Treasury Management
Concepts for Colleges and Universities

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Jon is an Executive Director of The Treasury Institute for Higher Education, an independent not-for-profit organization that promotes excellence in treasury and financial management through developing educational programs. Since the Institute’s founding in 2000, Jon has overseen the facilitation of over sixty programs developed for senior managers of the largest universities in the country. In addition to his work with the Institute, Jon was a Managing Director and Group Head for Commonfund, an investment service provider to schools, universities and other not-for-profit organizations. He had been with Commonfund for over twenty years in various investment and client service roles, including Head of Treasury/Short Term Investments, the Investor Resource Client Service Group, the Strategic Treasury Solutions Team and the Treasury Access Program.

Jon has been a faculty member with the National Association of College and University Business Officers (NACUBO), the Professional Development Group, the College Business Management Institute and has written articles for Robert Morris Associates, NACUBO, The Association for Financial Professionals’ Journal of Cash Management and Commonfund Institute. He has a B.A. from The Colorado College and an M.B.A. from Villanova University. Jon was a trustee of the Crozer Keystone Health System and a Finance Committee member of the Chester Community Improvement Project.
Treasury Management Defined

How you define Treasury Management

2019 CBMI Treasury Track
Treasury Management Defined

The process of administering to the financial assets and holdings of a business.

The goal of most treasury management departments is to optimize the organization’s liquidity, make sound financial investments, mitigate financial risks, and provide useful reporting.

Source: Businessdictionary.com
Treasury Management Defined

“Our team manages the University’s checkbook, savings, short-term investments, and borrowings, along with related systems and information.

And we work on a lot of special projects.”
CBMI Treasury Track

• Treasury Concepts
• Fundamentals of Higher Education Investments
• Stewardship of Gift Funds
• Financial Asset and Liability Management
• Introduction to Capital Finance
• Advanced Capital Financing
• PCI Compliance
# Basics of Treasury Management

## The Fundamentals

### Short-term
- Daily liquidity management
- Cash resources and availability
- For operations

### Long-term
- Finance functions
- Funds and information/data availability
- For initiatives to support financial objectives

Source: AFP

2019 CBMI Treasury Track
Basics of Treasury Management

The Daily Details

• Complete cash position worksheet
• Monitor cash/liquidity balances
• Collect, concentrate and disburse
• Short-term investing and borrowing
• Research and reconcile exceptions
• Coordinate with A/R, A/P, tax, accounting

Source: AFP

2019 CBMI Treasury Track
Treasury Management Responsibilities

• Oversee daily liquidity and cash management
  – Collection
  – Disbursement
  – Concentration
  – Information Gathering & Analysis
  – Forecasting

• Investments

• Negotiate External Financing

• Risk Management & Compliance

• Manage Relationships with Banks & Providers

• Internal Consulting
Where Treasury Fits in a University

BOARD OF TRUSTEES

INTERNAL AUDITOR

PRESIDENT

EXTERNAL AUDITORS

VP FINANCE/CFO

ENDOWMENT/CIO

TREASURER

CONTROLLER

TAX AND REPORTING

CASH MANAGEMENT

ACCOUNTING

RISK MANAGEMENT

FP&A

INVESTMENT MANAGEMENT

MANAGEMENT INFORMATION SYSTEMS

VENDOR (BANK) RELATIONS MANAGEMENT

CREDIT & A/R

EXTERNAL FINANCING

A/P

2019 CBMI Treasury Track
Treasury Collaboration - INTERNAL

Source: AFP

2019 CBMI Treasury Track
Treasury Collaboration - EXTERNAL

Source: AFP

2019 CBMI Treasury Track
Role of Board of Directors in Treasury

• General authority for operations
• Policies, major initiatives and contracts

Treasury
- Open, close and modify bank accounts
- Establish credit facilities
- Oversee investments
- Issue debt and equity securities
- Devise, implement and execute risk management

Source: AFP
2019 CBMI Treasury Track
Financial Resources

**Revenues**
- Tuition and Fee Rates
- State Support
- Financial Aid Policies
- Housing
- Academic Programs
- Enrollment

**Operations**
- Annual Giving
- Campaigns
- Deferred
- Asset Allocation
- Performance
- Spending
- Spending POLICY
- Endowment Income
- Current Use Gifts
- Grants and Contracts
- Other Income
- State Support, Tuition & Fees, Room & Board

**Expenses**
- Interest
- Depreciation
- Space and Occupancy
- Supplies & Others

**Facilities**
- New
- Renewal

**GIFTS**
- Annual Giving
- Campaigns

**Capital**
- Debt
- DEBT POLICY

**Operations**
- Fixed/ Variable

2019 CBMI Treasury Track
Treasury Management Strategy

80% of survey respondents believe that treasury is currently playing a more strategic role at their organizations than in the past three years.

80% of finance professionals agree that the treasury function will be playing a greater strategic role three years from now.

73% of treasury professionals report that the close attention paid by senior management and the Board to the companies’ liquidity and risk exposure is a primary reason for treasury playing a greater strategic role at companies.

Source: 2017 AFP Strategic Role of Treasury Survey

2019 CBMI Treasury Track
THE U.S. FINANCIAL SYSTEM
U.S. Regulatory Environment

- History of Bank Regulations - 1907
- Banking in the 1920’s
- Impact of 1929 stock market crash
- Glass-Steagall Act (1933)
- Banking Deregulation (Gramm-Leach-Bliley Act – 1999)
- Financial Crisis of 2007-2010
- Banking Re-regulation (Dodd-Frank Wall Street Reform and Consumer Protection Act – 2010)
U.S. Financial Regulations

Changes under Dodd-Frank

• Financial Stability Oversight Council (FSOC)-
  – Secretary of The Treasury serves as chair

Bureau changes under The Treasury

• Office of Financial Research (OFR) added
• Financial Insurance Office (FIO) added
• Office of Thrift Supervision (OTS) eliminated – responsibilities taken over by OCC
U.S. Financial Regulations

Emerging Regulations

• Cryptocurrency Regulations
  – Made illegal for IPOs in China in 2017

• De-merging regulations – Dodd-Frank Repeal?
U.S. Financial Regulators

U.S. Dual Banking System
FSOC, OCC, Fed, FDIC
OFAC, FinCEN, NCUA, State boards, DOJ
Consumer Financial Protection Bureau (CFPB)
Commodity Futures Trading Commission (CFTC)
Financial Industry Regulatory Authority (FINRA)
Securities and Exchange Commission (SEC)
FIO, Office of Credit Ratings, Office of Financial Information
Securities and Exchange Commission

• Registers public offerings of debt and equity
• Sets financial disclosure standards for corporations that sell securities to the public
• Requires companies with publicly owned securities to file quarterly and annual financial statements

• Regulates mutual funds and investment advisors
• Monitors insider trading

Source: AFP

2019 CBMI Treasury Track
Dodd-Frank Act (2010)

- Derivatives transparency and accountability:
- Closes regulatory gaps
- Requires central clearing and exchange trading
- Requires market transparency
- Adds financial safeguards
- Sets higher standards of conduct

Response to near failure of US banking system in 2009 recession

Source: AFP

2019 CBMI Treasury Track
Payment Systems & Instruments Legislation

**EFTA (1978)**
- Customer rights, responsibilities and liability limits for non-wire EFTs

**DIDMCA (1980)**
- Deposit-taking Fed reserves
- Discount window
- Reduce/price float

- Digital signatures legal status

**Check 21 (2003)**
- Substitute of image in clearing process
- Payment system efficiency

Source: AFP

2019 CBMI Treasury Track
Bank Secrecy/Money Laundering Control

BSA (1970), MLCA (1986)

- Must report suspicious financial transactions
- Financial Institution defined broadly
- Now a crime to structure transactions to avoid reporting
- KYC, parties to large-value transfers, referrals

Source: AFP

2019 CBMI Treasury Track
USA Patriot Act (2001)

- Non-bank Financial Institution obligations
- Foreign banks in US subject to US jurisdiction
- US banks: no foreign shell bank correspondent accounts
- US credit card operators cannot authorize foreign banks to issue or accept US credit cards without steps to prevent terrorist use
- Requires due diligence

Source: AFP
Are We Safer Post 2008 Crisis?

- Capital Requirements Increased
- Leverage Ratios Decrease
- Transparency Increased
- Stricter Requirements on KYC and Transactions
- Bank Deposits “De-risked” – Lower returns
- Redefine Bank Liquidity
Central Banks

Currency Issuance

Monetary Policy

Supervision and Regulation

Government Services

Depository Institution Services

Fed

ECB

Peoples Bank of China

Bank of England

Source: AFP

2019 CBMI Treasury Track
U.S. Federal Reserve Bank

Background

• Federal Reserve Act of 1913
• Foundation for the current banking system
• All banks with national charter from OCC to become Reserve banks
• National check collection and settlement system

Source: AFP
U.S. Federal Reserve Bank

Composition
- Board of Governors
- Federal Open Market Committee (FOMC)
- Federal Reserve Banks
  - 12 banks and 24 branches

Principal Roles
- Monetary Policy
- Supervision and Regulation
- Government Services
- Depository Institution Services
Policy making exercise
Monetary Policy at the Fed

• The Fed should conduct monetary policy in a way that:
  – Maximizes employment, promotes price stability and maintains moderate long-term interest rates
• Fed monetary policies influence the demand for, and supply of, credit at banks and other depository institutions
  – Discount rate
  – Reserve requirement
  – FOMC open market operations
  – Fed Funds target rate
From Regulation to Navigation

Cash Management
Cash Management – Commercial Bank Services

Financial Institution Offerings

• Depository accts & transaction services
• Short-term lending & investments
• Foreign exchange (FX)
• Information reporting
• Direct Placement Debt
• Trade services
• Agent & fiduciary services
• Risk management
• Consulting
Other Financial Institutions

Savings & Loan Institutions
Credit Unions
Mutual Funds (MMFs)

Other Non-Bank FIs
- Industrial credit/capital companies
- Industrial banks
- Captive finance companies
- Factoring firms
- Insurance companies
- Pension funds
- Consumer finance companies

Source: AFP
2019 CBMI Treasury Track
Cash Management & Banking

Your favorite banking organization – why?
Selecting The Right Provider

Historic Priorities

- Paper processing – Lockbox, deposits, etc.
- Controlled disbursement products
- Branches
- Transaction volume
- Commodity based

New Priorities

- Non bank providers
- Card processing – First Data, Vantiv...
- Technology ... Cloud
- Cyber security
- Non traditional incentives... beware
- State of art based

2019 CBMI Treasury Track
Cash Management Collections

Receipts
- Currency and coin
- Check processing
- Electronic Receipts
  - Automated Clearing House (ACH)
  - Wire transfer
- Payment, clearing and settlement systems
How Universities Collect

What are different ways you accept payments on Campus?

• Self-Service via Web payments
• Phone via IVR
• Cashier Back-Office
• Mail via Lockbox or Drop Box
• In Person via Cashier’s Window or Point-of-Sale
Collecting Funds Owed

Goals

• Collect receivables in a cost-effective manner
• Update receivables quickly and accurately
• Convert collections into available funds as rapidly as possible

"Do we accept PayPal? We accept any method that pays, pal."

2019 CBMI Treasury Track
Sample US Business Check

ANYCOMPANY
1430 ANY STREET
ANYTOWN CA 90000

PAY TO THE ORDER OF: ____________________________

e.g., 01-12 = Fed Reserve District

ANYTOWN BANK
1000 BANKING WAY
ANYTOWN CA 90000

Fed Office
Availability
Bank Location
Check Digit

AUXILLARY
ON-US
EPC
ROUTING/
TRANSIT
ON-US/ACCOUNT
#/CHECK SERIAL#

AMOUNT

e.g., 0124578021

Source: AFP

2019 CBMI Treasury Track
Lockbox Advantages vs. Internal Processing

• Reduced mail and processing float time
• Improved access to remittance information
• Reduced risk and improved security
• Improved control and record keeping
• Uninterrupted service
• Scalability
• Proper segregation of duties

Source: AFP
2019 CBMI Treasury Track
Lockbox Paper Check Collection

1. Mail sent to P.O. box
2. Courier picks up mail; delivers to lockbox facility
3. Mail sorted by bank staff
   - Remittance data captured using OCR scanners
     - Remittance data transferred to government
     - Posting to internal financial system (government process)
   - Data on checks captured using MICR scanners
     - Checks deposited at bank (non-matching or exception items processed separately)
     - Check clearing begins (bank process)

Source: GFOA
Local Paper Check Processing

- Check Image Capture
- Remote Deposit Capture

All positives on this service?

2019 CBMI Treasury Track
Local Paper Check Processing

Check Image Capture
Remote Deposit Capture

Issues
Retention
Image Quality
Device Connection
Data Security
Cross-Currency Checks

2019 CBMI Treasury Track
Electronic Receipts

Electronic Collections

- Wire Transfer
- ACH
- Check Conversion
- Credit Card
- Debit Card
- Campus Card
Large-Value EFT/Wire Transfer

Sender/Payer

Beneficiary/Payee

Central Bank

Sender’s/Payer's Bank

Beneficiary’s/Payee’s Bank

Source: AFP

2019 CBMI Treasury Track
Account Identification: Bank ID Code (BIC)

**SWIFT Code**
- **Alphabetic Only**
  - Bank Code
  - ISO 3166-1 alpha-2 country code
  - Location Code
  - Branch Code (XXX for primary office)

**RTN**
- 9-digit US routing
- 8-digit Canadian routing similar

**IBAN**
- EBCS, now ISO
- SWIFT managed
- 34-digit alphanumeric
  - 2-digit country code
  - 2 check digits
  - Country’s BBAN

Source: AFP

2019 CBMI Treasury Track
ACH

- Batch-process, store-and-forward system used for high-volume, low-value transactions
- Funds generally settled one or two business days after the file is released
- Same day ACH transactions were only on-us transactions until September 2016
- Multiple formats: ARC, POP, BOC, TEL, WEB
Small-Value Transfer Systems

Originator (Payer)

ACH Network

Receiver (Payee)

Credit Transaction Example

ODFI

RDFI

Source: AFP

2019 CBMI Treasury Track
Small-Value or ACH Systems

- Bacs, ECG or ACH
- Batch processed
- Value dated
- Credits or debits
- More payment information

- Giro now ACH
- Transactions
  - Payroll credits
  - Pre-authorized debits
  - Debit filters and blocks
- Cross-border ACH

Source: AFP

2019 CBMI Treasury Track
# Payment Volume – by type

<table>
<thead>
<tr>
<th>Year</th>
<th>Checks Collected (MM’s)</th>
<th>ACH Transactions (MM’s)</th>
<th>FedWire Volume (MM’s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>4,739</td>
<td>23,000</td>
<td>158</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$51.1T</td>
<td>$716B</td>
</tr>
<tr>
<td>2015</td>
<td>5,452</td>
<td>12,298</td>
<td>143</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$20.0T</td>
<td>$835B</td>
</tr>
<tr>
<td>2014</td>
<td>5,742</td>
<td>11,620</td>
<td>135</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$19.9T</td>
<td>$884B</td>
</tr>
<tr>
<td>2013</td>
<td>5,988</td>
<td>11,143</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$19.6T</td>
<td>$713B</td>
</tr>
<tr>
<td>2007</td>
<td>10,001</td>
<td>9,363</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$14.5T</td>
<td>$671B</td>
</tr>
<tr>
<td>2000</td>
<td>16,994</td>
<td>3,812</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$11.6T</td>
<td>$380B</td>
</tr>
<tr>
<td>1990</td>
<td>18,595</td>
<td>915</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$4.1T</td>
<td>$199B</td>
</tr>
</tbody>
</table>

*** 2018 Same Day ACH = 178 MM $159 B

Federal Reserve and NACHA 2018

2019 CBMI Treasury Track
Several core ACH use cases saw substantial growth in 2018 including:

- Business-to-business (B2B) payments, up 9.4 percent to 3.6 billion, total value $34.9 trillion
- Direct Deposit, up 4.4 percent to 6.8 billion, total value $9.7 trillion
- Internet payments, up 14.2 percent to 5.9 billion, total value $2.9 trillion
- Payments from health plans to medical and dental providers, up 11.5 percent to 306.7 million, total value $1.59 trillion
- Person-to-person (P2P) payments, up 32.2 percent to 128.7 million, total value $209.6 billion
Cash Management & Banking

Electronic Collections
Real-Time Payments

RTP Overview from The Clearing House

2019 CBMI Treasury Track
LET’S TAKE A BREAK
Card Payment Solutions

- **Types**
  - Visa
  - MasterCard
  - Discover
  - American Express
  - China UnionPay
  - Japan JCB

- **Where accepted**
  - Open-loop
  - Closed-loop

- **Participants**
  - Cardholder
  - Card issuer
  - Merchant
  - Merchant acquirer
  - Acquiring processor
  - Issuer processor
  - Network operator

Source: AFP

2019 CBMI Treasury Track
## Credit Card Processing

**(Processing Statement)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Type</th>
<th>Name</th>
<th>Payment to/from</th>
<th>Gross</th>
<th>Fee</th>
<th>Net</th>
<th>Balance</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 24, 2019</td>
<td>Payment</td>
<td>Bruce</td>
<td>From Oulu</td>
<td>$650.00 USD</td>
<td>- $19.15</td>
<td>$630.85</td>
<td>$630.85 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 24, 2019</td>
<td>Transfer</td>
<td>Bank Account</td>
<td>From Oulu</td>
<td>$2,450.57 USD</td>
<td>- $0.00</td>
<td>- $2,450.57</td>
<td>$0.00 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 21, 2019</td>
<td>Payment</td>
<td>Audra Reed</td>
<td>From Oulu</td>
<td>$650.00 USD</td>
<td>- $19.15</td>
<td>$630.85</td>
<td>$2,450.57 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 21, 2019</td>
<td>Payment</td>
<td>Audra Reed</td>
<td>From Oulu</td>
<td>$650.00 USD</td>
<td>- $19.15</td>
<td>$630.85</td>
<td>$1,819.72 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 21, 2019</td>
<td>Payment</td>
<td>Daniel Garrets</td>
<td>From Oulu</td>
<td>$650.00 USD</td>
<td>- $19.15</td>
<td>$630.85</td>
<td>$1,188.87 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 21, 2019</td>
<td>Payment</td>
<td>Jane Aube</td>
<td>From Oulu</td>
<td>$575.00 USD</td>
<td>- $16.98</td>
<td>$558.02</td>
<td>$558.02 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 20, 2019</td>
<td>Transfer</td>
<td>Bank Account</td>
<td>To Oulu</td>
<td>- $1,261.70 USD</td>
<td>- $0.00</td>
<td>- $1,261.70</td>
<td>$0.00 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 20, 2019</td>
<td>Payment</td>
<td>Laura Jones</td>
<td>From Oulu</td>
<td>$650.00 USD</td>
<td>- $19.15</td>
<td>$630.85</td>
<td>$1,261.70 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 20, 2019</td>
<td>Payment</td>
<td>Shanan Harmsen</td>
<td>From Oulu</td>
<td>$650.00 USD</td>
<td>- $19.15</td>
<td>$630.85</td>
<td>$630.85 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 18, 2019</td>
<td>Transfer</td>
<td>Bank Account</td>
<td>To Oulu</td>
<td>- $4,542.16 USD</td>
<td>- $0.00</td>
<td>- $4,542.16</td>
<td>$0.00 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 18, 2019</td>
<td>Payment</td>
<td>Lisa Zimmero</td>
<td>From Oulu</td>
<td>$895.00 USD</td>
<td>- $26.26</td>
<td>$868.74</td>
<td>$4,542.16 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 18, 2019</td>
<td>Payment</td>
<td>Lisa Zimmero</td>
<td>From Oulu</td>
<td>$895.00 USD</td>
<td>- $26.26</td>
<td>$868.74</td>
<td>$3,673.42 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 17, 2019</td>
<td>Bill To</td>
<td>Elliot Affi</td>
<td>Unpaid</td>
<td>$795.00 USD</td>
<td>- $0.00</td>
<td>$795.00</td>
<td>$2,804.68 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 17, 2019</td>
<td>Fee reversal</td>
<td>PayPal</td>
<td>From Oulu</td>
<td>$23.06 USD</td>
<td>- $0.00</td>
<td>$23.06</td>
<td>$2,804.68 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 17, 2019</td>
<td>Return to</td>
<td>Office of the Treasurer Stanford University</td>
<td>From Oulu</td>
<td>- $795.00 USD</td>
<td>- $23.06</td>
<td>- $771.94</td>
<td>$2,804.68 USD</td>
<td>Completed</td>
</tr>
<tr>
<td>Jun 17, 2019</td>
<td>Payment</td>
<td>Office of the Treasurer Stanford University</td>
<td>From Oulu</td>
<td>$795.00 USD</td>
<td>- $23.06</td>
<td>$771.94</td>
<td>$3,576.62 USD</td>
<td>Completed</td>
</tr>
</tbody>
</table>

2019 CBMI Treasury Track
Debit and Other Card Varieties

- Signature vs. PIN-based debit
- Purchasing
- T&E
- Fleet
- Ghost/Virtual
- Departmental

- Single-use
- SVCs
- Chip/smart

Source: AFP

2019 CBMI Treasury Track
Merchant Card Processing Fees

- **Components**
  - Interchange fees
  - Assessments
  - Processor fees or markups

- **Bundled or “interchange-plus”**

- **Merchant discount**

- **Smaller merchants/low volumes = higher fees**

- **Fee & process audit can be fruitful**

Source: AFP

2019 CBMI Treasury Track
Payment Card Industry Data Security Standards: PCI DSS

Build and Maintain a Secure Network

• **Requirement 1:**
  – Install & maintain firewall configurations to protect data

• **Requirement 2:**
  – Do not use vendor-supplied defaults for system passwords and other security parameters
  – Protect Cardholder Data

• **Requirement 3:**
  – Protect stored cardholder data

Source: PCI Security Standards Council

2019 CBMI Treasury Track
Payment Card Industry Data Security Standards: PCI DSS

• **Requirement 4:**
  – Encrypt transmission of cardholder data across open, public networks
  – Maintain a Vulnerability Management Program

• **Requirement 5:**
  – Use and regularly update anti-virus software

• **Requirement 6:**
  – Develop and maintain secure systems and applications

Source: PCI Security Standards Council
2019 CBMI Treasury Track
Payment Card Industry Data Security Standards: PCI DSS

• **Requirement 7:**
  – Restrict access to cardholder data by business need-to-know

• **Requirement 8:**
  – Assign a unique ID to each person with computer access

• **Requirement 9:**
  – Restrict physical access to cardholder data
  – Regularly Monitor and Test Networks

Source: PCI Security Standards Council
Payment Card Industry Data Security Standards: PCI DSS

• **Requirement 10:**
  – Track and monitor all access to network resources and cardholder data

• **Requirement 11:**
  – Regularly test security systems and processes
  – Maintain an Information Security Policy

• **Requirement 12:**
  – Maintain a policy that addresses information security

For additional information regarding PCI DSS go to www.treasuryinstitute.org

Source: PCI Security Standards Council
Payment Card Industry Data Security Standards: PCI DSS

Welcome to PCI DSS 3.2

Source: PCI Security Standards Council

2019 CBMI Treasury Track
What is new in PCI DSS 3.2?

- Within the 12 core requirements of the PCI DSS, there are five new sub-requirements for service providers affecting requirements 3, 10, 11 and 12.

- New sub-requirements have been added to requirement 8 to ensure multi-factor authentication is used for all non-console administrative access and all remote access in the cardholder data environment.

- There are also two new appendices. Appendix A2 incorporates new migration deadlines for removal of Secure Sockets Layer (SSL) /early Transport Layer Security (TLS) in line with the December 2015 bulletin. Appendix A3 incorporates the “Designated Entities Supplemental Validation” (DESV), which was previously a separate document.

Source: PCI Security Standards Council
Disbursements

- Payment initiation
- Reconciliation
- Control
  - Disbursement, clearing and settlement information

Source: AFP

2019 CBMI Treasury Track
Disbursements

Priorities

• Time cash disbursements to maximize discount benefits and avoid early payments
• Minimize the cost of issuing and processing disbursements
• Know when large-dollar disbursements are going to clear and have cleared
• Maintain satisfactory controls
Disbursement Structures

- Standard Disbursement Account
- Controlled Disbursement
- Zero Balance Account
- Imprest Account (petty cash account, other)
- Outsourced Payables
- Outsourced Check Printing
Focus on Controlled Disbursement

• Service providing same-day notification - early and mid-morning, of checks and ACH totals that will clear against the account later the same day

• Utilizes segregated routing number

• Provides timely and accurate clearing information for daily cash position determination

• Facilitates ability to minimize idle balances

• Cash position of University can be optimized
Best Disbursement Controls

Check Payments

- Reconciliation
- Segregation of Duties
- Positive Pay
- Issue No Checks
Best Disbursement Controls

Automated Clearing House
- Reconciliation
- Segregation of Duties
- ACH Debit Filter
- ACH Positive Pay
- ACH Debit Block
Is it a problem at YOUR school?

PAYMENT FRAUD

2019 CBMI Treasury Track
Fraud = 7% of Revenue Losses

Gross U.S. Losses
$994 Billion

Source: Association of Certified Fraud Examiners
Some Fraud Statistics

- Nilson Report estimates check fraud to amount to over $20 billion annually.

- ABA study of total cases: **Growing 25 percent per year**

- FBI predicts identity theft to cost financial institutions in excess of $5 billion and banks and businesses $48 billion (it is the fastest growing white-collar crime).
Payments fraud is a growing problem...

- Almost three-quarters of organizations were victims of payments fraud in 2009.
- Further, 30% of organizations experienced increased fraud activity during 2009, as economic conditions worsened in the U.S.
- 81% of organizations with revenues over $1 billion were victims of payments fraud in 2009 while 63% with revenues under $1 billion experienced fraud.
- 9 out of 10 organizations that experienced attempted or actual payments fraud in 2009 were victims of check fraud.
- ACH debit fraud (25%) is the second leading type of fraud committed, followed by credit/debit card (20%) and corporate/commercial cards (17%).
- Organizations that suffered financial averaged $17,100.
A former University of Miami finance director embezzled $2.3 million from the college by falsifying bills for a bogus vendor and depositing the ill-gotten payments into the bank account of a fabricated business she had set up to hide the income, authorities said.

Kimberly Jean Miller, 58, who worked as the finance director of the UM Rosenstiel School of Marine and Atmospheric Science, pleaded guilty to four counts of tax evasion on Tuesday in Miami federal court.

