PART 3 **Managing Risk**

إدارة السيولة والتزامات المؤسسات المالية

Ch 5 ( Ch 18 ) ***Liabilty(ies) and Liquidity Management***

(***How can you manage Risk)***

1. ***INTRODUCTION***

Depository institutions as well as life insurance companies are especially exposed

to **liquidity risk** (see Chapter 17). The essential feature of this risk is that an FI’s assets are relatively **illiquid** when liquid claims are suddenly withdrawn (or not renewed). The classic case is a bank run تشغيل البنك in which **depositors** demand **cash** as they withdraw their claims from a bank and the bank is unable to meet those demands because of the relatively illiquid nature of its assets. ***For example***, the bank could have a large portfolio of nonmarketable small business or real estate loans.

**To reduce the risk of a liquidity crisis**, FIs can insulate their balance sheets from liquidity risk by 1- efficiently managing their **liquid asset positions** or

1. Managing **the liability structure of their portfolios**.

**In reality**, an FI manager can optimize تحسين over both liquid asset and liability structures to insulate the FI against liquidity risk.

This chapter discusses **the various liquid assets and liabilities** an FI might use and the risk-return trade-off across these assets.

يناقش هذا الفصل الأصول والالتزامات السائلة المختلفة التي قد يستخدمها الوسيط المالي والمقايضة(المفاضلة أو الموازنة) بين المخاطر والعائد عبر هذه الأصول.

( زيادة النقدية والحرمان من العائد الخاص بها تحت الأصول مع تخفيض خطر السيولة أم تخفيض النقدية تحت الأصول من اجل الحصول على عائد ولكن مع زيادة خطر السيولة)

التنازل عن ميزة من أجل الحصول على أخرى trade off المقايضة Barter مفاضلة

differentiation

In addition to ensuring that FIs can meet expected and unexpected liability withdrawals, **two additional motives** exist for holding liquid assets:

1. monetary policy implementation تنفيذ السياسة النقدية للبنك المركزى and B- taxation reasons. The chapter concludes with a look at specific issues associated with liability and liquidity risk management in depository institutions, insurance companies, and other FIs.

***اولا***

1. ***LIQUID ASSET MANAGEMENT***

A liquid asset can be turned into cash quickly and at a low transaction cost with

little or no loss in principal value (see the discussion in Chapter 17 on the liquidity

index). Specifically, **a liquid asset** is **traded** in an active market so that even large transactions in that asset do not move the market price or move it very little.

***Good examples of liquid assets*** are newly issued *T-bills*, *T-notes*, and *T-bonds*. The ultimate liquid asset is, of course, cash. While it is obvious that an FI’s liquidity risk can be reduced by holding large amounts of assets such as cash, T-bills, and T-bonds, FIs usually face a return or interest earnings penalty from doing this. Because of their high liquidity and low default risks, such assets often bear low returns that reflect their essentially risk-free nature.

***By contrast***, nonliquid assets often must *promise additional returns* or liquidity risk premiums to compensate an FI for the relative lack of marketability and often greater default risk of the instrument.

Holding relatively *small amounts of liquid assets* exposes an FI to enhanced illiquidity and risk of a bank run. Excessive illiquidity السيولة المفرطة عدم can result in an FI’s inability to meet required payments on liability claims and, at the extreme, in insolvency.

It can even lead to **contagious effects** that negatively impact other FIs (see Chapter 17).

**Consequently**, **Regulators** have often imposed *minimum liquid asset reserve requirements on FIs.* **In general**, these requirements differ in nature and scope for various FIs and even according to country. The requirements depend on the liquidity risk exposure perceived for the FI’s type and other regulatory objectives that relate to minimum liquid asset requirements. *Further*, **regulators** often set minimum liquid asset requirements for at least two other reasons than simply ensuring that FIs can meet expected and unexpected liability withdrawals. The other **two reasons** are

A-monetary policy implementation and B- taxation. We discuss these two reasons next.

***2.1 Monetary Policy Implementation Reasons***

**Many countries** **set** **minimum liquid asset reserve requirements الحد الأدنى لمتطلبات احتياطي الأصول السائلة** to strengthen their monetary policy. Specifically, *setting* ***a minimum ratio of liquid reserve*** *assets to deposits* limits the ability of **depository institutions (DIs)** to expand lending and enhances the central bank’s ability to control the money supply.

A-

A decrease in the reserve requirement ratio means that depository institutions may hold fewer reserves (vault cash plus reserve deposits at the Fed) against their transaction accounts (deposits). Consequently, they are able to lend out a greater percentage of their deposits, thus increasing credit availability in the economy. As

new loans are issued and used to finance consumption and investment expenditures,

some of these funds will return to depository institutions as **new deposits** by those receiving them, in return for supplying consumer and investment goods to bank borrowers. **In turn**, after deducting the appropriate reserve requirement, these new deposits can be used by DIs to create additional loans, and so on. This process continues until the DIs’ deposits have grown sufficiently large that the DI willingly holds its current reserve balance at the new lower reserve ratio. Thus, a decrease in the reserve requirement results in a multiplier effect on the supply of DI deposits and thus the money supply.

B-

***Conversely***, على العكس an increase in the reserve requirement ratio means that depository institutions must hold more reserves against the transaction accounts (deposits) on their balance sheets. Consequently, they are only able to lend out a smaller percentage of their deposits than before, thus decreasing credit availability and lending, and eventually, leading to a multiple contraction in deposits and a decrease in the money supply انكماش متعدد في الودائع وانخفاض في المعروض النقدي. In this context, requiring depository institutions to hold minimum ratios of liquid assets to deposits allows the central bank to gain greater control over deposit growth and thus over the money supply (of which bank deposits are a significant portion) as part of its overall macrocontrol objectives. Appendix 18A to the chapter (located at the book’s Web site, www.mhhe.com/saunders6e ) describes the accounting treatment of the reserve ratio regime imposed by the U.S.

Federal Reserve.

***2.2 Taxation Reasons***

***Another reason*** for minimum requirements on DI liquid asset holdings is to force DIs to invest in government financial claims rather than private sector financial claims. **That is**, a minimum required liquid asset reserve requirement is an indirect way for governments to لجمع ضرائب اضافيهraise additional “taxes” from DIs. While these reserves are not official government taxes, having DIs hold cash in the vault or cash reserves at the central bank (when there is no interest rate compensation paid) requires DIs to transfer a resource to the central bank. **In fact**, the **profitability of many central banks** is contingent on **the size** of the **reserve requirement “tax**,” which can be viewed as the equivalent of a levy ضريبة on DIs under their jurisdiction الاختصاص القضائي. The tax or cost effect of non-interest-bearing reserve requirements is increased if inflation erodes the purchasing power value of those balances.

**Reserve requirement “tax**”: The cost of holding reserves that pay no interest at the central bank. This cost is increased further if inflation erodes the purchasing power value of these reserve balances

**- تكوين محفظة الأصول السائلة -**

1. ***THE COMPOSITION OF THE LIQUID ASSET PORTFOLIO***

The composition of an FI’s liquid asset portfolio, especially among *cash* and *government securities*, is determined **partly by** earnings considerations **اعتبارات أو دراسات الأرباح**and **partly by** the type of minimum liquid asset reserve requirements the central bank imposes.

***In many countries***, such as the **United Kingdom**, ***reserve ratios*** have historically been imposed to encompass لتشمل كل both cash and liquid government securities such as T-bills. Thus, **a 20 percent** liquid assets ratio requires a DI to hold $1 of cash plus government securities for every $5 of assets. Many states in the United States impose *liquid asset ratios* on life insurance companies that require minimum cash and government securities holdings in their balance sheets.

