TEXPO Conference 2021:
Essential Learning for CTP Candidates
Session #6 (Wed., 4/14, 11:30 am – 12:30 pm)

The Treasury Academy
New Frontiers in Treasury Education

- ***ETM6-Chapter 12:*** *Disbursements, Collections & Concentration*
- ***ETM6-Chapter 14:*** *Cash Forecasting*

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As a prep course for the CTP exam, significant portions of these lectures are based on materials from the ***Essentials*** text.

ETM6: Chapter 12

The Treasury Academy

New Frontiers in Treasury Education

- ***Disbursements, Collections, and Concentration***

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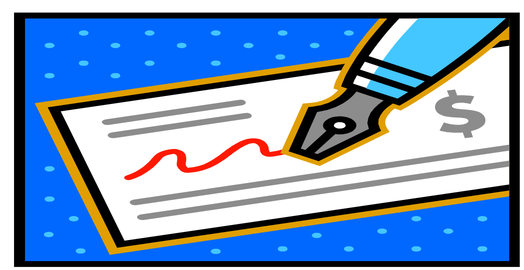
Overview of Chapter 12 Topics

- Introduction
- Disbursements
- Collections
- Concentration of Funds

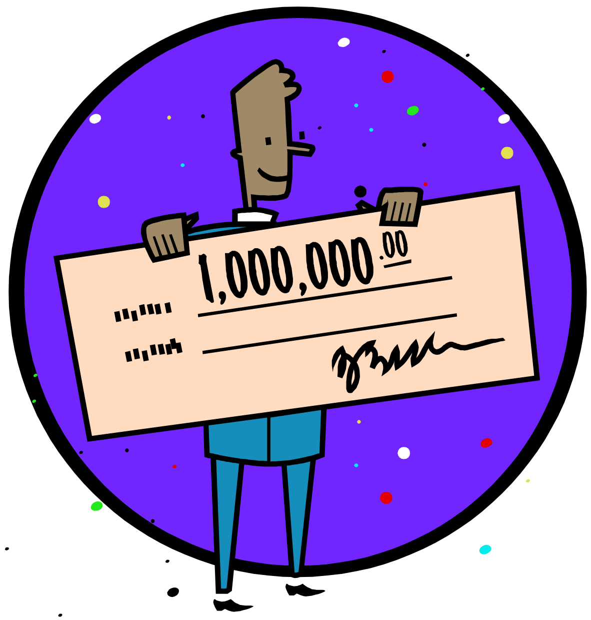
Disbursements

- Disbursement Products
- Electronic Funds Transfer
- Check Payments
- Card Payments
- Outsourced Disbursement Services
- Payments Fraud
- Managing Disbursement Information



Disbursement Management Products

- Demand Deposit Accounts (DDAs)
  - Zero Balance Accounts(ZBAs)
  - Controlled Disbursement
  - Imprest Accounts



Zero Balance Account (ZBA)

- Disbursement account with zero balance
- Credits and debits are posted daily
- Funding of debit balance is automatic from a master account at same bank
- Multi-tiered ZBAs used for companies with multiple divisions or subsidiaries to write checks on separate accounts or to segregate different types of payments

Controlled Disbursement

- Provides notification of checks that will clear account that day
- Offered in conjunction with Fed Payor Bank Services
- Often combined with a ZBA
- Managing discrepancies after notification
- Funding of disbursement accounts
- Credit risk from bank's perspective

Electronic Funds Transfer

- Wire Transfers
- Credit Transfers
- Tax Payments
- Wage Payments

Wire Transfers

- Fedwire is only true RTGS in U.S.
- To meet the needs of corporate users, banks generally classify wire transfers by usage category
  - Repetitive wire
  - Semi-repetitive wire
  - Non-repetitive wire (Free form)
  - Drawdown wire
  - Standing wire
  - Book transfers (within same bank)
    - These do NOT go through Fedwire = Cheaper

More on Other Types of EFT

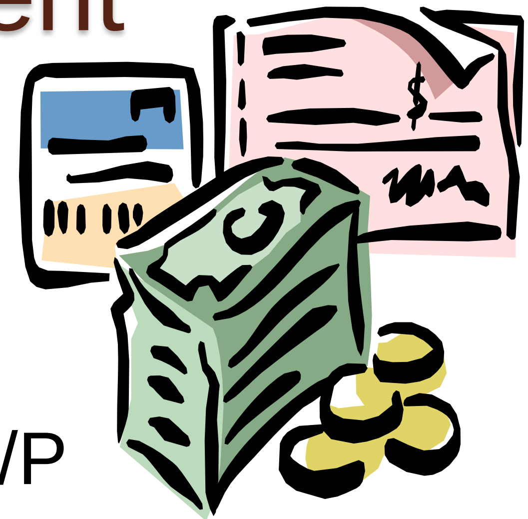
- Credit Transfers
  - Mainly direct deposits via ACH or other non-urgent electronic means
  - Used for payroll, employee expense reimbursement, interest, taxes, dividends, and B2B transactions
- Tax Payments
  - Most tax payments are some type of EFT
- Wage Payments
  - Direct deposit of payroll is very common
  - Can vary significantly by country and type of company/employee

Card Payments

These are covered in detail in Chapter 4 – Payment Systems

- Purchasing Cards
- Travel & Entertainment (T&E) Cards
- Fleet Cards
- Combined Cards
- Payroll and Other Stored-Value Cards
- Electronic Benefit Transfer (EBT Cards

Outsourced Disbursement Services



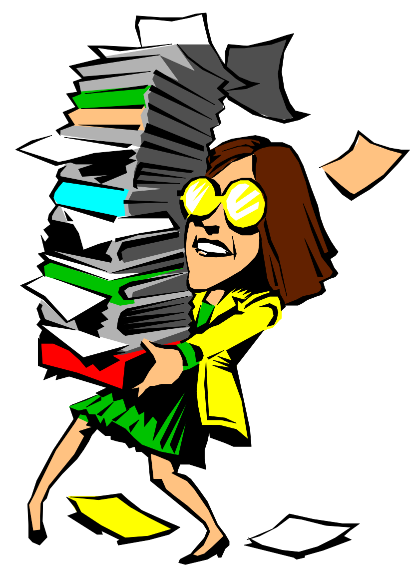
- Freight payments
- Payroll services
- Integrated or comprehensive A/P
  - Firm sends a data file to a financial services provider with a list of all payments to be made, including all detail information on payees
  - Financial service provide maintains a database of all the firm’s payees and only limited payment information needs to be sent
- Payment factories
  - Centralizing a company’s disbursements
  - Offers greater control and lower costs

Payments Fraud

- A major concern for all organizations
- Many use positive pay or reverse positive pay
- Also, ACH filters and blocks, and daily reconciliations to help detect and control payments fraud
- Some best practices
  - Check stock with security features
  - Segregation of duties
  - Dual authentication for EFT transactions
  - Reduction/elimination of non-repetitive wires
  - Separate accounts for receipts & disbursements
  - Dedicated computer for all on-line EFT transactions
- Card payment fraud is becoming a bigger issue
- “Holder in Due Course” issue in check fraud