Miller, who was charged in late March, faces between three and four years in prison at her sentencing before U.S. District Judge Robert Scola on Aug. 16.
Check Fraud

- Check “kiting”
- Counterfeiting
- Forgery (endorsement or signature)
- Paperhanging
- 3rd party billing service
- Alterations
- “Washing”
- Organized groups (gangs)
Who is Liable for Check Fraud?

**UCC 3-103**

- “Ordinary care” – the observance of “reasonable commercial standards” that prevail in the area in which the person is located with respect to business in which the person is engaged.
- Does not require the financial institution to examine each item if failure to examine does not violate the institution’s prescribed procedures and those procedures are commonly followed by other institutions in the area.
Who is Liable for Check Fraud?

**UCC 3-405**

- “Comparative negligence” – the risk would remain with the company (employer) if the bank exercised “ordinary care” in processing the check.
- In brief, employers are responsible for the integrity of their employees.
Who is Liable for Check Fraud?

UCC 3-406

• “Contributory negligence” – the risk would remain with the company if it fails to safeguard checks from forgery or alteration (by a “reasonable commercial standard”) and that failure to safeguard contributes to the forgery or alteration.

• In brief, the company could be responsible for the loss along with the financial institution.
Who is Liable for Check Fraud?

UCC 4-406

- “reasonable promptness” – a period of time in which the customer has the duty to discover and notify the bank of unauthorized signatures and/or alterations of checks on the account.
  - 30 days is the maximum limit.
  - Bank can establish a shorter time limit.
  - There is controversy over a shorter time limit.

2019 CBMI Treasury Track
Obligations Under UCC

- **Issuer** - Examine bank statements with reasonable promptness
- **Payee** – Employers responsible for fraudulent endorsements by employees
- **Depository bank** – Warranty of endorsement, signature authentication, information has not been altered, MICR encoding liability
- **Paying bank** – Return disputed items by the deadline
Commercial Check Fraud Defenses

• Positive pay
• Restrictive endorsements
• Secure check stock
• Utilize ACH whenever possible
• Prompt reconciliation of accounts
• Payroll/purchase cards
• Information verification software
• Deposit only accounts
Electronic Fraud (PC’s and ATMs)

• Remote PC access
• Wireless hacking
• Keystroke logging/memory programs
Who is Liable for Electronic Fraud?

• Reg “E” – Carries out the purposes of the Electronic Funds Transfer Act establishing the basic rights, liabilities and responsibilities of consumers using electronic funds transfer services

• UCC 4A – Governs the payment method referred to as a “wholesale wire transfer” in the “commercial community”
Electronic Fraud Defenses

- Personal firewalls
- Intrusion detection
- E-mail encryption
- Up-to-date anti-virus software
- Convert paper payments to electronic delivery
- ACH debit block
Electronic Fraud Defenses (cont.)

- Protect your equipment
- Protect your work area
- Protect your password
- Protect your files
- Lock up storage media containing sensitive data
- Back up data regularly
- Report security violations religiously
Credit Card Fraud

- Your trash is searched for discarded statements.
- Dishonest clerk copies your credit card number and makes personal charges.
- Call a long distance number in response to a free trip or bargain of some sort and provide your account number so you can be billed. You don’t get a trip or a bargain and charges appear on your account you did not authorize.
- Database hacking
- Carding
Credit Card Fraud Defenses – Personal/Consumer

- Carry cards separate from your wallet
- Keep a record of all your cards
- Watch your card during in-person transactions
- Save receipts to compare to billing statements
- Report questionable charges promptly
- Notify card companies in advance of a change in address
- Biometric technology
  - “Out of wallet” questions
  - Fingerprint identification
  - Voice recognition
Credit Card Fraud
Defenses – Corporate/Merchant

- Use of Address Verification Service (AVS)
- PCI/DSS
- “SecureCode”
- Proper acceptance procedure at point of sale
- Visual inspection of card
Strategic Planning to Move Paper Payments to Electronic

- The right thing to do?
- E-payable conversion solutions
- Getting to 100% direct deposit of payroll
- Later issue dates for paper checks
- Reevaluate in higher rate environments
Cash Flow and Forecasting

• Your Processes
• Daily Cash Positioning
• Extended Cash Forecasts
Cash Flow Timeline

Payables Period

Credit Period

Collection Period

Purchase Made
Payment Made
Enroll
Statement To Student
Student Mails Payment
School Receives and Processes Payment
School Deposits Payment
School Receives Good Funds

Day’s Payables

Days’ Receivables

2019 CBMI Treasury Track
Cash Flow Trends

Corporate cash as a % of current assets
S&P 500 companies – cash and cash equivalents, quarterly

Source: JPMorgan Guide To The Markets 9-30-2017
Account Analysis Billing

A record of bank services including:

- Account structures
- Transaction volumes
- Balances maintained
- Charges assessed
- Earnings credit allowances
Earnings Credit

\[ EC = CB \times (1 - RR) \times ECR \left( \frac{D}{365} \right) \]

\[ = AB \times ECR \left( \frac{D}{365} \right) \]

Where:
EC = Earnings credit
CB = Average collected balances
AB = Average available balances
RR = Reserve requirement
ECR = Earnings credit rate
D = Number of days in the month
Earnings Credit

Assume the following scenario:

- Average ledger balance: $250,000
- Deposit float: $30,000
- Reserve requirement: 10%
- Earnings credit rate: 5%
- Service charges for the month: $1,000
- Days in month: 30

Average Balance Calculations:

Average ledger balance: $250,000
Less: Deposit float: ($30,000)
Equals: Average collected balance: $220,000
Less: Reserve Requirement: ($22,000)
Equals: Average available balance: $198,000

\[ EC = CB \times (1 - RR) \times ECR \left( \frac{D}{365} \right) \]

\[ = \frac{220,000 \times (1 - 0.10) \times 0.05 \times 30}{365} \]

\[ = \$814 \]

2019 CBMI Treasury Track
**College and University Business Administration**

**Treasury Management**

Exhibit #10: Account Analysis Statement

**ABC Bank—Corporate Banking Analysis**

Global Manufacturing Company
1234 Main Street Anytown, Arkansas

<table>
<thead>
<tr>
<th>Date</th>
<th>7/1/2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECR</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Balance Summary</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Ledger Balance</td>
<td>$658,987.50</td>
<td></td>
</tr>
<tr>
<td>Less: Average Float</td>
<td>$55,934.89</td>
<td></td>
</tr>
<tr>
<td>Average Collected Balance</td>
<td>$603,052.61</td>
<td></td>
</tr>
<tr>
<td>Less: Reverse Requirement (10%)</td>
<td>$60,305.26</td>
<td></td>
</tr>
<tr>
<td>Average Available Balance</td>
<td>$542,747.35</td>
<td></td>
</tr>
<tr>
<td>Less: Balance Required</td>
<td>$6,796,360.83</td>
<td></td>
</tr>
<tr>
<td>Net Available Balance</td>
<td>-$6,253,613.48</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Volume</th>
<th>Unit Price</th>
<th>Fees Required</th>
<th>Balance Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Account Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Account Maintenance Flat Fee</td>
<td>4</td>
<td>20.00</td>
<td>$80.00</td>
<td>$97,333.33</td>
</tr>
<tr>
<td>Depository Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credits</td>
<td>94</td>
<td>0.25</td>
<td>23.50</td>
<td>$28,591.67</td>
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<tr>
<td>Deposited Items</td>
<td>1,745</td>
<td>0.08</td>
<td>139.60</td>
<td>$193,846.67</td>
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<tr>
<td>Return Items</td>
<td>15</td>
<td>2.00</td>
<td>30.00</td>
<td>$36,500.00</td>
</tr>
<tr>
<td>Debits</td>
<td>1,598</td>
<td>0.02</td>
<td>31.96</td>
<td>$194,422.33</td>
</tr>
<tr>
<td>Step Payments</td>
<td>5</td>
<td>18.00</td>
<td>90.00</td>
<td>$909,500.00</td>
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<tr>
<td>Lockbox Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale Lockbox Maintenance Fee</td>
<td>3</td>
<td>105.00</td>
<td>315.00</td>
<td>$381,250.00</td>
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<tr>
<td>Item Processing Fee</td>
<td>485</td>
<td>0.40</td>
<td>194.40</td>
<td>$129,520.00</td>
</tr>
<tr>
<td>ZBA Controlled Disbursement Services</td>
<td>1</td>
<td>40.00</td>
<td>40.00</td>
<td>$48,666.67</td>
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<tr>
<td>ZBA Maintenance</td>
<td>1</td>
<td>45.00</td>
<td>45.00</td>
<td>$54,750.00</td>
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<tr>
<td>Controlled Disbursement Notification</td>
<td>1</td>
<td>45.00</td>
<td>45.00</td>
<td>$54,750.00</td>
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<tr>
<td>Funds Transfer Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ACH Maintenance</td>
<td>1</td>
<td>55.00</td>
<td>55.00</td>
<td>$66,998.67</td>
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<tr>
<td>ACH Items</td>
<td>145</td>
<td>0.12</td>
<td>17.40</td>
<td>$21,700.00</td>
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<tr>
<td>Incoming Wire Transfers</td>
<td>24</td>
<td>7.00</td>
<td>168.00</td>
<td>$304,400.00</td>
</tr>
<tr>
<td>Outgoing Wire Transfers</td>
<td>8</td>
<td>12.00</td>
<td>96.00</td>
<td>$116,800.00</td>
</tr>
</tbody>
</table>

**Earnings Credit Summary**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Balance</td>
<td>$542,747.35</td>
</tr>
<tr>
<td>Earnings Credit Allowance</td>
<td>$466.09</td>
</tr>
<tr>
<td>Less: Charge for Services</td>
<td>$83.06</td>
</tr>
<tr>
<td>Net Service Credit</td>
<td>$5,139.96</td>
</tr>
<tr>
<td>Service Charge Amount</td>
<td>$5,139.96</td>
</tr>
</tbody>
</table>

**Relationship Manager**

J. Seltsmore

**Company Contact**

M. Cash

**Days in Month**

30

**Month Ending**

6/30/2016

---

2019 CBMI Treasury Track
Deposits (electronic)
- E-check, Credit Cards

Deposits (non electronic)
- Treasurer’s Office, Athletics, Book Store, Residence Halls

Bankers Trust
- Deposits/Disbursements
  - Deposits (electronic): E-check, Credit Cards
  - Deposits (non electronic): Treasurer’s Office, Athletics, Book Store, Residence Halls

Bank of America
- Merchant Credit Card
- US Bank
  - ISU Card/Confidential Research Projects/Athletics/P-Card

Wells Fargo Custodian
- Short Term Fund
- Endowments
- Bond Funds

Endowment
- Alternative Investments

Diversified Fund
- Vanguard Funds
- Great Western
- Western Asset
- ING

Concentration Account
- Depository Account
- Investment Account
- Trust Account

2019 CBMI Treasury Track
Treasury Trends

What to expect

• Real-time Payments
• Integrating FP&A
• Increased Tokenization
• Are checks going away yet?
• Blockchain Revolution
Building Blocks of the Internal Bank

Assets

- Limited Term Assets
- Cash Management

Liabilities

- Debt Portfolio

2019 CBMI Treasury Track
## Asset Liability Management

### Link between how assets are borrowed and invested:

<table>
<thead>
<tr>
<th><strong>Assets</strong></th>
<th><strong>Liabilities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Term</td>
<td>Money Market Funds</td>
</tr>
<tr>
<td></td>
<td>Commercial Paper</td>
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<tr>
<td></td>
<td>Repos, t-bills</td>
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<tr>
<td>Medium Term</td>
<td>MTN</td>
</tr>
<tr>
<td></td>
<td>Leases</td>
</tr>
<tr>
<td></td>
<td>Intermediate Fixed Income</td>
</tr>
<tr>
<td></td>
<td>Serial Bonds</td>
</tr>
<tr>
<td>Long Term</td>
<td>Endowment</td>
</tr>
<tr>
<td></td>
<td>Serial Bonds</td>
</tr>
<tr>
<td></td>
<td>Term Bonds</td>
</tr>
</tbody>
</table>

2019 CBMI Treasury Track
The School as a “Bank”

- Short-Term Investments
- Long –Term Investments

- Deposits
- Withdrawals

- Short-Term Borrowing
- Long –Term Borrowing

2019 CBMI Treasury Track
Internal Bank Funds – Sources and Uses

Deposits
- General Fund
- Earnings Units
- Other

Investments
- Short Term
- Intermediate Term
- Long Term

Loans
- LOCs & Internal Loans
- Capital Projects
- Leases

DEBT
- CP
- Fixed Notes
- Capital Leases
- Variable Rate

2019 CBMI Treasury Track
Goals of an Internal Bank

• reduce levels of excess cash maintained at the unit level while maintaining liquidity for operating needs
• increase the amount of cash available for short-term investment
• establish consistent loan terms to all units through the pooling and blending of debt
• generate higher levels of unrestricted resources
• smooth the effects of capital markets on university operations.
Financial Resources

Capital
- GIFTS
  - Annual Giving
  - Campaigns
- Endowment
  - Deferred
  - Asset Allocation
  - Performance
- Investments
  - PPE
  - Debt
  - Net Assets

Operations
- Revenues
  - Tuition and Fee Rates
  - State Support
  - Financial Aid Policies
  - Housing
  - Academic Programs
  - Enrollment
- Expenses
  - State Support, Tuition & Fees, Room & Board

Facilities
- New
- Renewal
- State Support
- Fixed/Variable
- Debt

Debt POLICY
- Interest
- Depreciation
- Space and Occupancy
- Supplies & Others

PPE
- Revenue
- Expense
- Compensation and Benefits

2019 CBMI Treasury Track
Resources

The Treasury Institute for Higher Education
www.treasuryinstitute.org

National Association of College and University Business Officers
www.nacubo.org

Association for Financial Professionals
www.AFPonline.org

National Automated Clearing House Association
www.nacha.org
Thank you!
Tm

treasury management
Acknowledgments

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A. The Evolution of Treasury Management

From its roots in “cash management” and paper checks in the mail, treasury management has become increasingly sophisticated. The inflation of the 1970s, along with advances in information technology, stimulated the more productive management of cash through such practices as funds concentration, float management, real-time transaction processing and reporting, and electronic payments. Spreadsheets enabled business officers to have more control over more accurate information. New and innovative financial products were introduced. Since then, products, practices and networks of relationships have become ever more complex.

Since the last CUBA volume published in 2000, treasury management, like other administrative functions, has experienced four broad sets of changes:

- The shift from a paper-intensive to an electronic and information-rich environment
- A greater focus on improving cash management processes throughout the institution
- Heightened concern about risk management and security
- Increased global focus

Each of these changes is addressed later in this chapter, but they are worth highlighting at the outset.

First, the proliferation of paperless billing (electronic bill presentment), online payments, image capture and substitute checks, enhanced treasury workstations and other tools have enabled treasury management to be more productive. They have also required treasury managers to be more conversant with the selection and use of technology and the security around that technology.

Second, technology has enabled new ways to think about cash management processes across the institution. It is no longer necessary, for example, for checks to be collected locally and then centralized. Instead of “face to face” payments, students and/or customers can be directed to use lockbox or online payments. In today’s treasury environment, it is generally more efficient to have payments and refunds made electronically via an automated clearinghouse (ACH), rather than having the bursar’s office write a check. Similarly, the use of purchasing cards can significantly streamline the payable process. As with the introduction of electronic processes in so many business areas, process and policy improvements often require changes in the mindset and behaviors of administrative and academic managers. Treasury managers must therefore not only provide training in the new, desired practices, but also, more important, instill a culture that recognizes the time value of money and how to capture that in an electronic environment.

Third, the transition to a more electronic environment, along with greater public concerns about privacy and personal data security, has elevated risk management as a priority for treasury managers. Internal controls and the mitigation of fraud have always been concerns, but over the past decade, new areas of risk have arisen. There have also been significant updates in card compliance (PCI-DSS: Payment Card Industry – Data Security Standards) in the last decade.

Finally, the issue of increased global focus must also be considered. Many treasury departments are now responsible for opening global bank accounts and moving funds around the world for operations and research in other countries. This requires an awareness of geopolitical environments, foreign banking practices and a host of additional regulations—both domestic and international.

These trends are not unique to higher education and reflect broader practices in treasury management in the corporate world. For these reasons, education-specific organizations such as NACUBO and the Treasury Institute for Higher Education emphasize the adoption of best practices as identified by the Association for Financial Professionals.
B. The Role of Treasury Management

While both treasury management and accounting employ many of the same financial principles and practices, treasury management is not an accounting function. Accounting typically analyzes transactions and data from the past. Treasury management is more proactive and uses data to manage and forecast financial assets. Managing the treasury involves oversight of a constant series of daily transactions: money comes in, money goes out, funds are invested, and funds are borrowed and paid back. The manager's responsibilities include monitoring that flow, ensuring liquidity, forecasting cash positions and borrowing when necessary.

The treasury manager serves as the operational steward of institutional funds. At the strategic level, this requires the treasurer manager to:

- protect the institution's operating assets by investing in secure investment vehicles.
- monitor, manage and negotiate the college's or university's credit facility.
- manage the risks involved with payment cards, cash management and investment activities.
- identify, evaluate, select and manage relationships with financial partners of the institution.
- ensure the college or university has the appropriate mix of financial products and services.
- be current on appropriate regulations as well as practices that promote efficiencies.
- where the institution has global concerns, keep up to date on geopolitical environments, foreign banking practices and a host of additional regulations—both domestic (e.g., Foreign Bank Account Report (FBAR)) and international.
- ensure that financial and operational decision-makers receive accurate information at the appropriate levels of detail.

Managing risk requires hands-on vigilance. At a tactical level, the treasury manager must be careful to:

- obtain daily information on bank balances, receipts and disbursements, and understand where these funds are coming from and going to.
- developing and maintaining forecasts of future cash flows for relevant horizons (30, 60, 90 day, etc.).
- monitor authorized and unauthorized bank and investment account changes.
- pay attention to the level of funds in both bank accounts and the institution's records.
- move funds across accounts as necessary to ensure liquidity.
- invest surplus funds as they become available or borrow from short-term sources as needed.
- ensure that there have been no errors, unauthorized transfers or other suspicious activity.

Appropriate staffing for the treasury management function varies with institutional size and with the complexity of the treasury management program. Some treasury offices include such functions as purchasing card management, alternative payment mechanisms (Zelle, Paypal), insurance, debt, global operations support, risk management and tuition collection; others do not. Whatever the college's or university's size, it is necessary to clearly designate someone as having treasury management responsibilities, and there should be due regard for the separation of duties. Committing staff to the function should bring economic returns through an enhancement of investment income, a reduction of borrowing costs, a decrease in the costs of transactions, and a minimization of risk. This can sometimes be a real challenge for smaller institutions, where many treasury staff are often “wearing several hats” due to the small staff size. In addition, many smaller educational institutions do not even have a true treasury operation but rather manage the treasury function as part of the controller's office.
Effective treasury management requires accurate and timely information. Technology and software services now make it possible for treasury managers to obtain real-time, online transaction reports, and real-time information should be used whenever it is available. Some larger institutions (especially those with global operations) have installed treasury workstations to help managers determine cash positions (on a global basis if necessary), verify bank activity, initiate financial transactions and perform trend and other analyses. These workstations can also do bank account administration, reconciliation, settlement, fee and account analysis, exposure management and merchant card activity (settlements, reconciliations, etc.). Treasury workstations enable institutions to communicate immediately with banks, other financial institutions, and customers or suppliers. They can poll banks so that balances are in place each morning. A general ledger interface saves staff time and eliminates errors associated with the manual posting of journal entries and other repetitive handling of time-sensitive data.

Treasury workstations are powerful, but they are expensive, with the sticker price easily exceeding $100,000. In addition, implementation can be difficult and time-consuming. Many of these functions can be performed in ways other than treasury workstations, using general ledger (enterprise resource planning, or ERP) systems, spreadsheets and/or bank-based reporting packages. In fact, many of the larger commercial banks offer sophisticated reporting applications that may be cost-effective for smaller institutions. These packages generally cost less, but they are less capable of handling more complicated reporting related to debt, investment and risk management. They are adequate for institutions that use one or two primary banks and are not involved in complex debt, investment, international or risk management activities. There are also stand-alone debt systems that may be available, and many large, complex universities use investment custodians to handle investment tracking of the portfolio.

C. Core Concepts in Treasury Management

Despite changes in technology and process, several concepts are still central to the discipline of treasury management. These include:

- Working capital management
- Payment systems
- Cash management (collections, concentration and disbursements)
- Short-term investing and borrowing
- Financial risk management
- Financial institution relationship management
- Basic treasury functions (internal bank, technology, international)

Debt management, while a key component of treasury management, is addressed in a CUBA chapter on strategic debt management (www.products.nacubo.org). These will be the sections to be covered as the main body of this reference.
II. Working Capital Management

Working capital management involves optimizing current assets and liabilities to ensure that the organization has sufficient liquidity. Optimization also includes releasing trapped cash from the working capital components, which implies that working capital management is one of the primary responsibilities of the treasury area. Note: The discussion of general working capital management developed below is based on a standard manufacturing company environment. Education institutions are more of a service organization, so some of the issues related to inventory, manufacturing and payable may not be directly relevant. However, ANY organization has issues related to the fact that inflows and outflows of funds are typically NOT matched, and there is often a necessity to finance the organization’s working capital requirements.

Working capital management is influenced by the organization’s daily operating activities, which consist of ordering and paying for goods and services as well as generating and collecting revenues. These operating activities result in the creation of various working capital accounts (e.g., inventory, accounts payable and accounts receivable), which impact cash flows and liquidity. The ebb and flow of this operating cycle results in the cash conversion cycle, as illustrated in Exhibit #1.

Exhibit #1: Cash Conversion Cycle

A. Operating Cash Flows and Cash Flow Timeline

This section describes key operating aspects of working capital management. Specific topics include types of operating cash flows, the cash flow timeline, and float concepts that are pertinent to working capital.

1. Operating Cash Flows

Four types of cash flows that the treasury area must consider include cash outflows, cash inflows, concentration flows and liquidity management flows. Each is described below.

- Cash outflows include funds disbursed to employees, vendors and/or suppliers, lenders, tax agencies, bondholders and other entities.
- Cash inflows include funds collected from various revenue streams (primarily tuition), obtained from financial sources (e.g., loans or investment income), and/or received from other sources (government funding, endowment funds, foundations).
- Concentration flows (e.g., funding flows) involve internal transfers among operating units and the associated bank accounts. The primary objectives of concentration flows include pooling funds or funding disbursement accounts.
- Liquidity management flows refer to the effective deployment of liquidity reserves to sustain overall liquidity needs. If there is a surplus of funds, treasury may either (1) invest in suitable investments or (2) pay down existing debt. If there is a shortage of funds, treasury may either (1) sell off investments or (2) draw on available debt sources (e.g., credit lines or short-term bond issuance). It is worth noting that there has been an increased focus on liquidity since 2000, especially from rating agencies.
2. More on Funds Surplus

As a general rule, each organization must determine what is meant by “surplus funds.” From an operating perspective, the organization needs to have some set level of liquidity based on its day-to-day and period-to-period cash flow needs. The excess of fund balances over and above these needs is generally considered “surplus.” These funds could then either be invested in various types of short-term investments or even retained in a bank account in order to earn either interest or earnings credits to offset bank account fees. Earning credits in commercial-type bank accounts is discussed in a later part of this guide.

B. Float Issues

1. Collection Float Related to Mail-Based Payments

In the area of payments, the party making the payment is typically referred to as the payor, while the party receiving the payment is referred to as the payee. Collection float is the time interval or delay between the time the payor initiates payment and the time the payee receives good funds. Collection float applies principally to paper-based payment instruments that are subject to three types of float or delays:

- **Mail Float**: The time interval or delay between the day a payment (and any related remittance information) is mailed and the day it is received by a payee or at a payee’s processing site. Mail float usually ranges from as little as a day or two to many days or even weeks in the case of international payments.

- **Processing Float**: The time interval or delay between the time the payee or the payee’s processing site receives the payment and the time the payment (typically a check) is deposited into the payee’s account. Processing time is required to capture remittance and payor information, and to prepare the deposit. Processing float is typically one day or less, but it may extend for more days if the processing system is inefficient or has any built-in processing delays, such as receiving payments at branch locations but sending them elsewhere for final processing. Posting of the payment may also be delayed if insufficient information is received with the payment.

- **Availability Float**: The time interval or delay between the day when a payment is deposited into a bank account and the day when the payee’s account is credited with collected funds. Availability float varies but ranges from zero to two business days domestically, and even longer for international payments.

The primary cost associated with collection float is opportunity cost, because uncollected funds cannot be invested or used to pay down debt. However, the cost of methods used to reduce or eliminate collection float, such as remote deposit capture (RDC) or lockbox services, should be weighed against the benefit of achieving those improvements.

2. Disbursement Float

Disbursement float is the time interval or delay between the day when a payment is initiated and the day when funds are debited from the payor’s account. As with collection float, disbursement float applies principally to paper-based payment instruments, which are subject to three types of delays or float: mail, processing and clearing. Disbursement float is analogous to collection float, except that it is viewed from the payor’s perspective. The primary difference between collection and disbursement float is availability versus clearing float.

Clearing float is the time interval or delay between the day when a check is deposited by the payee and the day when the payor’s account is debited. In most cases, the payee’s account is credited with collected funds at the same time the payor’s account is debited. In some cases, however, there also may be clearing float considerations related to the use of disbursements with automated clearinghouse (ACH) network credits. Some banks require that certain customers fund ACH disbursements upon initiation rather than when the actual value transfer takes place.

3. Benefits of Float Reduction

An organization typically benefits from shortening all types of float associated with collections and lengthening all types of float associated with disbursements. Traditionally, the rule in cash management is to collect quickly and disburse slowly, within the constraints of prudent financial practices and the maintenance of good relations with trading partners and other stakeholders. The introduction of electronic payment systems, including commercial cards, has changed this to an extent because the efficiency and benefits of the new payment methods outweigh the benefits of slowing paper-based payments, resulting in quicker disbursements.
C. The Cash Conversion Cycle (CCC)

The continuous flow of cash through working capital accounts results in the CCC, which provides the amount of time that elapses between when funds are disbursed in direct support of a revenue-generating activity until the time when revenues are collected. The CCC shows how inventory, accounts receivable (A/R), and accounts payable (A/P) interact to affect cash flow. While this calculation may not be directly relatable to higher education, it is useful for a treasurer or finance officer to understand its interpretation in order to evaluate the liquidity and working capital position of vendors, suppliers and/or corporate customers. For those involved in investment decisions for endowments or other university investment purposes, being able to analyze the liquidity and working capital position of possible portfolio additions would also be beneficial.