**By contrast**, the minimum liquid asset requirements on DIs in the **United States** have been cash based and have excluded government securities. ***As a result***, government securities are less useful because they are not counted as part of reserves held by DIs and at the same time yield lower promised returns than loans.

Nevertheless, **many DIs** view **government securities holdings** as performing a useful **secondary or buffer reserve** function. In times of a liquidity crisis, when significant drains on cash reserves occur, these **securities** can be turned into **cash quickly** and with very little loss of principal value because of the deep nature of the markets in which these assets are traded.

**Liquid assets ratio:** A minimum ratio of liquid assets to total assets set by the central bank.

**Secondary or buffer reserves:** Non reserve assets that can be quickly turned into cash.

1. ***RETURN-RISK TRADE-OFF FOR LIQUID ASSETS***

In optimizing its holdings of liquid assets, an FI must trade the benefit of **cash** immediacy for lower returns. In addition, **the FI manager’s** **choice** is one of constrained optimization in the sense that liquid asset reserve requirements imposed by regulators **set a minimum bound** on the level to which liquid reserve assets can fall on the balance sheet. Thus, an FI facing little risk of liquidity withdrawals and holding only a small amount of liquid assets for prudential reasons أسباب احترازية finds that it is forced to hold more than is privately optimal as a result of minimum reserve restrictions imposed by regulators.

***مثال هام***

We can calculate the ***cash reserve*** *by*  ***an example*** *in U.S.* ***Depository Institutions*** *as follows:-*

***An example***

***The Liquid Asset Reserve Management Problem for U.S. Depository Institutions***

**This section** examines **the risk-return trade-off in running a liquid asset position and the constraints imposed on this position**. We present a detailed example of **U.S.** **DIs liquidity management** under the current minimum reserve requirements imposed by the Federal Reserve. However, **many of the issues** and trade-offs are readily generalizable to any FI facing liability withdrawal risk under conditions in which **regulators** impose ***minimum liquid asset reserve ratios*.**

**The issues** involved in **the optimal management of a liquid asset portfolio** are illustrated by the problems faced by ***the money desk manager*** in charge of a U.S. DI’s reserve position. In the context of U.S. DI regulation, we concentrate on a **DI’s management of its cash reserves** , defined as **vault cash** (currency and coin used to meet depositor withdrawals) and cash deposits held by the DI at the Federal Reserve.

**As of November 2006**, in accordance with **Regulation D of the Securities Act** of 1933, **depository institutions** in the United States are required to hold the following “***target” minimum cash reserves*** against **net transaction accounts**: حسابات المعاملات الصافية:

قيود اجبارية على البنوك لمعرفة ***minimum cash reserves target المقابل ل* net transaction accounts**

<$8.5million 0%

$8.5million - $45.8million 3 **cash reserves = vault cash**

>$45.8million 10

In order to **calculate** the DIs ***cash reserve*** ,we have to understand the following points

**4.1 Transaction accounts** include all deposits on which **an account holder** may make withdrawals by negotiable or transferable instruments and may make more than three monthly telephone or preauthorized fund transfers for the purpose of making payments to third parties (i.e., demand deposits, NOW accounts, and share draft accounts—offered by credit unions). Transaction account balances are reduced by demand balances due from U.S. depository institutions and cash items in process of collection.

\*\*\*To calculate ***the target amount of reserves*** and to determine whether the DI is holding ***too many*** or ***too few reserves***, **the DI reserve manager** requires two additional pieces of **information** to manage the position.

**First**, over what period’s deposits does the manager compute the DI’s reserve requirement?( ***Computation Period)***

**Second**, for which period or periods must the DI maintain the target reserve requirement just computed? )***Maintenance Period***  (

***ملحوظة هامه***

The U.S. system is **complicated** by the fact that the period for which the DI manager computes the required reserve target differs from the period during which the reserve target is maintained or achieved. ***We describe the computation and maintenance periods for DI reserves next.***

***4.1.1 Computation Period***

For the purpose of ***reserve management***, a U.S. DI reserve manager must think of **time** as being divided into two-week periods. The reserve computation period always begins on a Tuesday and ends on a Monday 14 days later.

**Cash reserves**: Vault cash and cash deposits held at the Federal Reserve.

**Transaction accounts**: Deposits that permit the account holder to make multiple withdrawals.

**Reserve computation period**: Period over which required reserves are calculated.

**EXAMPLE 18–1 *Computation of Daily Average Required Reserve***

**Consider ABC bank’s reserve manager***, who wants to assess the bank’s minimum cash reserve requirement target. The manager knows the bank’s net transaction accounts balance at the close of the banking day on each of the 14 days over the period Tuesday, June 30, to Monday,July 13. Of course, in reality, the manager knows* these deposit positions *with certainty only at the very end of the two-week period.*

*Consider the realized* ***net transaction account positions*** *of ABC bank in* ***Table 18–1****.*

*The minimum daily average reserves that a bank must maintain are computed as a percentage of* the daily average net transaction accounts *held by the bank over the two week reserve computation period, where* Friday’s balances *are carried over for Saturday and Sunday.* The minimum daily average *for ABC Bank to hold against* ***the daily average*** *of $1,350.7 million in its* ***net transaction accounts*** *is calculated as follows (amounts in millions):*

***Daily average net transaction accounts × Reserve percentage = Daily average reserves***

*required*

*$8.5 m 0% $ 0.000*

*( $45.8 - $8.5 m ) 3 1.119*

***$1,350.7*** *( net transaction account)- $45.8 m 10 130.490*

***Minimum average reserves to be held $131.609***

***---------------------------***

**Note that :**  *the daily average target* in Example 18–1 is calculated by taking the 14-day average of net transaction accounts, even though the DI is closed for 4 of the 14 days (two Saturdays and two Sundays). Effectively, Friday’s deposit figures count three times compared with those of other days in the business week.

This means that a DI manager who can engage in a strategy whereby deposits are lower on Fridays can, on average, lower the DI’s reserve requirements. This may be important if required liquid asset reserve holdings are above the optimal level from the DI’s perspective to handle liquidity drains due to expected and unexpected deposit withdrawals.

**One strategy** employed in the past was for a DI to send deposits out of the country (i.e., transfer them to a foreign subsidiary شركة تابعة أجنبية ) on a Friday, when a reduction in deposits effectively counts for 3/14 of the two-week period, and to bring them back on the following Monday, when an increase counts for just 1/ 14 of the two-week period. This action effectively reduced the average demand deposits in the balance sheet of the DI over the 14-day period by 2 /14 times the amount sent out of the country and thus, reduced the amount of reserves it needed to hold. Analysts term this the **weekend game.**

**Weekend game:** Lowering deposit balances on Fridays since that day’s figures count three times

for reserve accounting purposes. (الجمعه- السبت – الاحد)

**TABLE 18–1 Net Transaction Accounts and Vault Cash Balances of ABC Bank (in millions of dollars) Cash reserves**

**Transaction Less Demand Less Cash Items Net Vault**

**Accounts Balances Due from in Process of Transaction Cash**

**U.S. Depository Collection Accounts**

Tuesday, June 30 $ 1,850 $ 240 $ 140 $ 1,470 $ 30

Wednesday, July 1 1,820 235 135 1,450 28

Thursday, July 2 1,770 250 120 1,400 24

Friday, July 3 1,610 260 100 1,250 21

Saturday, July 4 1,610 260 100 1,250 21

Sunday, July 5 1,610 260 100 1,250 21

Monday, July 6 1,655 250 125 1,280 24

Tuesday, July 7 1,650 230 130 1,290 26

Wednesday, July 8 1,690 240 130 1,320 25

Thursday, July 9 1,770 275 135 1,360 25

Friday, July 10 1,820 280 140 1,400 27

Saturday, July 11 1,820 280 140 1,400 27

Sunday, July 12 1,820 280 140 1,400 27

Monday, July 13 1,785 260 135 1,390 29

Total $24,280 $3,600 $1,770 $18,910 $355

**÷ 14 = ÷ 14**

Daily average net transaction accounts $ **1,350.7 $ 25.357**

**A second strategy** is for the DI to offer its customers “**sweep accounts**,” حسابات شاملة" in which high reserve ratio demand deposits are “swept” out of customers’ accounts on **Friday** into higher-interest-bearing savings accounts حسابات التوفير ذات الفائدة المرتفعة. On Monday (or in many cases when the depositor needs funds in his or her checking account) these funds are swept back.

