Chapter 9

Cash and Marketable Securities Management

FLORIDA INTERNATIONAL UNIVERSITY
COLLEGE OF ENGINEERING

Learning Objectives

After studying Chapter 9, you should be able to:

- Explain the difference between the flow of funds (sources and uses of funds) statement and the statement of cash flows -- and understand the benefits of using each.
- Define "funds" and identify sources and uses of funds.
- Create a sources and uses of funds statement, make adjustments, and analyze the final results.
- Describe the purpose and content of the statement of cash flows as well as implications that can be drawn from it.
- Prepare a cash budget from forecasts of sales, receipts, and disbursements -- and know why such a budget should be flexible.
- Develop forecasted balance sheets and income statements.
- Understand the importance of using probabilistic information in forecasting financial statements and evaluating a firm's condition.

FLORIDA INTERNATIONAL UNIVERSITY
COLLEGE OF ENGINEERING

Topics

- Motives for Holding Cash
- Speeding Up Cash Receipts
- S-l-o-w-i-n-g D-o-w-n Cash Payouts
- Electronic Commerce
- Outsourcing
- Cash Balances to Maintain
- Investment in Marketable Securities

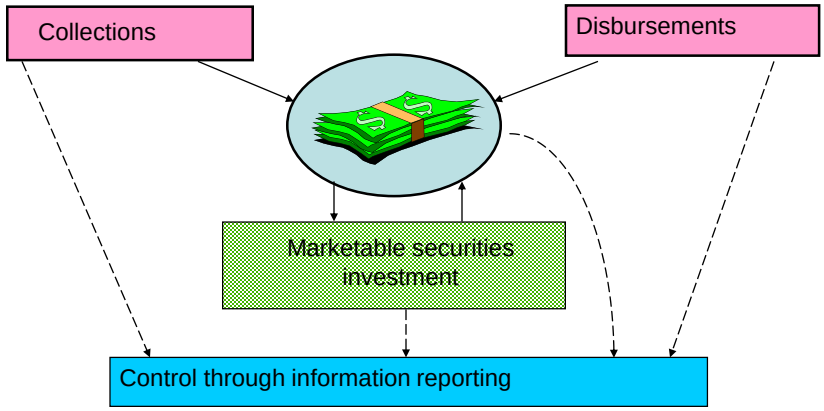
Motives for Holding Cash

Transactions Motive -- to meet payments arising in the ordinary course of business

Speculative Motive -- to take advantage of temporary opportunities

Precautionary Motive -- to maintain a cushion or buffer to meet unexpected cash needs

Cash Management System



Speeding Up Cash Receipts

Collections

- Expedite preparing and mailing the invoice
- Accelerate the mailing of payments from customers
- Reduce the time during which payments received by the firm remain uncollected

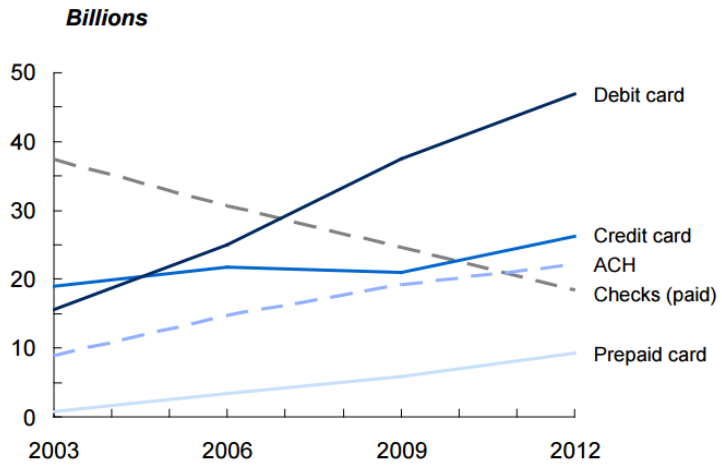
Trends in Noncash Payments by Number and Type of Transaction