Managing Disbursement Information

- Balance Reporting Services
  - Allows a bank to report information to corporate customers
  - The allow both account management and fraud control
- Account Reconciliation Program (ARP)
  - Helps firms to meet their information and control requirements
  - Partial vs. Full Recon
- Check Images
  - In today's world, everything is imaged
  - Images can be used for both record keeping and control



Collections

Key Issues in Collection Systems

- Speed of Collection
- Security of Payment
- Availability of Remittance Information
- Customer Preference
- Cost of Collection

Domestic Collection Products

- Cash Collections
- Check Collections
- Imaging Technology
- Electronic Fund Transfer (EFT) Collection (Float Neutral Calc.)
- Card and Mobile Payments
- Centralized Collection Svcs
  - Mail Payments
  - Lockbox
  - Consolidated Remittance Processing(CRP)
- Electronic Bill/Invoice Presentment And Payment (EBPP/EIPP)

Switching from Check to EFT

- Treasury focus is on the payment portion of the cycle
- Calculation: Float Neutral Calculation
  - TD = total days difference in payment timing
  - r = Opportunity cost as an annual rate

$$\text{Discount} = 1 - \frac{1}{\left[1 + TD\left(\frac{r}{365}\right)\right]}$$

Float Neutral Calculation

- Assume r = 5% and TD = 3 days

$$\text{Discount} = 1 - \frac{1}{\left[1 + 3\left(\frac{0.05}{365}\right)\right]}$$

$$= 1 - \frac{1}{1.00041096} = 1 - 0.99958921$$

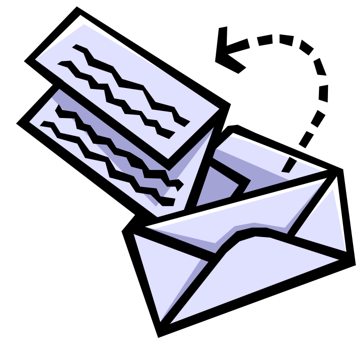
$$= 0.00041079 = 0.00041 \text{ (Rounded) or } 0.041\%$$

Source: ETM5 - © AFP

If the buyer is allowed to take a discount of 0.041 %, they would be indifferent (in present value terms) between paying by check or by electronic transfer (a speedup of 3 days in loss of value)

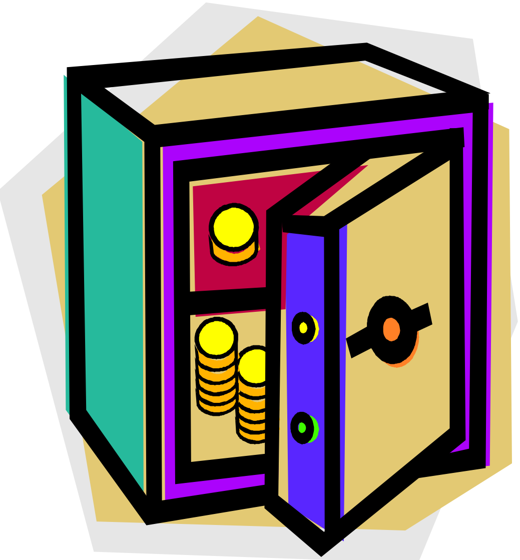
Collection Float in Mail Systems

- Components
  - Mail Float
    - Mail Time
  - Processing Float
    - Deposit Preparation Time
    - Impact of Remote Deposit Capture (RDC)
  - Availability Float
    - Check Clearing Time
- Measurement of Float
  - Dollar-Days



Lockbox Processing Systems

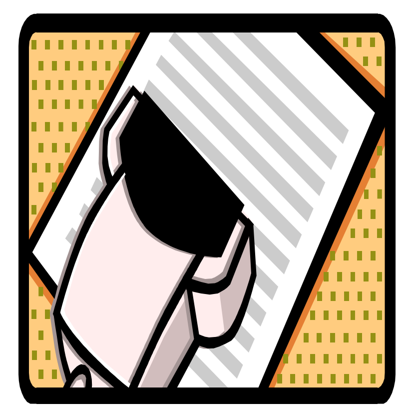
- Collection tool in which an FI or 3rd party vendor receives payments at specified post office box addresses, then processes the remittances and credits the payments into a payee's account.
- Advantages of Lockbox Systems
  - Reduced mail & processing float
  - Improved access to remittance information
  - Reduced information float
  - Reduced risk and improved security (pmts no longer received internally)
  - Improved control and record keeping capabilities
  - Uninterrupted service
  - Scalability
  - Proper segregation of duties



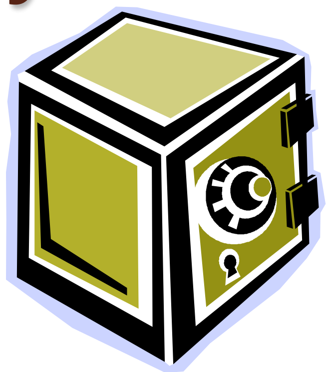
Different Types of Lockboxes

- Retail
  - Used to process high-volume, small-dollar consumer remittances (C2B)
  - Checks are accompanied by standardized, machine-scannable remittance documents
  - Highly automated
  - Focus is on reducing processing cost

- Wholesale
  - Used to process low-volume, large-dollar B2B payments with detailed remittance information
  - Focus is on float reduction
  - Often manual and/or semi-automated
  - Usually highly customized
- Hybrid (or Wholetail)
  - Combine features of both

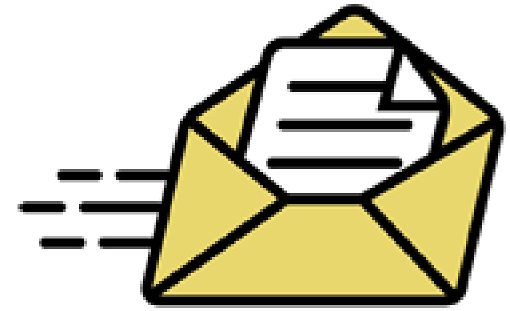


Lockbox Cost/Benefit Analysis



- Annual Sales = $108 Million ($9M/month)
- Average check size = $9,000
- Annual vol. of checks = 12,000
- Opportunity costs = 9%
- Internal processing = $0.25/item
- Lockbox costs = $10,000/yr plus $0.50 per item

Without Lockbox



Batch	Dollar Amount	Calendar Days of Collection Float	Total Dollar-Days
1	$1,500,000	X 4 =	$6,000,000
2	$4,500,000	X 2 =	$9,000,000
3	$3,000,000	X 6 =	$18,000,000
Total Deposits	$9,000,000	Total Float	$33,000,000
		Divided by 30 Calendar Days	$1,100,000

Annual Cost of Float

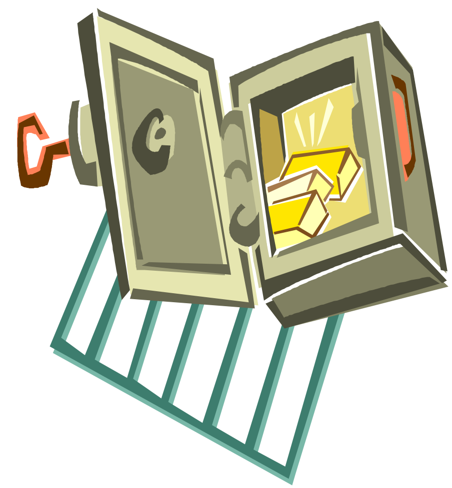
= Average Dollar-Days times Opportunity Cost