The remainder of this section describes the individual components of the CCC and strategies that can be implemented to shorten the CCC.

1. Days’ Inventory (DI)

While the typical college or university is a service organization rather than a manufacturing company, it is useful to start the analysis of the CCC from a commercial perspective. For a manufacturing company, days’ inventory (e.g., the inventory conversion period or days’ sales in inventory) is the average number of days that elapse from the purchase of raw materials until the sale of finished goods. This period of time is the sum of the average number of days that:

- raw materials remain in inventory
- raw materials are converted into finished goods (work-in-progress inventory)
- finished goods remain in inventory.

Decisions that affect the raw materials, work in progress or finished goods held in inventory impact days’ inventory. For a retailer, days’ inventory is the average length of time that finished goods inventory is held before sale.

For a service entity, such as a college or university, days’ inventory is determined by the average length of time that materials are held in inventory until they are used to provide services.

2. Days’ Receivables (DR)

For manufacturing, retail and service organizations, days’ receivables (e.g., receivables conversion period) is the average number of days required to collect on credit sales; but for universities, it may reflect the average number of days it takes to collect all types of accounts receivable. Changes in A/R policies (e.g., credit standards, credit terms or collection efforts) impact days’ receivables. Any changes in the competitive marketplace or general business/economic conditions also may impact days’ receivables. For most universities, one of the largest income streams is typically tuition, which may come in a very short period at the beginning of each semester/quarter. Public universities may also have to deal with funding coming from state or local governments, and all universities deal with monies from student aid organizations and research grants. In short, for finance offices at higher education institutions, the days of receivables question can be a complicated one to answer.

3. Days’ Payable (DP)

Days’ payable (e.g., payable conversion period) is the average number of days between the purchase/receipt of materials, supplies or services and the accompanying payment. Days’ payable represents the actual trade credit period, which is often different from the stated trade terms. A selling firm with trade terms of net 30 will typically have days’ payable that are higher than 30 days. The ability to purchase materials on deferred payment terms lets the buyer conserve cash by delaying payment. Any strategy that delays payment lengthens the buyer’s days’ payable, which shortens the CCC. Delaying payment until the end of the credit term or the credit discount period enables the organization to:

- reduce debt
- invest cash on a short-term basis
- make other purchases.

The proper management of payables is important and provides an effective source of liquidity for many organizations. Deferring payments until the end of the established trade terms and negotiating improved trade terms are both good practices. Unilaterally paying suppliers late, while a practice of some organizations, should be avoided. Stretching payables beyond agreed-upon credit terms can negatively affect relationships with suppliers.

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2. Portions of this section are adapted with permission from Chapter 10 (Introduction to Working Capital Management) of Essentials of Treasury Management, 5th Edition, published by the Association for Financial Professionals (AFP).
There are also often issues related to the accounts payable process versus the actual payments process. Organizations generally have either a centralized or decentralized accounts payable process, which is NOT part of the university finance office. The role of the treasury or finance office is typically to manage the payment process once the accounts payable office has authorized a payment to a vendor or supplier.

4. Calculating the CCC

As discussed above, this calculation might not be directly appropriate for a college or university, but it is useful for evaluating vendors, suppliers, corporate customers or possible investments. The calculations below are based on a typical manufacturing-type company and may have to be adjusted for service-type organizations.

The formula for CCC is:

\[
CCC = \text{Days' Inventory} + \text{Days' Receivable} - \text{Days' Payable}
\]

CCC is the average number of days between the cash outflow for the acquisition of materials and supplies, and the cash inflow from the sale of products or services. Therefore, the CCC is a method for calculating the average length of time a college or university must finance a cash outflow before receiving a cash inflow. Use the following information to calculate the CCC:

- Days' inventory = 45 days
- Days' receivable = 35 days
- Days' payable = 30 days

\[
CCC = 45 + 35 - 30 = 50 \text{ days}
\]

These assumptions result in a CCC of 50 days.

Suppose the management reduces the days’ inventory to 40 days by more carefully planning purchases, scheduling production runs and managing finished goods inventories. Next, by encouraging slow-paying accounts to pay within terms, the days’ receivables is reduced to 32 days. Finally, the payables department discovers that payments were being made before the end of the credit period. By paying these obligations at the end of the trade credit term, the days’ payable increases to 33 days. Through these improvements, the CCC is reduced to 39 days, as shown:

\[
CCC = 40 + 32 - 33 = 39 \text{ days}
\]

Decreased investment in inventory and A/R, and the increased process efficiency in A/P, are all sources of funds. Note that the organization’s underlying business processes have not changed. Revenues, unit sales of the product or service, total purchases and total billings remained constant. What changed is that the organization now recovers a dollar invested in working capital in 39 days rather than 50 days, which significantly improves the organization’s liquidity.

Another measure that is closely related to the CCC is the cash turnover measure. The formula for cash turnover is:

\[
\text{Cash Turnover} = \frac{365}{\text{Cash Conversion Cycle}}
\]

In the earlier example, when the CCC was 50 days, cash turnover was 7.3 (365/50) times per year. Reducing the CCC to 39 days increases cash turnover to 9.4 times (365/39). The latter indicates that the organization goes through 9.4 CCCs per year. Subsequently, a higher cash turnover implies increased working capital efficiency.

The CCC can be shortened by reducing the receivables and inventory periods and by extending the payable periods. Taking these actions may improve the efficiency and liquidity of the organization.
III. Payment Systems

A. Introduction

It is important for treasury professionals to understand payment systems, because the movement of funds is a fundamental part of the treasury function. While many of the techniques and concepts discussed in this section are primarily deployed by large corporations, they are often just as applicable for educational institutions, especially the larger ones. Also note that payment systems are used for both paying and receiving funds for an organization.

This section begins with an overview of the basic aspects of payment systems. Next, the section provides a detailed review of the common payment systems, including paper, electronic and card-based payments. The use of cash as a payment mechanism is also discussed. Although cash is technically not a payment system, cash is an important payment method for many universities for selected activities. Many universities have implemented significant handling processes to ensure the safety of cash receipts.

B. Overview of Payment Systems

A payment system is a series of processes and technologies that transfers monetary value, using cash substitutes, from one party to another.

For noncash payments, the value being transferred is typically stored in depository accounts at a bank. The bank, in turn, is connected to the various payment systems, and it processes payments on behalf of its customers or depositors. As an example, most banks are connected to various electronic and paper-based payment systems, such as Fedwire, ACH, TARGET2, Visa, MasterCard and many others.

1. Payment Basics

In the simplest case, payments involve four participants:

- **The payor** sends a payment, and the payor’s account is debited (decreased) for the value of the transaction.
- **The payor’s bank** (often referred to as the paying bank) processes the value transfer on the payor’s behalf.
- **The payee or beneficiary** is the receiver of the payment whose account is credited (increased) for the value of the transaction.
- **The payee’s bank** (often referred to as the depository bank) processes the transaction on behalf of the payee and generally holds the value in an account.

While the banks may choose to transfer payment instructions and funds directly with each other, there can be additional parties and intermediaries that help facilitate the transaction. Exhibit #2 refers to these intermediaries as the network. Note that the use of mobile and peer-to-peer payment systems is increasing in many countries, often bypassing the traditional financial institution model.

This simple case is illustrated in the four-corner payment system model shown in Exhibit #2.

![Four-Corner Payment System Model](image)

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4. Portions of this section are adapted with permission from Chapter 10 (Introduction to Working Capital Management) of Essentials of Treasury Management, 5th Edition, published by the Association for Financial Professionals (AFP).
5. The exchange of cash is not a payment system because it does not require the use of any outside agency.
6. The term bank is used throughout this section, even though the financial institution (FI) involved may be a non-bank
The network includes central banks such as the U.S. Federal Reserve, and commercial entities such as the Clearing House Interbank Payments System (CHIPS) and Visa. The network can also include transaction facilitators (e.g., Society for Worldwide Interbank Financial Telecommunications (SWIFT), which transmit information but do not provide funds settlement, and payment systems, which include information transmission capabilities and settlement. There may also be entities outside of the four-corner model that participate in the payment process, such as payroll processors, check printers and systems providers.

2. The Payment Process

From a systems standpoint, there are four elements in the payment process:

- **Payment instructions** consist of the information contained in an electronic transfer (e.g., a wire or automated clearinghouse [ACH] transaction), payment card transaction or a check. These instructions are from the payor and tell the paying bank to transfer value to the beneficiary through the receiving bank.

- **Payment generation** occurs when the payment instructions are entered into the payment system.

- **Clearing** is the process where banks use the payment information to transfer money between themselves on behalf of the payor and the beneficiary, either directly or through some external network.

- **Settlement** is the final step in the process and occurs when the beneficiary’s bank account is credited and the payor’s bank account is charged.

3. Settlement Versus Finality

It is important to understand the difference between settlement and finality of payment. **Settlement** refers to the movement of funds from the payor’s account to the payee’s account. In other words, the payee can use the money involved at settlement. For this reason, the term **availability** can also refer to settlement. **Finality** refers to the point in time at which the funds cannot be taken back or retracted by the payor or the payor’s bank. Settlement transitions to finality when a payment is unconditional and irrevocable.

Finality varies depending on the payment system and the parties involved in the transaction. Payment systems that offer immediate and irrevocable value are called **real-time gross settlement** (RTGS) systems. A common example of an RTGS is a wire transfer system. Others, such as check- and card-based systems, typically provide immediate information, with value following at a later time. But the value is contingent on the payor or the payor’s bank not attempting to retract the payment, a right that can exist for several months or more, depending upon the specific payment system.

The actual transfer of funds, or settlement, can be handled in several ways. With domestic transfers (e.g., the parties involved are in the same country), settlement is often handled between the banks using common accounts held at their central bank.

Alternatively, banks can use **correspondent accounts** to settle their customers’ funds transfers. In a correspondent banking relationship, two banks have accounts with each other for the purpose of clearing and settling payments. Generally, smaller banks with limited access to other clearing methods will maintain a correspondent relationship with a larger bank to enable more efficient clearing. In most international funds transfers, correspondent banks play a key role in the settlement process. These correspondent relationships may be reciprocal (i.e., both banks move value both ways and have accounts with each other) or one-way (i.e., a small bank may have an account with a larger bank for clearing purposes).

4. Types of Payments

Payments can be differentiated based on payment systems and the parties involved. Both methods of differentiation are discussed in turn.

The various non-cash payment systems generally have unique operating characteristics, risks, rules and settlement mechanisms. The non-cash payment types include:

- **Checks** are paper-based payments initiated when one party writes a check to pay another. Although one of the oldest forms of noncash payment systems, checks are still used throughout the world and are most widely used in the U.S.

- **RTGS (real-time gross settlement) or large-value electronic payments** generally refer to **wire transfers**. Wires are processed individually and in real-time (e.g., immediately). Wires have existed since the late 1800s with the invention of the telegraph but did not become widely used until the early 1900s.

- **Electronic payments**, often referred to as **automated clearinghouse (ACH) payments**, were introduced in the early 1970s as a means to replace checks. ACH
payments are value-dated and processed in batches, and typically take one to two days to settle, though some same-day ACH is now available in the U.S. for certain types of transactions. Originally, ACH payments were intended for “small” payments, such as payroll and consumer transactions. Today, the lower cost of ACH transactions has motivated many companies to replace wires and other payment types with ACH transactions.

- **Card-based payments** are payments that settle through one of the large card-processing networks, including Visa, MasterCard, China UnionPay and American Express. Card-based payments may also settle through one of the ATM (automated teller machine) or POS (point-of-sale) systems such as STAR, NYCE and PULSE in the United States, Interac in Canada, and Telstra in Australia. Originally, card transactions were all credit card payments and were initiated through the presentment of a plastic credit card. Today, card payment methods come in a variety of alternatives, including debit cards, prepaid cards, purchasing cards, single-use cards, ghost cards and payroll cards—some of which, despite the name, no longer use a physical card.

- **Emerging payments** include mobile wallets, person-to-person payments and virtual currencies. Mobile wallets and other types of mobile payment systems (Alipay, Google Wallet, Apple Pay) use smartphones and tablets equipped with near field communication (NFC) chips or a barcode. The mobile payment system allows the customer to choose a payment method and then tap the phone to a contactless payment device or scan a barcode. Person-to-person payments may be initiated by the payer through a bank (Quickpay, Popmoney, VENMO, Zelle), a nonbank intermediary (Paypal) or a credit card network (Visa Money Transfer). Virtual currencies, also known as cryptocurrencies (Bitcoin, Etherium, Ripple (XRP), etc.) and their corresponding blockchains are in the early stages of development and have gained limited acceptance. Blockchain technology is covered in more detail in a later section.

Payments can also be differentiated based upon the identities of the parties involved in the payment transactions, such as:

- **Business-to-business (B2B)** payments move funds from one business to another, typically for vendor payments. While this payment category represents the smallest portion of payment volume, it typically represents the largest segment of payment value. Increasingly, B2B payments are made with electronic payments or via cards.

- **Business-to-consumer (B2C)** payments move funds from businesses to consumers or individuals. Examples of B2C payments include payroll, student refunds and research participants.

- **Consumer-to-business (C2B)** payments move funds from consumers to businesses, typically for purchases and bill payments. Historically, transactions at the point of sale are sometimes cash, but the majority of the other C2B payments are either card payments at the point of sale or electronic payments made through a bank. Examples: consumer mortgage or credit card payments, tuition payment via ACH and athletic tickets via payment card.

- **Consumer-to-government (C2G)** payments include taxes and other government fees.

- **Business-to-government (B2G)** and consumer-to-government (C2G) payments include taxes, fines and other government fees.

- **Government-to-business (G2B)** payments are usually for vendor payments. The best example here is the U.S. government’s EFT payment programs under the auspices of the Financial Management Services (FMS) used to pay most government vendors and contractors via the ACH system.

- **Government-to-consumer (G2C)** payments include various government-issued payments, such as retirement, social security and welfare payments. The majority of G2C payments are electronic or card-based.

- **Consumer-to-consumer (C2C), person-to-person (P2P) or peer-to-peer** payments move funds from one individual to another. Examples include income payments (e.g., babysitting or lawn mowing) and various personal payments (e.g., gifts). This is especially the area where payment innovators such as VENMO and Zelle have operated.

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6. For the purposes of this discussion, the university or college is considered a business, but in some cases and for some types of payments, it could be considered a government entity.
C. Cash Payments

In general, cash payments (those involving currency and coin) are used by consumers to settle small transactions. Cash payments are typically self-settling, meaning that the physical transfer of cash provides the clearing network leading to final settlement (e.g., no banking network is needed). Thus, no additional settlement infrastructure is needed for cash transactions. For this reason, cash is generally not considered a separate payment system. Irrespective of cash constituting a specific payment system, cash payments are sometimes utilized for payment of research participants and for athletic stipends (although other payment types are replacing the use of cash at some institutions). In some countries, cash represents the prominent payment method for purchasing transactions and for payroll.

A popular misconception is that cash payments are less expensive than other types of payments. Cash represents a security risk. Cash receipts must be safeguarded at the collection point until they can be transported to a bank and deposited into the company’s bank account. The cost of this process, which includes items such as locked cash drawers, dual-control procedures, specialized safes (virtual vaults) and armored cars, can actually be quite high. Additionally, banks typically charge their corporate and large organization customers a fee to receive, count and verify cash deposits. As a result, cash is a high-cost payment method for most organizations.

D. Check-Based Payments

1. Check Payment Basics

Checks (or cheques) are the traditional method that payors, also referred to as makers (because they “make” the check), have used to access their bank accounts. While overall check volume is declining, checks are still the primary payment method used for B2B payments in the U.S. Checks are also used in many other countries around the world, but the overall volume of checks is much lower in those countries than in the U.S.

Steps 3, 4 & 5 = Clearing Process
Steps 6, 7 & 8 = Settlement Process

As illustrated in Exhibit #3, the check payment system begins with the deposit or “paying in” of a check—drawn on a domestic bank in local currency—into a payee’s account at the payee’s bank, referred to as the bank of first deposit (also known as the depository or collecting bank). The check may be deposited either as a physical check or (in the U.S.) as a check image, using a process referred to as remote deposit capture (RDC).
If the payee has not already scanned the check and deposited it as an electronic image, the check is either scanned at the teller counter or batched and sent through a reader/sorter at the bank of first deposit, which captures the magnetic ink character recognition (MICR) line information and captures an image of the check. During this scanning process, the amount of the check is captured and added to the information contained in the MICR line on the bottom of each check.

The MICR line is a specially formatted line of machine-readable information on the bottom of a check that contains all the information necessary to process the check through the check-clearing system. It is called the MICR line because it was originally printed with a special magnetic ink used for magnetic ink character recognition, or MICR. Today, many check readers actually use optical character recognition (OCR) to capture the information in a MICR line, and many on-demand laser-printed checks do not use magnetic ink in their processing.8 Exhibit #4 illustrates a sample U.S. business check and the elements of the MICR line.9 Comparable MICR lines are used in other countries.

Exhibit #4: Sample U.S. Business Check

After initial capture via scanning or reader/sorter, the checks and/or images are then sorted by the collecting or payee’s bank according to the rules of the country’s checking system and the clearing channel used to collect the payments, and they are sent through the clearing channel as cash letters. This processing is typically done at the bank of first deposit. A cash letter is a physical bundle of checks and related control documents. A cash letter form accompanies the bundled checks. The cash letter form includes information such as the depositing institution’s routing number, the total dollar amount of items deposited, and the number of items deposited.

This clearing mechanism has changed in many countries with the introduction of image check processing,10 which has largely replaced the exchange of physical checks with the exchange of check images. Another result of image check processing has been the development of ancillary services, such as remote deposit capture (RDC). RDC is a service (available primarily in the U.S.) that allows a payee to scan a check received as payment and transmit the scanned images to a bank for posting and clearing, instead of having to deposit physical checks. Originally designed for larger commercial deposits, RDC is now often available for small depositors as well.

Regardless of whether the check is paper or an image, value is subtracted from the paying bank’s account at the time of presentment through a central bank, a correspondent bank, or some other clearing channel. Following presentment, the paying bank posts the check to the payor’s account. Most check processing is automated, and banks rely on account holders to report fraudulent checks, forged endorsements and alterations.

The paying bank has a limited period of time to conduct a review of the paid check/image and either authorize final payment or refuse payment and return the check to the bank of first deposit. Returned checks (referred to as return items) may be redeposited or charged back to the depositor’s account, depending on the return reason. In the U.S., banks have until midnight of the business day following the day of receipt of a check (either as an image or a physical document) to complete their review and return any checks, roughly 36 hours.9 In the United Kingdom, the return deadline is six days from the date the check was deposited at the payee’s bank. While other countries have similar rules governing check processing, there are often local variations on such issues as processing time and return requirements. As a result, it is important that treasury professionals know and understand the rules and regulations that apply to checks written or received in the normal course of business. Local banks are usually one of the best sources of this information.

8. It is important to note that it is the responsibility of the treasury department to collaborate with IT, AP and their financial institution to ensure the accuracy of the MICR line. Failure to have a MICR line that can be read accurately could result in extra bank fees.
9. U.S. consumer checks differ from business checks in that they are slightly smaller (6” versus 8.5”) and lack the initial, or auxiliary on-us, field in the MICR line.
10. In the U.S., this change occurred in 2004 with the enactment of the Check Clearing for the 21st Century Act (referred to as Check 21). While Check 21 did not specifically authorize image presentment of checks, it did create a new negotiable instrument called an image replacement document (IRD). An IRD is a paper reproduction of the original check that contains an image of the front and back of the original check and is the legal equivalent of the original check. As a result, U.S. banks can legally exchange images electronically instead of shipping paper checks, and they can use the images to print an IRD when or if someone in the clearing process needs a physical document.
11. The guidelines for returned check items are based on the Federal Reserve’s Regulation CC.
2. Some Check Clearing Terms

**On-Us Check Clearing:** On-us check clearing involves a payee depositing a check in an account at the same bank on which it is drawn. The payee’s bank simultaneously debits (decreases) the payor’s account and credits (increases) the payee’s account. The payee typically receives same-day or immediate availability, if funds are available.

**Transit Check Clearing:** Deposited checks drawn on other banks are referred to as transit checks and require more processing than on-us checks. As discussed above, the bank of first deposit must sort these checks into cash letters, which must then be transmitted to the paying bank either directly or via intermediary processors, such as a central bank or correspondent bank (collectively referred to as clearing channels) for final settlement. Until final settlement is completed, there is a chance the item could be returned as non-payable.

- **Correspondent Bank:** In this type of clearing, the collecting bank maintains a depository account with another bank, called a correspondent bank. The collecting bank sends cash letters to the correspondent bank, which presents the items to the paying bank through a local clearinghouse or the Federal Reserve System. The collecting bank’s depository account at the correspondent bank is then credited with the proceeds of the checks.

- **Direct Send or Direct Exchange:** As an alternative to using the clearing channels just discussed, collecting banks may arrange to send cash letters directly to a paying bank or to a nonlocal Federal Reserve Bank. This process, also referred to as direct presentment, enables banks to meet various deposit deadlines and achieve faster clearing times. The collecting bank maintains a depository account with the paying bank or nonlocal Federal Reserve Bank, which is credited with the proceeds of the checks. If the cash letter arrives early enough in the day, the paying bank must settle the same day.

- **Federal Reserve System (Fed):** The Fed also acts as a check-clearing agent. Depository banks can send cash letters to the Fed, which will then clear the checks and transfer values from paying banks to depository banks.

As a result of image processing and electronic presentment of checks in the United States, many checks now clear the same day, with the remainder settling in one day. Finality, however, can still take several weeks due to various types of returned items. Similar options are typically available in most countries, with that country’s central bank (or an equivalent processor) substituting for the Fed.

3. Foreign Checks

Foreign checks are checks deposited at a bank in one country that are drawn on a bank in another country. Foreign checks may also be drawn in a foreign currency (e.g., a check in British pounds deposited with a U.S. bank for credit to a U.S. dollar bank account). These checks are normally treated as collection items and processed outside of the normal check-clearing systems. This implies that the depository will send the foreign check to a correspondent bank (or a foreign branch of the depository bank, if it has one) in the country in which the foreign check is payable. The correspondent bank will, in turn, process the foreign check locally and eventually remit the proceeds to the depository bank. Because these checks are subject to both foreign exchange transaction costs and extra processing fees, the bank of first deposit typically will not credit the payee’s account until it receives and converts the proceeds of the check to its base currency. As a result, foreign checks can take days or weeks to clear and normally clear for significantly less than the face amount of the check. Due to the complicated nature of clearing these items, some banks do not accept foreign checks for deposit.

One exception to this process is U.S. dollar checks that are drawn on a Canadian bank but have a U.S. MICR line and are deposited into a U.S. bank. Such checks are processed through standard check-processing channels.

4. Balances and Float

Balance measurements and float calculations are determined by the relationship between the time that a check is deposited and the deadlines set by the depository institution (in contrast, electronic payments are typically available when posted):

- **Ledger balances** are bank balances that reflect all entries to a bank account, regardless of whether the deposited items have been collected and are available for withdrawal. Ledger balances are important for accounting purposes, but not for funds availability or bank compensation purposes. A negative ledger balance results in a ledger overdraft, for which charges can be assessed.

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12. A collection item (also called a noncash item) is any item presented to a bank for deposit that the bank will not provisionally credit to the depositor’s account. Payment must be received from the payor’s bank before the item is credited to the payee’s account.

13. Several Canadian banks have requested and been assigned U.S. RTNs.
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- **Available balances** reflect the amount of funds available for withdrawal from an account, based on the bank’s availability schedule and/or local regulations that require specific availability for certain funds (e.g., Reg. CC in the United States; other countries may have similar regulations). Available balances may also include overdraft lines of credit.

- **Collected balances** refer to the average ledger balance minus the deposit float. Neither collected balances nor deposit float is a regulatory term. Rather, they are items used by U.S. banks to determine earnings credits on account analysis statements.

- **Daylight overdrafts** occur when financial institutions permit customers to make payments that exceed the available balance. These overdraft positions are usually eliminated by funds that arrive later in the day. Financial institutions carefully examine the creditworthiness of a customer before allowing a daylight overdraft.

5. Additional Paper-Based Instruments

A number of other less common payment instruments have check-like attributes (e.g., a MICR line and Routing Transit Number [RTNs] and typically clear through the same channels as checks. Note: While it may be unusual for universities to issue some of these items, they could possibly be in receipt of any of them. These include:

- **Cashier’s Check/Certified Check**: A cashier’s check, also known as an **official bank check**, is a check drawn on a bank’s funds. A certified check is drawn on a depositor’s checking account, and funds are withdrawn from the depositor’s account at the time of certification, to assure payment with a certification or guarantee by the bank. Both carry the signature of a bank officer certifying the check to be genuine and guaranteeing payment. Due to the higher processing costs of certified checks, most banks have replaced them with cashier’s checks. These checks may be required for certain types of payments, especially when dealing with the issuance of visas for some countries.

- **Government Warrants**: In government finance, a warrant is an order to pay that instructs a treasurer to pay the warrant holder on demand or after a maturity date. Warrants deposited in a bank are routed (based on the MICR line information) to a collecting bank that processes them as collection items. The collecting bank presents the warrants to the government entity’s treasury department for payment each business day. In the U.S., warrants are commonly issued by state treasurers for payroll purposes, A/P to vendors, tax refund payments to taxpayers, and payments to owners of unclaimed monies.

- **Money Order**: A money order is a prepaid instrument issued by various third parties such as banks, postal services and consumer outlets, such as convenience stores and check-cashing agencies. The purchaser is the instrument’s payor, and the money order is the obligation of the issuer. As with cashier’s/certified checks, some embassies and consulates require payment for visa fees in postal money orders due to their finality of payment.

- **Payable Through Draft (PTD)**: A PTD is a payment instrument resembling a check that is drawn against the payor rather than the bank. It is handled like a check through the clearing process, but the responsibility for paying the draft lies with the payor, referred to as the **drawee** in the case of drafts. The primary reason organizations use drafts is to preserve the right to review the items prior to final payment. Insurance companies often use this type of instrument for claims reimbursement because drafts provide insurers with an opportunity to verify signatures and endorsements before honoring the items. These may be used for replacement checks to enhance payment security.