The effective result is **lower average balances** in a DI’s demand deposit accounts and thus lower required reserve holdings at the Federal Reserve. ***Note that*** the **$131.609** million figure is **a minimum reserve target**. The DI manager may hold excess cash reserves above this minimum level if the privately optimal or prudential level for the DI exceeds the regulatory specified minimum level because this DI is especially exposed to deposit withdrawal risk. In addition, the DI manager may hold some buffer reserves in the form of government securities that can be turned into cash quickly if deposit withdrawals are unusually high or to preempt the early stages of a bank run.

***4.1.2 Maintenance Period فترة الاحتفاظ بالمتوسط اليومى للإحتياطى***

We have computed **a daily average minimum cash reserve** **requirement for ABC bank** but have yet to delineate تحدد ***the exact period over which the bank manager has to maintain this $131.609 million daily average reserve target***.

**Reserves** may be held either as vault cash or as deposits held (by the bank) at the Federal Reserve.

**Federal Reserve** هو جهاز حكومي في الولايات المتحدة الأمريكية يتكون من اثني عشر بنكا للاحتياطي. يلعب الاحتياطي الفيدرالي دور البنوك المركزية

يحدد الاحتياطي الفيدرالي السياسة المالية للولايات المتحدة

Under the current set of regulations, the average daily vault cash held during the reserve computation period (June 30 through July 13 in our example) is deducted from the institution’s required reserves to determine the reserve balance to be maintained at the Federal Reserve. In addition, a lag of 30 days exists between the beginning of the reserve computation period and the beginning of the reserve maintenance period (over which deposits at the Federal Reserve Bank must meet or exceed the required reserve target). **For ABC Bank**, this reserve maintenance period is from July 30 through August 12 (see Figure 18–1 ). Thus, the bank’s reserve manager knows the value of the target reserves with perfect certainty throughout the reserve maintenance period. However, the manager still has a challenge in maintaining sufficient deposits on reserve at the Fed to hit the reserve target without holding too large an excess reserve balance (since this bears a zero interest return).

The reserve manager knows **the vault cash** component of the reserve target, since this is based on the average vault cash held by the bank over the reserve computation period, as reported in Table 18–1 . The daily balances in deposits at the Federal Reserve for ABC Bank for the 14-day reserve maintenance period from July 30 through August 12 are shown in **Table 18–2** . Since the average daily balance in vault cash is shown (in Table 18–1 ) at $25.357 million, *the average daily target balance for deposits at the Federal Reserve* is $106.252 million (i.e., $25.357 million + $106.252 million ( Net Deposits in table 18.2) = $131.609 million). Essentially, since the vault cash component of the reserve target is based on vault cash held over the reserve computation 14-day period, the bank’s active target during the maintenance period itself is its reserve position at the Fed (in this case, it seeks to hold an average deposit of $106.252 million per day at the Fed over the 14-day maintenance period).

**FIGURE 18–1 Lagged Reserve Requirements متطلبات الاحتياطي المتأخر**

Reserve Computation Period

Begins Ends

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

June July

30 1 2 3 4 5 6 7 8 9 10 11 12 13

Reserve Maintenance Period

Begins Ends

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

July Aug

30 31 1 2 3 4 5 6 7 8 9 10 11 12

**As discussed above,** currently, the reserve maintenance period for meeting the reserve target begins *30 days* after the start of the reserve computation period. Given that the computation period is two weeks, the reserve maintenance period does not begin until **17 days** after the end of the computation period. Regulators introduced this lagged reserve accounting system to make it easier for bank ***reserve managers*** to calculate their **required reserve balances** and to increase the accuracy of information on aggregate required reserve balances. **Prior to July 1998**, regulators used **a contemporaneous reserve accounting** system نظام محاسبة احتياطي معاصر , in which the two-week reserve maintenance period for meeting the reserve target began only **two days** (as opposed to the current 30 days) after the start of the computation period. This contemporaneous reserve system resulted in only a two-day window during which required reserves were known with certainty. In the above example, the reserve maintenance period would have been from Thursday, July 2, through Wednesday, July 15, for a reserve computation period beginning Tuesday, June 30, and ending Monday, July 13.

**TABLE 18–2 ABC Bank’s Daily Reserve Position over the July 30–August 12 Reserve Maintenance Period (in millions of dollars)**

***Deposits at the***

***Date Federal Reserve***

Thursday, July 30 $ 98.050

Friday, July 31 100.000

Saturday, August 1 100.000

Sunday, August 2 100.000

Monday, August 3 98.004

Tuesday, August 4 91.000

Wednesday, August 5 102.050

Thursday, August 6 101.000

Friday, August 7 99.000

Saturday, August 8 99.000

Sunday, August 9 99.000

Monday, August 10 107.050

Tuesday, August 11 154.000

Wednesday, August 12 139.374

**Total $1,487.528 ÷ 14**

Daily average 106.252

**Lagged reserve accounting system**: An accounting system in which the reserve computation and reserve maintenance periods do not overlap.

**Contemporaneous reserve accounting system**: An accounting system in which the reserve computation and reserve maintenance periods overlap

**بداية المحاضرة الثانية**

***4.2 Undershooting/Overshooting of* the Reserve Target**

***4.2.1 Undershooting***

What happens if, at the end of the reserve maintenance period (on August 12 from the previous example) the DI undershoots the regulatory required daily minimum reserve ratio—that is, **holds less than the required amount ($**131.609 daily average million in our example)? The Federal Reserve allows the DI to make up to a 4 percent daily average error without penalty بدون عقوبه . **Thus**, if the DI is 4 percent in the red on its reserve target to the tune of 4 percent × $131.609 million = $5.26436 million, it must make this up in the next two-week reserve maintenance period that runs from August 13 to August.

When a DI holds *a deficit in its required reserves* in a given two-week period, it must hold a surplus amount of reserves in the subsequent two-week period. If the reserve shortfall exceeds 4 percent, the DI is liable to explicit and implicit penalty charges from the Federal Reserve. The explicit charges include the imposition of a penalty interest rate charge equal to the central bank’s discount rate plus a 2 percent markup هامش الربح بنسبة 2٪; the implicit charges can include more frequent monitoring, examinations, and surveillance مراقبة if DI regulators view the undershooting of the reserve requirements as a reflection of an unsafe and unsound practice by the DI’s manager. Such a view is likely to be taken only if the DI consistently undershoots its reserve targets.