= $1,100,000 x .09 = $99,000

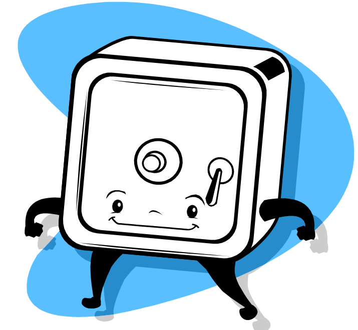
Source: ETM5 - © AFP

Lockbox Assumptions

- Lockbox can deliver the following float reductions:
  - Batch 1 from 4 days to 3 days
  - Batch 2 from 2 days to 1 day
  - Batch 3 from 6 days to 5 days
- Lockbox costs
  - $10,000 annual fee
  - $0.50 per item processing fee



With Lockbox



Batch	Dollar Amount	Calendar Days of Collection Float	Total Dollar-Days
1	$1,500,000	X 3 =	$4,500,000
2	$4,500,000	X 1 =	$4,500,000
3	$3,000,000	X 5 =	$15,000,000
Total Deposits	$9,000,000	Total Float	$24,000,000
		Divided by 30 Calendar Days	$800,000

Annual Cost of Float

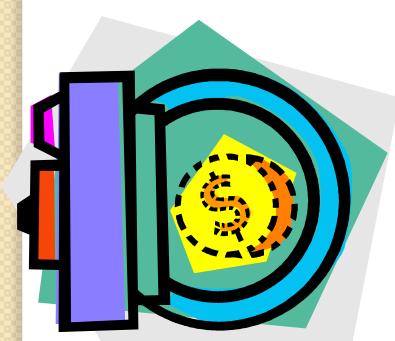
= Average Dollar-Days times Opportunity Cost

= $800,000 x .09 = $72,000

Source: ETM5 - © AFP

Comparison of Alternatives

- Without Lockbox Float Cost = $99,000
- With Lockbox Scenario
  - Float cost savings = $99,000 – $72,000 = $27,000
  - Fixed Costs of Lockbox = $10,000
  - Variable Costs of Lockbox = 12,000 x $0.50 = $6,000
  - Elimination of internal processing costs
    = 12,000 x $0.25 = $3,000
  - Net Benefit = Savings minus lockbox costs
    = ($27,000 + $3,000) – ($10,000 + $6,000)
    = $30,000 – $16,000 = $14,000



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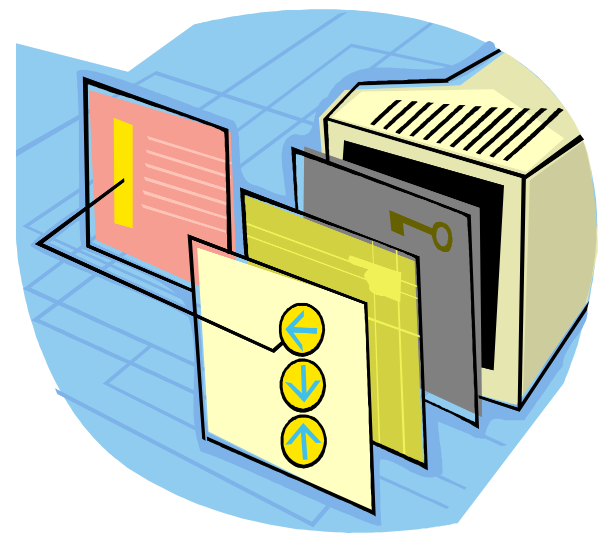
Collection Process Improvement

- Electronic Funds Transfer (EFT) with Remittance Information
- EBPP and EIPP
- Consolidated Remittance Processing (CRP)
  - Formerly known as an “Electronic Lockbox”
  - Single point for receiving all payments
  - Provides for a single data transmission to A/R
- Imaging Technology



Cross-Border Collections and Trade Management Products

- Open Account
- Documentary Collection
- Letter of Credit
- Banker’s Acceptance (BA)
- Trade Acceptance
- Other Trade Payment Methods
  - Barter
  - Countertrade
  - Trading Companies

International Trade Payment Hierarchy

Least Expensive

Least Protection For Seller

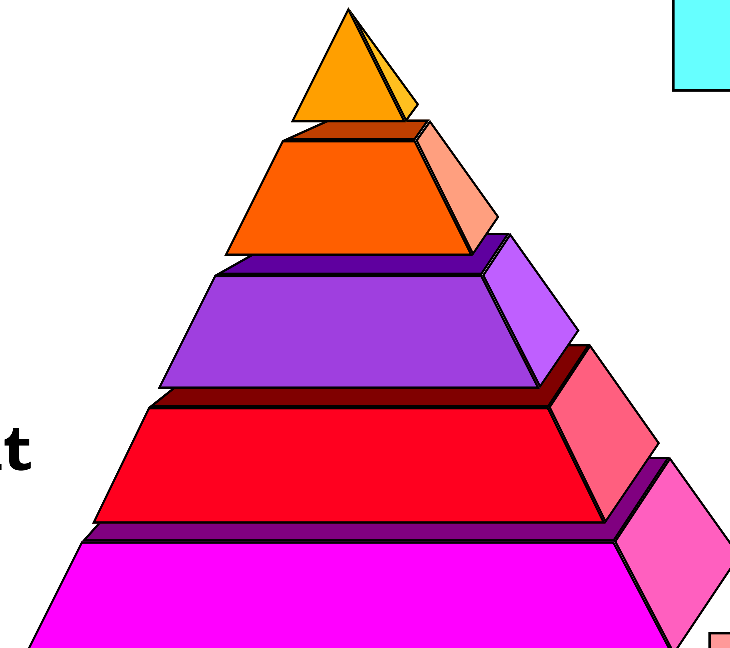
Most Protection For Buyer

Open Account

Documentary Collection

Letter of Credit

Cash in Advance



Most Protection For Seller

Most Expensive

Least Protection For Buyer

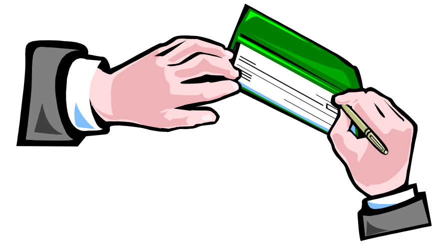
Open Account

- Responsibility of Seller
  - Checks the creditworthiness of the buyer
  - Establishes credit terms and limits
  - Ships the merchandise
  - Sends an invoice to the buyer
- Responsibility of Buyer
  - Initiates payment to the seller in accordance with any agreed upon credit terms

Open Account

- Use of Open Account
  - In the U.S., most frequently used method of payment
  - Widely used internationally when two trading partners have an existing relationship
- When to Use Other Methods
  - Exporting goods to a non-domestic buyer where there is no established relationship