- **Remotely Created Check (RCC)**: RCCs, also known as **pre-authorized drafts**, are used to draw or draft against a payor’s account. The check is unsigned, and the payee, rather than the payor, initiates the transaction. RCCs are typically created for a one-time payment, such as a late bill payment or debt settlement. Because they do not bear a signature and can be created without the knowledge of the payor, RCCs are vulnerable to fraud. As a result, many banks refuse to accept them for deposit. According to Reg. CC and most clearinghouse agreements, any bank that transfers or presents an RCC warrants that the check is authorized by the person on whose account the check is drawn.

- **Sight Draft/Time Draft**: A sight draft is usually presented in combination with other documents that verify the terms of a transaction have been met. If all the documentation is in order, then the draft is payable upon presentment (i.e., at sight). A time draft is the same as a sight draft except it is not payable until a specified future date. Time drafts are used for transactions that call for delayed payment. Sight and time drafts are used primarily to support international trade.

- **Traveler’s Check**: Traveler’s checks are prepaid instruments similar to money orders. Two signatures are usually required by the purchaser: one at issuance and one at the time the check is used to pay for goods or services. Some issuers of traveler’s checks are replacing them with stored-value cards to improve processing times and reduce fraud.
E. Large-Value Electronic Funds Transfer (EFT) or Wire Transfer Systems

Processing large-value electronic funds transfers involves two key elements: clearing and settlement. Clearing is the transfer and confirmation of information between the payor’s bank (sending financial institution, or FI) and the payee’s bank (receiving FI). Settlement is the actual transfer of funds between the banks, which discharges the payor’s obligation to the payee.

Final settlement is irrevocable and unconditional. The finality of the payment is determined by the transfer system’s rules and applicable law. The illustration shown in Exhibit #5 assumes that the funds transfer takes place within one country. In this case, the transaction information and ultimate settlement are handled through the country’s central bank or equivalent. For cross-border payments, the transaction information is sent via an external system, and settlement is handled through correspondent bank accounts.

Exhibit #5: Large-Value Funds Transfer System

Large-value funds transfer systems consist of either RTGS (real-time gross settlement) systems or net settlement systems.

Gross settlement occurs when each transaction results in a separate value transfer between the payor and payee. In most gross settlement systems, the settlement occurs immediately through an RTGS system. Such payments are considered final when processed.

Net settlement occurs when many transactions are combined and then sorted by sending and receiving banks. At day’s end (or at another agreed-upon point in time), the net amount either owed by or owed to each bank is determined, and only the net amount of value is actually transferred. At this point, electronic credit transactions are considered to be final. Electronic debits may be reversible under certain specified circumstances. All of the individual transactions are accounted for on a bookkeeping basis, with each bank making the necessary debits and credits to individual accounts.

1. RTGS Systems

Real-time gross settlement means that the clearing and settlement of each transaction occur continuously during the processing day. Payment to the receiving participant (payee) is final and irrevocable when the RTGS processor (central bank or equivalent) either credits the amount of the payment order to the receiving bank’s account or sends notice to the receiving bank, whichever is earlier.

Examples of RTGS systems used for large-value transfers throughout the world include Fedwire (U.S.), CHAPS (United Kingdom), LVTS (Canada), TARGET2 (Europe) and CNAPS (China).

Large-value RTGS payment systems are used by organizations to facilitate major transactions that are time sensitive and where the irrevocable receipt of value is required. They are also typically used for most international payments. Because a payment made through these systems is final and irrevocable once made—and because the value amounts can be significant—special care and diligence is required in the issuance and processing of wire transfers.

2. Clearing House Interbank Payments System (CHIPS)

CHIPS is a U.S.-based, privately owned wire transfer system that settles its transactions through the Fed. Like Fedwire, CHIPS handles both the transmission of funds transfer instruction messages among banks and the settlement of the payment between the banks, and it is an RTGS system that provides finality. CHIPS is one of the main electronic funds transfer systems for processing international U.S. dollar funds transfers made among international banks in the United States. It is important to note that the sending bank will typically choose the specific payment system used to move funds for its customers.

14. Systems used to send the transaction information include SWIFT and CLS.
15. CHAPS refers to the UK’s Clearing House Automated Payment System, LVTS refers to Canada’s Large Value Transfer System, and CNAPS refers to the China National Advanced Payment System.
3. TARGET2 and the Single Euro Payments Area (SEPA)

TARGET2 is based on a common operating platform developed and operated by Banca d’Italia, Banque de France and Deutsche Bundesbank on behalf of the Eurosystem. The Eurosystem is comprised of the European Central bank and the central banks of countries using the euro. It is the monetary authority for the euro area. TARGET2 became operational in November 2007 and is Europe’s RTGS system. TARGET2, along with its predecessor TARGET, was developed as part of the implementation of SEPA, the Single Euro Payments Area. SEPA, an initiative of the European Union, ensures that electronic payments within the Eurozone are handled in a standardized and inexpensive manner across all countries of the Eurozone. In effect, cross-border payments within the SEPA boundaries are treated as if they were in-country rather than cross-border payments.

4. Continuous Linked Settlement (CLS)

Continuous linked settlement (CLS) was developed to reduce the risks of working with counterparties. Beginning in the mid-1990s, central banks became increasingly concerned that the high level of settlement risk in existing practices, coupled with an unexpected event or failure, could trigger a serious disruption of the global foreign exchange (FX) markets and financial system liquidity. In an FX transaction, settlement risk is the risk that one party to the transaction provides the currency it agreed to sell but does not receive the currency it agreed to buy. Thus, the transaction is not settled. The exposure to a single counterparty, even if for a limited time, can have substantial negative consequences for the parties involved.

The solution to eliminating settlement risk was the development of CLS. CLS is a multicurrency FX settlement service that allows a simultaneous exchange of the payments for both sides of the underlying financial transactions (e.g., FX contracts, non-deliverable forward [NDF] contracts and over-the-counter [OTC] derivative contracts).

The CLS process is managed by CLS Group Holdings AG and includes the CLS Bank International (CLS Bank). It is regulated by the central banks in the countries in which it operates. The group was formed in 1997, and the system has been operating since 2002. As of 2015, CLS membership includes 62 member banks and settles payment instructions for foreign exchange transactions in 17 currencies.

5. Society for Worldwide Interbank Financial Telecommunication (SWIFT)

SWIFT is not a payment system. SWIFT is a communication system used by most of the banks in the world to transmit payment instructions, among other things, and is therefore often thought of, incorrectly, as an international wire transfer or funds transfer system. SWIFT is an industry-owned, cooperative, interbank telecommunication network that enables banks to send authenticated electronic messages in standard formats. The information that moves through SWIFT ultimately results in value being transferred from one party to another, generally through correspondent banks.

SWIFT was created in Brussels in 1973 with the support of more than 200 large banks in 15 countries. As of 2015, SWIFT included more than 10,000 banking organizations, security institutions and corporate customers in more than 200 countries. SWIFT communications contain payment-related information but do not actually transfer value. Communications that are initiated and received by member banks are known as SWIFT messages. These messages cover a wide range of international banking services, including balance reporting, letters of credit (L/Cs), documentary collections and FX transactions. Through the SWIFT network, a company can request a bank to initiate a balance transfer or foreign payment.

For corporate customers, SWIFT provides a limited membership that allows a corporation to utilize SWIFT’s multibank platform to exchange financial information with its banks through one standardized platform. This may allow the corporation to reduce or eliminate transaction costs while increasing the speed of payment and minimizing the necessity of maintaining multiple bank connections in order to send/receive information and initiate payments.
F. Non-Urgent Electronic Transfer Systems

Originally, these types of systems were designed to facilitate small-value electronic transfers of payments among FIs, typically on behalf of consumers. These systems have evolved to handle a much wider range of payments and are now generally referred to as “non-urgent” payment systems, to separate them from the RTGS systems discussed above. Many countries have these types of systems—ACH in the U.S., Bacs in the United Kingdom and ECG in Hong Kong. Non-urgent transfer payments are payment instructions to either debit or credit a deposit account. They are typically batch-processed, value-dated electronic funds transfers between originating and receiving FIs. An additional feature is that these types of electronic transactions can transfer more payment-related information than can normally be transmitted via paper-based instruments or wire transfers. Companies use these systems for a wide range of transactions, including the issuance of payroll credits and pre-authorized debits. For the purposes of the following discussion, we will use the term ACH or automated clearinghouse to refer to these types of payments/systems in general.

These electronic transactions can either be credits, such as payroll payments, that are originated by the account holder that is sending funds (the payor), or they can be debits, such as mortgage or loan payments (or, in the case of higher education, tuition and fee payments), that are originated by the account holder that is receiving funds (payee). SEPA debit and credit schemes fall into the category of small-value transactions. All non-urgent transfer systems allow for the processing of credit transactions, but not all systems allow for pre-authorized debits.

A giro payment, available in some countries, is the functional equivalent of an ACH credit. The payor, typically a consumer, authorizes their bank to pay the payee, typically a business, through a direct transfer. Although the original authorization from the customer may be received through either paper or electronic bill payment systems, the payment itself is electronic and is usually sent through the country’s ACH system. Although the term giro is still widely used in many countries, separate giro-processing systems have largely been replaced by electronic small-value transfer systems.

Since ACH electronic transactions can be originated as either credits or debits, the terms payor and payee are not used to identify the parties to the transaction. Instead, the terms originator and receiver are used, as shown in the ACH credit transaction in Exhibit #6. In a similar manner, the financial institutions involved in an ACH transaction are not referred to as the depositary and paying banks. Rather, they are called the originating depository financial institution (ODFI) and the receiving depository financial institution (RDFI). Unlike checks, which are always created by the payor and move money to the payee, ACH transactions can be either created by the payor to send money to the payee (called ACH credits or credit mandates), or created by the payee to take money from the payor (called ACH debits or debit mandates).

Exhibit #6: ACH Payment System

ACH transactions are typically sent in batches by FIs and third-party service providers to operators for processing one or two business days before settlement dates. The operators then deliver the transactions to the receiving institutions at defined times.

To combat fraud, a considerable range of controls and balances are associated with ACH payments. Examples include debit filters and blocks, which restrict a perpetrator’s ability to use a stolen routing transit number and account number to withdraw money from the account using an ACH transaction.
Although these systems typically operate within a specific country, it is possible to send ACH transactions between countries in what are referred to as cross-border ACH transactions. This is accomplished through the use of a “gateway” bank or service provider that will receive transactions in one country and then forward them to the ACH system of another country. The U.S. Federal Reserve Bank (along with a host of other banks) provides this service, called FedGlobal ACH Payments, to over 35 countries as of 2015.

The standard option for distributing cross-border payments between deposit accounts is known as an account-to-account transfer. An account-to-receiver option is also offered and allows funds from accounts at a U.S. depository financial institution to be retrieved by any receiver either at a participating bank location or at a trusted third-party provider in certain receiving countries.

The FedGlobal service also provides a range of transaction currency options:

- **Fixed-to-Variable**: U.S. dollars are converted to a variable amount of a destination currency based on a competitive exchange rate. Settlement occurs in U.S. dollars between participating U.S. financial institutions and Fed Banks.

- **Fixed-to-Fixed—U.S. Dollar to U.S. Dollar**: Payments are both transferred and received in U.S. dollars. Settlement occurs in U.S. dollars and is between participating U.S. financial institutions and Fed Banks.

- **Fixed-to-Fixed—Foreign Currency to Foreign Currency**: Payments are both transferred and received in foreign currency. The FX rate and settlement are managed and processed by participating U.S. financial institutions and the respective foreign gateway operators via their foreign correspondent banks.

The growth in acceptance of internet services and online banking has created a demand for small-value systems that settle more quickly than the traditional ACH systems. In response to this demand, many countries are looking at various options to provide some form of same-day or near real-time transaction. An example of this is the Faster Payments Service in the United Kingdom. Faster Payments is a joint development of CHAPS, the UK ACH system, and VocaLink, a large British telecom company, and it uses an internet-based system to provide immediate online payments to customers. Faster Payments was developed by British banks in response to a government demand to reduce the clearing time for ACH transactions. Other countries are looking at similar changes.

There are two ACH operators in the U.S. ACH system: the Fed processes most of the ACH transactions, while a private operator, the Electronic Payment Network (EPN), processes the remainder. NACHA, the Electronic Payments Association (formerly the National Automated Clearing House Association), is a trade organization that is responsible for managing the development, administration and governance of the ACH system. NACHA is a membership organization of financial institutions and other stakeholders in the ACH system. In addition to administering the rules, standards and procedures that enable the system to work on a daily basis, NACHA also is responsible for enforcing the rules and various risk management processes.
Credit and debit cards are payment cards issued to individuals and businesses for the purchase of goods, payment for services and/or access to cash advances and withdrawals. A credit card is issued against a line of credit, whereas a debit card is issued against a deposit account belonging to the cardholder.

1. Credit Cards

Banks and financial services companies are the primary issuers of credit cards, although some major retailers and oil and fuel service companies issue them as well. The two primary bank-issued cards used in the U.S. are Visa and MasterCard. The main nonbank card is American Express (Amex), which is issued primarily by Amex itself, although some of its specialty cards may be associated with bank lines of credit. Finally, the Discover card is issued primarily by Discover Financial Services and is U.S.-based. These U.S.-based cards are offered and accepted on a global basis. There are credit cards offered through other countries as well, such as China's Union Pay and Japan's JBC card.

In general, bank-issued cards, Amex and Discover are known as open-loop cards because they are accepted anywhere the card logo is displayed. Cards issued by gas companies, department stores and other retailers are considered closed-loop cards as the card is accepted only by the issuing company. Many of the large oil companies issue their own credit cards for fuel purchases, and there are several fuel service companies that provide card services to corporate and government entities. These are sometimes referred to as fleet cards.

Chip cards (or smart cards) include a computer chip with related circuitry that can be used to store information for security or transaction processing. In the early 1990s, Europay, MasterCard and Visa agreed to develop common specifications for smart cards as either debit or credit cards. This system, called EMV (for Europay, Mastercard and Visa), was initially released in 1994 and has been upgraded several times since then. With the exception of a few countries, EMV-compliant cards and equipment are widespread. Since not all countries or even all merchants in a country are capable of reading the chip on chip cards, these cards also typically have a magnetic stripe on them in addition to the chip.

EMV chip transactions are more secure than transactions using a magnetic stripe. When a payment is initiated with a magnetic stripe card, the terminal reads data that is stored on the magnetic stripe and routes the information through the payment networks for authorization. A criminal can copy the magnetic stripe data and produce counterfeit cards. An EMV chip, on the other hand, can process information and determine the rules of the transaction through communication with the terminal. This dynamic authentication reduces the possibility of fraud.

To encourage the use of EMV chip cards in the U.S., Visa, Mastercard, Discover and American Express set October 2015 as the deadline for merchants to support EMV payments. After that date, liability for the cost of counterfeit fraud shifted to issuers or merchants if they did not support chip technology.
There are several participants in a credit card transaction. Exhibit #7 describes these participants and their roles in the credit process.

**Exhibit #7: Participants in a Credit Card Transaction**

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardholder</td>
<td>A Cardholder receives a card from the issuing bank.</td>
</tr>
<tr>
<td>Card Issuer</td>
<td>Issuing banks underwrite and issue cards to individual and business cardholders who meet credit standards, or in the case of debit cards, hold bank accounts with that financial institution. The issuing bank maintains the individual card accounts, bill and collects payments from cardholders, and monitors the performance of credit card receivable portfolios.</td>
</tr>
<tr>
<td>Merchant</td>
<td>Merchants are businesses that accept cards as a method of payment. Merchants can include “brick and mortar” merchants (those with a physical storefront presence), e-commerce merchants (those conducting transactions on the internet), or moto merchants (those who process orders by mail order or telephone order).</td>
</tr>
<tr>
<td>Merchant Acquirer</td>
<td>In addition to issuing cards, banks can also act as acquiring banks for businesses that accept credit card payments. The merchant acquiring bank qualifies businesses (referred to as merchants) that accept credit card payments. The merchant acquiring bank provides merchants with credit card terminals, which may be purchased or leased, and maintain deposit accounts through which the credit card payments settle.</td>
</tr>
<tr>
<td>Acquiring Processor</td>
<td>Many merchants and merchant acquiring banks use third-party processors to manage the daily settlement, as well as the information flows, related to credit card activities.</td>
</tr>
<tr>
<td>Issuer Processor</td>
<td>The issuer processor provides a system for card issuers to board accounts, provides authorizations, and offers risk management tools to issuers to manage their card portfolios effectively.</td>
</tr>
<tr>
<td>Network Operator</td>
<td>Network operators maintain communication networks to support card transaction activities, such as authorization, clearing, and settlement. Network operators include Visa, Mastercard, Discover, Star, NYCE, Pulse, Accel, Interlink, and others.</td>
</tr>
</tbody>
</table>
In addition to the clearing and settlement processes common to all payments, credit card transactions add a third major process: authorization. Credit card transaction processes are illustrated in Exhibit #8.

Exhibit #8: Credit Card Transaction Process

The authorization process starts when a customer pays for a purchase using a card (Step 1-A). This process is essentially the equivalent of the payment instruction and generation process outlined for payments in the earlier discussion of the payment process. The merchant submits an online authorization request for the charge amount to its merchant acquiring bank, which is also known as the merchant acquirer (Step 1-B). The request usually is transmitted through a point of sale (POS) terminal or other electronic communication system. That authorization request is routed through the appropriate card network and subsequently to the issuing bank. The issuing bank reviews the cardholder’s account and approves or declines the transaction. If approved, the issuing bank places a hold on the cardholder’s credit limit (Step 1-C, referred to as open-to-buy) for the amount of the charge. If the purchase is made with a debit card, the issuing bank places a hold on the cardholder’s available funds. Then, an authorization response is routed back through the network to the merchant (Step 1-D).
The second major step in a card transaction is the clearing process—the communication of payment information through a card-processing network or channel. Card transaction data are submitted electronically by the merchant to the merchant acquirer, typically at the end of the business day (Step 2-A). The merchant acquirer then forwards the data through the network operator to the issuing bank (Step 2-B). Depending upon the type of card used, the acquirer uses one of several networks, such as Visa, MasterCard, Discover or American Express. When the issuing bank receives the transaction data, it converts the hold on the customer’s account to a charge that will appear on the cardholder’s monthly billing statement (Step 2-C).

The final step in a card transaction is the settlement process, in which the funds are transferred from the issuing bank to the merchant via the merchant acquirer. The network operator establishes net positions of all settlement participants (issuers/acquirers), collects funds from the issuing bank, and makes transfers to the merchant acquirer through the ACH, Fedwire or other similar system. Settlement usually occurs the next day, following submission of the clearing transaction to the network operator (Step 3). If the card transaction involves more than one currency (i.e., it is a cross-border transaction where a card issued in one country is used for purchases in another country), any foreign currency exchange is handled as part of the settlement process.

The merchant receives settlement either gross or net of any allocated fees. These fees, which are discussed in more detail later in this chapter, include interchange fees due to the issuing bank, any network assessment fees due to the network operator, and any transaction fees due to the merchant acquirer.

If the amount that the merchant receives is the net settlement, then the transaction value is less the fees. If the terms are gross settlement, then the merchant receives full transaction value, and a periodic invoice is received for the amount of the fees due to the respective parties.

Cardholders can dispute a charge assessed to their accounts, which may result in a charge-back to the merchant. Generally, cardholders have a window of anywhere from 60 to 120 days to dispute a transaction. A merchant has an established time period to respond to this charge-back and provide evidence to the validity of the charge, as well as have the charge re-presented by the merchant acquirer. Certain card networks permit up to two charge-back cycles. Then, the process of pre-arbitration and arbitration may occur.

2. Debit Cards/EFTPOS

Debit and credit cards have similar features, but debit cards, often referred to as EFTPOS in many parts of the world, access funds directly from a cardholder’s checking or savings deposit account. Debit cards may be signature-based and/or personal identification number (PIN)-based. Also note that most cards now utilize the EMV chip technology as discussed above to enhance security. Also, as a result of the use of chip security, many systems now process transactions up to certain limits without requiring either PIN or signature.

- **Signature-Based**: Signature debit cards bear the logos of Visa, MasterCard or Discover, and they are processed in the same manner as credit card transactions using those network operators. The customer signs a receipt at checkout.

- **PIN-Based**: A PIN debit transaction facilitates consumer authorization and authentication through the entry of a PIN at the POS terminal. Authorization and clearing are generally immediate and are facilitated by network operators, such as Maestro (owned by MasterCard), Interlink (owned by Visa), NYCE, STAR and ACCEL/Exchange.

3. Other Varieties of Payment Cards

Some variants of payment cards include purchasing, smart cards and stored-value cards (e.g., payroll cards, some types of health reimbursement account cards and gift cards). The types of payment cards discussed below streamline the purchasing process and offer rebates for the companies that use them.

- **Purchasing Cards**: Purchasing cards (also known as procurement cards or p-cards) are credit cards used by businesses for the purchase of supplies, inventory, equipment and service contracts. P-cards are typically used for various types of purchases (high or low value) with spending limits established on an individual card basis. Purchases can be limited to approved vendors and suppliers, as determined by the merchant category code (MCC) of the vendor or supplier. From the issuing college’s perspective, the principal benefit of a p-card is the replacement of the traditional time-consuming, labor-intensive, paper-based requisition process and the streamlined reconciliation process for the card transactions. Additionally, universities may negotiate a rebate based on charge volume and average transaction size, and they may be able to effectively

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18. *EFTPOS* refers to electronic funds transfer (EFT) at the point of sale (POS).
delay payment since purchased items will not be paid for until the end of the billing cycle. The principal benefit for an employee is that goods and services can be obtained quickly and conveniently without a complicated purchase order process.

- **Travel and Entertainment (T&E):** These credit cards are used by businesses for employee travel purposes. Travel cards may be incorporated into a company’s p-card program (typically referred to as one-card programs), or they may be issued as a separate card. These cards work very similarly to p-cards. Card issuers may send campuses a regularly scheduled data file of transactions that have been charged by employees for automatic loading, as well as send reconciliation details directly to the campus’s employee expense system. In addition to rebates, travel card programs may allow the firm to earn travel points. T&E cards, as with p-cards, often can have restrictions on use based on the university’s policy.

- **Fleet Cards:** Fleet cards are similar to T&E cards but are designed to be used for expenditures related to trucks and cars, such as fuel and repairs, and in some cases, other driver expenses, such as food and lodging. Fleet card systems often entitle users to fuel discounts and capture added information, such as vehicle mileage and location.

- **Ghost Cards or Virtual Cards:** These are variations on the p-card that do not involve the use of an actual card. With a ghost card system, a card number is given to a specific vendor and is then used for electronic purchasing and billing purposes.

- **Departmental (Unnamed) Cards:** This is another variation of p-card in which each department has its own p-card for general use by that department. The card is linked to the department rather than to an individual, and, unlike most cards, there is no individual’s name on the card.

- **Single-Use Cards:** Most credit card companies provide additional purchasing security by offering their account holders the ability to generate a single-use or disposable card number. These card numbers look like regular credit card numbers, including embedded expiration dates and security codes, but they will only work for a single use. Single-use cards are often used for travel and entertainment, and by A/P departments to pay vendors. Since the number is only good for a set amount and a set period of time, it is a mechanism for fraud control with the benefit of streamlined reconciliations and receipt of rebate.

- **Stored-Value Cards (SVCs):** These debit cards may be offered by financial institutions, retailers and other service providers, and they can be branded, open-loop cards (e.g., Visa or MasterCard), or private-label, closed-loop cards (e.g., Starbucks and other merchant gift cards). Generally, open-loop cards can be used almost anywhere, while closed-loop cards can only be used at one selected merchant or group of merchants. Gift cards are one of the most commonly used types of stored-value card. The payroll card (or pay card), another stored-value card type, is offered as an alternative payment method to employees or students who do not have bank accounts and therefore cannot accept direct deposit of funds for their paychecks. The key benefits to employers of moving employees or students to payroll cards versus checks include reduced payroll costs and lower levels of payroll-related fraud. Another use for stored-value cards is for employee benefit programs, such as flexible spending accounts and health care expense reimbursements. Depending upon the specific card and issuer, SVCs can be either reloadable (e.g., the holder of the card can add more value) or non-reloadable (e.g., the value of the card is limited to the amount originally placed on it). In addition, some universities may consider using SVCs as a replacement for traditional cash-based payments such as those for research participants, athletic per diems and study abroad programs.

4. Payment Card Industry Data Security Standard (PCI DSS)

As a result of several system breaches and compromises of data in card networks, the card industry created a governing body to establish and administer a series of strict requirements for the security of card data. Merchants are required to go through an audit of their systems and applications to confirm they are compliant with the PCI DSS.

The PCI DSS is a worldwide information security standard defined by the Payment Card Industry Security Standards Council. The standard was created to help organizations that process card payments prevent payment card fraud through increased controls of the data they hold and exchange. The standard applies to all organizations that store, process or transmit cardholder information from any card branded with the logo of one of the major card brands.

Failure to comply with standards or a breach of security can result in substantial fines and possible termination of the acceptance of payment cards. It is important to note that compliance is typically a partnership between treasury...
and IT (info technology). PCI compliance is expensive but necessary to mitigate risk, including reputational risk.

5. Merchant Card Fees

Merchant card fees are a complex subject and are affected by a large number of variables, including items such as the type of card accepted, the amount of the transaction, the way the card is processed and the merchant's contract with its bank and/or acquiring processor (sometimes referred to as a merchant processor).

The major components of merchant card fees are:

- interchange fees (referred to simply as interchange).
- assessments.
- processor fees or markups.

Interchange typically accounts for the largest portion of overall card fees and represents a fee that is paid to the issuing bank for each transaction. These fees are established by the card brands and go directly to the issuing bank to cover its costs in issuing cards and in processing card transactions.

Interchange fees vary depending upon the method of acquisition and card type. The lowest fees are generally set for cards that the merchant is able to process at the point of sale (referred to as “card present” transactions.) This allows for accurate transmittal of the data and reduced security concerns (i.e., the actual card is present at the time and point of the transaction, and the cardholder authorizes the transaction). Card transactions accepted over the phone or via the internet, referred to as “card not present” transactions or mail order or telephone order (MOTO) transactions, may be assessed higher fees due to the increased risk (e.g., fraud and data errors) from the transaction.