**EXAMPLE 18–2 Undershooting/ Overshooting a Reserve Target**

***A bank*** *has* an average balance of **transactions accounts***, August 10 to 23, of $914.36 million. The average balance in the cash account is $32.214 million over this period. The bank is carrying forward a deficit عجز of $2.276 million from the last reserve period.*

***Calculate the net reserve requirement for the reserve maintenance period from September 9 to 22****.* ***Calculate the minimum reserves that may be maintained and the maximum reserves that will count toward the next reserve maintenance period, September 23 to October 6.***

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*$8.5 m at 0% $ 0*

*$45.8 m–$8.5 m at 3% 1.119 m*

*$914.36 m–$45.8 m at 10% 86.856 m*

*Gross reserve requirement $87.975 m*

*Daily average vault cash, Aug. 10–23 32.214 m*

*Net reserve requirement* ***$55.761 m***

*Reserve carry forward from last period*

*daily average amount = $2.276 m 2.276 m*

***Reserves to be maintained with Fed $58.037 m***

***Minimum reserves to be maintained***

*-.04(87.975 m) = -3.519* a 4 percent daily average error without penalty *by fedral bank* **$54.518 m**

*Maximum reserves to be maintained*

*+.04(87.975 m) =+ 3.519* **$61.556 m**

***\_\_\_\_ان\_بفرض\_\_\_\_\_\_\_***

*If over the first 12 days of the current reserve maintenance period the average daily reserves held were $57 million (or 12 × $57m = $684m cumulative total over the 12 days),* ***what does the bank need to hold as reserves over the last two days to*** *(1) exactly meet the reserve requirement, (2) meet the minimum reserve, and (3) meet the maximum reserve?*

1. *To meet the reserve requirement: Over the first 12 days the bank should have held a cumulative reserve of $58.037 m × 12 = $696.444 m. The bank is running a shortfall of $696.444 m - $684 m =$12.444 m. Thus, the cumulative balance over the last two days, September 21 and 22, needs to be:*

*$58.037 m + $58.037 m + $12.444 m = $128.518 m*

1. *To hit the minimum cumulative balance*  *لتصل إلى الحد الأدنى للرصيد التراكمي: Over the first 12 days the bank should have held a cumulative reserve of $54.518 m × 12 = $654.216 m. The bank is running a surplus of $654.216 m - $684 m = - $29.784 m. Thus, the cumulative balance over the last two days, September 21 and 22, needs to be:*

*$54.518 m + $54.518 m - $29.784 m = $79.252 m*

1. *To hit the maximum cumulative balance: Over the first 12 days the bank should have held a cumulative reserve of $61.556 m × 12 = $738.672 m. The bank is running a shortfall of $738.672 m - $684 m =$54.672 m. Thus, the cumulative balance over the last two days, September 21 and 22, needs to be:*

*$61.556 m + $61.559 m + $54.672 m = $177.784 m*

***الخلاصه***

*Or the bank must run a reserve balance between $79.252 million and $177.784 million over the two days, September 21 and 22.*

*---------------------------------------------------*

In undershooting the target, the DI manager **must weigh** *the explicit and implicit costs of undershooting against any potential benefits*. Specifically, it may be beneficial to undershoot if the privately optimal or prudential reserve position of the DI is less than the regulatory set minimum and/or there are very high opportunity costs of meeting the reserve requirement targets. There may be high opportunity costs of meeting reserve targets if interest rates and loan demands are high so that the cost of forgone loans on future profits may be significant.

**A DI that undershoots the reserve target has two principal ways to build up reserves to meet the target as *the reserve maintenance period comes to an end*:**

It can **(1)** ***liquidate assets*** (e.g., by selling off some buffer assets such as Treasury

bills) or **(2) borrow in the interbank market for reserves**, especially in the fed funds and repurchase agreement markets described later. The DI manager is likely to choose the least costly method to meet any reserve deficiency, such as borrowing fed funds if this rate is less than the cost of selling off liquid assets*.*

*The manager may be reluctant to fund the entire reserve deficiency in this manner,* قد يحجم المدير عن تمويل نقص الاحتياطي بأكمله بهذه الطريقةhowever, if the costs of adjusting to a deficiency are high and the privately optimal amount of reserves is less than the regulatory required minimum amount.

Such cost considerations lead some **DI managers** to use the Federal Reserve’s discount window نافذة خصم الاحتياطي الفيدرالي to borrow the required funds to meet *temporary reserve shortfalls* because the cost of borrowing from the discount window is the discount rate, an administered rate set by the Federal Reserve. *The discount window rate* was historically set below fed funds and government security rates and offered a very attractive borrowing cost to a DI with deficient reserves as the reserve maintenance period came to an end. However, discount window loans were meant to be used by DIs on a need rather than a profit basis—that is, by DIs that were solvent but faced sudden liquidity crises due to deposit withdrawals caused by seasonality in deposit flows or some other similar lender of last resort need.

**In January 2003**, the Fed implemented changes to its discount window lending that increased the cost of borrowing but eased the terms. Through the Fed’s primary credit program, discount window loans are available to generally sound depository institutions on a very short-term basis, typically overnight, at a rate above the Federal Open Market Committee’s (FOMC) target rate for federal funds. Primary credit may be used for any purpose, including financing the sale of fed funds. Primary credit may be extended for periods of up to a few weeks to depository institutions in generally sound financial condition that cannot obtain temporary funds in the financial markets at reasonable terms.

**4.2.2 Overshooting** **التجاوز المفرط ،**

The cost of overshooting, or holding cash reserves in excess of the minimum required level, depends on whether *the DI perceives its prudent level of reserves to meet expected and unexpected deposit withdrawals to be higher or lower than the regulatory imposed minimum reserve requirement*.

**In cases of overshooting ,there are 2 cases**

#1- If its required minimum reserves are higher than the amount managers perceive to be optimal, *the first 4 percent of excess reserves* can be carried forward to the next reserve period. The Federal Reserve allows this amount to count toward meeting the reserve requirement in *the next two-week maintenance period*. After that, any reserves held above the required minimum plus 4 percent constitute a drag on DI earnings تشكل عبئًا على أرباح شركة DI since every dollar that is held as excess reserves—either in cash or on deposit at the central bank—*earns no interest* and could have been lent out at the DI lending rate. ***For example***, if the DI’s lending rate to its best customers is 12 percent, the DI and its shareholders have suffered an opportunity cost of 12 percent for every dollar of excess cash reserves held by the DI.

**In contrast**, #2- if the DI manager perceives that the regulatory required minimum level of reserves is lower than what it needs for expected and unexpected deposit withdrawal exposure, the DI overshoots the required minimum reserve targetيتجاوز DI الحد الأدنى المطلوب للاحتياطي المستهدف. This policy maintains the DI’s liquidity position at a prudently adequate level. In choosing to overshoot the target, the manager must consider the least-cost instrument in which to hold such reserves.

Thus, while *some excess reserves* might be held in highly liquid (non-interest bearing) cash form, at least part of *any excess reserve* position might be held in *buffer assets such as short-term securities or Treasury bills that earn interest but*

*are not quite as liquid as cash.* The proportion between cash and Treasury bills held depends in large part on yield spreads. *For example*, suppose the loan rate is 12 percent, the T-bill rate is 7 percent, and the interest earned on excess cash holdings is 0 percent. The opportunity cost of a forgone return to the DI from holding excess reserves in cash form or T-bill form is:

Opportunity cost cash = 12% - 0% = 12%

Opportunity cost T-bills = 12% - 7% = 5%

Thus, **T-bills** have a significantly lower opportunity cost than cash, and the manager must weigh the 7 percent net opportunity cost savings of holding excess reserves in T-bill form against the ease with which such instruments can be sold and turned into cash to meet liability withdrawals or liquidity crunches. *Table 18–3 shows excess cash reserves of U.S. DIs between 1990 and November 2006*. Because of their opportunity cost, excess reserves are invariably kept at very low levels; this was 3.97 percent of required reserves in November 2006.