- Paper check writing continues to persist as a significant portion of noncash payments, but interbank processing and clearing of these checks are virtually all electronic. As in 2009, almost all checks in 2012 were either cleared by electronic image exchange or converted to ACH payments.
- Increasingly fewer checks enter the banking system as paper at all: in 2012 about one in six checks was deposited by accountholders as an electronic image rather than paper.

https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Trends in Noncash Payments by Number and Type of Transaction



https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Trends in Noncash Payments by Number and Type of Transaction

- The estimated number of noncash payments, excluding wire transfers, was 122.8 billion in 2012, with a value of $79.0 trillion.
- The number of noncash payments in U.S. increased at a compound annual rate of 4.4% from 2009.
- Trends in noncash payments are influenced by many factors, including technological and financial innovations, changes in consumer and business financial behavior, the business cycle, the composition of economic activity, regulatory developments, and population growth.

https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Trends in Noncash Payments by Number and Type of Transaction

- The number of checks paid continued to decline, falling to 18.3 billion in 2012—less than half the number of checks that were paid in 2003.
- Despite the continued decline in the use of checks, the check clearing process continued to gain efficiencies and has become virtually 100% electronic.
- Most checks continued to be deposited in paper form, but the number of checks deposited as electronic images increased since the last survey.

https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Trends in Noncash Payments by Number and Type of Transaction

- In 2012, among all checks deposited at the bank of first deposit, 3.4 billion (17%) were deposited as electronic images compared with 3.0 billion (13%) in 2009.
- The 2013 Study finds that in 2012, 93% of checks deposited as images were by business depositors compared with 7% by consumer depositors.

https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

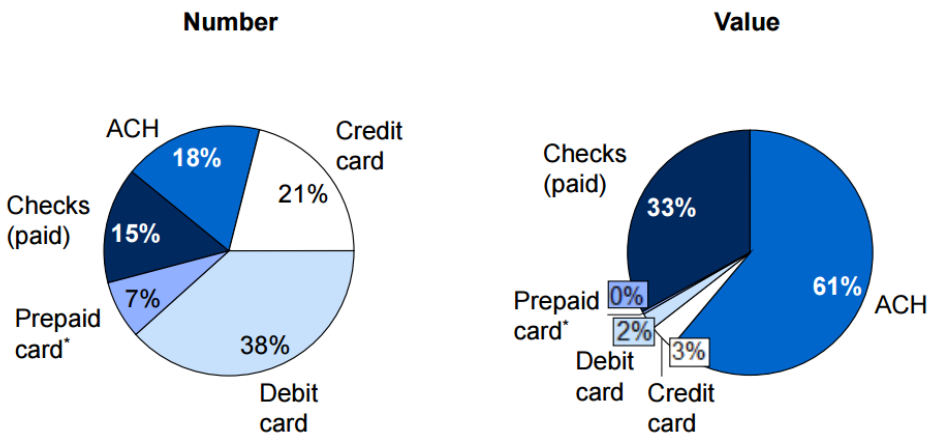
Trends in the Average Values of Noncash Payments ($)

	2003	2006	2009	2012	2003-12	2009-12
Credit card	89	98	89	94	0.7%	2.1%
Debit card	40	39	37	39	-0.5%	1.2%
Prepaid card	26	23	23	24	-0.7%	1.3%
ACH	2,754	2,121	1,946	2,186	-2.5%	4.0%
Checks (paid)	1,103	1,363	1,291	1,420	2.8%	3.2%

