securities lending facility. *Staff Reports* 426.
- Garbade, K. D. 2006. The evolution of repo contracting Conventions in the 1980s. *FRBNY Economic Policy Review* 12 (1): 27–42.
- Gorton, G. 2009. *Information, Liquidity, and the (Ongoing) Panic of 2007*. National Bureau of Economic Research Working Paper Series No. 14649. Available at: <http://www.nber.org/papers/w14649>
- Gorton, G. 2010. E-coli, repo madness, and the financial crisis. *Business Economics* 45 (3): 164–173.
- Gorton, G., and A. Metrick. 2009. Haircuts. *Federal Reserve Bank of St. Louis Review* 92 (6).
- Gorton, G., and A. Metrick. 2011. Securitized banking and the run on repo. *Journal of Financial Economics* (forthcoming).
- Griffiths, M. D., and D. B. Winters. 1997. On a preferred habitat for liquidity at the turn-of-the-year: Evidence from the term-repo market. *Journal of Financial Services Research* 12 (1): 21–38.
- Hördahl, P., and M. R. King. 2008. Developments in repo markets during the financial turmoil. *BIS Quarterly Review* (December 8): 37–53.
- International Accounting Standards Board (IASB). 2009a. *Derecognition Proposed Amendments to IAS 39 and IFRS 7*. Exposure Draft ED/2009/3. London, UK: IASB.
- International Accounting Standards Board (IASB). 2009b. *Staff Paper: Accounting for Repurchase Agreements and Similar Transactions—October 2009*. Available at: <http://www.ifrs.org/Current+Projects/IASB+Projects/Derecognition/Meeting+Summaries+and+Observer+Notes/IASB+October+2009.htm>
- International Accounting Standards Board (IASB). 2010a. *Disclosures—Transfers of Financial Assets Amendments to IFRS 7*. London, UK: IASB.
- International Accounting Standards Board (IASB). 2010b. *IASB February 2010 Discussion*. London, UK: IASB. Available at: <http://media.iasb.org/AP3Derecognition15022010.mp3>
- International Accounting Standards Board (IASB). 2010c. *Staff Paper: Accounting for Repurchase Agreements (Repos) and Similar Transactions—February 2010*. Available at: <http://www.ifrs.org/Current+Projects/IASB+Projects/Derecognition/Meeting+Summaries+and+Observer+Notes/IASB+February+2010.htm>
- Jackson, T. H. 2001. *The Logic and Limits of Bankruptcy Law*. Frederick, MD: Beard Books.
- Johansson, E. 2009. *Property Rights in Investment Securities and the Doctrine of Specificity*. Berlin, Heidelberg, Germany: Springer-Verlag.
- Krishnamurthy, A. 2010. How debt markets have malfunctioned in the crisis. *Journal of Economic Perspectives* 24 (1): 3–28.
- Martin, A., D. Skeie, and E. L. Von Thadden. 2010. *Repo runs*. Staff report, New York, NY: Federal Reserve Bank of New York.

- New York Stock Exchange (NYSE). 2008. *NYSEData.com Factbook: Daily NYSE Group Volume in NYSE Listed*. Available at: [http://www.nyxdata.com/nysedata/asp/factbook/viewer\\_edition.asp?mode=table&key=3002&category=3](http://www.nyxdata.com/nysedata/asp/factbook/viewer_edition.asp?mode=table&key=3002&category=3)
- Ong, K. T., and Yeung, E. Y. 2011. Repos and securities lending: The accounting arbitrage and their role in the global financial crisis. *Capital Markets Law Journal* 6 (1): 92.
- Pounder, B. 2011. One problem, three fixes. *Strategic Finance* 92 (7): 18.
- Reuters. 2010. *IASB official claims IFRS would have stymied Repo 105*. CFOZone. Available at: <http://www.cfozone.com/index.php/Compliance/IASB-official-claims-IFRS-would-have-stymied-Repo-105.html>
- Schroeder, L. J. 2002. A repo opera: How Criimi Mae got repos backwards. *American Bankruptcy Law Journal* 76: 565–622.
- Schweitzer, L., S. Grosshandler, and W. Gao. 2008. Bankruptcy court rules that repurchase agreements involving mortgage loans are safe harbored under the bankruptcy code, but that servicing rights are not. *Journal of Bankruptcy Law* (May/June): 357–360.
- Securities and Exchange Commission (SEC). 2010. *Proposed Rule: Short-Term Borrowings Disclosure*. Available at: <http://www.sec.gov/rules/proposed/2010/33-9143.pdf>
- Securities Industry and Financial Markets Association (SIFMA). 2008. *Research Quarterly*. Available at: <http://www.sifma.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=21475&libID=5641>
- Skeel, D. A., and T. Jackson. 2011. Transaction consistency and the new finance in bankruptcy. *Scholarship at Penn Law* (355).
- Sontchi, J. 2008. *In Re: American Home Mortgage Inc., Et Al*. Washington, DC: U.S. Court of Appeals, Third Circuit.
- Tuckman, B. 2010. *Systemic Risk and the Tri-Party Repo Clearing Banks*. CFS Policy Paper, New York, NY: Center for Financial Stability.
- The World Bank. 2011. *GDP (current US\$)*. Data—Table. Available at: <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>

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