The Federal Reserve sets the fed funds rate at a level it believes will foster financial and monetary conditions consistent with achieving its monetary policy objectives, and it adjusts that target in line with evolving economic developments. The Fed exercises considerable control over the fed funds rate through its influence over the supply of and demand for balances at the Reserve Banks (discussed earlier in the chapter). While the fed funds rate varies during the day, it is the Fed’s objective to keep the rate as close to the target as possible.

**TABLE 18–3 Reserves and Excess Reserves of U.S. Depository Institutions (in**

**millions of dollars)**

***December December December December November***

***1990 1995 2000 2005 2006***

Total reserves $59,120 $56,452 $38,537 $ 45,312 $42,797

Required reserves 57,456 55,162 37,110 43,403 41,099

Excess reserves 1,664 1,290 1,427 1,909 1,698

***Internet Exercise***

*Go to the Web site of the* ***Board of Governors of the Federal Reserve*** *and find the latest information available for reserves and excess reserves of U.S. depository institutions using the following steps. Go to the Board of Governors of the Federal Reserve Web site at www .federalreserve.gov. Click on “*Economic Research and Data*.” Click on “Statistics: Releases and Historical Data.” Click on “Aggregate Reserves of Depository Institutions and the Monetary Base: Releases.” Click on the most recent date. This will download a file onto your computer that will contain the most recent information.*

**4.3 Managing Liquid Assets Other than Cash )** securitization and loan sales(

Chapter 17 discussed several models FIs use to measure liquidity risk, including

models used to determine the FI’s liquid asset needs over a future period of time.

Reserve requirements establish *the minimum level of cash* an FI must hold to meet

liquidity needs (due to deposit withdrawals). However, since cash is a nonearning

asset, an FI will hold as little cash as possible to meet its liquid asset needs. The remaining liquid assets are generally stored in the FI’s security portfolio (e.g., holding Treasury bills).

Managing ***the securities portfolio*** is an integral part of liquidity management for financial institutions. FI managers must determine the optimal combination of lower-yielding, liquid assets *versus* higher-yielding, less liquid assets. Short-term marketable securities that are not pledged التعهد for public deposits (such as Treasury securities) are held for immediate liquidity needs الأوراق المالية القابلة للتداول قصيرة الأجل غير المرهونة للودائع العامة (مثل سندات الخزينة) محتفظ بها لاحتياجات السيولة الفورية, and mortgage securities and other longer-term securities are held and can be sold if liquidity needs are larger than expected.

Other ways of maintaining liquidity are **securitization** and **loan sales** (see Chapters 26 and 27). **Briefly**, FIs can **sell loans** (or securitized loans) for liquidity to long-term investors, such as insurance companies. These loan sales provide **a stream of liquidity** that can be used to fund new loan demand or deposit withdrawals. ***In addition***, if the FI removes loans from its balance sheet, it can use the funds received from the sale of loans to pay off depositors (i.e., shrinking the size of the FI). *This reduces the FI’s deposits and, hence, its reserve requirement*—which, as noted earlier, can be viewed as a regulatory tax. With fewer assets, the FI’s required capital (under capital requirements such as the 8 percent risk-based rate; see Chapter 20) can be reduced.

***Liquidity Management as a Knife-Edge Management Problem***.

The management of a DI’s liquidity position is something of *a knife-edge situation* because holding too many liquid assets penalizes a DI’s earnings and, thus, its stockholders. A DI manager who holds excessive amounts of liquid assets is unlikely to survive long. Similarly, a manager who excessively undershoots the reserve target faces enhanced risks of liquidity crises and regulatory intervention. Again, *such a manager’s tenure فترة المدير at the DI may be relatively short.*

***ثانيا***

1. ***LIABILITY MANAGEMENTفى جانب الميزانية الإلتزامات إدارة الخصوم أو*** structuring the liability, or funding, side of the balance sheet)

Liquidity and liability management are closely related. ***One aspect*** of liquidity risk

control is the buildup of a prudential level of liquid assets. ***Another aspect*** is the management of the DI’s liability structure to reduce the need for large amounts of liquid assets to meet liability withdrawals. However, excessive use of purchased funds in the liability structure can result in a liquidity crisis if investors lose confidence in the DI and refuse to roll over تمديد such funds.

As discussed in Chapter 16, improvements in technology and demand for efficiency

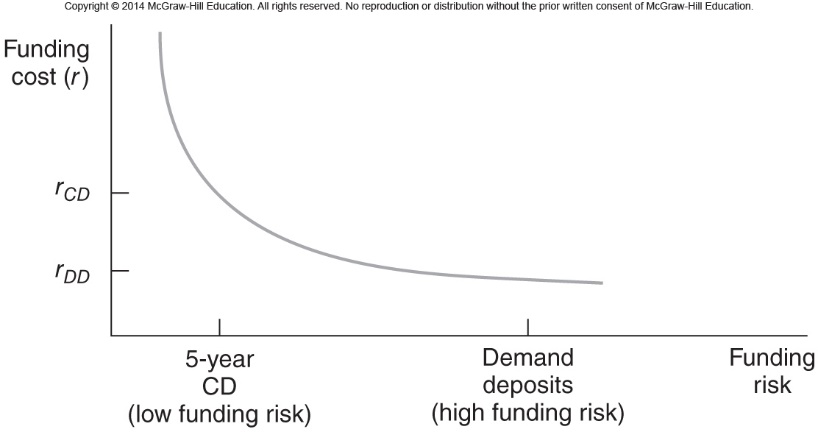
and flexibility in the financial transactions of wholesale and retail customers have lowered the costs of holding deposits and changed the way FIs manage liquidity risk. Technologically oriented services (such as home banking) connect customers to their deposit and brokerage accounts via personal computers. These technologies also provide other services such as electronic securities trading and bill paying via personal computers. Likewise, preauthorized debits of payroll checks get cash into FIs’ deposit accounts faster and with more predictability.

***Finally***, the Check Clearing for the 21st Century Act allows FIs to provide deposit

customers with electronically transmitted copies of their checks rather than returning the original, paper checks الشيكات الورقية . In doing so, check processing time and handling costs can be reduced significantly for FIs. These types of services have changed **the way liquidity management** is viewed by FIs.

CD= CERTIFICATE of DEPOSIT ,DD= Demand deposit

**FIGURE 18–2: Funding Risk versus Cost**

 Withdrawals

**5.1 Funding Risk and Cost مخاطر التمويل والتكلفة**

Unfortunately, constructing a low-cost, low-withdrawal-risk **liability portfolio** is more difficult than it sounds. This is true because those liabilities, or sources of DI funds, that are the most subject to *withdrawal risk* are often the least costly to the DI.

***من هنا تلزم المؤسسات المالية DI بعمل موازنة بين Funding Risk versus funding Cost***

**That is**, *a DI must trade off the benefits of attracting liabilities at a low funding cost with a high chance of withdrawal* ***against*** *liabilities with a high funding cost and low liquidity.* **For example**, demand deposits are relatively low funding cost vehicles for DIs but can be withdrawn without notice. **By contrast**, a five-year, fixed-term certificate of deposit may have a relatively high funding cost but can be withdrawn before the five-year maturity is up only after the deposit holder pays a substantial interest rate penalty.