https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

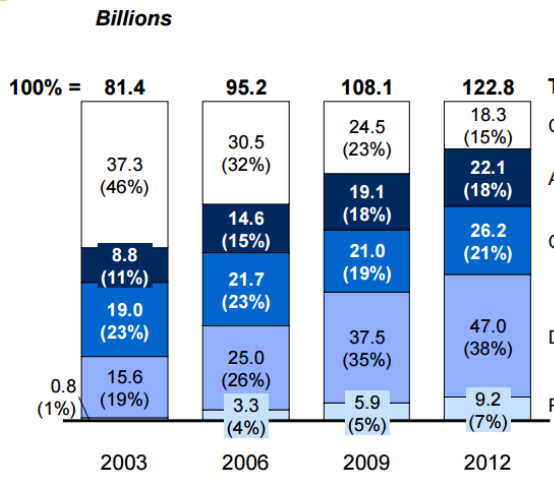
Distribution of Noncash Payments in 2012



https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Noncash Payment Transactions by Payment Type



	CAGR* 2003-12	CAGR* 2009-12
Total	***4.7%***	***4.4%***
Checks (paid)	*-7.6%*	*-9.2%*
ACH	*10.9%*	*5.1%*
Credit card	*3.7%*	*7.6%*
Debit card	*13.0%*	*7.7%*
Prepaid card	*30.7%*	*15.8%*

https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

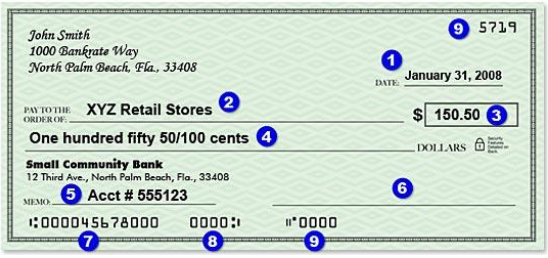
Number and Growth of Noncash Payments

	2003	2006	2009	2012	2003-12	2009-12
Total (billions)	81.4	95.2	108.1	122.8	4.7%	4.4%
General-purpose card	30.8	44.3	58.4	73.8	10.2%	8.1%
Credit card	15.2	19.0	19.5	23.8	5.1%	6.8%
Debit card	15.6	25.0	37.5	47.0	13.0%	7.7%
Prepaid card	0.0	0.3	1.3	3.1		33.5%
Private-label card	4.6	5.8	6.1	8.5	7.1%	11.6%
Credit card	3.8	2.7	1.5	2.4	-4.8%	17.1%
Prepaid card	0.8	3.0	4.6	6.1	24.9%	9.7%
ACH	8.8	14.6	19.1	22.1	10.9%	5.1%
Checks(paid)	37.3	30.5	24.5	18.3	-7.6%	-9.2%

https://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

How do Checks get Processed?



1. Date
2. Person/Company receiving payment.
3. The amount of payment
4. Total payment in words.
5. Memo
6. Your signature.

7. Routing number (for electronic clearing).
8. Checking account number.
9. Check number (also in upper-right corner).

http://www.bankrate.com/finance/checking/happens-write-check.aspx

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

How do Checks get Processed?

- Merchants total each day's receipts and then deposit the checks at a local bank.
- There, the dollar amount of each check is encoded into the "MICR line" -- the row of numbers and symbols imprinted along the bottom of each check.
- The amount is filled in by the bank or other processing authority under the account holder's signature and to the right of the routing, transit, account and check numbers as MICR (magnetic ink character readable).

http://www.bankrate.com/finance/checking/happens-write-check.aspx

How do Checks get Processed?

- The paper checks are then fed into a reader/sorter, a high-powered machine.
- The reader/sorter produces images of the front and back of each check and creates an electronic file that contains all the MICR data. Very large merchants, such as national grocery store chains, typically MICR their own checks on site and transmit the data to their bank electronically.
- The MICR file is then sent electronically to a clearinghouse, which combines and re-sorts the data, and then forwards the information to each bank on a bank-by-bank basis.

http://www.bankrate.com/finance/checking/happens-write-check.aspx

How do Checks get Processed?