Documentary Collections

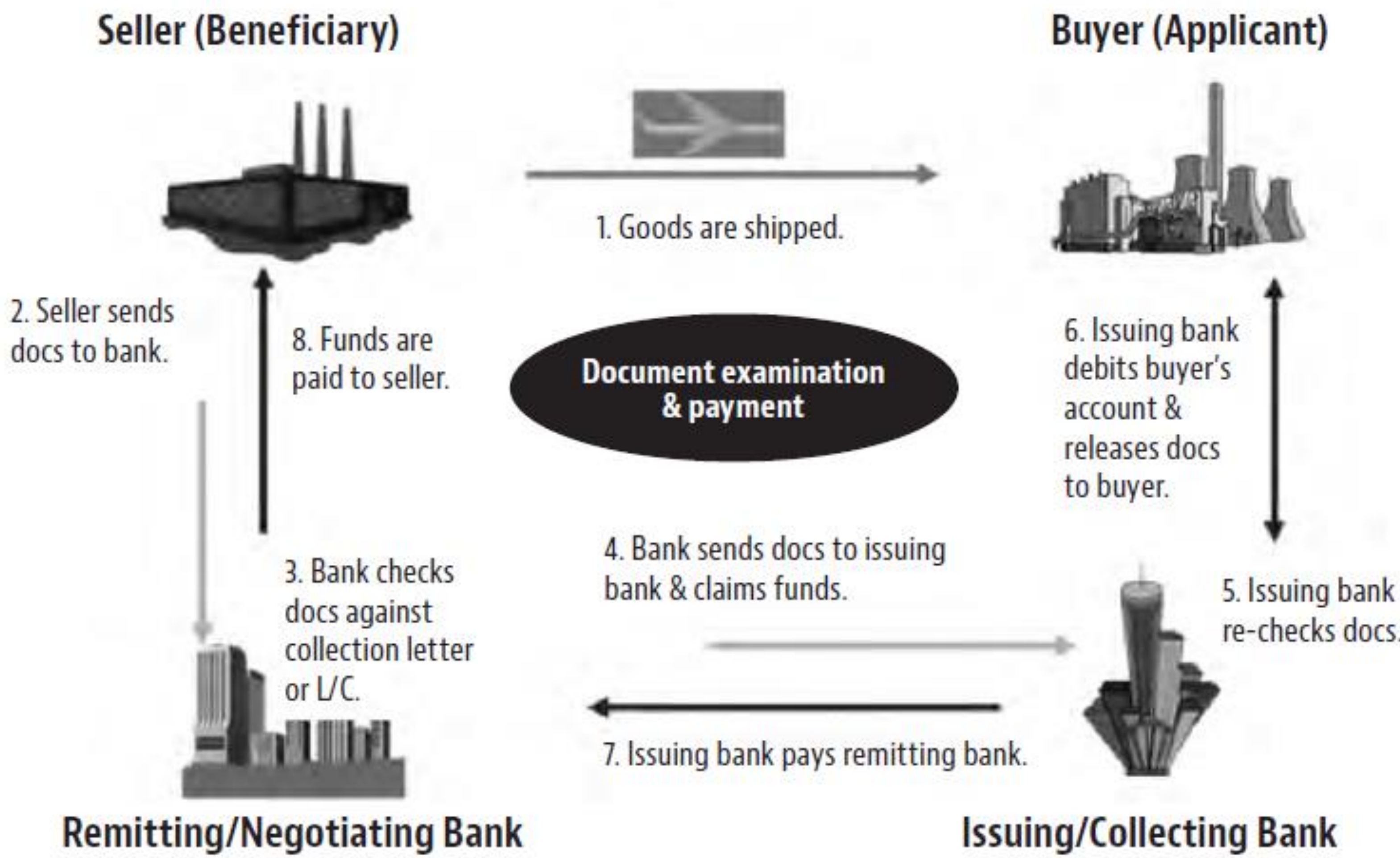


- Payment method that processes the collection of a draft and accompanying shipping documents through international correspondent banks
- Instructions regarding the specifics of the transaction are contained in a collection letter or form that accompanies the documentation
- Exporter must determine the specific instructions to be used in a collection letter

Role of Banks

- Remitting Bank
  - Seller's (exporter) bank that prepares the collection letter and forwards documents to a correspondent bank in the buyer's (importer) country
- Collecting (Presenting) Bank
  - The correspondent bank that is responsible for contacting the buyer (importer), collecting the amount due and releasing the documents as instructed

Documentary Collection



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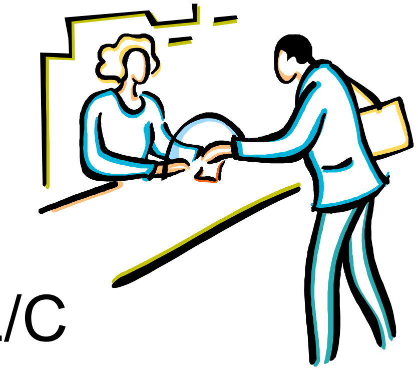
Letter of Credit (L/C)