In determining interchange fees, card type refers to whether the card is a standard card versus a reward card (i.e., cards that offer rewards or points back to the user), as there are typically higher fees on reward cards than on standard (i.e., non-reward) cards, but it also includes whether the card is a debit or credit card. Recent U.S. regulations have impacted interchange fees for debit cards, and as a result, debit card interchange fees are limited to roughly $0.24 per transaction. Credit card fees are typically higher, and while there may be a fixed fee involved, interchange is usually a percentage of the card transaction itself. As of 2018, average rates on retail consumer credit card transactions in the United States were around 2.5%, plus fees charged for equipment and other interchange costs. Large entities with high credit card volumes can usually negotiate significant discounts from these rates. Some processors oriented toward small businesses, such as Square and PayPal, usually run at a flat 2.75% per transaction, with no additional fees.

In addition to the fees already discussed, merchants are also subject to a number of miscellaneous fees for such things as returns, charge-backs and disputes, as well as for supplies and equipment costs for terminals and card scanners. In some cases, these may be included in bundled pricing.
IV. Cash Management (Collections, Concentration and Disbursements)

A. Collections

The collections function—which includes billing, receiving, cashiering, depositing and banking—is critical to an effective treasury management program. Since cash can only work for the institution when it is received, the effectiveness of these collections processes will have a tremendous impact on the availability of cash.

A collection system should have four objectives:

• To collect receivables in a cost-effective manner.
• To convert collections into available funds as rapidly as possible.
• To identify surplus cash on a daily basis and move it into income-generating investments or to pay on short-term borrowings.
• To update receivables data quickly and accurately.

An analysis of the collection process begins by identifying the sources of all cash flows into the institution and the typical collection methods used to capture them. These can be varied, consisting of online payments, by mail, by telephone, by electronic transactions or over-the-counter at the bursar or bookstore. Payments may be in the form of cash, checks, wires, ACH transfers and payment cards. They can be for tuition, fees, endowments, gifts, corporate or government research grants, or government appropriations. The sources of money coming into the institution can be many and diverse. If the majority of payments are few but large, the emphasis of the program should be on float reduction. For higher education, however, where the payments are many, relatively small, and seasonal, most attention should be paid to reducing the processing costs.

B. Remote Capture and Imaging

The Check Clearing for the 21st Century Act, or Check 21, became effective in 2004. The law was stimulated in part by the events of September 2001, when tens of millions of paper checks worth an estimated $40 billion could not be cleared for days because of the grounding of the airlines. Check 21 is designed to improve efficiency in the payments system through imaging, also called truncation. Check images can come in two forms: digital images and substitute checks (in which digital images are transmitted electronically and then printed for delivery).

Remote deposit capture (RDC) allows an institution to make deposits directly into an account. When a check comes in, it is scanned and the quality of the check image is verified. An image cash letter (ICL) is prepared and then transmitted via a secure, encrypted connection over the internet. The bank receives the ICL, clears and deposits the funds, and then sends a confirmation of the deposit back to the institution. Once the receipt by the bank has been validated, the original check can be securely destroyed. Businesses/Universities that fail to timely and securely destroy the original checks are liable for any losses or fines should the original check be presented to the bank for clearing after the original image was processed.

Many banks offer the necessary equipment, software, training and support. The advantages of remote capture lie in the elimination of time required to package checks and take them to the bank and in the faster deposit of funds into the account.

Imaging technologies are being used at various points in the process. Lockbox services, for example, may include imaging technology to provide invoice and/or check information to the institution. Processors can capture invoice information from tuition bills (such as name of the student, identification number, semester being paid and amount being paid) and transmit the data electronically to the institution’s administrative systems to update the student’s account. Typically, these services can accelerate the posting of information, reduce the amount of internal processing at the institution for posting receivables, and reduce the need for traditional cashiering operations.
C. Lockbox

A lockbox speeds the entry of cash into the institution’s account. It is a post office box opened in the name of the institution but accessed and serviced by the bank or remittance processor. One of the earliest forms of lockbox was created in 1947, when the Radio Corporation of America (RCA) set up a special post office box to which dealers sent their rental payments. Whether seeking to improve processing or reduce float, a lockbox can be an invaluable tool. Typically, an institution receives mail once or, at most, twice a day through postal deliveries. Lockboxes use special zip codes to expedite delivery to the bank, which may process lockbox mail 24/7. Geographically distributed institutions may save even more time by having more than one lockbox site.

Receipts are taken directly to the bank’s item processing center, where they are placed immediately into the check collection system. In-house clerical expenses for processing remittances and preparing deposits are eliminated. In addition, data entry into ERP system may be eliminated with file transmission from the lockbox back to the institution.

Finally, the audit controls of a lockbox system are typically more robust than those found in a bursar’s office. There are two types of lockboxes: wholesale and retail.

Wholesale lockboxes generally are more appropriate for small-volume, large-dollar payments that are accompanied by multiple invoices, contract references and other information needing to be captured when they are processed. The remittance processing is typically less automated and may include customized features. Retail lockboxes are for institutions with large volumes of small-dollar payments, such as tuition. They are appropriate for invoices with machine-readable payment coupons that can automatically update receivables information.

When selecting a lockbox provider, it is important to ask questions about their availability schedules, quality of processing, information delivery capabilities, fund clearance efficiency, technology and use of clearing via images. It is often advantageous to perform a site visit to the lockbox facility to observe the operations. There are several explicit components of a lockbox price, such as the fixed monthly maintenance charge and the variable per-item processing charges. When comparing prices, however, it is also important to consider implicit costs associated with availability. One bank may seem to be cheaper because of its lower per-item charges, but its longer time to activation may cost the institution more because of excessive processing or clearing float. Institutions should negotiate their own bundle of services that incorporate needed features.

D. Concentration

Different business functions—such as payroll, accounts payable disbursements and retail—often have their own accounts. This provides a number of advantages, including easier reconciliation with the general ledger, more automatic processing, improved internal control, and clearer audit trails. But from a treasury perspective, these decentralized accounts invite idle balances and hinder effective management of funds.

In a concentration or master account system, money distributed in multiple banks, depositories, accounts and lockboxes is gathered into one location from which institutional funds are managed. Funds can be tracked, forecast and applied where needed with better information and control. Excess funds can be swept into an investment vehicle to earn income rather than sitting unproductively in different banks and accounts. A concentration account can be established to centralize funds being paid while maintaining subaccounts for, say, payroll and vendors. This can also be accomplished by using high-order prefixes and separate check ranges to designate different check purposes from a single controlled disbursement account. This can provide benefits through more effective controls and easier reconciliation.
One mechanism for concentrating accounts is the zero balance account (ZBA), which is designed to move all excess balances from ZBA sub-accounts into the single ZBA master account, and to fund all disbursement accounts from the concentration account. At the end of each day, funds are moved in and out of the master account so that each of the ZBA sub-accounts balance to zero. This offers several advantages: Cash balances are eliminated, excess funds can be swept into an investment account, and inter-account fees are reduced. ZBA allows individual schools or operating units to maintain collections at the local level, while aggregate cash investments and movement of funds remain closely controlled by the central treasury.

Concentration is especially helpful for institutions, such as state university systems, with multiple campuses and dispersed deposit locations. Concentration services should be an important criterion when selecting a financial institution. The treasury manager should inquire about the number of locations where cash or receivables are handled, the average dollar size of transactions, the availability of funds at the original deposit banks, and the administration needed to oversee the system. To be sure, consolidations in the banking industry and the emergence of national players make it more likely that institutions with multiple campuses will be able to use one bank (and perhaps even one bank account) for all or most of their campuses. Additionally, the use of smart safes and cash recycler equipment for making deposits onsite eliminates the need for a local bank branch, saving time and armored carrier cost, and enhances security. Additionally, smart safes and recyclers are connected to the financial institution, and the institution often receives immediate credit.

If a depository account is in a different bank than the concentration account, funds can be transferred through ACH transfers, which are the least expensive method, or through wire transfers, which are the most expensive method and are typically used for large amounts. These are discussed more extensively below. In a later section, we also examine the emerging practice of an internal bank, which takes the concentration of funds concept to a new level.

**E. Disbursements**

The three major types of disbursements for institutions are payroll, student refunds and vendor payments. The primary objective of the disbursement portion of a treasury management program (beyond eliminating fraud) is to reduce costs. This requires the treasury manager to:

- time cash disbursements to maximize discount benefits and avoid early payment
- minimize the cost of issuing and processing disbursements
- minimize the cost of overdrafts
- maintain a clear audit trail of payments
- minimize the cost of excess funds sitting idle in a disbursement account
- reduce the transfer cost of moving funds into the disbursement account.

There are three types of accounts for funding disbursements, each of which differs in the timing and method of funding: commercial demand, zero balance and controlled disbursement accounts.

Demand deposit accounts (DDA, also called commercial demand accounts) are the most basic form. A check is issued and presented for payment. Funds are taken from the demand account, and the check is then returned to the originating bank, which returns it to the payor as paid. With paper checks, this process can take up to a week. There must be sufficient funds in the account to cover the presentment whenever it occurs. This type of account can also be “stagger funded,” meaning that a series of funding actions are taken in anticipation that issued checks will clear on different days. Student refund accounts, for example, can make good use of stagger funding. It is relatively simple to calculate an institution’s funding pattern based on the actual checks cleared over a period of time.

Zero balance accounts enable an institution to concentrate and better control its funds. With ZBAs, separate accounts for different disbursement needs can exist in a single bank. In the morning, forecasts for total funds required in the master account can be made, with excess funds thus being made available for investment. Each evening, the required funding for disbursement checks that have cleared that day in each account is covered or “zeroed out” by funds flowing from the master account.

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21. Smart safes are safes that are connected to the internet, so any deposit is immediately tallied and recorded, both for the customer and the bank. Cash recyclers also store cash, but they offer different functions. For example, they allow withdrawals to be made, so employees can prepare registers as needed.
Controlled disbursement accounts provide daily notification by the bank to the institution of the exact dollar amount of disbursements that will be posted against an account that day. That amount is then transferred to cover the requirement, with no excess balances remaining in the account. In contrast to a commercial demand account, where there can be multiple daily presentments against the account and exact funding needs are not known, a controlled disbursement account allows only one or two presentments daily and these amounts are typically known in the morning. If the master account has insufficient funds to cover the checks presented in the controlled disbursement account, a short-term investment can be liquidated or a line of credit may be accessed to avoid the penalizing costs of overdrafts. An additional advantage of the controlled disbursement account is that the time and frustration of disbursement forecasting is avoided.

Institutions most likely to benefit from a controlled disbursement account are those with high levels of disbursements and that make daily investment and borrowing decisions. On the negative side, these accounts generally have higher fees than commercial demand accounts. When selecting a provider, the treasury manager should evaluate banking costs and service quality.
V. Short-Term Investing and Borrowing

Treasury managers are typically responsible for managing the institution’s short-term investments and debt.

A. Short-Term Investments

The primary reason for institutions to hold short-term investments is to maintain reserve liquidity. The cash flows for educational institutions are unique in that the bulk of inflows come with tuition payments in the fall and spring semesters, as well as loan reimbursements from federal and/or state entities. In contrast, expenses are normally balanced during the academic calendar year, with high levels of disbursement at the end of the month (or bi-weekly) for payrolls and interest payments. Debt issuance for capital projects are typically planned well in advance but impact cash flow patterns.

A portfolio of short-term investments can help to smooth the peaks and troughs associated with working capital imbalances. Even when interest rates are low, and even on a short-term basis, the investment of cash can provide some level of earnings. The treasury manager must determine the available and appropriate level of funds to invest, and then choose investment alternatives that are aligned with those resources, with liquidity needs, and with institutional strategy and policies. The overall objectives of investing operating cash balances, in order of priority, should be safety/preservation of principal, liquidity and optimal return.

To determine the appropriate approach, the treasury officer should analyze the cash investment history of the institution. This analysis entails a review of cash and operating balances over a period of several years. By mapping out the levels of cash held by the organization, the officer can determine the level of cash fluctuation and the amount of cash that has generally been maintained in the institution’s accounts. Cash analysis should include all bank accounts, bank investment accounts, cash securities held by the institution, and cash investment vehicles. The treasury officer can use this information, coupled with the cash forecast, to determine the appropriate vehicles, length of investments, and allocation of cash investments.

B. Investment Options

The treasury manager must choose from among a variety of short-term investment products and vehicles. The appropriate investment program should be guided by the institution’s investment policies, the sophistication of the individuals overseeing the investments, the levels of operating cash invested, and the institution’s risk tolerance in the current environment. One time-tested caveat: If you do not fully understand a particular investment, you should not be purchasing it for your portfolio, as there is a range of risks attached to investment opportunities.

In demand deposit (checking) accounts, balances maintained in a commercial account earn credits (typically called earnings credits) at a rate determined by the financial institution. The relative earnings credit rate (ECR) is given at the end of the month and is outlined on the monthly analysis statement. This is essentially a pricing decision by the financial institution, since there are no underlying investments associated with the earnings credit rate. For the college or university, however, the earnings credit should be analyzed as if it were an investment, since parking money in a demand account has an opportunity cost. The use of the account analysis statement is covered in more detail in the section of bank relationship management.

A commercial bank sweep account is a service that automatically links a commercial bank depository account with an investment product and adjusts the bank account balances to a targeted level by transferring funds to or from the investment vehicle as it is needed. Sweep is a generic term, with banks offering products varying widely in characteristics and expense. The treasury manager needs to fully understand the underlying investments and the structure of the sweep being purchased, as well as the expenses that are netted from the investment return.
Money market is a generic term for a set of debt instruments that mature in a year or less. They may include the following:

- Federal agency securities, such as issues from the Federal National Mortgage Association (Freddie Mac), Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Bank
- Commercial paper, which is an unsecured promissory note issued by a corporation for a specific amount and typically issued for less than two months
- Bank financial instruments, including short-term certificates of deposit, bank notes and bankers’ acceptances (BA)
- U.S. treasury securities, which are backed by the government and considered to be risk-free
- Repurchase agreements, which are collateralized securities with a commitment by the seller to buy back the security from the purchaser at a specified price and on a specified date

Many institutions have policies that limit asset-backed securities and money market instruments to be rated at a certain level (such as “AAA” and “A1/P1”) at the time of purchase.

A commingled vehicle is an actively managed investment account in which the investments are not limited in their average maturity and security selection. The potentially longer weighted average maturity may allow these funds to offer higher returns but may also raise the risk profile of the investment. Most commingled investment vehicles are either registered SEC mutual funds or common trust accounts. They may have fluctuating unit values, or daily pricing, and each has specific or unique investment goals. Treasury managers need to be familiar with the investment guidelines and maintain confidence in the investment manager.

In-house management of the investment portfolio is often appropriate for treasury staff with sufficient knowledge and experience. However, it is costly to hire, train and maintain investment staff. External management of the portfolio is expensive, and the cost should be weighed against maintaining in-house expertise. External managers often offer the availability of deep resources, which are typically difficult to obtain and costly to manage in-house.

Segregated accounts provide an institution with a security-specific portfolio. Overseen by professional money managers, these separate investment accounts could increase management costs, since the institution has to maintain and pay for custodial and/or trustee relationships. To compensate, however, direct ownership of security positions may offer a positive level of comfort that makes up for the reduction in economies of scale and portfolio diversification that would be available in a commingled management plan. If the day-to-day change in cash assets is volatile, these entities may have liquidation and reinvestment problems. If this option is considered, the institution should carefully weigh the impact of market fluctuations in the pool and ensure that a sufficient liquidity cushion is established.

C. Money Market Funds (MMFs)

MMFs, known as unit trusts in the United Kingdom and Europe, are commingled pools of money market securities. In fact, many of the available money market investments form the basis for these funds. MMFs are typically held by financial institutions and investors who purchase an ownership interest in the fund. MMFs may be offered in the local currency or, where allowed by local regulators, in a foreign currency. There are five types of money market funds.

- U.S. Treasury Funds—Invest only in U.S. Treasury securities.
- Government Funds—99.5% of total assets must be invested in cash, government securities and repurchase agreements collateralized by government securities.
- Institutional Prime Funds—Invest in commercial paper, certificates of deposit, government securities, repurchase agreements and other short-term instruments.
- Institutional Municipal/Tax Exempt Funds—Invest in tax-exempt securities issued by state and local governments.
- Retail Funds—Offered to individuals. Institutional investors are restricted from investing in retail money market funds as of October 2016.
Money market funds generally have a net asset value (NAV) set at one unit of the currency of offering, such as dollars, pounds or euros. The primary goal of MMFs is stability and security. As long as the NAV of a fund does not fall below one unit (e.g., $1), referred to as “breaking the buck,” the investor’s initial principal is secure. Historically, MMFs have been secure investments, and many treasury professionals regard them as the equivalent of cash in the bank.

It should be emphasized that MMFs are not riskless assets, and funds can differ substantially in terms of risk, maturity and return. In September 2008, the Reserve Primary Fund became the second U.S. MMF to “break the buck.” The fund held a considerable amount of commercial paper issued by Lehman Brothers, which was considered worthless after the investment bank failed. This event created a run on the Reserve Primary Fund, which then spread to other MMFs. The funds began to sell securities and hoard cash in order to meet redemption demands. Since MMFs held approximately 40% of outstanding commercial paper at that time, corporations had difficulty finding buyers for new short-term debt. The SEC implemented several rule changes to prevent future runs on MMFs. Initial reforms adopted in 2010 reduced risk by mandating liquidity requirements to allow funds to more easily meet demand for redemptions.

Additional reforms were implemented in October 2016. These measures apply to institutional money market funds that do not qualify as government funds. The new rules include a floating NAV, redemption fees if a fund’s weekly liquid assets fall below a threshold, and the ability to suspend redemptions (redemption gates) for a period of up to 10 business days. Government MMFs, which hold 99.5% or more of their assets in cash, government securities, and repurchase agreements collateralized by government securities, are not subject to these rules. Exhibit #9 outlines these changes.

Exhibit #9: October 2016 Money Market Fund Changes

<table>
<thead>
<tr>
<th>Type of Fund</th>
<th>Net Asset Value (NAV)</th>
<th>Redemption Fees</th>
<th>Redemption Gates</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Treasury</td>
<td>Stable</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Government</td>
<td>Stable</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Institutional Prime</td>
<td>Floating</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Institutional Municipal/Tax/Exempt</td>
<td>Floating</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Retail</td>
<td>Stable</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Despite the aforementioned risks, MMFs offer numerous benefits. For example, MMFs offer daily liquidity and pay dividends (usually monthly) based on the fund’s average yield for the dividend period. Since minimum investments in many MMFs tend to be substantially smaller than those required for direct investments in money market securities, organizations can tailor their short-term portfolios to meet diversification and maturity requirements.

Another benefit of MMFs is that they may be preferred over other money market securities during periods of interest rate volatility. For example, when interest rates are falling, MMF managers may extend the maturities of new securities purchases in the fund’s underlying portfolio (within regulatory guidelines and limits) to lock in yields. Thus, investors in the fund receive the greater return of longer-term instruments while enjoying the liquidity and stability of principal that can be associated with investments with shorter maturities. The opposite holds true in rising interest rate environments.
The economies of scale of large MMFs implies competitive trading terms and low transaction costs. This helps to ensure that yield is not eroded by active management of the underlying portfolio. Most MMFs offer same-day settlement, making them just as liquid as overnight deposits. Moreover, MMFs are rated by the leading credit rating agencies, which helps investors to assess the funds’ default risk.

Overall, MMFs can provide an organization with a low-cost, professionally managed and marketable securities portfolio. MMFs are also administratively easy to use, helping to free up valuable treasury resources for other tasks. Even though MMFs charge management fees or service charges (based on the investor’s balance, level of activity and services provided), MMFs are more cost effective than managing a short-term investment portfolio for many firms.

D. Short-Duration Mutual Funds

Short-duration mutual funds invest in securities with maturities that exceed the maturities of most money market instruments. While this longer investment maturity offers the prospect of higher returns, it also exposes the investor to increased price volatility. Short-duration mutual funds do not typically have a fixed unit currency value.

The average maturity of securities held in a short-duration mutual fund portfolio is between one and three years. These funds place the majority of their holdings in specific types of instruments, such as government issues, CDs and commercial paper. Certain mutual fund companies offer various short-duration mutual funds based on maturity. Short-duration mutual funds may be used by investors to implement a strategy that matches investments with forecasted cash flow needs. For example, a treasury department may place some investable cash in MMFs, other cash in a short-duration mutual fund with an average maturity of 15 months, and still other cash in a fund with an average maturity of 24 months.

E. Short-Term Debt

At times, an institution may need to take on short-term debt to smooth out revenue cycles, to address a temporary liquidity problem, or as a bridge to a long-term debt issuance.

Another CUBA chapter focuses on debt management, but it is useful to reiterate two major points here.

First, short-term debt should be assessed in the context of the institution’s total debt strategy. Rather than being an isolated borrowing event, the debt should be evaluated in terms of an integrated portfolio of obligations that support a strategic and deliberate set of institutional needs and priorities. Among the questions that should be considered are:

- What is the current and proposed mix of short-term and long-term debt?
- What is the current and proposed mix of fixed and variable debt?
- What will be the impact of the debt service on our cash flow and liquidity?

Second, even short-term debt should be undertaken with a strict eye on risk management. The current environment has once again demonstrated that even seemingly safe investments and debt instruments have risks associated with them. The credit and related crises of recent years have also changed the risk profile and tolerance of many institutions. Treasury managers, working in association with other business officers, must do due diligence and ensure that they fully understand the fine print and obligations of the debt they are assuming. Further, they should do contingency planning to ensure that the institution is protected in case “unlikely events” become as likely as they have in recent times. Risk management questions that treasury managers need to address for short-term debt are similar to the ones that institutions need to ask more generally for longer-term debt:

- Do we understand the debt instrument(s) and the risks associated with them?
- Is our level of debt sustainable, or have we overextended ourselves?
- Will we continue to have access to the credit markets if an emergency arises?
- What is the worst that can happen with this instrument, and how would we deal with it?
F. Short-Term Funding Alternatives

Short-term debt instruments mature within one year and are generally used by firms to finance current assets such as accounts receivable and inventory. There are a number of alternatives to short-term debt issuance, including trade financing and commercial bank lines of credit. These are all potential sources of liquidity funding that should be considered as part of a campus’s short-term funding strategy, and they are summarized below.

1. Trade Credit

Trade credit arises when a customer receives goods or services but payment is not made to the supplier until a later date. Trade credit is the primary source of short-term financing used by many higher education organizations. Trade credit lets a buyer use the supplier’s goods or services while simultaneously using the cash it otherwise would have had to pay in advance or upon delivery. Trade credit provides a tangible economic benefit as a source of financing, because the buyer may avoid liquidating investments or incurring debt over the credit period. A university that pays its suppliers before the invoice’s due date (assuming no discount for early payment) may be forgoing an inexpensive source of short-term financing.

2. Commercial Bank Credit

Bank borrowings represent an important source of working capital for many organizations. This type of credit may be attractive because banks can customize debt structures and use information not disclosed to the public to justify underwriting the debt.

Bank loans are offered on a secured or unsecured basis. Security, provided in the form of collateral or guarantees, may be used to obtain more favorable rates by some borrowers or to make credit available to businesses that cannot access unsecured credit facilities. In addition, a lender’s use of private information may reduce borrowing costs.

a. Basics of a Line of Credit

A line of credit is an agreement in which the lender gives the borrower access to funds up to a maximum amount over a specific period of time. Lines of credit are usually revolving, meaning the borrower may borrow, repay, and borrow funds again up to the established limit during the commitment period. A line of credit can provide short-term financing, back up a commercial paper program or provide temporary liquidity.

Lines of credit may be secured or unsecured, and uncommitted or committed. Secured lines require the borrower to pledge some form of collateral, most often current assets such as receivables or inventory. Unsecured lines do not require any collateral as part of the borrowing arrangement. The availability under some secured lines is limited by a borrowing base (sometimes referred to as loan value) that is negotiated as a percentage of the value of the collateral securing the line.

An uncommitted line is an agreement with a lender in which the lender offers to make funds available in the future but is not obligated to provide a specific amount. Usually, an uncommitted line is made available for a one-year period. However, funding may be refused at the lender’s discretion or canceled outright, usually due to changes in the financial condition of the borrower. Hence, an uncommitted line is often called a discretionary line of credit. There is typically no fee for an uncommitted line unless funds are actually borrowed.

By contrast, a committed line usually involves a formal loan agreement that specifies the terms and conditions of the credit facility. It also typically requires compensation in the form of balances or fees because the lender is obligated to provide funding up to the credit limit stipulated in the agreement so long as the borrower is not in default. A commitment fee may be assessed based on the total amount or unused portion of the commitment. Typically, payment is made quarterly with varying fees, depending upon the organization’s creditworthiness, the stated purpose of the line and the commitment term.

One of the most common types of credit lines is a revolving credit agreement, also known as a revolver. This is a committed line of credit, as opposed to an uncommitted line of credit, that is established for a specified period of time, often on a multiyear basis. Revolving credit lines are formal, contractual commitments with loan agreements, including covenants. Usually, there is a commitment fee on the unused portion, as well as a fee for use of the borrowing facility. Though often used for short-term borrowing, the commitment term typically ranges from two to five years and may be followed by a period in which the principal is repaid systematically. If more than one year remains on a multiyear revolver, accounting guidelines typically allow balances on this agreement to be carried as a long-term liability on the borrower’s balance sheet.

23 Portions of this section are adapted with permission from Chapter 13 (Short-Term Investing and Borrowing) of Essentials of Treasury Management, 5th Edition, published by the Association for Financial Professionals (AFP).
b. Pricing on Lines of Credit
Pricing for a line of credit is usually negotiable. The lender may take into account various aspects of the overall lender/borrower relationship in pricing the facility. There are three basic cost components for lines of credit:

- The all-in rate of interest
- Commitment fees, which can be on both used and unused balances
- Compensating balances

The all-in rate consists of a base rate, such as LIBOR, the U.S. prime rate, or the Fed funds rate, plus a spread that is added to, or occasionally subtracted from, the base rate. Rates on lines are normally variable and adjust immediately to changes in the base rate. While the actual rate on the loan will vary with the market, it is not unusual for a credit agreement to have a floor rate, which provides a bottom limit on how low the total interest rate can go.

The total interest paid is calculated as the all-in rate times the loan balance outstanding at any given time. Since both the rates and the loan balance can vary daily, the daily interest expense will also change. Annual (or period) interest is the total of the daily interest charges during the year (or period). Total fees paid include all commitment fees, placement fees and any issuance costs. The average usable funds of the borrowed amount is the average outstanding loan for the year less the required compensating balances.

3. Single Payment Notes

Single payment notes are usually granted for a short period of time and specific purpose, with both the principal and interest amounts paid at maturity. Because of the limited duration and precise maturity of a single payment note, a specific cash flow event is frequently identified as the repayment source at the time the funds are advanced.