- The Federal Reserve operates a national clearinghouse.
- Some banks also use regional clearinghouses.
- Very large banks have direct lines to one another for check-clearing purposes.
- Each bank then matches the data file to its own customer accounts.
- If all goes well, payment is made.

http://www.bankrate.com/finance/checking/happens-write-check.aspx

How do Checks get Processed?

- If a checking account has insufficient funds or a stop-payment order has been placed, the data file is flagged and sent back to the bank where the check was deposited.
- That bank then produces a copy of the original check for the merchant, who can then pursue the customer for payment.
- The copy is known as an "image replacement document," or IRD.
- The unpaid check is said to be a "bad check" or to have "bounced."

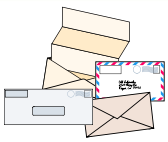
http://www.bankrate.com/finance/checking/happens-write-check.aspx

How do Checks get Processed?

- Meanwhile, the original paper checks are set aside and later destroyed, usually within a matter of weeks or months, depending on the bank's policies.
- Some checks don't even make it that far. That's because some banks now offer customers the ability to deposit checks remotely. Instead of going to the bank, the customer simply takes a picture of the check with a cellphone and sends that image to the bank to be processed.

http://www.bankrate.com/finance/checking/happens-write-check.aspx

Collection Float

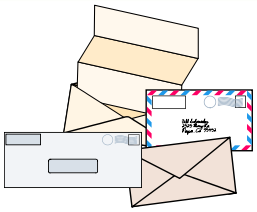
Mail Float | Processing Float | Availability Float

Deposit Float

Collection Float: total time between the mailing of the check by the customer and the availability of cash to the receiving firm.

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Mail Float

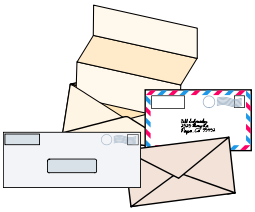


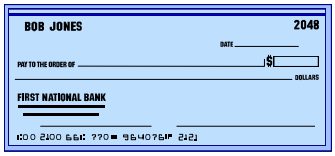
Customer mails check

Firm receives check

Mail Float: time the check is in the mail.

Processing Float





Firm receives check

Firm deposits check

Processing Float: time it takes a company to process the check internally.

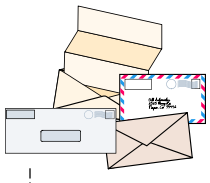
Availability Float

Firm deposits check

Firm's bank account credited

Availability Float: time consumed in clearing the check through the banking system.

Deposit Float



Processing Float

Availability Float

Deposit Float: time during which the check received by the firm remains uncollected funds.

Earlier Billing

Accelerate preparation and mailing of invoices

- computerized billing
- invoices included with shipment
- invoices are faxed
- advance payment requests
- preauthorized debits

Preauthorized Payments

Preauthorized debit

The transfer of funds from a payor's bank account on a specified date to the payee's bank account; the transfer is initiated by the payee with the payor's advance authorization.

Lockbox Systems

Traditional Lockbox

A post office box maintained by a firm's bank that is used as a receiving point for customer remittances.

Electronic Lockbox

A collection service provided by a firm's bank that receives electronic payments and accompanying remittance data and communicates this information to the company in a specified format.

Lockbox Process*

- Customers are instructed to *mail* their remittances to the lockbox location.
- Bank picks up remittances several times daily from the lockbox.
- Bank deposits remittances in the customers account and provides a deposit slip with a list of payments.
- Company receives the list and any additional mailed items.

* Based on the traditional lockbox system

Lockbox System

Advantage

Receive remittances sooner which reduces processing float.

Disadvantage

Cost of creating and maintaining a lockbox system. Generally, not advantageous for small remittances.

Concentration Banking

Cash Concentration

The movement of cash from lockbox or field banks into the firm's central cash pool residing in a concentration bank.

Compensating Balance

Demand deposits maintained by a firm to compensate a bank for services provided, credit lines, or loans.