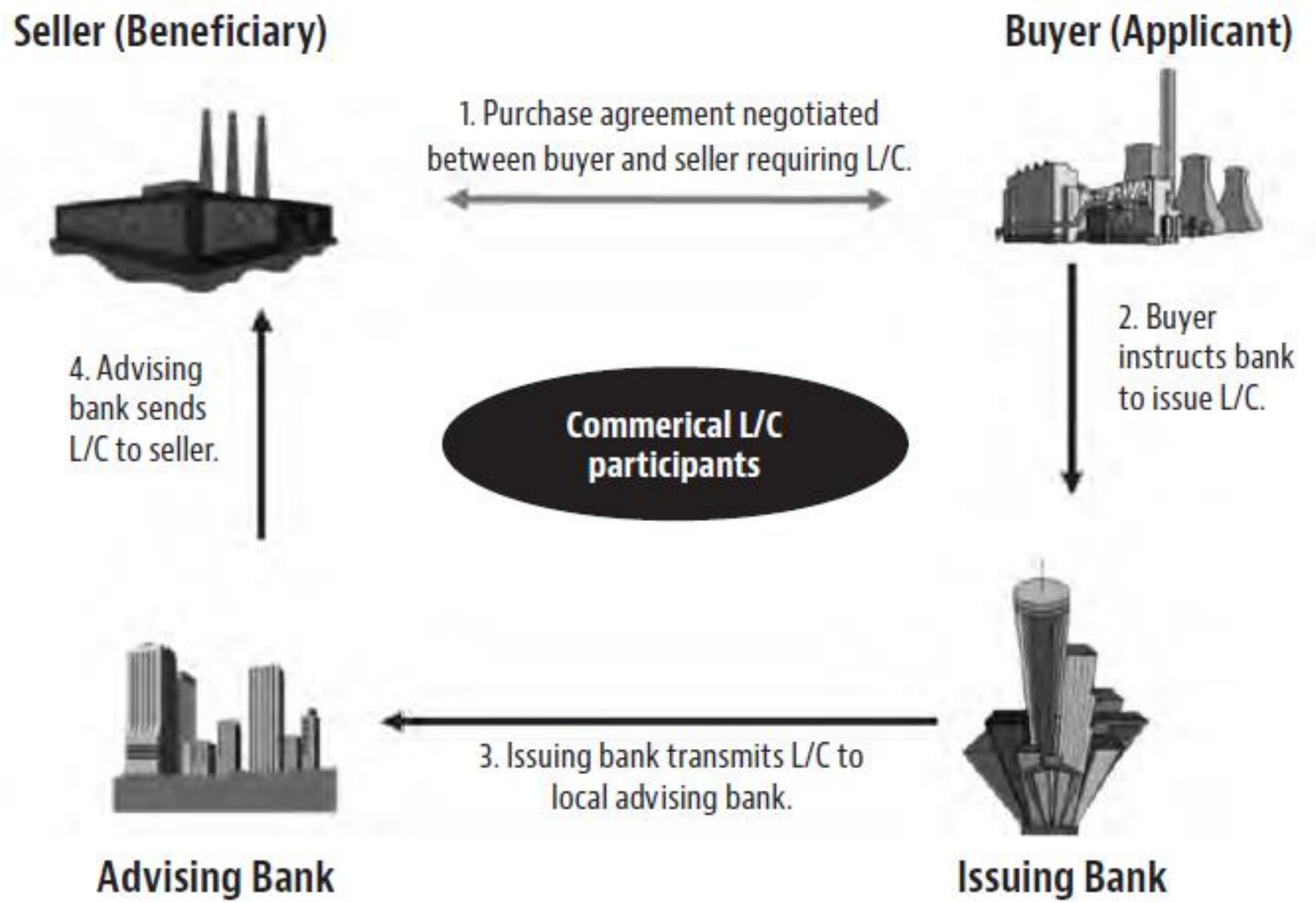
- An L/C is a document issued by a bank, guaranteeing the payment of a customer's draft up to a stated amount for a specified period, provided certain conditions are met.
- The L/C substitutes a bank's credit for that of the buyer, virtually eliminating the credit risk to the seller.
- Commercial Letter of Credit
  - Mechanism of payment on a trade transaction
  - Governed by UCP 600
- Standby Letter of Credit or Guarantee
  - Ensures financial performance of a bank's customer to a third-party beneficiary
  - Typically used as a credit enhancement

Role of Banks



- Issuing Bank
  - Buyer's (importer) bank that issues L/C
- Advising Bank
  - Seller's (exporter) bank that advises beneficiary of L/C in its favor
- Negotiating Bank
  - Examines documents and pays beneficiary (often same as advising bank)
- Confirming Bank
  - Commits to beneficiary that payment will be made regardless of issuing banks ability to pay

Letter of Credit (L/C)



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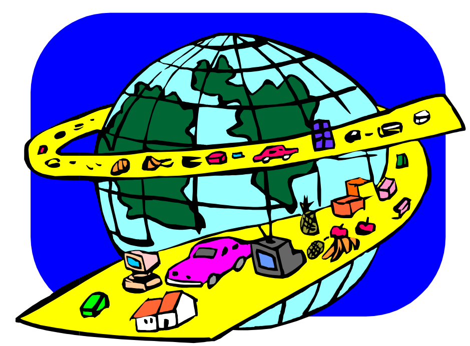
More in International Trade

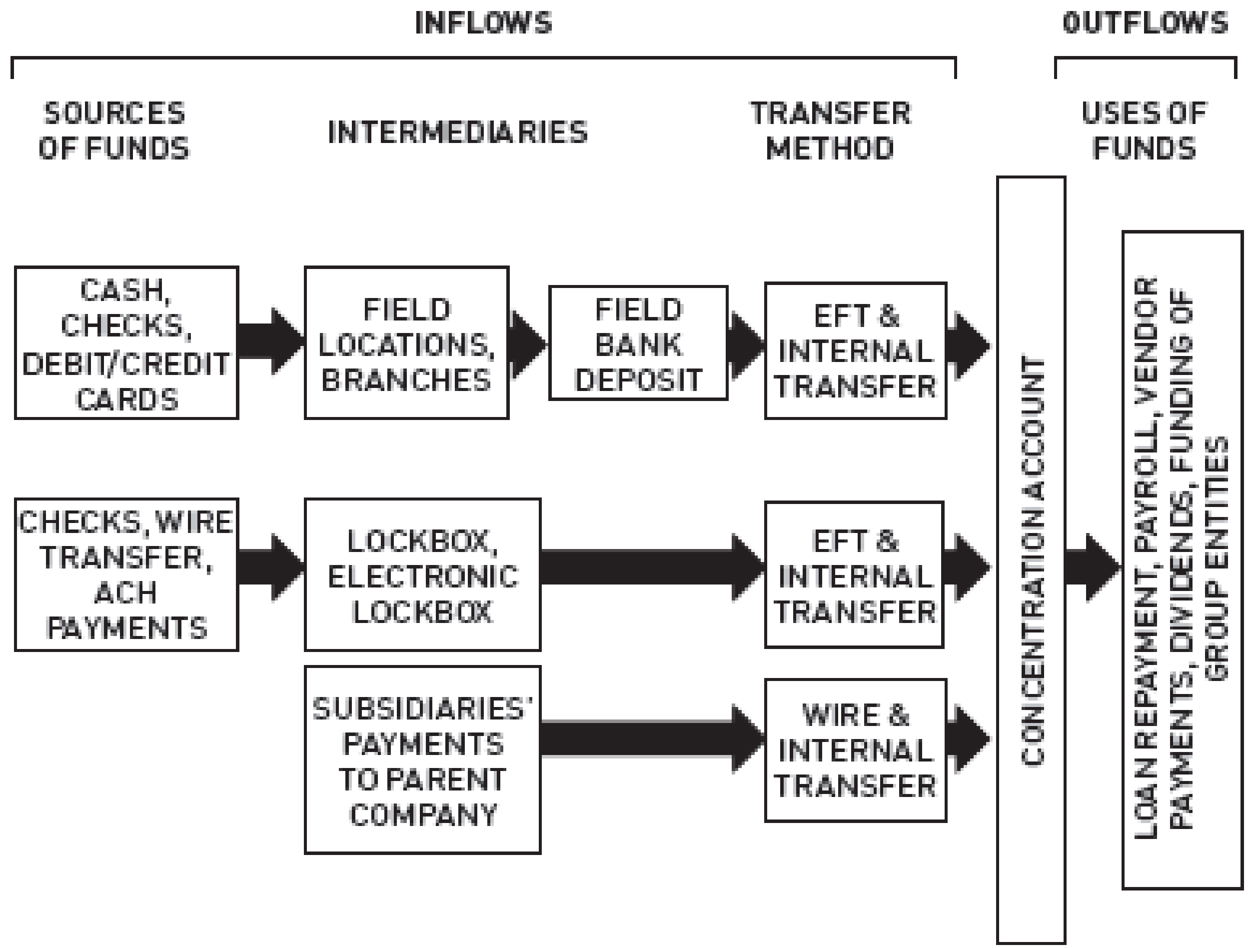
- Banker's Acceptance (BA)
  - Can be used to finance the import, export or domestic shipment of goods, as well as the storage of properly titled goods.
  - Less expensive form of short-term financing than a loan
  - Costs include discount rate and commission
- Trade Acceptance
  - Similar to a BA except it is drawn on, and accepted by, a buyer (importer).
  - Often used by importers to secure financing from a bank