Thus, **in structuring the liability**, or funding, side of the balance sheet, the DI manager faces a trade-off along the lines suggested in Figure 18–2 . **That is**, ***funding costs*** are generally **inversely** related to the period of time the liability is likely to remain on the DI’s balance sheet (i.e., to funding risk).

Although we have discussed **depository institutions’** **funding risk**, other FIs face a similar trade-off. ***For example***, investment banks can finance through overnight funds (repurchase agreements and brokered deposits) or longer-term sources such as notes and bonds. **Finance companies** have a choice between commercial paper and longer-term notes and bonds.

**The next section)5.2)** looks at *the spectrum* *طيف, سلسلة of liabilities available to a DI manager in seeking to actively impact liquidity risk exposure through the choice of liability structure.*

***5.2 CHOICE OF LIABILITY STRUCTURE***

This section considers in more detail the withdrawal (or funding) risk and funding

cost characteristics of the major liabilities available to a modern DI manager.

***Some Examples*** ***of the major liabilities***

***Example 1* Demand Deposits**

***Withdrawal Risk (***funding risk)

Demand deposits issued by DIs have a high degree of withdrawal risk. Withdrawals can be instantaneous and largely expected by the DI manager, such as pre-weekend cash withdrawals, or unexpected, as occur during economic crisis situations (so-called bank runs; see Chapter 17).

**Costs (**funding cost)

In the United States, *demand deposits* have paid zero explicit interest since the 1930s by law. This does not mean that they are a costless source of funds for DIs or that DIs have no price or interest mechanisms available to partially control the withdrawal risk associated with these contracts. **Despite** the zero explicit interest paid on demand deposit accounts, competition among DIs and other FIs (e.g., money market mutual funds) has resulted in the payment of implicit interest, or payments of interest in kind مدفوعات عينية , on these accounts. **Specifically**, in providing demand deposits that are checkable accounts, a DI must provide a whole set of associated services from providing checkbooks, to clearing of checks, to sending out statements with cleared checks or check images. Because such services absorb real resources of labor and capital, they are costly for DIs to provide. *DIs can recapture these costs by charging fees استرداد هذه التكاليف عن طريق فرض رسوم , such as 10 cents per check cleared.* To the extent that these fees do not fully cover the DI’s cost of providing such services, the depositor receives a subsidy or an implicit interest payment.

**EXAMPLE 18–3: Calculation of Average Implicit Interest Rate**

*Suppose a DI pays 15 cents to clear a check but charges a fee of only 10 cents per check cleared. The customer receives a 5-cent subsidy per check. We can calculate implicit yields for each service, or an average implicit interest rate, for each demand deposit account.*

**For example***, an average implicit interest rate for a DI’s demand deposits might be calculated as:*

***DI’s average management Average fees earned per***

***Average implicit = costs per account per annum - account per annum***

***Interest rate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***(IIR ) Average annual size of account***

***Suppose that:***

*DIs average’ management costs per account per annum = $ 150*

*Average fees earned per account per annum $ 100 = $100*

*Average annual size of account = $1,200*

*Then:*

*$ 150 - $ 100*

*IIR = \_\_\_\_\_\_\_\_\_\_ = 4 .166%*

*$ 1200*

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**The payment of implicit interest** means that the DI manager is not absolutely powerless to mitigate deposit withdrawals مدير DI ليس عاجزًا تمامًا عن التخفيف من عمليات سحب الودائع ، , especially if rates on competing instruments are rising. In particular, the DI could lower check-clearing fees, which in turn raises implicit interest payments to depositors. Such payments are payments in kind or subsidies that are not paid in actual dollars and cents as is interest earned on competing instruments. ***Nevertheless***, implicit payments of interest are tax free to the depositor, but explicit interest payments are taxable.

**Finally**, demand deposits have an additional cost in the form of non-interest-bearing reserve requirements ,the DI must hold at the Federal Reserve.

***Example 2* Interest-Bearing Checking (NOW) Accounts**

***Withdrawal Risk(***funding risk)

Since 1980 banks in the United States have been able to offer checkable deposits that pay interest and are withdrawable on demand; they are called ***negotiable order of withdrawal accounts or NOW accounts.*** The major distinction between these instruments and traditional demand deposits is that these instruments require the depositor to maintain a minimum account balance to earn interest. If the minimum balance falls below some level, such as $500, the account formally converts to a status equivalent to demand deposits and earns no interest. The payment of explicit interest and the existence of minimum balance requirements make NOW accounts potentially less prone to withdrawal risk than demand deposits. ***Nevertheles***s, NOW accounts are still highly liquid instruments from the depositor’s perspective.

**Costs (**funding cost)

As with demand deposits, the DI can influence the potential withdraw ability of NOW accounts by paying implicit interest or fee subsidies such as not charging the full cost of check clearance. However, the manager has two other ways to impact the yield paid to the depositor. The first is by varying the minimum balance requirement. If the minimum balance requirement is lowered—say, from $500 to $250—a larger portion of a NOW account becomes subject to interest payments and thus the explicit return and attractiveness of these accounts increases. The second is to vary the explicit interest rate payment itself, such as increasing it from 5 to 5¼ percent. Thus, the DI manager has three pricing mechanisms to increase or decrease the attractiveness, and therefore impact the withdrawal rate, of NOW accounts: implicit interest payments, minimum balance requirements, and explicit interest payments.

**NOW account**: Negotiable order of withdrawal account that is like a demand deposit account but has a minimum balance requirement, and, when the minimum balance is maintained, pays interest

**EXAMPLE 18–4 Gross Interest Return**

*Consider a depositor who holds on average $250 per month for the first three months of the year, $500 per month for the next three months, and $1,000 per month for the final six months of the year in a NOW account. The NOW account pays 5 percent per annum if the minimum balance is $500 or more, and it pays no interest if the account falls below $500. The depositor writes an average of 50 checks per month and pays a service fee of 10 cents for each check although it costs the bank 15 cents to process each check. The account holder’s gross interest return, consisting of implicit plus explicit interest, is:*

*Gross interest return = Explicit interest + Implicit interest = $500 (.05)(.25) + $1000 (.05)(.5) +($.15 -*

*$.10)(50)(12)*

*= $6.25 + $25 + $30 = $61.25*

*Suppose the minimum balance was lowered from $500 to $250 and check service fees were lowered from 10 cents to 5 cents per check. Then:*

*Gross interest return = $250(.05)(.25) + $500(.05)(.25) + $1000(.05)(.5) + ($.15 - $.05)(50)(12)*

*= $3 .125 + $ 6 .25 +$ 25 +$ 60 = $ 94. 375*

***Example 3*  Passbook Savings التوفير في دفتر الحسابات**

***Withdrawal Risk***

Passbook savings are generally less liquid than demand deposits and NOW accounts for two reasons. First, they are non-checkable and usually involve physical presence at the institution for withdrawal. Second, the DI has the legal power to delay payment or withdrawal requests for as long as one month. This is rarely done and DIs normally meet withdrawal requests with immediate cash payment, but they have the legal right to delay, which provides important withdrawal risk control to DI managers. For Bank of America ,passbook savings are 28.3 percent of deposits and other borrowings.

**Costs**

Since these accounts are no checkable, any implicit interest rate payments are likely to be small; thus, the principal costs to the DI are the explicit interest payments on these accounts. In recent years, DIs have normally paid slightly higher explicit rates on passbook savings than on NOW accounts.