Concentration Banking

Moving cash balances to a central location:

- Improves control over inflows and outflows of corporate cash.
- Reduces idle cash balances to a minimum.
- Allows for more effective investments by pooling excess cash balances.

Concentration Services for Transferring Funds

(1) Depository Transfer Check (DTC)

Definition: A non-negotiable check payable to a single company account at a concentration bank.

Funds are not immediately available upon receipt of the DTC.

Concentration Services for Transferring Funds

(2) Automated Clearinghouse (ACH) Electronic Transfer

Definition: An electronic version of the depository transfer check (DTC).

(1) Electronic check image version of the DTC.
(2) Cost is not significant and is replacing DTC.

Concentration Services for Transferring Funds

(3) Wire Transfer

Definition: A generic term for electronic funds transfer using a two-way communications system, like *Fedwire*.

Funds are available upon receipt of the wire transfer. Much more expensive.

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

S-l-o-w-i-n-g D-o-w-n Cash Payouts

- "Playing the Float"
- Control of Disbursements
  - Payable through Draft (PTD)
  - Payroll and Dividend Disbursements
  - Zero Balance Account (ZBA)
- Remote and Controlled Disbursing

"Playing the Float"

Net Float -- The dollar difference between the balance shown in a firm's (or individual's) checkbook balance and the balance on the bank's books.

You write a check today, which is subtracted from *your* calculation of the account balance. The check has not cleared, which creates float. You can potentially earn interest on money that you have "spent."

Control of Disbursements

Firms should be able to:

1. shift funds quickly to banks from which disbursements are made.
2. generate daily detailed information on balances, receipts, and disbursements.

Solution:

Centralize payables into a single (smaller number of) account(s). This provides better control of the disbursement process.

Methods of Managing Disbursements

Payable Through Draft (PTD):

A check-like instrument that is drawn against the payor and not against a bank as is a check. After a PTD is presented to a bank, the payor gets to decide whether to honor or refuse payment.

- Delays the time to have funds on deposit to cover the draft.
- Some suppliers prefer checks.
- Banks will impose a higher service charge due to the additional handling involved.

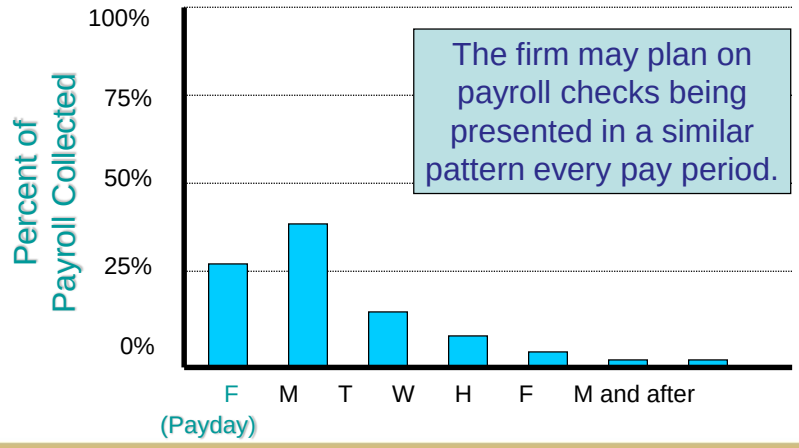
Methods of Managing Disbursements

Payroll and Dividend Disbursements

The firm attempts to determine when payroll and dividend checks will be presented for collection.

- Many times a separate account is set up to handle each of these types of disbursements.
- A distribution scheduled is projected based on past experiences.
- Funds are deposited based on expected needs.
- Minimizes excessive cash balances.

Percentage of Payroll Checks Collected



Methods of Managing Disbursements

Zero Balance Account (ZBA):

A corporate checking account in which a zero balance is maintained. The account requires a master (parent) account from which funds are drawn to cover negative balances or to which excess balances are sent.

- Eliminates the need to accurately estimate each disbursement account.
- Only need to forecast *overall* cash needs.