Other International Trade Terms

- Barter
  - Involves the direct exchange of goods or services between two end users without the exchange of money. It is most frequently used when funds cannot be repatriated.
- Countertrade
  - A method of payment used by companies that do not have access to sufficient hard currencies (internationally traded currencies) to pay for imports from other countries
- Trading Companies
  - Trading companies are used when an exporter (seller) sells products at a discount to an export trading company, which then resells the products internationally

Cash Concentration Systems



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Objectives of Funds Concentration

- Two Major Objectives
  - To efficiently move funds from deposit bank accounts to concentration accounts
  - To attain visibility over the group cash position
- Concentration of Funds enables a firm to:
  - Balance excess and deficit cash positions across multiple locations, entities and currencies
  - Optimize idle balances for offsetting fees or optimizing earnings credits
  - Invest larger amounts of funds
  - Pay down debt faster and minimize borrowings
  - Take advantage of supplier/vendor discount terms

Cash Concentration & Pooling Systems

- Global Concentration of Funds
  - Physical pooling
  - Notional pooling
  - Bank overlay structure
- Cash Concentration Systems (U.S.)
  - Over-the-counter/Field deposit systems
    - Remote deposit capture (RDC)
    - Virtual vault services
  - Cash concentration system configuration
    - Size and geographic distribution of collection system
    - Transfer alternatives to concentrating bank
    - Branch footprint of banking network

Domestic Concentration of Funds

- Two frequently used concentration systems in U.S.
  - EDT: Electronic Depository Transfer
  - Wire Transfer
- Assume the following:
  - ACH Cost = $1.00; Wire Cost = $10.00
  - Opp Cost = 3.5%; 1-day speed-up with wire

$$\text{Min. Transfer} = \frac{\text{Wire Cost} - \text{ACH Cost}}{\left[\text{Days Accelerated} \times \left(\frac{\text{Opportunity Cost}}{\text{365 Days}}\right)\right]}$$

$$= \frac{\$10.00 - \$1.00}{\left[\text{1 Day} \times \left(\frac{0.035}{\text{365 Days}}\right)\right]} = \frac{\$9.00}{\left[1 \times (.00009589)\right]} = \$93,858$$

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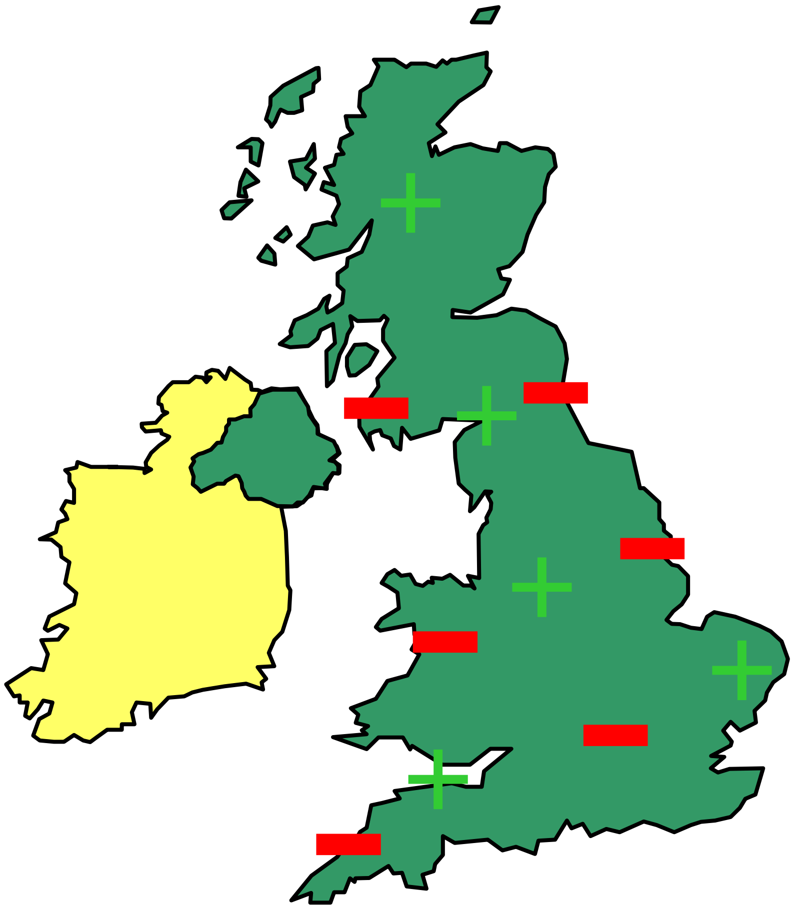
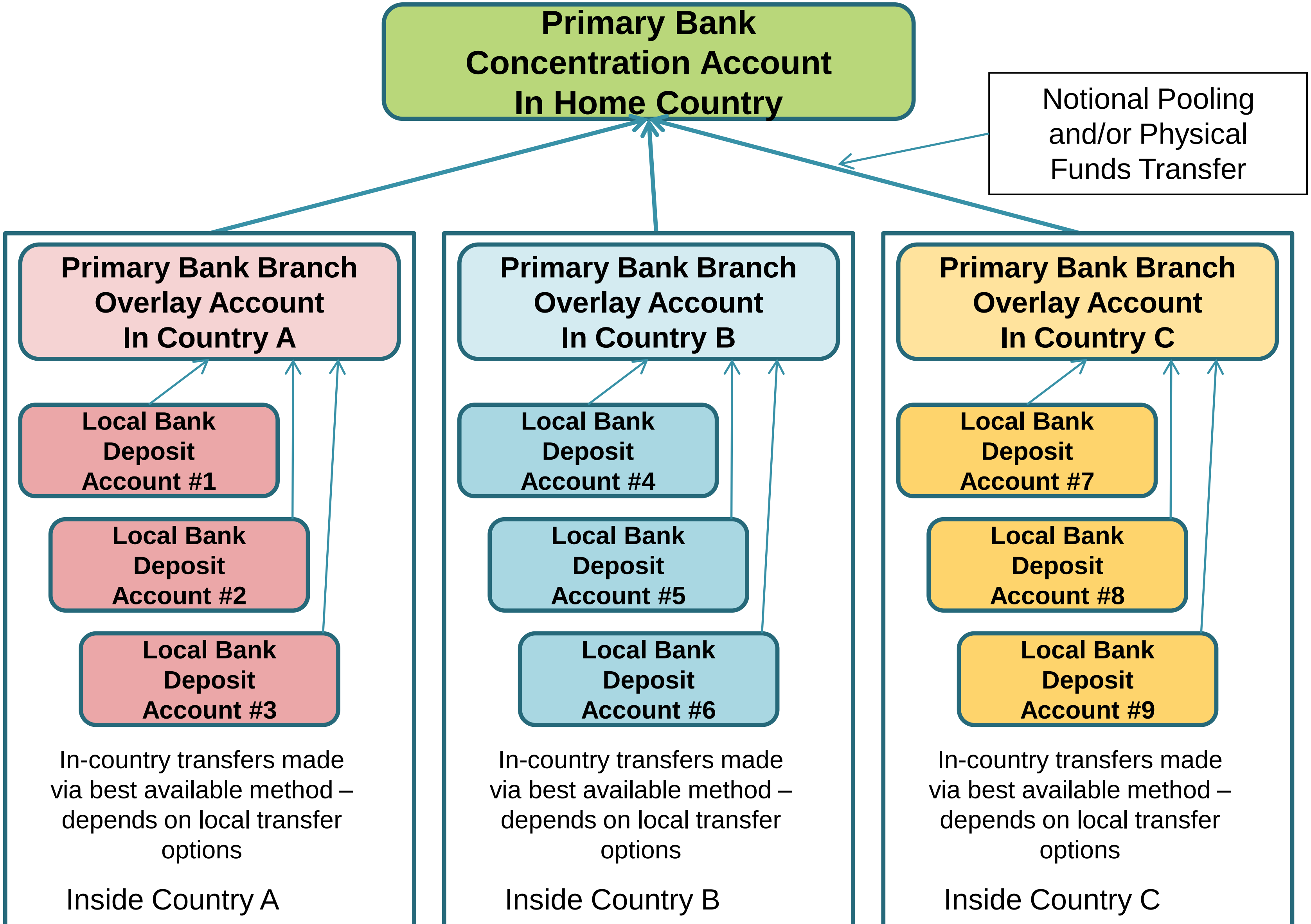
Notional Pooling