4. Repurchase Agreements

A repurchase agreement or repo is another source of short-term funds. With a repo, securities are sold, providing the seller with cash until the securities are repurchased. Repos let firms tap into the liquidity of their investment portfolio without having to permanently dispose of their short-term investments. An equivalent transaction may be structured by using a single payment note secured by marketable securities.

5. Commercial Paper (CP) Issuance

Commercial Paper or CP is an unsecured promissory note of a highly rated issuer, typically corporations, financial institutions or government entities. While the specific characteristics of CP programs vary by country, most CP markets are modeled after the U.S. market, which is the oldest and still the largest CP market in the world.

CP programs are rated by the major credit rating agencies, which normally require each program to have a liquidity backup in the event the market would not be available to issue or reissue CP for any reason. Typical backup facilities include a revolving credit facility or a letter of credit issued by a highly rated bank. Although common, not every CP issuer has to have a backup. Some issuers with high liquidity and a strong credit rating are able to issue CP based solely on their own resources. CP can be issued directly by the issuer (i.e., sold directly to investors), but most CP is placed through dealers (selected by the issuer) who market the CP to investors for a nominal fee.

CP is sold at a discount, meaning the interest paid by the issuer on the CP is deducted from the proceeds. The discount rate on CP is always calculated on a 360-day basis. Other costs associated with a CP program include the dealer fees, backup credit facility fees, rating agency charges and any credit enhancement costs.

Because of the effort and high fixed costs involved in establishing a CP program, CP financing is desirable only when ongoing funding needs are large. Issuers with the highest credit rating rarely issue CP for amounts below $50 million, although individual issues under an overall program may be for smaller amounts. In addition, organizations without excellent credit ratings often find commercial bank credit more attractive than CP because banks have more flexibility in structuring credit (e.g., covenants, rate adjustments and collateral) to mitigate risk and therefore lower costs to the borrower.
VI. Financial Risk Management

A. Introduction

In many higher education organizations, the treasury department is responsible for financial risk management. Since the treasury department is a clearinghouse for daily financial information, treasury professionals are well positioned to understand and control an organization’s exposure to financial risks. For domestic organizations, financial risk has traditionally been driven by interest rate risk, but increased globalization and international trade have created a corresponding need for managing foreign exchange (FX) risk. Fortunately, the processes and tools available to manage FX risk are well developed.

This section begins with an overview of financial risk management, including a discussion of the three primary areas of financial risk. Next, the derivative products (e.g., forwards, futures, swaps and options) used to hedge financial risks are described. Following this discussion, examples are provided that apply these derivatives to the management of FX risk and interest rate risk. The section closes with a discussion of the characteristics of commodity price risk and miscellaneous issues pertinent to financial risk management (e.g., accounting and tax issues and hedging policy statements).

See also CUBA Chapters on Risk Management and Endowment Management.

B. Overview of Financial Risk Management

This section of the chapter describes three key categories of financial risk, including interest rate risk, FX risk and commodity price risk. In addition, this section discusses key concepts associated with managing financial risk and the benefits of financial risk management.

1. Interest Rate Risk

Interest rate risk is the risk related to changes in investment values or borrowing costs due to changes in interest rates. For example, as interest rates change, an organization will find that the overall value of its short-term and/or long-term investment portfolio changes. A positive change is good, but without adequate planning or protection, a change may be negative and reduce the organization’s overall value. Alternatively, an organization that finances operating expenses using bank credit will be exposed to changes in overall expense as interest rates charged by the bank change. An increase in rates will lead to an increase in expense, and consequently to decreased earnings.

2. Foreign Exchange (FX) Risk

FX risk arises from the exposure an organization has as a result of transactions, assets and liabilities that are denominated in a foreign currency. As exchange rates fluctuate, so too can the value of these items, ultimately impacting the overall cash flow values for the organization. FX risk is further broken down into three types of risk: economic, transaction and translation risk.

a. Economic Risk

Economic risk exposure is the long-term effect of changes in exchange rates on the present value of future cash flows. Educational institutions that operate in foreign countries and different currencies are, in the long run, always subject to fluctuations in cash flows because of exchange rate changes. These might include: study abroad programs, faculty-led excursions, foreign-based educational centers and the like.
An organization that generates revenues and incurs expenses locally is not affected by transaction or translation exposure. However, if the local currency appreciates against a foreign competitor’s currency, then the organization’s cash flows in the long run may be impacted when domestic demand shifts toward the less costly product or service of the foreign competitor.

**b. Transaction Risk**

Transaction risk exposure arises when an organization creates receivables, payables or other cash flows that are denominated in a currency other than its functional currency. Thus, the ultimate value of these receivables or payables when they are collected or paid may be different from when they were created, due to possible changes in the exchange rate between the currency of denomination and the company’s reporting currency.

This is the most common type of FX risk exposure to be hedged through the use of currency derivatives. Balance sheet exposure originates when a receivable or payable is entered on the balance sheet and remains until cash is received or paid. For example, when a U.S.-based university sells executive education to a French company and agrees to accept payment in euros (EUR) in three months, the transaction is recorded in revenue and in accounts receivable using the dollar vs. euro spot rate in effect at that time. However, the value of the receivable changes as the value of the euro changes against the dollar over the following three months. These gains and losses are typically recorded on the financial statements at the end of each accounting period, creating earnings volatility.

**c. Translation Risk**

Translation risk exposure is created when a foreign subsidiary’s financial statements are converted (translated) into the parent organization’s reporting currency as part of the process of consolidating a company’s financial statements into a common currency. Any organization with an investment in operations in multiple countries and currencies must report its financial statements on a consolidated basis in its reporting currency. This exposure is sometimes referred to as *accounting exposure*. The exposure occurs because the value of the foreign assets and liabilities will change from one accounting period to the next as the underlying FX rates change. For example, if a U.S. organization has a subsidiary operation in the United Kingdom, then the value of that subsidiary’s foreign currency financial statements will change as the exchange rate between the dollar (USD) and the British pound (GBP) changes over a given accounting period. If the GBP were to increase in value relative to the USD over the course of a year, then there would be a translation gain as a result of that change.

**3. Commodity Price Risk**

Commodity price risk is the risk that a change in the price of a raw material used by an organization will impact the income (and hence value) of the organization that uses that raw material. For example, a university may find its expenses going up more than anticipated if the price of natural gas (used for heating buildings on campus) goes up unexpectedly. Factors that can affect commodity prices include political and regulatory changes, weather, technology and overall market conditions.

**C. Managing Financial Risk**

Managing the exposure to financial risk typically involves some form of hedging. In addition, this section also discusses the concept of arbitrage, which is used primarily to maintain efficiency in key financial markets.

**1. Passive or Natural Hedging**

The first step in managing financial risk in many larger organizations is to use passive, or natural, hedging. A natural hedge (typically used to address FX risk) occurs when an organization holds both assets and liabilities in the same currency, allowing them to offset each other in the event of market fluctuation. For example, a large U.S. university that expects to earn future revenue in euros might arrange to finance part of its facilities with a euro-based loan. To the extent that the future earnings in euros match the loan payments in euros, the university is economically unaffected by changes in the value of the euro. A university may also implement a natural hedging strategy by incurring revenue and expenses in the same currency. If a university offers programs in Mexico priced in pesos, it may use facilities or personnel also priced in pesos to avoid foreign exchange exposure. Passive hedging strategies include borrowing and investing using currencies other than the organization’s reporting currency (i.e., creating natural hedges), and can also include decisions around fixed versus floating borrowing, balance sheet matching and fixed-price supplier agreements.
2. Active or Financial Hedging

Active or financial hedging is the process of using various financial instruments (discussed in more detail in the section below on derivatives as financial risk management tools) to reduce or eliminate risks associated with future cash flows, or the values of assets or liabilities. This is a core principle of treasury financial risk management. Hedging is similar to the concept of buying insurance to protect an asset, and the purpose of the hedge is to insure the asset’s value (or minimize the risk on a liability) when its market value fluctuates.

In hedging a transaction, an organization reduces the uncertainty associated with a future FX rate, interest rate or commodity price to minimize the risk in a transaction. For example, if a U.S.-based university was planning on spending EUR 6 million over the coming six months for study abroad programs, the university might purchase a forward contract to buy the needed EUR 6 million in six months. By buying a forward contract now (discussed in more detail later in this chapter), the university is locking in an FX rate so that if the value of the euro (EUR) increases in the next six months, the university will not lose any value on the deal. On the other hand, the university is also giving up any potential gain it might have made if the euro had dropped in value over those same six months.

3. Speculation

Speculation goes beyond hedging and involves taking a position on the direction of the market in an attempt to make a profit, which is not usually a treasury objective. Most organizations use hedging to minimize risk, not to make a profit. But some organizations go a step further and attempt to use the products to make a profit. This is referred to as speculation. In many organizations, university hedging policies forbid this type of speculation.

4. Arbitrage

Arbitrage is the process by which an asset is purchased in one market and simultaneously sold in another market to produce a riskless profit. While making a profit is not usually a treasury objective, it is important for a treasury professional to understand the arbitrage process, because arbitrage is the primary mechanism that ensures efficiency in financial markets.

An example of arbitrage is referred to as covered interest arbitrage. In this case, an investor takes advantage of differences in the interest rates in two different currencies by using a forward contract (discussed later in this chapter) to eliminate any exposure to changes in the currencies (i.e., to “cover” the investor). In theory, the exchange rates (both long and short) in the two currencies should be such that an investor would earn exactly the same amount no matter which currency was used for the investment. This is referred to as interest rate parity. Although it is uncommon, there can be situations where interest rate parity does not exist, and investors can improve their returns by selecting the right currency.

D. The Benefits of Financial Risk Management

Managing an organization’s risk helps to reduce the variability of both its future cash flows and its profitability due to external changes in FX rates, interest rates and commodity prices, which consequently increases the value of the future cash flows. Hedging enables treasury to smooth uneven cash flows due to unexpected external changes and forecast financial results with greater confidence. Less variability in expected future cash flows increases a firm’s value in three ways:

- Greater predictability in future cash flows makes the future cash flow stream more stable.
- The organization gains an enhanced borrowing advantage in credit markets because lenders view the organization as less risky.
- The organization’s probability of financial distress decreases because the organization can assess costs and revenues more accurately.

26. Alternatively, this transaction can be hedged by buying a futures contract or option, both of which are also discussed later in this chapter.
VII. Financial Institution Relationship Management

An effective treasury management program requires a good working relationship with financial services providers such as banks, brokers and third-party processors. These relationships are more important than those with many other vendors because the financial institution is the custodian of so many of the college’s or university’s fundamental assets. Because of the primacy of the banking relationship, it is critical that open communication and trust be valued and practiced. Especially in today’s fluid financial environment, financial institutions should be held to a high standard for communicating strategy, plans and anticipated changes to services. In the same spirit, the business officer should be open to communicating any expected changes in the institution’s financial status. The business officer and financial institution should meet on a regular basis to review how well the service provider is performing its responsibilities.

The detailed information provided in this section will assist treasury professionals in managing relationships with financial institutions, and banks in particular. This section also discusses the RFP and selection process, as applied to the selection of FIs. This process requires hard work and diligent planning across various departments. Using a formalized process helps to ensure buy-in from both management and other operational units. It does take time, however, and treasury should be realistic about the required level of commitment, as well as expectations.

Once an FI is selected, relationship management is an important part of the treasury professional’s job. Relationship management goes beyond assessing the quality of the products or services provided; it includes assessment of compensation and ongoing assessment of FI risk.

A. Selecting Banking and Financial Services

Financial partners should be selected on the basis of several criteria. Fees are an obvious consideration, but appropriate weight must also be given to geographical location, financial strength, service quality, issue resolution, security of deposits, covenants in the credit agreement, and the ability of the provider to introduce new techniques, technologies and services. When selecting a provider, the business officer should focus on the total package of services provided, rather than on individual service costs.

To evaluate the total package of services provided by a bank or service provider, treasury managers should prepare a request for information (RFI) or request for proposals (RFP). The RFI is used to gather information that will help determine whether to issue an RFP and what specifications should be included in the RFP. The RFI also assists in identifying which financial institutions or service providers are interested in, or capable of, providing the desired services. The RFP, on the other hand, is a formal request for service providers to submit a bid for a set of desired services.
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The RFP should include:

- A statement of the college's or university's operating philosophy, including treasury management goals and approach to risk.
- A clear set of services required, such as:
  - Master consolidation account
  - Zero balanced subaccounts
  - Lockbox services
  - Direct deposit services
  - Standard wire and ACH services
  - Daily balance reporting and detail reporting
  - Positive pay
  - Stop pay processing
  - Check truncation
  - Standard deposit and disbursing services
  - Account reconciliation
  - The investment of idle funds
- An assigned account executive and customer service representative
- A request for the charge and fee structures (whether on a unit, monthly or transaction basis) for all services needed.
- The financial institution’s approach to asset security, including the electronic transfer of funds, the physical movement of cash, and the collateralization of deposits.  

The RFP should also provide information to the bidder on the process and timetable for the RFP process (including when vendor demos will be requested, responses are due and a decision will be made), the required format of the response, the name of the contact person who can handle questions, the contract period and evaluation criteria.

The use of RFIs and RFPs provides a rational, logical and defensible method for identifying, evaluating, selecting and negotiating financial services. Once the relationship is established, the business officer has the ongoing responsibility to monitor and assess service levels, fees and other potential providers. Some state-based educational institutions may be required to periodically (e.g., at five-year intervals) do a formal re-examination of their banking relationship. And, as discussed below, many organizations will simply benchmark their services and fees on a regular basis rather than going through a full RFP process.

B. Documentation

Important documents that are integral to relationship management include service agreements, account resolutions, signature cards, government authorizations from the customer, and contracts for depositary accounts. The complexity and number of documents required typically increase with the number of countries involved. For example, service providers in many European countries require a statement of beneficial interest.  

The complexity of and the need for frequently updating documentation has led to the development of electronic bank account management (eBAM). It is also important to note that banks and other financial institutions have extensive requirements for their own compliance with “know your customer” guidelines. This can add quite a bit of additional overhead to the bank relationship management process.

1. Board Resolutions

A board resolution is the basic account or service authorization empowering a representative of the organization to enter into agreements for financial services. The resolution specifies the functions that can be performed by specific individuals or job titles, the people authorized to open and close accounts, and the entire scope and limitations of the relationship.

The account resolution may be general or specific with regard to actions that the financial institution (FI) may take on behalf of the organization. It can be a standard form used by the provider to serve all customers, or it can be customized for a given organization. Some organizations or government entities have developed their own standard resolutions. The acceptance of such a resolution is subject to negotiation.

28. The RFP should also include a section for the FI to address security of data (and Global Data Protection Regulation or GDPR), backup and business continuity. References from similar-sized institutions should also be obtained.

29. Beneficial interest or ownership refers to control over funds or accounts and is separate from signature authority or legal title. It recognizes that the entity in whose name an account is opened with a bank is not necessarily the person who ultimately controls the funds or who is ultimately entitled to the funds. Many countries require a statement of beneficial interest whenever a bank account is opened.
In an effort to simplify and reduce the documentation needed to manage an operating relationship, many FIs now use a master agreement that spells out overall operating requirements and authorizes the provider to operate on behalf of the organization signing the agreement. Once the master agreement is in place, additional accounts or services are covered by separate operating agreements that are addenda to the existing master agreement.

2. Signature Cards and Service Agreements

FIs require organizations to furnish signatures of authorized signers (or specimens of both facsimile and computerized signatures) for all accounts. In conjunction with any signature card, providers typically provide a standardized set of service agreements to organizations when relationships are established and accounts are opened. Service agreements are contracts—legal documents that describe the requirements and expectations of both the purchaser and provider of a specific service or services. There may be a master service agreement relating to the overall relationship and then separate service agreements for each specific service area (e.g., deposit accounts, card services and lockboxes). These documents provide the terms and conditions of the account—many of which can be negotiated as with any other contract, as well as the responsibilities of the FI and the account holders in the maintenance of accounts. The elements of a service agreement often include:

- Contract length and adjustments
- Information on funds availability
- Time frames during which errors must be reported
- The right of offset against accounts resulting from fees owed
- Liability clauses defining responsibilities for specified risks
- Other terms and conditions of the relationship

Agreement terms are periodically amended, and notice may be distributed via the account statements and/or postings to the FI’s website. Depending upon the countries in which the accounts are domiciled, the provider may also require incumbency certificates, which are documents used to confirm the identity of the signing officers of a corporation.

3. Service Level Agreements (SLAs)

An SLA may be a separate document or part of the service agreement. The SLA is primarily concerned with the definition of the specific services provided and the operating metrics used to measure the level of service provided. SLAs also typically include a description of any penalties for failure to comply with the requirements of the agreement. The elements of an SLA often include:

- Operational policies and procedures (including the detailed processing requirements for each service; a list of required information and related reports; a list of individuals authorized to make changes; and a description of the issue escalation and resolution process)
- Performance standards and calculations that define agreed-upon levels of service performance and quality

4. “Know Your Customer” (KYC) and Statements of Beneficial Ownership

To prevent money laundering and other financial crimes, many countries have significantly strengthened their requirements regarding organizational relationships with financial institutions and, in particular, the opening of accounts. These activities go under the general title of KYC, which requires the bank or financial institution to perform varying amounts of due diligence to determine the legitimacy of any new customers, as well as the identities of the individuals who have access to or control over the funds in those accounts. Collectively, these due diligence efforts are usually referred to as customer identification programs (CIPs). The nature and extent of customer identification programs may vary by country but typically require a firm to provide copies of its articles of incorporation and identification of all signers on any accounts—through provision of copies (often certified) of driver’s licenses or passports, social security numbers, and formal statements of beneficial ownership. A statement of beneficial ownership identifies the individuals who actually own or control a given account, which may be different from the name or names on the account.
C. Bank Compensation Practices

Bank compensation refers to the way in which a bank is compensated for the entire set of products and services (e.g., the complete “book of business”) provided to a particular organization. This includes credit or lending services, operating services, and trust or investment management services. Some banks look at compensation for each type of service separately, but the vast majority look at the profitability of the total relationship. In many cases, banks are willing to reduce the price of one product or service and use it as a loss leader with a given client in hopes of making up that loss on other more profitable areas of business. As a result, it is important that treasury professionals look at the total cost of the banking relationship and manage the relationships accordingly. Compensation can come in the form of fees, balances or some combination of the two. The mix can vary depending upon the desires of both the bank and the firm.

1. Billing for Bank Services

Banks are typically compensated by fees, which are typically netted against any actual or imputed interest earned on funds held in accounts. Banking services are often bundled\(^\text{30}\) and paid for with a combination of required balances in deposit accounts, augmented by value dating (discussed below). As larger banks expanded outside of their home country and began competing for services globally, many banks began to unbundle their services and charge specific fees for specific services. In an effort to help companies manage these unbundled services, TWIST\(^\text{31}\) has developed standards for electronic billing of bank services. Various groups, including the Association of Financial Professionals (AFP), are working to standardize international banking service descriptions and provide a standardized service code structure that can be used for billing. Designed specifically to work with the TWIST BSB format,\(^\text{32}\) the 2011 AFP Global Service Codes™ include over 800 codes for banking services that are widely adopted across Europe, the Middle East, Africa and the Pacific Rim.

In contrast to the corporate or large institution banking practices in most other countries, where banks charge explicit fees and pay interest on deposits, most banks in the U.S. provide large organizations with earnings credits, which are essentially imputed interest. Earnings credits can be used to offset service charges. Earnings credits are attributable to U.S. federal regulations that barred banks from paying interest on commercial accounts.\(^\text{33}\) Earnings credits allow depositors to be compensated for the value of the balances they have at the bank, in lieu of actual interest. An example of the computation of the amount of the earnings credit is shown later in this section.

2. Value Dating

Outside the U.S., banks often use value dating as compensation for services provided to corporate customers. Under a value-dating system, a bank sets a forward value date when determining the date on which the value of funds is credited to an account and establishes a back value date when determining the date on which the value of funds is debited from an account. For example, when a deposit is forward valued, the date of the credit to the customer’s account is later than the actual date on which the item is added to the ledger balance. Similarly, when a withdrawal is back valued, the date of the debit to the account is earlier than the actual date on which the item is deducted from the ledger balance at the bank. This reduces available balances, which in turn reduces interest earned on the account. In effect, the bank is compensated during the value-dating period either by not having to pay interest on positive balances or by earning interest charged on negative balances. In some countries, value dating is standardized among the major clearing banks, while in other countries, it is negotiated on a customer-by-customer or item-by-item basis.

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30. Bundling of services is the practice of either charging a single fee for a group of services or charging different fees for specific services, depending upon which services are used. For example, a bank might charge a very low price on a product or service that is normally closely scrutinized. The bank may then charge a higher fee for other products/services that are not as closely scrutinized.

31. The Transaction Workflow Innovation Standards Team (TWIST) is a not-for-profit industry group formed to rationalize financial industry standards by creating user-driven, nonproprietary and internally consistent XML-based standards for the financial supply chain.

32. The TWIST BSB (bank services billing) format is incorporated into the ISO 20022 standard.

33. This practice was prompted by the Reg. Q prohibition against paying interest on DDA accounts. This regulation was repealed in 2010, as part of the Dodd-Frank Act.
D. Account Analysis in the U.S. Commercial Banking System

As previously noted, U.S. banks typically provide their corporate and large institutional customers with imputed interest on demand deposit account (DDA) balances using earnings credit analysis (ECA) systems. The rate used to calculate this imputed interest is called the earnings credit rate (ECR) and is typically negotiable as part of the initial selection process. Banks can, and often do, change the ECR without notifying their customers, resulting in unexpected fees or unused balances at the end of a billing period. Note that in some cases, it may be possible to negotiate quarterly, semi-annual or even annual assessment and collection timelines.

An account analysis statement serves as the bank’s bill for services rendered and shows the process used to determine the fees charged and the earnings accrued during the period in question. This practice is typically not seen outside of the U.S., where invoices for services are more common. The account analysis statement typically provides the following information to a bank’s commercial customers:

- Services provided
- Balances maintained
- Transaction/item volumes processed
- Charges assessed
- Earnings credit allowances

It is important to note that banks may not use the same terminology when describing products and services. Some services and fees may be combined into a single line item or flat fee, and these combinations may vary from bank to bank, but wherever possible, AFP service codes should be requested from the bank. Fee structures are as varied and complex as the account analysis formats. Any fees owed, after deducting the earnings credits, are typically debited directly from the account. In some cases, however, the bank may be willing to invoice the institution for the fees. Exhibit #10 provides an example of an account analysis statement.
### Global Manufacturing Company
1234 Main Street Anytown, Arkansas

| Date: 7/1/2016 | ECR: 100% |

#### Balance Summary

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Ledger Balance</td>
<td>$658,987.50</td>
</tr>
<tr>
<td>Less: Average Float</td>
<td>-55,934.89</td>
</tr>
<tr>
<td>Average Collected Balance</td>
<td>$603,052.61</td>
</tr>
<tr>
<td>Less: Reverse Requirement (10%)</td>
<td>-60,305.26</td>
</tr>
<tr>
<td>Average Available Balance</td>
<td>$542,747.35</td>
</tr>
<tr>
<td>Less: Balance Required</td>
<td>-6,796,360.83</td>
</tr>
<tr>
<td>Net Available Balance</td>
<td>-$6,253,613.48</td>
</tr>
</tbody>
</table>

#### Earnings Credit Summary

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Balance for Earnings Credit</td>
<td>$542,747.35</td>
</tr>
<tr>
<td>Earnings Credit Allowance</td>
<td>$446.09</td>
</tr>
<tr>
<td>Less: Charge for Services</td>
<td>-5,586.05</td>
</tr>
<tr>
<td>Net Service Credit</td>
<td>-$5,139.96</td>
</tr>
<tr>
<td>Service Charge Amount</td>
<td>$5,139.96</td>
</tr>
</tbody>
</table>

#### Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Volume</th>
<th>Unit Price</th>
<th>Fees Required</th>
<th>Balance Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Account Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Account Maintenance Flat Fee</td>
<td>4</td>
<td>20.00</td>
<td>$80.00</td>
<td>$97,333.33</td>
</tr>
<tr>
<td>Depository Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credits</td>
<td>94</td>
<td>0.25</td>
<td>23.50</td>
<td>$28,591.67</td>
</tr>
<tr>
<td>Deposited Items</td>
<td>1,745</td>
<td>0.08</td>
<td>139.60</td>
<td>$169,846.67</td>
</tr>
<tr>
<td>Return Items</td>
<td>15</td>
<td>2.00</td>
<td>30.00</td>
<td>$36,500.00</td>
</tr>
<tr>
<td>Debits</td>
<td>1,598</td>
<td>0.10</td>
<td>159.80</td>
<td>$194,423.33</td>
</tr>
<tr>
<td>Stop Payments</td>
<td>5</td>
<td>18.00</td>
<td>90.00</td>
<td>$109,500.00</td>
</tr>
<tr>
<td>Lockbox Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale Lockbox</td>
<td>3</td>
<td>105.00</td>
<td>315.00</td>
<td>$383,250.00</td>
</tr>
<tr>
<td>Maintenance Fee</td>
<td>486</td>
<td>0.40</td>
<td>194.40</td>
<td>$236,520.00</td>
</tr>
<tr>
<td>ZBA Controlled Disbursement Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZBA Maintenance</td>
<td>1</td>
<td>40.00</td>
<td>40.00</td>
<td>$48,666.67</td>
</tr>
<tr>
<td>Controlled Disbursement Notification</td>
<td>1</td>
<td>45.00</td>
<td>45.00</td>
<td>$54,750.00</td>
</tr>
<tr>
<td>Funds Transfer Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACH Maintenance</td>
<td>1</td>
<td>55.00</td>
<td>55.00</td>
<td>$66,916.67</td>
</tr>
<tr>
<td>ACH Items</td>
<td>145</td>
<td>0.12</td>
<td>17.40</td>
<td>$21,170.00</td>
</tr>
<tr>
<td>Incoming Wire Transfers</td>
<td>24</td>
<td>7.00</td>
<td>168.00</td>
<td>$204,400.00</td>
</tr>
<tr>
<td>Outgoing Wire Transfers</td>
<td>8</td>
<td>12.00</td>
<td>96.00</td>
<td>$116,800.00</td>
</tr>
<tr>
<td>International Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Wires Outbound</td>
<td>26</td>
<td>25.00</td>
<td>650.00</td>
<td>$790,833.33</td>
</tr>
<tr>
<td>International Collection Items</td>
<td>125</td>
<td>20.00</td>
<td>2,500.00</td>
<td>$3,041,666.67</td>
</tr>
<tr>
<td>Foreign Exchange Transactions</td>
<td>87</td>
<td>10.00</td>
<td>870.00</td>
<td>$1,058,500.00</td>
</tr>
<tr>
<td>Account Reconciliation Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconciliation Maintenance - Partial</td>
<td>1</td>
<td>50.00</td>
<td>50.00</td>
<td>$60,833.33</td>
</tr>
<tr>
<td>Checks Reconciliation</td>
<td>1,247</td>
<td>0.05</td>
<td>62.35</td>
<td>$75,859.17</td>
</tr>
</tbody>
</table>

#### Totals

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Balance</td>
<td>$5,586.05</td>
</tr>
<tr>
<td>Balance Required</td>
<td>$6,796,360.83</td>
</tr>
</tbody>
</table>
1. Account Analysis Standards

Since 1986, AFP Service Codes™ have been recognized as the standard for identifying balances and charges that appear on account analysis statements and in responding to RFPs. AFP Service Codes are six-character, alphanumeric codes used by banks to provide standard, uniform references and terms for identifying, describing and reporting bank services, as well as the associated charges. By simplifying and organizing the often varied and complex terminology used to identify bank services, the codes also help to resolve volume and pricing errors.