Remote and Controlled Disbursing

Remote Disbursement -- A system in which the firm directs checks to be drawn on a bank that is geographically remote from its customer so as to maximize check-clearing time.

This maximizes disbursement float.

Example: A Vermont business pays a Maine supplier with a check drawn on a bank in Montana.

This *may* stress supplier relations, and raises ethical issues.

Remote and Controlled Disbursing

Controlled Disbursement -- A system in which the firm directs checks to be drawn on a bank (or branch bank) that is able to give early or mid-morning notification of the total dollar amount of checks that will be presented against its account that day.

Late check presentments are minimal, which allows more accurate predicting of disbursements on a day-to-day basis.

Electronic Commerce

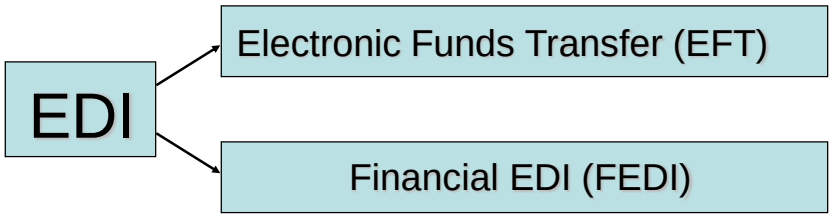
Electronic Commerce -- The exchange of business information in an electronic (non-paper) format, including over the Internet.

Messaging systems can be:

1. Unstructured -- utilize technologies such as faxes and e-mails
2. Structured -- utilize technologies such as *electronic data interchange (EDI)*.

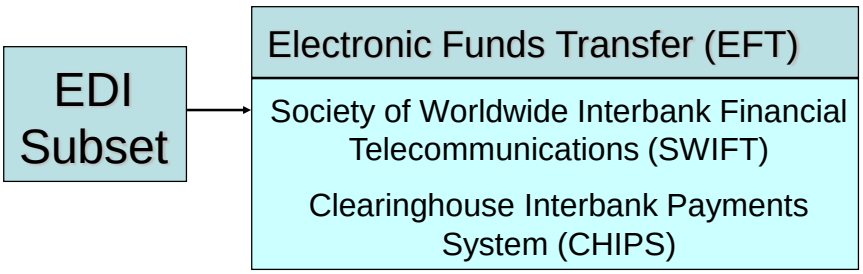
Electronic Data Interchange (EDI)

Electronic Data Interchange -- The movement of business data electronically in a structured, computer-readable format.



Electronic Funds Transfer (EFT)

Electronic Funds Transfer (EFT) -- the electronic movements of information between two depository institutions resulting in a value (money) transfer.



Electronic Funds Transfer (EFT)

New Regulation

In January 1999, a new regulation requires ALL federal government payments be made electronically.* This will:

- provide more security than paper checks and
- be cheaper to process for the government.

* Except tax refunds and special waiver situations

Financial EDI (FEDI)

Financial EDI -- The movement of financially related electronic information between a company and its bank or between banks.

EDI Subset →

Financial EDI (FEDI)
Examples include:
Lockbox remittance information
Bank balance information

Costs and Benefits of EDI

Costs

- Computer hardware and software expenditures
- Increased training costs to implement and utilize an EDI system
- Additional expenses to convince suppliers and customers to use the electronic system
- Loss of float

Benefits

- Information and payments move faster and with greater reliability
- Improved cash forecasting and cash management
- Customers receive faster and more reliable service
- Reduction in mail, paper, and document storage costs

Outsourcing

Outsourcing -- Subcontracting a certain business operation to an outside firm, instead of doing it "in-house."

*Why might a firm outsource?**

1. Improving company focus
2. Reducing and controlling operating costs
3. Freeing resources for other purposes

* The Outsourcing Institute, 2002

Cash Balances to Maintain

The optimal level of cash should be the larger of:

(1) the transaction balances required when cash management is efficient.