- Balances are offset notionally, preserving integrity of accounts
- No concentration
- No commingling
- Interest on the net pool balance is debited or credited to master account
- Some countries do NOT allow notional pooling

Bank Overlay Structure



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ETM6: Chapter 14

- ***Cash Flow Forecasting***

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Overview of Chapter 14 Topics

- Introduction
- Purpose of Cash Forecasting
- Issues and Opportunities in Forecasting
- Types of Forecasts
- The Forecasting Process
- Forecasting Methods
- Best Practices For Cash Forecasting

Introduction to Cash Flow Forecasting

- Goal is to optimize future cash resources
- Assists a treasury professional in planning cash management activities
- Cash forecasts are more concerned with cash projections as opposed to financial statements
- Four Steps to Cash Flow Forecasting:
  - Establish assumptions
  - Estimate future cash inflows and outflows
  - Generate a pro-forma cash position
  - Identify how to finance deficits or invest surpluses

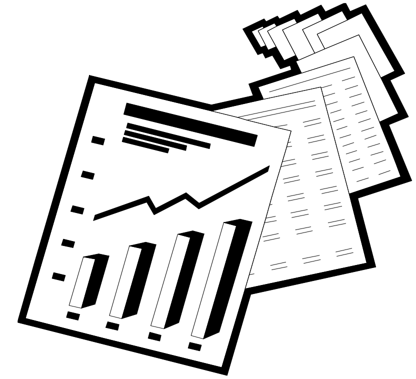
Purpose of Cash Forecasting

- Managing Liquidity
- Maximizing Returns
- Controlling Financial Activities
- Meeting Strategic Objectives
- Budgeting Capital
- Managing Costs
- Managing Currency Exposure
- Complying with Regulatory Requirements

Projected Closing Cash Position

- A treasury professional arrives at the projected closing cash position by taking:
  - The day's opening available bank balance(s)
  - Adding the expected settlements in the collection (lockbox, wire and ACH) and concentration accounts,
  - Deducting the projected disbursement totals
- Information about checks in the process of collection and ACH credits is available from prior day balance reports
- Lockbox and controlled disbursement totals are reported on a same-day basis
- Other clearings must be estimated
- Estimated closing position determines surplus or deficit for the day

Forecasting Process



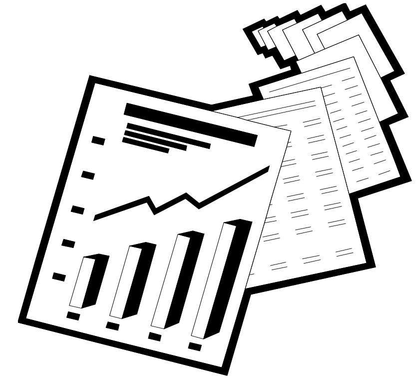
- Cash Flow Components
  - "A broken-down forecast is good"
- Degree of Certainty
  - Certain Cash Flows
  - Predictable Cash Flows
  - Less-Predictable Cash Flows
  - Volatile Cash Flows

Forecasting Process - Continued

- Data Identification and Organization
  - Available information
  - Assumptions
  - Desired type of forecast
  - Source of information
  - Bank account structure
  - Reporting requirements
  - Historical data

- Selection and Validation of Forecasting Methods
  - Establishing data relationships
  - Selecting a method
- Testing & Validation Relationships
  - Validation (In-sample, Out-of-sample, Ongoing)
  - Documenting the process
  - Use of technology

Forecasting Methods



- Short-term Methods
  - Accounts receivable balance pattern forecast
  - Distribution forecast
  - Receipts and disbursements (cash budget)
- Medium and Long-term Methods
  - Developing pro-forma statements with the percentage of sales approach
- Statistical Forecasting
  - Time-series forecasting
    - Simple moving average vs. exponential smoothing
  - Correlation & Regression

A/R Balance Pattern Forecast

- Used to forecast collections from credit sales.
- The A/R pattern is used to determine a collection pattern which can forecast cash inflows.
- The objective is to use forecasts of sales revenues and the pattern of collections to determine the receipts side of the R&D forecast.

Data for A/R Pattern Forecast

INTERVAL SINCE SALE	PERCENTAGE OUTSTANDING AT END OF MONTH	PERCENTAGE COLLECTED IN MONTH
Month 0 (current month)	95%	5%
Month 1	55%	40%
Month 2	20%	35%
Month 3	5%	15%
Month 4	0%	5%

FORECASTING CASH INFLOWS FROM CREDIT SALES

MONTH	SALES	MAY COLLECTIONS FORECAST	
January	$350,000	350,000 x 0.05 =	$17,500
February	$400,000	400,000 x 0.15 =	$60,000
March	$500,000	500,000 x 0.35 =	$175,000
April	$300,000	300,000 x 0.40 =	$120,000
May	$425,000	425,000 x 0.05 =	$21,250
Collections Forecast for May			**$393,750**

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Distribution Method Forecast

Example

A company has used regression analysis to estimate the proportion of dollars that will clear on a given business day. It has determined that this proportion depends on the number of business days since the checks were distributed. The estimated proportions are given below.