The Accredited Standards Committee (ASC) X12 of the American National Standards Institute (ANSI) has developed a standardized format (Account Analysis Transaction Set 822) for financial institutions to use when sending account analysis statements to account holders electronically. The ASC X12 822 transaction set accommodates the AFP standard account analysis format and AFP Service Codes.

It is important for educational institutions to review their account analysis statements and compare fees to contractually agreed upon pricing in a timely manner to ensure accuracy. Commercial software packages, databases and spreadsheets can be used for this purpose. This is discussed in more detail in a later section.

2. Account Analysis Terminology

The following are common terms used in account analysis statements:

- **Average Ledger Balance:** This is the sum of the daily ending ledger balances (both positive and negative) divided by the number of days in the analysis period. Balances used in the calculation are net of any current-period adjustments.

- **Average Deposit Float:** This is the sum of the daily dollar amount of items (primarily checks) in the process of collection divided by the number of calendar or business days in the analysis period.

- **Average Collected Balance:** This is the sum of the daily ending collected balances (both positive and negative) divided by the number of days in the analysis period. In many account analysis statements, this item is calculated as the average ledger balance minus the average deposit float.

- **Reserve Requirement:** In the context of an earnings credit computation, the reserve requirement represents the amount that the bank must maintain with the Fed. Historically, reserve balances needed to satisfy the reserve requirement were nonearning, hence the practice of deducting this reserve from balances that received an earnings credit. Just as commercial banks are now allowed to pay interest on commercial accounts, U.S. reserve banks can now pay interest on reserve balances. Many banks, however, still deduct the reserve from available balances in calculating earnings credits. As with most things related to analysis statements, the amount of funds deducted for reserve requirements is usually negotiable.

- **FDIC Fees:** As with the reserve requirement, banks sometimes charge customers fees to cover the cost of federally mandated deposit insurance. While the FDIC does not object to these fees, in 2012, the FDIC ordered banks to stop labeling these fees as “FDIC fees” (or with other government agency names), as this could mislead customers into thinking the fees go to the government instead of to the banks.

- **Service Charges:** These are the explicit fees or prices charged for services provided by a bank. Service charges are either expressed as a flat monthly fee or as a per-item or per-unit price. In the case of the latter, the unit price is multiplied by the volume to arrive at the analysis period total.

- **Available or Investable Balance:** The available balance, sometimes referred to as the investable balance, represents the balances in the customer’s account that the bank was able to invest in income-producing assets during the account analysis period. Some banks calculate the investable balance as the average collected balance minus the reserve requirement balance. The investable balance can be a surplus or deficit.

- **Earnings Credit Allowance and the ECR:** The earnings credit allowance is the total dollar value of credit that can be used to offset the service charges incurred during the analysis period. It is calculated by multiplying the investable balance by the ECR for the period in question. The methods used for determining the ECR vary. A common basis for the ECR is the 90-day T-bill.

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34. It should be noted that these standards are not necessarily used in all account analysis statements.
35. As of the date of publication, the reserve requirement was 10% of collected balances.
rate, but banks can base ECRs on their own internal requirements and rates. For example, some banks reduce the ECR by the applied reserve requirement (a reserve-adjusted ECR), and calculate the earnings credit using the average collected balance instead of the investable balance. In some cases, the ECR may also be negotiable with the bank in question.

3. Account Analysis Calculations

The following formula is generally used to measure the earnings credit:

\[
EC = CB \times (1 - RR) \times ECR \left( \frac{D}{365} \right)
\]

Where:

- \( EC \) = Earnings credit
- \( CB \) = Average collected balances
- \( RR \) = Reserve requirement
- \( ECR \) = Earnings credit rate
- \( D \) = Number of days in the month (Note: Some banks use the ECR divided by 12 to determine this monthly calculation instead of using the actual number of days.)

An example of this calculation appears in Exhibit #11.

**Exhibit #11: Earnings Credit Calculation**

**ASSUMPTIONS:**

- AVERAGE LEDGER BALANCE = $250,000
- DEPOSIT FLOAT = $30,000
- RESERVE REQUIREMENT = 10%
- EARNINGS CREDIT RATE = 1%
- SERVICE CHARGES FOR THE MONTH = $1,000
- DAYS IN MONTH = 30

**AVERAGE COLLECTED BALANCE CALCULATION**

\[
\text{AVERAGE COLLECTED BALANCE} = \frac{\text{AVERAGE LEDGER BALANCE} \times (1 - \text{RESERVE REQUIREMENT})}{\text{DAYS IN MONTH}}
\]

\[
EC = CB \times (1 - RR) \times ECR \left( \frac{D}{365} \right)
\]

\[
= \frac{220,000 \times (1 - 0.10) \times 0.01 \times 30}{365}
\]

\[
= \frac{220,000 \times 0.9 \times 0.01 \times 0.0822}{365} = \$162.76
\]
The calculations indicate that the firm’s monthly earnings credit equaled $162.76. Since the monthly charges equal $1,000, the bank will debit $837.24 from the firm’s account.

Overall, the organization’s monthly $220,000 average collected balance results in an earnings credit that is insufficient to cover the service provider’s $1,000 charges for the month. It would be helpful to know the average collected balance that would be required so that the earnings credit exactly offsets the bank’s charges. This is determined by rearranging the previous formula to solve for the collected balances required. The revised formula is:

\[ CB = \frac{SC}{ECR \times \left(\frac{D}{365}\right) \times (1 - RR)} \]

Where:

- \( CB \) = Average collected balances required to pay service charges
- \( SC \) = Monthly service charges
- \( ECR \) = Earnings credit rate
- \( RR \) = Reserve requirement
- \( D \) = Number of days in the month (Note: Some banks use the ECR divided by 12 to determine this monthly calculation instead of using the actual number of days.)

An example of this calculation is presented in Exhibit #12.

Exhibit #12: Calculation of Required Collected Balance

\[ \text{AVERAGE COLLECTED BALANCE REQUIRED} = \frac{\text{MONTHLY SERVICE CHARGES}}{\left(\frac{\text{EARNINGS CREDIT RATE} \times \frac{\text{DAYS IN MONTH}}{365}}{1 - \text{RESERVE REQUIREMENT}}\right)} \]

\[ CB = \frac{SC}{ECR \times \left(\frac{D}{365}\right) \times (1 - RR)} \]

\[ \frac{1,000}{0.01 \times \frac{30}{365} \times (1 - 0.10)} = \frac{1,000}{(0.01 \times 0.0822) \times 0.9} = \frac{1,000}{0.0007398} = 1,351,716.68 \]

An average collected balance of $1,351,716.68 is required to produce an earnings credit that offsets the $1,000 service charges. Thus, the average collected balance must be increased by $1,131,716.68 ($1,351,716.68 minus the $220,000.00) to offset the charges.
E. Comparing and Monitoring Costs Among Financial Institutions

Organizations usually compare FI service charges during their selection process (via the RFPs) and then during periodic relationship reviews. This process is important not only to validate the reasonableness of pricing over time, but also to confirm that the service provider is actually abiding by any negotiated pricing. One source for comparable bank service charge data is the Phoenix-Hecht Blue Book Compensation Review. The Blue Book is published annually and provides a comparison of various key service charges.

Developing a precise comparison of pricing, whether during the RFP selection process or during relationship reviews, can be a difficult exercise, but it can be simplified with a carefully prepared template or spreadsheet for bank fee analysis, prepared ahead of time by the treasury professional. It is often helpful to share this template with the various FIs so that they understand how they are being evaluated. Banks have varying approaches to bundling products and services—the charging basis can be quite different (e.g., per user or per location), and terminology and descriptions for services are not standardized (e.g., pooling, sweeping and concentration can be used interchangeably at one bank and refer to separate services and price points at another).

The comparison template should include comparisons for each of the primary service charges as outlined in the contract with the FI. In general, the broad categories of service charges are:

- Implementation
- Maintenance
- Account services
- Transaction processing
- Information delivery
- Technology

The only valid method of comparing costs is to calculate the bottom-line cost of a specific set of services based on the processing volumes and balances that a firm expects to have.

Adding to the difficulty of comparing and monitoring ongoing costs is the fact that while many FIs provide monthly analysis statements, others may calculate their account analysis quarterly, semiannually or annually. If an account holder’s balances fluctuate from month to month, then quarterly, semiannual or annual analysis periods allow excess balances in one month to offset charges in other months.

F. Assessing the Risk of Financial Institutions

The viability of financial institutions is of paramount importance, because an operations breakdown, information compromise or financial failure could significantly disrupt the organization’s ability to perform basic liquidity management activities. Accordingly, the operating practices and creditworthiness of FIs must be assessed periodically.

Assessing the risk of FIs is necessary, as these entities control an organization’s information flows, related records and liquid assets. The FI must have adequate backup systems and disaster recovery procedures. These procedures should be evaluated at the outset of a relationship and periodically thereafter. SLAs and contract provisions should indicate specific rights and responsibilities of the parties in the event of a service interruption.

37. This information can also be used as part of the RFP process outlined in an earlier section.
38. There are also services that universities can subscribe to that compare their fees to peers. Treasury Strategies has such a service, called NDepth. This service compares monthly account analysis fees to peers, as well as contract pricing.
1. Assessing Operational Risk

A financial institution’s operational risk can be monitored via the provider’s SOC 1 Report and the SSAE 18 Statement. FIs receive significant value from having an SSAE 18 engagement performed and report issued. An FI’s audit report with an unqualified opinion that is issued by an independent accounting firm differentiates the FI from its peers by demonstrating that is has established effectively designed control objectives and activities. A service auditor’s report also helps an FI build trust with its customers.

Without a current service auditor’s report, an FI may have to entwine multiple audit requests from its customers and their respective auditors. Multiple visits from user auditors can strain the organization’s resources. A service auditor’s report ensures that all user organizations and their auditors have access to the same information. This will satisfy the user auditor’s requirements in many cases.

The organization should provide the service auditor’s report to its auditors. This will greatly assist the firm’s auditors in planning the audit. Without a service auditor’s report, the organization would likely have to incur additional costs in sending its auditors to the FI to perform additional audit procedures.


One of the primary publicly available tools for assessing the general financial risk of a U.S. bank is the Uniform Bank Performance Report (UBPR), published by the Federal Financial Institutions Examination Council (FFIEC). The UBPR is an analytical tool created for supervisory, examination and management purposes. In a concise format, it shows the impact of management decisions and economic conditions on a bank’s performance and balance sheet composition. The performance and composition data contained in the report can be used to help evaluate the adequacy of earnings, liquidity, capital, asset and liability management, and growth management.

By analyzing the data contained in the UBPR, the user can obtain an overall picture of the bank’s financial health and discover conditions that might require further analysis and investigation. The UBPR presents three types of data for use in the financial analysis of a bank:

- Data for the specific bank
- Data for a peer group of banks similar in size and economic environment
- Percentile rankings

A thorough understanding of these data groups and their interrelationships and limitations is essential in order to use the UBPR effectively. As a general rule, any analysis should compare the bank to its peer group, consider the bank’s trends over time, and recognize trends and changes in peer group averages.

3. Counterparty Risk

Counterparty risk refers to the risk that a counterparty in a contract will not meet its contractual obligations. This applies as much or more to contracts with FIs, which may be acting as custodians of company funds and information, as it does to any investment decision. This is a very real risk and should be considered when evaluating a contract for services of any kind with a bank or FIs.

4. Sovereign and Political Risk

Global account management requires an understanding of sovereign and political risks. Sovereign risk refers to the risk that a government may default on its debt.

Political risk is the term applied to the variety of actions that a government may take that negatively impact a firm’s operations and/or value. It includes the risk that a firm’s operations in a foreign country may be nationalized or expropriated by the government of that country. Nationalization refers to a government takeover of all firms in a specific industry, often involving ore extraction, petroleum, transportation or power generation and distribution businesses. Expropriation refers to a government takeover of a single firm, with or without compensation. Experience suggests that when compensation is made, it is significantly less than the market value of the expropriated firm. Political risk may also take the form of regulatory or policy changes. For example,

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39. An SOC 1 Report is the first of a set of Service Organization Control (SOC) reports introduced by the AICPA. The SSAE 18 (Statement on Standards for Attestation Engagements) primarily addresses the auditing standards used for the financial institution in question.
a central bank could alter its monetary policy significantly or impose currency regulations that would reduce the value of FX contracts or currency trades. Other types of political risk include:

- **Blocked Currencies**: Profits cannot be converted from the local currency into a major trading currency.
- **Forced Reinvestment**: Funds cannot be transferred out of the country in any form, or the amount that can be transferred is limited.
- **Required Majority Ownership**: Firms must be owned by resident nationals.

Institutions with multinational operations are exposed to varying degrees of political risk depending upon attitudes and policies of the host country and the nature of the business. An organization with operations in foreign countries must be knowledgeable about the laws, regulations, taxes and customs that govern business activities, as well as the overall political and social dynamics of the countries where capital is invested.

**G. Managing Confidential Information and Conflicts of Interest**

FIIs often have access to confidential information about an organization’s customer base. A treasurer must know if, and under what conditions, this information may be shared with affiliates of the FI or other parties to prevent the loss of confidentiality. Some firms document this with a nondisclosure agreement.

A conflict of interest may arise when a particular FI serves in multiple capacities. For example, an FI with a lending relationship with a specific organization may also serve as the organization’s bond trustee. If the borrower becomes distressed, there is a risk that the FI might protect its own interests at the expense of the bondholders and other investors. Traditionally, FIs have established a notional barrier (sometimes referred to as a “wall”) against information flows between functional divisions to prevent such abuses. Employees are typically not permitted to work on both sides of the wall, and there are internal controls about what information may be passed over the wall.

FIIs may form business alliances that provide complementary areas of expertise or superior cost efficiencies. These alliances often result in the FI outsourcing services to another party or corporate entity. For example, many FIs outsource their credit card merchant processing operations to third parties. In these cases, information is shared with outside parties, and disclosure to the customer is generally required. In the Euro-zone, the current regulations regarding this area are defined under the GDPR (Global Data Protection Regulation). The GDPR is designed to: 1) harmonize data privacy laws across Europe, 2) protect and empower all EU citizens’ data privacy and 3) reshape the way organizations across the region approach data privacy.

**H. Legal and Ethical Issues**

In many countries, commissions or fees that would be considered bribes in the U.S. are deeply ingrained in the commercial culture. However, the Foreign Corrupt Practices Act (FCPA) forbids U.S. organizations from engaging in these practices. Many other countries have similar laws and regulations. U.S. organizations also must consider whether their foreign activities may come under the jurisdiction of the Office of Foreign Assets Control (OFAC), which is an office of the U.S. Treasury Department that administers and enforces economic and trade sanctions against targeted foreign countries, terrorist-sponsoring organizations, and international narcotics traffickers, as required by legislation, foreign policy and national security goals. OFAC has the authority to impose controls on financial transactions and freeze foreign assets under U.S. jurisdiction.
VIII. Basic Treasury Functions

A. Treasury as an Internal Bank

A number of universities have developed or are experimenting with the concept of the treasury function serving as an internal or “in-house” bank. Through means of an internal, or central, bank, they have been able to use their entire balance sheet to optimize the use of resources, use debt strategically, create capital from liquidity, and streamline the administration of capital.

Motivating the practice is the growing realization that higher education institutions maintain high levels of liquidity that are not being used to full advantage. The concept of the internal bank is centered on an organization’s ability to integrate the three primary functions of treasury management:

- Limited-term asset management (the management of non-endowment investment assets)
- Liability management (both short and long term)
- Cash management (transaction and process management).

The internal bank is based on the belief that benefits can be derived from centralizing debt, treasury and cash management into a single portfolio of assets and liabilities. This allows for more strategic uses of resources than can be obtained through the individual approaches employed by academic and administrative entities. Among the advantages are the ability to:

- assess, assume and allocate risk on a broader institutional basis
- manage debt on a portfolio basis rather than on a per-issue basis, thereby reducing risk and cost
- reduce the levels of external debt through the recycling of internal loans
- reduce levels of excess cash maintained at the unit level while maintaining liquidity for operating needs
- increase the amount of cash available for short-term investment
- establish consistent loan terms to all units through the pooling and blending of debt
- generate higher levels of unrestricted resources
- smooth the effects of capital markets on university operations.

In sum, an internal bank enables an integrated approach to assets and liabilities across the entire institution.

Colleges and universities contemplating an internal bank need to be systematic about it. The first step is to be very clear about objectives. The multiple benefits enumerated need to be prioritized so that the internal bank’s structures and processes are aligned with the desired outcomes. Because an operating unit may be reluctant to relinquish control of its reserves, a concerted campaign will be needed to educate the campus about the benefits to them of the new practice. Other steps include establishing the bank’s management infrastructure, such as account coding, cash flows, tracking and reconciliation, and allocation methods. Decisions need to be made about the terms under which loans and lines of credit will be extended to internal units.

Institutions that have adopted the practice have found that they tend to think more like a financial institution. They have had to cast a more critical eye on proposed projects and carefully examine rates of return, the viability of the project, and the ability of the internal unit to repay.

41. See “In-House Banking: Is It Right for Your Treasury Function?” Treasury in Practice Series by AFP (Association for Financial Professionals); Issue 12, September 2016.
B. Security and Risk

The security of transactions is an obvious concern for the treasury manager, and risk can come from multiple directions. Added risk comes from at least two directions. The first is the vulnerability of electronic information to unauthorized access and hacking. The second is the greater public sensitivity to the security of sensitive data such as credit card and Social Security numbers.

1. Risk Management and Controls

The treasury officer must be a risk manager, safeguarding institutional funds so that they are not jeopardized by sloppy processes, unwise judgments or fraud. Some of these controls involve policy, such as dollar limits on transactions; segregation of duties; clear reporting lines; assignment of responsibility and authority; regular audits; and centralization of banking, collection and cash management. Other controls are simply good practices, such as timeliness in depositing funds; timely bank reconciliation; two signers on manual checks; limitations to wiring destinations on sole initiations (so that, for example, proceeds on sales of stocks can only be wired to an institutional cash account); and secure physical control over assets such as checks. All transactions must be properly recorded, classified, validated, authorized, valued and summarized. Control technologies can be applied, such as a fraud hotline, payee positive pay, treasury workstations, ACH debit filters and protective check stocks. The treasury manager has a well-stocked toolkit of risk management controls.

Funds flow through every corner of the institution, and there is an extraordinary range of offices and people involved in the flow of funds: the bursar, the development office, auxiliary enterprises, and even the dean who receives a check from a donor. Risks distributed across the campus can be minimized through communications and education. Beyond prevention education on the obvious risks of loss and fraud, all campus areas should be made aware of the time value of money and of their role in putting institutional resources to work as quickly as possible. The treasury manager should clearly communicate policies and expectations with everyone involved in the handling of money.

2. Electronic Data Security

As discussed in the earlier section on electronic payments, the security of electronic data is critical in today’s treasury operations. Specifically related to card payments, the PCI DSS (Payment Card Industry Data Security Standards) were covered as part of that discussion. Treasury operations at universities should ensure that they are in compliance with the most current version of these standards.

3. Check Fraud

Check fraud has been an issue for every higher education institution. Types of theft range from a check stolen from inventory to a scanned reproduction of check stock. Both types of check fraud (and others) are common due to cheap equipment and widely publicized techniques. Some of the biggest threats in today’s payments environment are phishing and other external attempts to change direct deposit information for both employees and vendors. Business officers should preempt fraud by adopting appropriate practices and controls.

Determining liability for loss from check fraud can be difficult because of the number of parties involved: the deposit bank, the presentment bank, the check printers and the college or university. Liability is determined by the concept of comparative negligence, which allocates liability based on the extent of each party’s contribution to the loss. Check forgery cases are determined on a case-by-case basis. Under Articles 3 and 4 of the Uniform Commercial Code, financial institutions are required to follow reasonable commercial standards and utilize “ordinary care” in processing checks. Higher education institutions have the responsibility to use prudent methods in disbursing payments and reconciling accounts.

A business office is able to only minimize the chance of fraud, never completely eliminate it. To aid in the effort, the business officer has an arsenal of tools that can help to disburse payments with better controls.

- Tight controls should be established over storage and distribution of check stock.
- Authorizations to disburse funds should be updated, especially within the administrative system.
- Internal processes should include dual party signatures, periodic inventory of checks, timely reconciliation, job rotation and controlled vendor lists.
- There should be a separation of duties so that different people authorize checks, sign checks and reconcile statements. It should also take two people to establish a vendor relationship.
• Commercial products from check printers should contain check security features such as pre-numbered check stock, void pantographs, safety paper, micro-printing, artificial watermarks and warning bands.

• Institutions are responsible for the acts of employees, so make background checks and training an early line of defense.

• Legal counsel should scrutinize all bank agreements governing checking accounts, and negotiate the narrowest possible definitions of corporate responsibility and negligence.

A good overview of fraud avoidance practices, developed by a federal, multi-agency Check Fraud Working Group, is available in the references.

Banks offer several cash management services for detecting and preventing unauthorized payments. Daily positive pay is an automated check matching service where the college or university sends a check issuance file to the bank every day. The bank matches that information to the checks being presented for payment to that account. If a presented check does not match the issuance information, the college or university is contacted to determine the check’s authenticity. Many banks also offer verification of the payee information as part of this process. Reverse positive pay uses the same matching capability, but the college or university maintains the information database and the bank sends daily information to match presentments with issuance. An added feature, stale date control, automatically returns checks after a predetermined date.

If an institution is hit with check fraud, notification is important: to the institution’s chief financial officer, to internal audit, to the bank on which the check was written, and to the institution’s general banking contacts, who will make the connection with their Loss Prevention Department. Notify law enforcement agencies, starting with the campus public safety office and/or local police, who in turn will contact state police, the FBI and other agencies. The bank may also contact the police agencies, but it is important that the victim of the fraud make this contact.

Other steps after an occurrence should include:

• Document all actions and conversations taken regarding fraud and actions to recover lost funds.

• If it appears that the forgery is using actual check stock, determine where the theft of the check stock occurred. If it occurred at your printer or during shipment to you, notify the printer and/or the shipping agent.

• If the stock came from stock stored at your institution, take a complete inventory of the remaining check stock. Determine which specific checks have been stolen, and place stop payments against them.

• Take steps to minimize loss to the business community, especially valued suppliers. Even though your institution and your bank may be able to minimize losses, the vendor that cashes your fraudulent checks may not be so fortunate.

• Notify the major check-cashing institutions in your area, if necessary. This includes banks, grocery and convenience stores, and check-cashing outlets.

### 4. Account Reconciliation

One of the primary control tools at the treasury manager’s disposal is account reconciliation. Most banks provide this service, so it need not be done in house or manually.

In partial reconciliation, the simpler version, the bank provides the date and the amount of all checks paid in check-numbered sequence. This information may be reported in paper format or electronically. Electronic reporting enables automated reconciliation of checking accounts by the institution.

Full reconciliation is the reporting of canceled and stopped checks, as well as paid and outstanding items from regular and controlled disbursement accounts. The college or university provides the bank with a list of information about each issued check (i.e., check number, date issued and dollar amount). The bank uses this information to verify each check presented for payment, thereby reducing fraud, and delivers a fully reconciled account statement at the end of each month.

Banks may offer flexible statement cut-off dates to meet monthly, quarterly and fiscal-year reporting needs. With an account reconciliation system, a college or university can issue online stop payments and thus reduce stop-payment costs. There is immediate confirmation of the stop payment, and a new check can be issued at once. The most important benefit in establishing an account reconciliation system with the bank is the significant reduction in clerical costs. Comparison of this information to the university’s system is critical. That is a function of accounting, in collaboration with treasury. A best practice is to obtain a daily bank file (BAI2 or other format) for import into the ERP system. Daily review of the bank data and reconciliation to the ERP system assists in monitoring for fraud.
C. International Cash Management

Colleges and universities are becoming increasingly global through overseas campuses, study abroad programs and the recruitment of international students. While important strategically and competitively, this globalization can pose significant challenges to the treasury manager in the collection and management of funds from foreign banks.

As an example of the challenges, imagine a French student sending a paper tuition check drawn on her local bank account in the amount of 10,000 euros. When the check is finally received, it must be sent back to France for collection and then converted to a U.S. dollar equivalent. There are numerous risks and costs associated with this procedure, including:

- The process can take several weeks, creating a lost investment opportunity cost.
- The U.S. dollar equivalent is not known until the item is actually collected, resulting in an exchange rate fluctuation risk.
- There may be processing fees for such a remittance in dollars and/or euros.
- There is a payment risk, in that by the time the item is presented against the account in France, funds may no longer be available or the account may be closed.
- The length and uncertainty of the process can make it more difficult to forecast and analyze cash flows.
- In some countries, there is a foreign exchange conversion risk in that the payment may not be convertible into U.S. dollars when presented.

Fortunately, there are mechanisms that can help. International electronic funds transfers are facilitated through SWIFT (Society for Worldwide Interbank Financial Telecommunications) messages and CHIPS (Clearing House Interbank Payment System) settlements. Through these mechanisms, payments can be made from most large banks in any country.