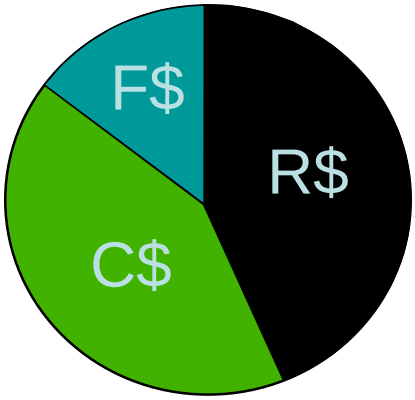
(2) the compensating balance requirements of commercial banks.

Investment in Marketable Securities

Marketable Securities are shown on the balance sheet as:

1. Cash equivalents if maturities are less than three (3) months at the time of acquisition.
2. Short-term investments if remaining maturities are less than one (1) year.

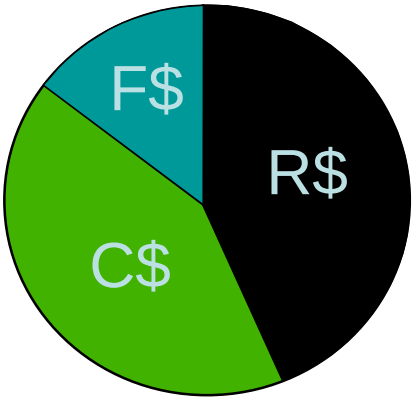
The Marketable Securities Portfolio



Ready Cash Segment (R$)

Optimal balance of marketable securities held to take care of probable deficiencies in the firm's cash account.

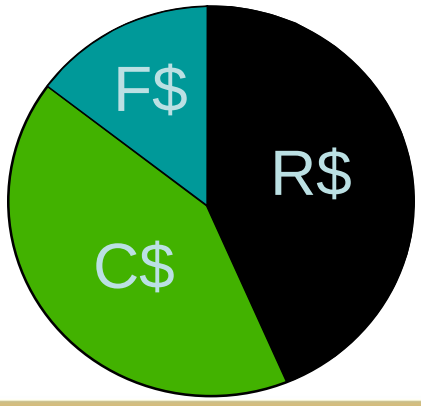
The Marketable Securities Portfolio



Controllable Cash Segment (C$)

Marketable securities held for meeting controllable (knowable) outflows, such as taxes and dividends.

The Marketable Securities Portfolio



Free Cash Segment (F$)

"Free" marketable securities (that is, available for as yet unassigned purposes).

Variables in Marketable Securities Selection

Safety

Refers to the likelihood of getting back the same number of dollars you originally invested (principal).

Marketability (or Liquidity)

The ability to sell a significant volume of securities in a short period of time in the secondary market without significant price concession.

Variables in Marketable Securities Selection

Interest Rate (or Yield) Risk

The variability in the market price of a security caused by changes in interest rates.

Maturity

Refers to the remaining life of the security.

Common Money Market Instruments

Money Market Instruments

All government securities and short-term corporate obligations. (Broadly defined)

- Treasury Bills (T-bills): Short-term, non-interest bearing obligations of the U.S. Treasury issued at a discount and redeemed at maturity for full face value. Minimum $1,000 amount and $1,000 increments thereafter.

T-Bills and Bond Equivalent Yield (BEY) Method:

$$BEY = [\ (FA - PP) / (PP)\ ] * [\ 365 / DM\ ]$$

- FA: face amount of security
- PP: purchase price of security
- DM: days to maturity of security

A $1,000, 13-week T-bill is purchased for $990 – what is its BEY?

$$BEY = [\ (1000 - 990) / (990)\ ] * [\ 365 / 91\ ]$$

$$\underline{BEY = 4.05\%}$$

T-Bills and Equivalent Annual Yield (EAY) Method:

$$EAY = (1 + [\ BEY / (365 / DM)\ ]\ )^{365/DM} - 1$$

- BEY: bond equivalent yield from the previous slide
- DM: days to maturity of security

Calculate the EAY of the $1,000, 13-week T-bill purchased for $990 described on the previous slide?

$$EAY = (1 + [.0405/(365 / 91)])^{365/91} - 1$$

$$\underline{EAY = 4.11\%}$$

Common Money Market Instruments

- Treasury Notes: Medium-term (2-10 years' original maturity) obligations of the U.S. Treasury.
- Treasury Bonds: Long-term (more than 10 years' original maturity) obligations of the U.S. Treasury.