Business Days Since Distribution	Percentage of $ Expected to Clear
1	**13%**
2	**38%**
3	**28%**
4	**13%**
5	**8%**
Total	100%

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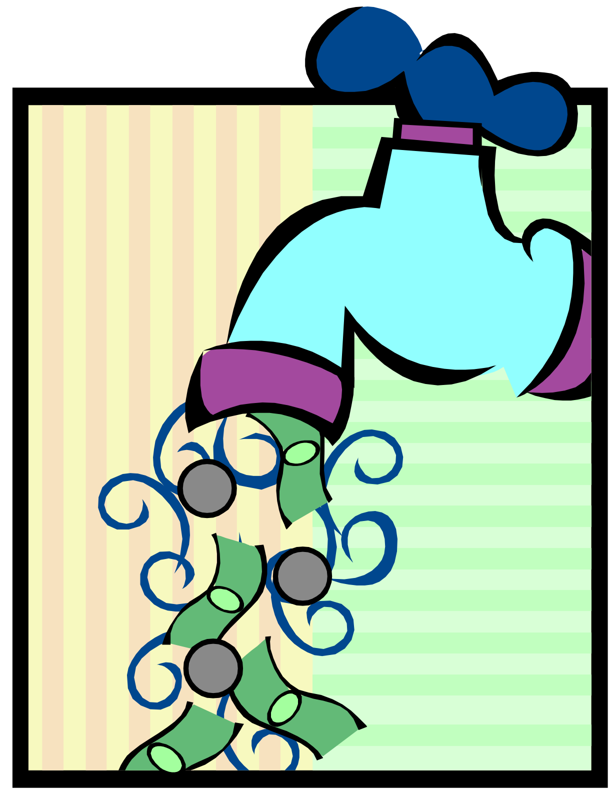
Distribution Method Forecast

- Provides estimates of the cash flow effect of a single event, on a daily basis over a specified interval based on historical patterns.
- The distribution method is particularly appropriate for short-term forecasts.



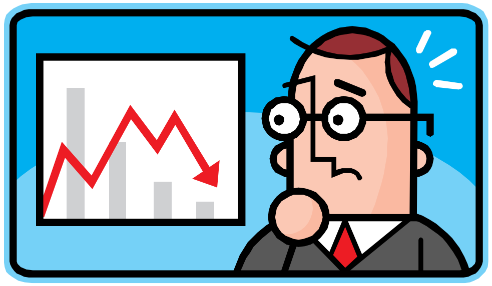
Distribution Method Forecast

Therefore, if $100,000 in checks are distributed on Wednesday, May 1, the checks are estimated to clear according to the schedule below.

Date	Business Days After Distribution	Day of the Week	% of Dollars Clearing	Forecast Dollars Clearing
May 2	**1**	**Thur.**	**13%**	**$ 13,000**
May 3	**2**	**Fri.**	**38%**	**$ 38,000**
May 6	**3**	**Mon.**	**28%**	**$ 28,000**
May 7	**4**	**Tues.**	**13%**	**$ 13,000**
May 8	**5**	**Wed.**	**8%**	**$ 8,000**
		Total	100%	$ 100,000

Source: ETM6 - © AFP

Receipts and Disbursements (R&D) Forecasting Method



- Why forecast receipts and disbursements?
  - Determine borrowing requirements
  - Establish debt repayment schedules
  - Formulate investment strategies
- Receipts and disbursements forecast
  - One of most common methods
  - Predicted cash inflows and outflows lead to excess (deficit) forecast
  - Also known as the cash budget

Receipts & Disbursements Forecast

- Fundamental to short-term cash forecasting
- Separate receipts & disbursements schedules
- Both prepared on a cash basis
- Method can be accurate in the short-term and near medium-term, especially when based on accounts receivable and accounts payable data.

Receipts & Disbursements Forecast

$ Amounts in $1,000	Week 1	Week 2	Week 3
Cash Receipts	**$ 1,000**	**$ 1,000**	**$ 950**
Cash Disbursements	**(870)**	**(1,350)**	**(1,000)**
Net Cash Flow	**$ 130**	**$ (350)**	**$(50)**
Beginning Cash Balance	**$ 100**	**$ 230**	**$ (120)**
Ending Cash Balance	**$ 230**	**$ (120)**	**$ (170)**
Minimum Cash Req.	**50**	**50**	**50**
Financing Needed		**($ 170)**	**($ 220)**
Investable Funds	**$ 150**		

Source: ETM6 - © AFP

Pro Forma Financial Statements

- Projected income statements and balance sheets can form the basis of predicted cash flows over a longer forecast horizon
- Projected statements are based on the percentage-of-sales method

Five-Period Moving Avg Forecast

Day	Actual Cash Flow (X_t)	Forecast (N = 5)	Error (Act –F)
1	890,000		
2	812,500		
3	775,000		
4	754,000		
5	716,000		
6	748,500	789,500	- 41,000
7	1,009,000	761,200	247,800
8	824,000	800,500	23,500
9	874,000	810,300	63,700
10	955,000	834,380	120,620

Moving Average Forecast for Day 7 is:
(812,500 + 775,000 + 754,000 + 716,000 + 748,500) / 5 = 761,200
Which results in a forecast error of: 1,009,000 – 761,200 = 247,800

Source: ETM6 - © AFP

Forecast with Exponential Smoothing

Day	Actual Cash Flow (X_t)	Forecast (α=0.40) (F_t)	Error
6	$ 748,500	$ 789,500	- $ 5,400
7	$ 1,009,000	$ 773,100	$ 235,900
8	$ 824,000	$ 867,460	- $ 43,460
9	$ 874,400	$ 850,076	$ 24,324

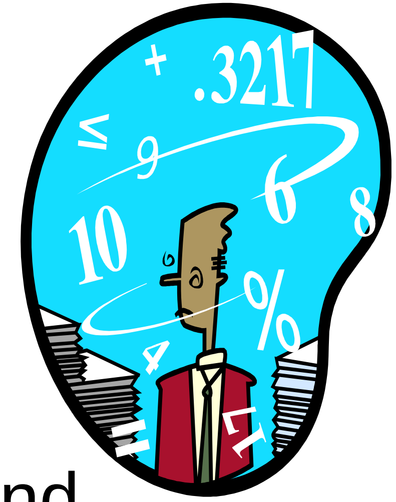
$$F_{t+1} = \alpha X_t + (1 - \alpha)(F_t)$$

The exponential smoothing forecast begins with the Day 6 Forecast of $789,500 based on the moving average forecast.

Then, the Day 7 forecast using exponential smoothing is:
F_7 = 0.40(748,500) + (1 – 0.40)(789,500) = $773,100
This results in a forecast error of: $1,009,000 – $773,100 = $235,900

Source: ETM6 - © AFP

Correlation & Regression Analysis



- Correlation calculations involve a statistical identification of the degree of association between a cash flow and another variable
- This can be used in the building of a forecast
- Regression analysis is a statistical method that assesses the impact that multiple variables (or causes) have on a value or an outcome
- Linear least squares method is the most commonly used

Best Practices for Cash Forecasting

- Use appropriate detail
- Disclose assumptions
- Use the appropriate platform
- Invest the appropriate amount of resources
- Validate the forecast
- Cooperate and communicate
- Ensure the forecast is useable

Session Wrap-up
ETM6: Chapter 12 & 14

- ***What did we learn in this session?***
- ***What topics do we need to learn more about?***

TEXPO Conference 2021
Essential Learning for CTP Candidates

End of This Session

We will reconvene at 2:15 pm Today.

The topic will be:

More Investments & Numbers

Long-Term Investing and Capital Structure