***Example 4*  Money Market Deposit Accounts (MMDAs)حسابات ودائع أسواق النقد**

***Withdrawal Risk***

Under the Garn–St. Germain Act, introduced in 1982, DIs can use money market deposit accounts (MMDAs) as an additional liability instrument to control their overall withdrawal risk—in particular, the risk of funds’ disintermediating from DIs and flowing to money market mutual funds (MMMFs) (see Chapter 5). If DIs are to be competitive with the money market mutual funds offered by groups such as Vanguard and Fidelity, the MMDAs they offer must be liquid but not as liquid as demand deposits and NOW accounts. In the United States, MMDAs are checkable

but subject to restrictions on the number of checks written on each account per month, the number of preauthorized automatic transfers per month, and the minimum denomination of the amount of each check. *For example*, one DI may allow a customer with an MMDA to make a maximum of six preauthorized transfers,

of which no more than three can be checks of at least $500 each. In addition, MMDAs impose minimum balance requirements on depositors. The Federal Reserve does not require DIs to hold reserves against MMDAs. Accordingly, Dis generally pay higher rates on MMDAs than on NOW accounts. Bank of America has 30.9 percent MMDAs to deposits and other borrowings.

**Costs**

The explicit interest paid to depositors is the major cost of MMDAs; it is also the

pricing mechanism DIs use to control withdrawal risk. Since MMDAs are in direct

competition with MMMFs, the DI manager can influence their net withdrawal rate

by varying the rate the DI pays on such accounts. In particular, while the rate that MMMFs pay on their shares directly reflects the rates earned on the underlying money market assets in which the portfolio manager invests, such as commercial paper, banker’s acceptances, repurchase agreements, and T-bills, the rates that DI managers pay on MMDAs are not based directly on any underlying portfolio of money market assets. ***In general***, DI managers have considerable discretion to alter

the rates paid on MMDAs and thus the spread on MMMF–MMDA accounts. This can directly impact the rate of withdrawals and withdrawal risk on such accounts.

Allowing MMDA rates to have a large negative spread with MMMFs increases the

net withdrawal rate on such accounts.

**MMDAs** : Money market deposit accounts; retail savings accounts with some limited checking account features.

***Example 5*  Retail Time Deposits and CDs**

***Withdrawal Risk***

By contractual design, *time deposits* and *retail certificates of deposit* (CDs) reduce

the withdrawal risk to issuers. ***Retail CDs*** are fixed-maturity instruments with face values under $100,000. Small time deposits carry early withdrawal penalties.

Although the size, maturity, and rate on these CDs are negotiable, most DIs issue standardized retail CDs. In a world of no early withdrawal requests, the DI knows the exact scheduling of interest and principal payments to depositors holding such deposit claims, since these payments are contractually specified. As such, the DI manager can directly control fund inflows and outflows by varying the maturities of the time deposits and CDs it offers to the public. In general, DIs offer time deposits and CDs with maturities varying from two weeks to eight years.

When depositors wish to withdraw before the maturity of a time deposit or CD contract, regulation empowers DIs to impose penalties on a withdrawing depositor,

such as the loss of a certain number of months’ interest depending on the maturity of the deposit. While this does impose a friction or transaction cost on withdrawals, it is unlikely to stop withdrawals when the depositor has exceptional liquidity needs. Also, withdrawals may increase if depositors perceive the DI to be insolvent, despite interest penalties and deposit insurance coverage up to $100,000. Nevertheless, under normal conditions, these instruments have relatively low withdrawal risk compared with transaction accounts such as demand deposits and NOW accounts and can be used as an important liability management tool to control withdrawal/liquidity risk.

**Costs**

Similar to those of passbook savings, the major costs of these accounts are explicit

interest payments. Short-term CDs are often competitive with T-bills, and their rates are set with the T-bill rate in mind. Note that depositors who buy CDs are subject to state and local taxes on their interest payments, whereas T-bill investors do not pay state and local taxes on T-bill interest income. *Finally*, time deposits and CDs do not at present require the bank to hold non-interest-bearing reserves at the central bank.

**Retail CDs :** Time deposits with a face value below $100,000.

***Example 6* Wholesale CDs *Withdrawal Risk***

Wholesale CDs were innovated by banks in the early 1960s as a contractual mechanism to allow depositors to liquidate their positions in these CDs by selling them in the secondary market rather than settling up with the DI. Thus, a depositor can sell a relatively liquid instrument without causing adverse liquidity risk exposure

for the DI. Thus, the unique feature of these wholesale CDs is not so much their large minimum denomination size of $100,000 or more but the fact that they are negotiable instruments. That is, they can be resold by title assignment in a secondary

market to other investors. This means, ***for example***, that if IBM bought a $1 million three-month CD from Citibank but for unexpected liquidity reasons needs funds after only one month has passed, it could sell this CD to another outside investor in the secondary market. This does not impose any obligation on Citibank in terms of an early funds withdrawal request. Thus, a depositor can sell a relatively liquid instrument without causing adverse withdrawal risk exposure for the DI. Essentially, the only withdrawal risk (which can be substantial) is that these wholesale CDs are not rolled over and reinvested by the holder of the deposit claim on maturity.

**Costs**

The rates that DIs pay on these instruments are competitive with other wholesale

money market rates, especially those on commercial paper and T-bills. This competitive rate aspect is enhanced by the highly sophisticated nature of investors

in such CDs, such as money market mutual fund managers, and the fact that these deposits are not covered by explicit deposit insurance guarantees. Only the first $100,000 invested in these CDs (per investor, per institution) is covered by insurance. To the extent that these CDs are offered by large DIs perceived as being too big to fail, the required credit risk premium on CDs is less than that required for similar-quality instruments issued by the nonbank private sector (e.g., commercial paper). In addition, required interest yields on CDs reflect investors’ perceptions of the depth of the secondary market for CDs. In recent years, the liquidity of the secondary market in CDs appears to have diminished as dealers have withdrawn. This has increased DIs’ relative cost of issuing such instruments.

**Wholesale CDs** : Time deposits with a face value above $100,000.

**Negotiable instrument**: An instrument whose ownership can be transferred in the secondary market.

***Example 7* Federal Funds**

***Withdrawal Risk***

The liabilities just described are all deposit liabilities, reflecting deposit contracts issued by DIs in return for cash. However, DIs not only fund their assets by issuing

deposits but also can borrow in various markets for purchased funds. Since the funds generated from these purchases are borrowed funds, not deposits, they are subject to neither reserve requirements (as with demand deposits and NOW accounts) nor deposit insurance premium payments to the FDIC (as with all the domestic deposits described earlier). The largest market available for purchased funds is ***the federal funds market.*** While DIs with excess cash reserves can invest some of this excess in interest-earning liquid assets such as T-bills and short-term securities, an alternative is to lend excess reserves for short intervals to other DIs seeking increased short-term funding. *The interbank market for excess cash reserves is called the federal funds (fed funds) market*. In the United States, federal funds are short-term uncollateralized loans made by one DI to another; more than 90 percent of such transactions have maturities of one day. The DI that purchases funds shows them as a liability on its balance sheet, while the DI that sells them shows them as an asset.

For the liability-funding DIs, there is no risk that the fed funds they have borrowed

can be withdrawn within the day, although there is settlement risk at the end of each day (see Chapter 16). However, there is some risk that fed funds will not be rolled over by the lending bank the next day if rollover is desired by the borrowing DI. In reality, this has occurred only in periods of extreme crisis, such as the failure of Continental Illinois in 1984. Nevertheless, since fed funds are uncollateralized loans, institutions selling fed funds normally impose maximum bilateral limits or credit caps on borrowing institutions. This may constrain the ability of a bank to expand its federal funds–borrowing position very rapidly if this is part of its overall liability management strategy.