Common Money Market Instruments

- Repurchase Agreements (RPs; repos): Agreements to buy securities (usually Treasury bills) and resell them at a higher price at a later date.
- Bankers' Acceptances (BAs): Short-term promissory trade notes for which a bank (by having "accepted" them) promises to pay the holder the face amount at maturity.

Common Money Market Instruments

- Commercial Paper: Short-term, unsecured promissory notes, generally issued by large corporations (unsecured IOUs). The largest dollar-volume instrument.
- Federal Agency Securities: Debt securities issued by federal agencies and government-sponsored enterprises (GSEs). Examples: FFCB, FNMA, and FHLMC.

Common Money Market Instruments

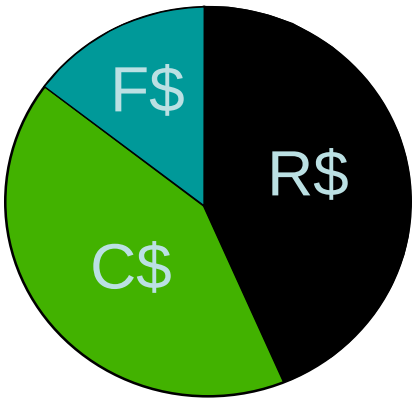
- Negotiable Certificate of Deposit: A large-denomination investment in a negotiable time deposit at a commercial bank or savings institution paying a fixed or variable rate of interest for a specified period of time.

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Common Money Market Instruments

- Eurodollars: A U.S. dollar-denominated deposit -- generally in a bank located outside the United States -- not subject to U.S. banking regulations
- Money Market Preferred Stock: Preferred stock having a dividend rate that is reset at auction every 49 days.

Selecting Securities for the Portfolio Segments

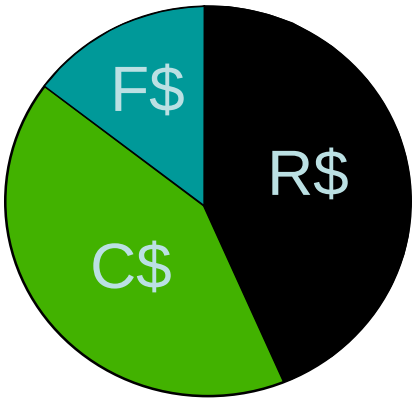


Ready Cash Segment (R$)

Safety and ability to convert to cash is most important.

Select *U.S. Treasuries* for this segment.

Selecting Securities for the Portfolio Segments

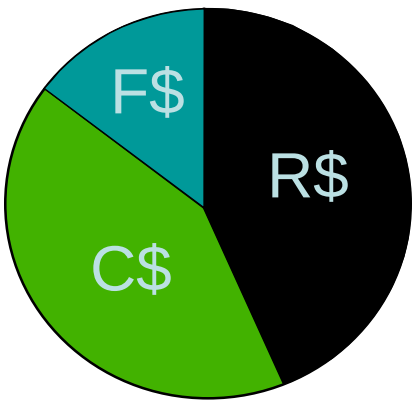


Controllable Cash Segment (C$)

Marketability less important. Possibly match time needs.

May select *CDs, repos, BAs, euros* for this segment.

Selecting Securities for the Portfolio Segments



Free Cash Segment (F$)

Base choice on yield subject to risk-return trade-offs.

Any money market instrument may be selected for this segment.