**Costs**

The cost of fed funds for the purchasing institution is the federal funds rate. The federal funds rate is set by DIs (mostly banks) that trade in the fed funds market and can vary considerably both within the day and across days—although rate variabilityhas fallen since the introduction of lagged reserve accounting in July 1998.

**Federal funds**: Short-term uncollateralized loans made by one DI to another

***Example 8* Repurchase Agreements (RPs)**

***Withdrawal Risk***

Repurchase agreements (RPs or repos) can be viewed as collateralized federal funds transactions. In a federal funds transaction, the DI with excess reserves sells fed funds for one day to the purchasing DI. The next day, the purchasing DI returns the fed funds plus one day’s interest reflecting the fed funds rate. Since a credit risk exposure exists for the selling DI because the purchasing DI may be unable to repay the fed funds the next day, the seller may seek collateral backing for the one-day loan of fed funds. In an RP transaction, the funds-selling DI receives government securities as collateral from the funds-purchasing DI. **That is,** the funds-purchasing DI temporarily exchanges securities for cash. The next day, this transaction is reversed. The funds-purchasing DI sends back the fed funds it borrowed plus interest (the RP rate); it receives in return (or repurchases) its securities used as collateral in the transaction.

As with the fed funds market, the RP market is a highly liquid and flexible source of funds for DIs needing to increase their liabilities and to offset deposit withdrawals. **Moreover**, like fed funds, these transactions can be rolled over each day. The major liability management flexibility difference between fed funds and RPs is that a fed funds transaction can be entered into at any time in the business day as long as the Fedwire is open (see Chapter 14).23 In general, it is difficult to transact an RP borrowing late in the day since the DI sending the fed funds must be satisfied with the type and quality of the securities collateral proposed by the borrowing institution. This collateral is normally in the form of T-bills, T-notes, T-bonds, and mortgage-backed securities, but their maturities and other features, such as callability and coupons, may be unattractive to the funds seller. Negotiations over the collateral package can delay RP transactions and make them more difficult to arrange than simple uncollateralized fed fund loans.

**Costs**

Because of their collateralized nature, RP rates normally lie below federal funds rates. Also, RP rates generally show less interday fluctuation than do fed funds rates. This is partly due to the lesser intraday flexibility of RPs relative to fed fund transactions.

1. ***LIABILITY AND LIQUIDITY RISK MANAGEMENT***

***IN INSURANCE COMPANIES***

Insurance companies use a variety of sources to meet liquidity needs. As discussed

in Chapters 3 and 17, liquidity is required to meet claims on the insurance policies these FIs have written as well as unexpected **surrenders** of those policies.

These contracts therefore represent **a potential future liability** to the insurance company. Ideally, liquidity management in insurance companies is conducted so that funds needed to meet claims on insurance contracts written can be met with premiums received on **new and existing contracts**. However, a high frequency of claims at a single point in time (e.g., an unexpectedly severe hurricane season) could force insurers to **liquidate assets** at something less than their fair market value.

Insurance companies can reduce their exposure to liquidity risk by

1. diversifying the distribution of risk in the contracts they write. ***For example***, property–casualty insurers can diversify across the types of disasters they cover (e.g., in the early 2000s the top two property–casualty insurance companies [in terms of premiums sold] held policies for 18 different lines—from auto physical damage, for which they wrote 27.6 percent of all industry premiums, to homeowners multiple peril, for which they wrote 34.2 percent of all industry premiums).
2. Alternatively, insurance companies can meet liquidity needs by holding relatively **marketable assets** to cover claim payments. Assets such as government and corporate bonds and corporate stock usually can be liquidated quickly at close to their fair market values in financial markets to pay claims on insurance policies when premium income is insufficient. *For example, in 2006*, life and property– casualty insurance companies held approximately 80 percent of their assets in the form of government securities and corporate securities (see Chapter 3).
3. ***Summary***

Liquidity and liability management issues are intimately linked for the modern FI. Many factors, both cost and regulatory, impact an FI manager’s choice of the amount of liquid assets to hold. An FI’s choice of liquidity is something of a knife edge situation, trading off the costs and benefits of undershooting or overshooting regulatory specified (and prudentially specified) reserve asset targets.

An FI can manage its liabilities in a fashion that affects the overall withdrawal risk of its funding portfolio and therefore the need for liquid assets to meet such withdrawals. However, reducing withdrawal risk often comes at a cost because liability sources that are easier to control from a withdrawal risk perspective are often more costly for the FI to utilize.

تعد مشكلة السيولة إحدى أهم المشكلات التي تواجه أغلب الشركات والمؤسسات التجارية التي تسعى جاهدة إلى حلها بهدف توفير التمويل لمشروعاتها المختلفة، ومن بين الأدوات التي تلجأ الشركات والمؤسسات المالية إليها لتحقيق هذا الهدف هو التوريق Securitization، حيث يسهم في خلق تدفقات مالية جديدة بتكاليف منخفضة دون اللجوء إلى الاقتراض. وسنحاول في السطور التالية الإجابة عن السؤال الأساسي في هذا المقال: ماهو التوريق؟ كما سنعرض آلية عمل هذه العملية وأهم الأهداف الاقتصادية لها، كما سنوضح إيجابياتها وسلبياتها.

تعريف التوريق

**التوريق**

تعد مشكلة السيولة إحدى أهم المشكلات التي تواجه أغلب الشركات والمؤسسات التجارية التي تسعى جاهدة إلى حلها بهدف توفير التمويل لمشروعاتها المختلفة، ومن بين الأدوات التي تلجأ الشركات والمؤسسات المالية إليها لتحقيق هذا الهدف هو **التوريق Securitization**، حيث يسهم في خلق تدفقات مالية جديدة بتكاليف منخفضة دون اللجوء إلى الاقتراض. وسنحاول في السطور التالية الإجابة عن السؤال الأساسي في هذا المقال: **ماهو التوريق؟** كما سنعرض آلية عمل هذه العملية وأهم الأهداف الاقتصادية لها، كما سنوضح إيجابياتها وسلبياتها.

**تعريف التوريق**

التوريق أو التسنيد هو إجراء او عملية مالية تتولى فيها جهة الإصدار تصميم أداة مالية قابلة للتداول في الأسواق من خلال دمج الأصول المالية المختلفة في مجموعة واحدة ومن ثم بيعها في صورة صكوك أو سندات للمستثمرين.

ويمكن من الناحية النظرية توريق أي حق مالي غير قابل للتداول ومضمون بأصول وتحويله إلى عنصر قابل للتداول في الأسواق له قيمة نقدية، غير أن هذه العملية تتم في الغالب مع القروض والأصول التي تدر عائدا مثل أنواع مختلفة من الديون الاستهلاكية أو التجارية بهدف الحصول على قيمتها فور إصدارها

**ما هو التوريق؟**

**- التوريق هو عملية مالية يتم فيها إصدار صكوك تحمل قيمة أصول تدر عائد وتباع بعد ذلك إلى المستثمرين.**

**أو هو تحويل أقساط القروض طويلة الأجل إلى سندات وبيعها فى سوق الأوراق المالية بهدف الحصول على قيمتها فور اصدارها مما يتيح للشركات المصدرة توفير سيولة تمكنها من التوسع فى تقديم مزيد من القروض دون انتظار مواعيد سداد الأقساط، ودون تحميل ميزانيتها مصروفات تمويلية مثل الاقتراض البنكى.**