Electronic funds transfers for international transactions enable funds to be transferred and received in a timelier manner, thereby accelerating availability. Payments can be made in U.S. dollars, thereby eliminating exchange rate fluctuation risk. The processing fee for international electronic items is only a fraction of the cost of fees for international paper items. Stop payments and insufficient fund hassles (payment risk) are also eliminated.

Although SWIFT and CHIPS can help with the actual transactions, there are still numerous challenges associated with differing national practices related to payment systems, currency restrictions, taxation and data exchange. Treasury managers should solicit expert opinion when advising their campuses on setting up payments and transactions. Credit cards are also a good option for accepting international payments.

Another method is to partner with a third party for the acceptance of international tuition payments. There are several vendors in the field, and many higher education bill presentment vendors also offer this service. The student goes online to pay their tuition and fee and can do so in their home currency. That is converted into USD and sent to the university. The student then receives the university’s institutional exchange rate, which is more favorable than the retail rate. No other fee is assessed to the student. Western Union Business Solutions is one large vendor in this area.

These service providers allow the student to pay via bank wire, credit card, etc. Alipay, WeChat and other international payment options are offered to the student/parent.

The end result is that the university receives U.S. dollars, as well as a file to update the student system. Traditional wires necessitated intermediary bank fees and currency risk, resulting in less than the amount owed and often leaving the university unable to properly, or timely, identify the student payment and to update the student record.
IX. Treasury Technology

A. Introduction

The treasury function manages its diverse responsibilities using various forms of technology. While many treasury professionals still rely primarily on spreadsheets and personal computers, the available technology has grown to include treasury management systems (TMSs), bank-specific portals, cloud-based systems, company-wide enterprise resource planning (ERP) systems, and e-commerce systems.

The use of technology allows treasury professionals to retrieve, review, analyze and transmit large amounts of financial data in a timely manner while minimizing the potential for operational and financial errors. Further, technology provides a standardized way to interact with various internal and external entities, including the accounting, payables, receivables and finance units, as well as financial institutions. Technology also helps facilitate visibility in treasury operations and allows organizations to leverage external capabilities, such as SWIFT, market rate providers and online portals. Reliance on technology does, however, require an increased level of attention to controls and security to safeguard against intrusion and fraud.

This section introduces some of the basics of information management and technology as they apply to treasury, including a discussion of security, treasury applications, technology platforms and information technology policies. Next, the section provides a brief discussion of TMS functionality and cost and concludes with an overview of some of the issues associated with e-commerce and mobile or electronic banking, including a discussion of common information standards that are important to treasury.

Information technology and information management have become an integral part of treasury management and the driving force in the development of TMSs. Since the finance area is typically viewed as the clearinghouse for a wide variety of intracompany information flows, one of treasury’s major responsibilities is to integrate treasury operations with other operational areas, including accounting, payables, receivables and finance.

B. The Role of Information Management in Treasury

To add value to an institution, treasury professionals continue to expand information management beyond the narrow focus of the daily cash position. The added value comes from using modern technology for tasks such as cash forecasting, financial transaction initiation, effecting foreign exchange transactions, managing investment and debt, and financial risk management programs. The benefits of an information technology-enhanced treasury department are magnified through collaboration with other departments and with various stakeholders and business partners. Acting as an information technology steward builds relationships between treasury and other areas, and it enhances treasury’s advisory role in strategic decision-making.

• With regard to information management, the treasury professional is commonly responsible for:
  • protecting financial assets
  • compiling data from a wide range of internal and external sources
  • sorting, analyzing and storing information
  • initiating and validating transactions
  • obtaining account balances and transaction details from external sources
  • obtaining internal information that affects the cash flow timeline (e.g., receipts and disbursements)
  • consolidating information into the cash position worksheet
  • creating forecasts
  • generating journal entries for accounting
  • reporting information to management
  • assisting other areas with any treasury-related research.

42. Portions of this section are adapted with permission from Chapter 15 (Technology in Treasury) of Essentials of Treasury Management, 5th Edition, published by the Association for Financial Professionals (AFP).
C. Information Security

1. Basics

Information security is the assurance that all information and messages are safe from intrusion, detection and modification. Security is often required for regulatory and compliance purposes and must provide a number of basic elements:

- **Privacy**: The assurance that information is accessible only by authorized individuals and will not be used for unintended purposes
- **Authentication**: The ability to know, with a reasonable amount of certainty, who is accessing information or initiating a transaction
- **Authorization**: The ability to know and control what functions and data an authenticated individual can access and use
- **Integrity**: The ability to ensure that a message was not modified in transit and that stored information has not been improperly modified or deleted. Data integrity is especially important for financial transactions.
- **Non-repudiation**: The inability of the sender or receiver of a message to deny having sent or received the message

2. Multifactor Authentication

Authentication methods for information technology and network purposes are based on four basic factors:

- Something the individual knows, such as a password or personal fact
- Something the individual has, such as a token or a cell phone
- Something the individual is, such as a fingerprint, voiceprint, retinal scan or other biometrics
- Something the individual does, such as a person’s login times or IP address.

Single-factor authentication uses only one of these factors, typically a password, to validate an individual attempting to access a system or network. Single-factor authentication is often acceptable for activities such as inquiries, which have no financial impact. Dual-factor authentication requires two of the three, such as a token and a password. A token is an electronic security device, and it is discussed in more detail below. Since users demonstrate both possession of the token and the password, they meet the first two factors. Dual-factor authentication is currently the accepted standard for most financial systems, especially when actual transactions are being processed. Four-factor authentication requires the use of all four factors and is the strongest authentication available. It is typically reserved for access to high-security systems and locations.

A multifactor authentication methodology may also include “out-of-band” controls. Out-of-band refers to the use of additional steps or actions taken beyond the technology boundaries of a specific transaction and includes such things as callback verification using a previously registered phone number or a cell-phone-based challenge, in which a one-time access code is transmitted to a previously registered cell phone and must be entered to authenticate the user.

The success of any given authentication method depends on more than just technology. An effective authentication method should have customer acceptance, reliable performance, scalability to accommodate growth, and compatibility with existing systems and future plans. Otherwise, users will look for ways to defeat the system. For example, requiring a long, complex and random password as one factor is certainly more secure than short, simple passwords.

3. Encryption

Encryption refers to the process of transforming information using a computer-based model to make it unreadable to anyone except those possessing the key. Encryption addresses several of the security needs discussed above. First, encryption helps protect privacy. Second, properly designed encryption programs can also help with non-repudiation, because the fact that a message has been encrypted and subsequently decrypted indicates that the originator possessed the specific key needed to originally encrypt the message, which implies at least single-factor authentication. Both privacy and non-repudiation are important to treasury professionals when transmitting files related to investments, payments and other financial transactions. The interception of an unencrypted ACH payroll file compromises the company’s account information as well as the employee banking information.
Many popular encryption programs are designed using what is called public-key infrastructure (PKI). PKI involves the use of dual keys. One of the keys is private and is kept by an individual user or organization. The other key is public and is distributed to trading partners. Information encrypted with one key can only be decrypted and read using the other key. As a result, individuals encrypting data with the public key know that no one but the holder of the private key can access the data. Conversely, individuals who are able to decrypt messages using the public key have some assurance that the information came from the holder of the private key. These keys are typically computer files or certificates that are protected by a local password. PKI is designed to provide security over traditionally unsecure networks, such as the internet.

4. Digital Signatures and Certificates

A digital signature is a message encoded with the sender’s secret, private key that the receiver can use to identify the source. As long as the private key is never shared with anyone, forgery of a digital signature is extremely difficult. A digital signature is tied to a document and to the signer, meaning the signer’s digital signature will be different for each document signed.

Note that a digital signature is different from a digitized signature, such as that used as a facsimile signature on laser-printed checks. In the U.S., the Electronic Signatures in Global and National Commerce Act (E-Sign) gave digital signatures the same legal status as paper/ink signatures, sometimes referred to as wet signatures.

Digital certificates tie the identity of the user (private key) to the user’s public key and may also authenticate the devices used to create documents or transactions. The identification information is secured by a trusted third party’s digital signature on the certificate. The trusted third party is known as the certificate authority.

Banks and other third parties are partnering with security companies, certificate authorities, software providers, and other technology firms to administer their public-key infrastructure and issue digital certificates. These initiatives serve as virtual passports to subscribers.

The main objective of this type of partnership is for corporations to trust the identity of digital partners through real-time authentication and validation of the transmission under legally binding contracts. These associations also let users verify unknown buyers through a trusted financial institution and establish multilateral trust through one bilateral customer agreement. Oftentimes, certificates are stored in a smart card with dual authentication. A combination of the smart card and an assigned PIN unlock the card. The next section on tokens describes authentication devices in more detail.

5. Token Devices

Token devices are electronic devices that contain circuitry that encodes assigned user-specific information or personal information to help ensure password protection. For example, one type of token contains a clock in a smart card that is synchronized to a clock on the host system where the data or application resides. When the user wants to log on to the system, whether locally or from a remote point, the token provides a unique dynamic code that, when entered with the user’s PIN or password, ensures that the user is authorized to access the system. The unique dynamic code expires every few seconds and is replaced with a new code. Alternatively, the token may be a device that is plugged into a port on the user’s computer and responds directly to the host system without the need for the user to enter, or even know, the challenge information. Devices specifically designed for this purpose are referred to as hard tokens. Soft tokens may also be used for authentication. Soft tokens rely on software installed on a computer, tablet or mobile device. For example, the use of a soft token allows a treasury professional to access the unique dynamic code through a phone instead of requiring a separate hard token. The use of a token meets the “something they have” criterion of multifactor authentication.

6. Single Sign-On (SSO)

A SSO permits an individual to enter one user name and password in order to access multiple applications on the same network or at the same host. SSO has broad applicability to all technology and can simplify access for treasury professionals who access multiple systems. For example, SSO is helpful when accessing a bank website or a hosted TMS provider with multiple applications, such as report generation and transaction initiation, because it allows an individual to sign on and authenticate one time and not have to be authenticated with each individual application. Many colleges have incorporated SSO technology to enhance security and privacy initiatives at their institution.
D. Types of Information Management Technology Solutions

Treasury professionals use a wide variety of technology solutions, ranging from simple spreadsheets to complex TMS packages. Each provides a range of functionality and capabilities at varying cost levels.

1. Spreadsheets

Spreadsheets created with Microsoft Excel and other software providers remain an essential tool for consolidating and analyzing the data that are essential to treasury. The major advantages of spreadsheets are their low initial cost, ubiquity and ease of access and use. The major drawbacks of spreadsheets include:

- Security limitations
- Potential for logic and formula errors
- Lack of auditability
- Poor version control
- Minimal integration with other applications
- Lack of organized information technology support and software maintenance
- Potential for corruption of data and internal formulas
- Lack of a common database, leading to duplication of data
- Lack of transaction initiation capabilities

While spreadsheets are excellent analytical tools and are extremely adaptable for many purposes, spreadsheets are inefficient when used as ERP components and for sharing. Treasury-specific applications are more effective, as they are designed to address the spreadsheet drawbacks articulated above. These types of applications are typically referred to as business intelligence software or data analytic software.

While the spreadsheet software itself can be very inexpensive when compared to treasury-specific software, the total cost of ownership can be quite high based on the various drawbacks and the potential for problems or mistakes.

2. Bank Portals and Online Banking Solutions

Historically, many banks supplied their commercial customers with online treasury applications that offered access to bank information and allowed for the initiation of various transactions. Most of these solutions started out as information reporting services. Over time, their capabilities were expanded in response to customer requests to provide broader access to information with inquiry capabilities, self-service capabilities for stop payments and other customer needs, and, finally, transaction initiation. In many cases, these bank-provided technology solutions offer functionality that can rival dedicated TMSs. Today, most of the bank-specific solutions have become online banking solutions typically offered over the internet.

While bank-provided solutions overcome many of the drawbacks of spreadsheets, they are typically more expensive than spreadsheets over time due to ongoing fees for the use of the system. These fees are often based upon transaction volumes and usage, and they can become significant if multiple users are frequently accessing bank information. The major drawback to bank-provided solutions is that they are typically limited to dealing with only one bank. Although some of the bank products can consolidate and report data from multiple banks, transaction initiation and inquiry capabilities are normally limited to the bank that provides the application. As a result, treasury operations that have multiple bank relationships may need to use multiple bank solutions, all with different security requirements and different user interfaces.

3. Other Technology Solutions

Treasury management systems (TMSs) were initially developed in response to the need to use one system to access multiple banks. Today, most TMSs not only provide access to multiple banks, but they also typically provide expanded functionality in terms of managing debt, investments, foreign exchange, letters of credit, bank communications and risk management. TMSs often include the capability to directly connect with internal accounting and other financial systems. The expanded functionality comes at a higher cost and often requires some form of internal information technology support to operate or configure the solution. In today’s technology environment, many of these systems are available as cloud-based applications.43 These types of systems and software are discussed in more detail in a later portion of this section.

43. One such application is Kyriba, (https://www.kyriba.com/).
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In addition to full-featured TMSs, there is also a wide variety of specialty applications that are used by many treasury professionals. Although these tools may be less powerful or robust than TMSs, they are leveraged by many treasury professionals. These include packages such as investment management software, escheatment tracking and reporting software, front/middle/back office trading systems, bank fee analysis tools, budgeting, forecasting, foreign exchange exposure tools, market rate data, risk management and analytics/decision-making packages.

ERP systems are sophisticated information management, production and accounting software packages that link different functional areas or operational divisions of a company on an enterprise-wide basis. They integrate large amounts of data into a common database, which helps eliminate multiple, duplicate copies of information. The greatest advantage of ERP systems is that they can provide a single processing platform for all of an organization’s accounting and finance software, reducing the number of integration points required with standalone packages. Many large ERP systems include a TMS application, which may include the ability to directly connect to an organization’s banks to initiate payments and other transactions from A/P and A/R to download and reconcile bank account information. One of the major advantages of ERP-based TMS solutions is the built-in integration with an organization’s accounting and financial applications. The disadvantages can include a higher cost and a need for significant information technology support.

There is also an increasing number of companies offering different types of financial planning and analysis software or add-ons to ERP systems. These types of packages allow for the easy creation of budgets, forecasts and variance analysis. In many cases, the systems are “cloud-based” and utilize predictive analytics to quickly summarize relationships between different revenue and cost options under a variety of assumptions.\(^{44}\)

A dashboard is a user interface or display that summarizes and presents information in a way that is easy to read and understand. Like a car’s dashboard, it is often color coded to indicate the importance of specific information (e.g., green is normal and red requires immediate attention). Dashboards are intended to provide summary data that can be used to manage a function or process and often include the ability to drill down on specific pieces of information to get more detailed information about the specific item. Dashboards can also provide management with a view of bank balances, investments, cash forecast, outstanding debt and other critical factors. For example, if one item on a dashboard is the number of payments over a specific dollar amount, clicking on the number would provide a detailed list of the individual payments.

4. Hosted Solutions (Cloud-Based)

Many software vendors, including most TMS vendors, also provide their solutions in a hosted environment. In fact, many vendors now provide their solutions only in this fashion. In a hosted environment,\(^{45}\) the vendor runs the application on its own technology platform, and firms access the software over the internet using personal computers. The vendor is responsible for updating and maintaining the software, as well as for providing appropriate backup and disaster recovery. Hosted solutions are also often referred to as cloud\(^{46}\) computing, since the applications are in the cloud and accessed through the internet.

Hosted software is typically charged for on a per-use fee, a per-user fee or some combination of both. Some vendors also charge based on volume statistics, such as number of accounts or transactions, or services/modules actually used. This can result in higher ongoing processing fees but typically reduces or eliminates any up-front costs for software and hardware, since those belong to the vendor, as well as the cost and effort involved in installing new versions of the software as they become available. In most cases, the software is highly configurable, so that individual users can customize their own input screens and reports. In addition, unlike an installed solution, where a company may pay for capabilities that are provided in the purchased software but not actually used, with hosted software, companies typically pay for only what is actually used.

5. Workflow Management System Functionality

Workflow management is a function incorporated into many software packages that allows multistep processes to be automated, tracked and actively managed. Although workflow software is available as independent software, it is more commonly seen as an integrated function of most TMS or ERP solutions.

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\(^{44}\) One such FP&A application system is Anaplan (https://www.anaplan.com/).

\(^{45}\) A hosted environment is also referred to as an application service provider (ASP).

\(^{46}\) The cloud is a term often used to describe distributed computing provided over the internet that allows multiple users to access and use the same software from a variety of locations. The software is actually running on a number of servers or computers that can be scaled up or down depending upon the number of users and their usage at any particular time.
Workflow management allows a company to use software to implement, monitor and enforce the specific processes and procedures (i.e., the workflow) that it wants used throughout the company. For example, a company following best practices will normally require that all wire transfers be entered by one individual and then approved and released by a second individual. Workflow management software will accept the initial transaction and then notify the appropriate approver(s) that a transaction is awaiting approval. Once the transaction is approved, the software will automatically release the transaction and may be set up to notify the original initiator that the transaction has been released. Management can view reports at any time to see how many transactions have been entered into the system and the current status of the transaction (e.g., entered, approved or released). Workflow management systems are typically capable of managing processes with many steps and multiple decision points throughout the process. They not only help enforce proper procedures, but they also provide ongoing status reports that can be used to manage the overall process.

E. Technology Policies and Guidelines

1. End-User Computing

An organization’s end-user computing policy is usually “owned” by the information technology department and not by treasury, and it covers policies needed to control risk related to personal computers, laptops, tablets, mobile phones and other portable devices. That being said, it is important for treasury to work with information technology as a partner in dealing with the various issues covered in the policy and not blindly assume that information technology is handling all of the details. An informed and cooperative treasury operation can help ensure that any problems related to technology are dealt with before becoming major issues. These policies typically cover:

- Password protection and update requirements
- Permitted use of organization computer assets
- Permitted use of personal equipment, including “bring your own device” policies related to business continuity plans
- Software version control and documentation requirements, including updates and patches
- Backup and recovery procedures
- Data integrity
- Fraud and cybercrime security
- Use of antivirus software and update requirements
- Use of off-premises data controls for mobile devices and storage, such as flash drives
- Permitted use of e-mail and internet resources
- Documentation of end-user-developed software and spreadsheets

2. Treasury Systems

In addition to end-user computing requirements, specific policies are needed regarding any TMS or other treasury-specific software an organization may have installed. While many of the issues involved are similar to those covered by an organization’s information technology policies, these policies typically are owned and managed by treasury due to the ability to access the organization’s financial assets and bank accounts. Concerns typically include:

- Access to treasury systems
- Password requirements
- Segregation of duties
- Reconciliation with accounting and other books of record
- Backup and recovery procedures
- Business continuity procedures
- Off-premises access and use
- Reporting requirements
F. Treasury Management Systems (TMS)

1. Background

The simple treasury workstation of the 1980s that handled bank balance collection, daily cash positioning, and in some cases transaction initiation has expanded to an enterprise-wide TMS that now manages global liquidity, foreign exchange transactions, financial risk management, derivatives and bank account access. Significant advances in technology have led to closer integration with other corporate applications, such as G/L and payroll, as well as single-function systems used for such things as escheatment and hedge accounting. While TMSs are available as independent solutions, many ERP systems now include TMSs as a part of their service offering.

Bank information is the core of a TMS regardless of how the data are received, and the real power of a TMS is the ability to collect, compile, synthesize and relate the data to financial transactions and other treasury elements relevant to a particular organization. This section of the chapter describes the functionality that can be expected from a TMS and discusses some of the issues involved in selecting and implementing a TMS.

2. Functionality

TMSs can provide a wide variety of capabilities and functionality that are of value to the treasury professional. This functionality can be broken down into the following major categories:

- Cash management
- Bank communications
- Payments
- Debt and investment transactions
- Accounting
- Bank account management
- Reporting
- Risk management (foreign exchange, interest rates, commodity prices)
- Cash flow forecasting and liquidity planning
- Invoice management
- Dashboards
- In-house banking

a. Cash Management

Daily cash management includes cash positioning, funding and investment. It starts with bank reporting, using SWIFT, BAI2, BTRS or other standards (discussed below in more detail) to gather previous-day and current data from an organization’s various banks. The TMS collects this information through direct bank connections (typically over the internet), SWIFT or some other secured third-party network. The value added by the TMS is that it eliminates the need for multiple bank communication tools to manage the connectivity process. TMSs typically manage the process so that users know if banks have failed to report, if files are incomplete, or if there are other problems collecting information (e.g., log-on or network issues).

Once data have been collected, TMSs typically prepare and reconcile an organization’s daily cash position based on bank and cash flow forecasting information. Most TMSs have the ability to provide a real-time or near real-time view of positions across banks, accounts, entities and geographies.

Cash forecasting is an area of critical importance for liquidity management and is a good example of how technology can provide significant benefits for treasury. A TMS should be able to accept direct input of forecast data (inputs) by teams in a variety of locations, import data from the ERP or a data warehouse, and build a forecast based on past results. Validating and consolidating the various inputs improves both the quality and the ease of forecast assembly.

In-house banking is another part of the suite of cash management capabilities provided by many TMSs. In-house banking refers to the college, or more typically the treasury department, acting as a bank for a group of the college’s operating businesses. Functions performed by an in-house banking function (IHB) can include cash pooling, inter/intracompany activity (including loans and license agreements), and foreign exchange. Having a technology-enabled IHB enables colleges to benefit from functionality possible with an IHB without developing a large and expensive infrastructure to administer the operation.
The IHB is the treasury structure that enables more strategic and flexible cash management for global-oriented businesses. Information technology is the mechanism that provides the ability to centralize cash management and function as an IHB without the use of an external service provider.

b. Payments

Meeting operational, compliance and documentation demands for making basic payments can be time consuming, especially when multiple banks are involved, with a variety of access devices and user credentials. TMSs can help by providing the basic payment origination functionality and by connecting to a company’s various banks. Alternatively, many colleges use their ERP systems for A/P, A/R and payroll and use the TMS for only treasury-related transactions. Some organizations take this functionality a step further and use their TMS as a payment factory to collect payment transactions from across the organization and then sort/transmit them to the appropriate banks and payment channels. This requires special workflows that are included in the functionality of some TMSs.

Multilateral netting is a tool some colleges use for managing inter/intracollege payment activity on a cost-effective basis. Most TMSs offer some form of netting system capable of working with payables, receivables or a combination of the two (i.e., a hybrid system). In the event that the netting function is handled by an external provider such as a bank, the TMS can provide access to the transactions and information for posting and reporting purposes.

c. Debt and Investment Transactions

Many TMSs provide the ability to manage debt and related derivative transactions. This includes portfolios of short- and long-term borrowings at fixed and floating rates, letters of credit, and lease contracts, as well as specialized functions such as calls, puts and custom amortization schedules. Most TMS providers include a limited range of debt transactions within their base module. Additional capabilities not included in the base package are often available at an additional cost.

A TMS investment module supports the tracking and management of investment activity. Users can manage portfolios of short- and long-term investments, including money market funds and municipal bonds, as well as interest-bearing, fixed-rate, floating-rate and amortizing contracts. As with debt, a limited amount of investment functionality is incorporated in the base package, with additional functionality available as needed.

For those colleges dealing in more than one currency, TMSs normally provide basic spot and forward foreign exchange transactions, and generally support the tracking and management of non-deliverable forwards, plain vanilla options, and other related products. Transactions can be imported from single-bank or multibank portals to help in reconciliation and eliminate rekeying. Depending on the TMS, hedging and hedge effectiveness testing can be performed and mark-to-market valuations calculated.

d. Accounting and G/L Interfaces

Transactions created by or imported to the TMS can normally be automatically posted to the G/L through the generation of dual and multisided entries from the combination of bank and internal transactions within the TMS, increasing the potential for straight-through processing. Some systems support the independent reconciliation of bank transactions to accounting entries. Bank transactions imported each day are matched against accounting entries imported from the G/L based on user-defined rules, for a true bank-to-book reconciliation.

e. Bank Account Management

Good treasury practices require a firm handle on details of bank accounts, including signatories. Many TMSs offer a complete review and approval workflow to manage signature authorities for all accounts and produce the appropriate management, bank and compliance reporting. The addition of electronic bank account management (eBAM) capabilities provides an automated interface between the TMS and an organization’s bank(s).

Additionally, some TMS vendors offer analysis and monitoring of bank fees. This capability is also available from certain specialized vendors but primarily for U.S. banks, which typically use relatively standardized fee categories. The functionality allows users to analyze, reconcile and manage bank fees to compare monthly fees against internal benchmarks.
f. Reporting

Treasury management requires visibility of cash positions, bank account activity, risk exposure, payments, the cash forecast, investments and debt. TMSs provide treasury professionals with automated customized reports for individual areas, such as bank account balances or payments and audit reports. Dashboards are also available to consolidate multiple reports for an overview of treasury operations on a single screen.

g. Foreign Exchange

TMSs offer foreign exchange modules to track and manage foreign exchange transactions, including spot, forwards, options and swaps. The foreign exchange module may also include information on FX exposures, mark-to-market valuations for derivative contracts, derivatives accounting and reporting.

3. Costs

The initial costs of implementing a TMS are directly influenced by the type of TMS and the specific platform used, and they can include one-time costs such as system selection, software, hardware, installation, start-up, implementation and personnel training expenses.

Implementation costs for a TMS may be significant, and care should be taken to ensure these costs are not underestimated.

Ongoing TMS costs can include licensing, IT maintenance and software usage. Fixed costs typically include administration, overhead, software maintenance, licensing and upgrades. Variable costs include transaction service charges, bank fees and system security expenses.

When considering a TMS, it is important to consider the total cost of ownership for a particular solution. Installed systems often have higher up-front costs, but the ongoing costs can be significantly less, since there are usually no usage fees. Hosted solutions, whether bank applications or TMSs, may have low initial costs, but ongoing costs can become significant for heavy users. Spreadsheets may appear to be a low-cost alternative until the lack of maintenance, security requirements, auditability and other risk factors are considered. ERP solutions can work well if the college already has an ERP system, but ERP solutions may not have all of the required functionality, leading to the need to purchase specialty software to fill any gaps.

The selection of a TMS should not be made using a strictly quantitative cost/benefit analysis, as many of the important benefits of a TMS are qualitative, including automation of processes, ease of use, the availability of ongoing support, stricter controls and security.

G. E-Commerce

1. Basics of E-Commerce

E-commerce is defined as the application of information and secure network technology for the purpose of facilitating business relationships, including buying and selling, among trading partners. E-commerce encompasses many types of channels and communications protocols, including traditional electronic data interchange (EDI) and web-based commerce. In addition to treasury, other functional areas impacted by e-commerce include supply chain management, online marketing, online transaction processing, automated inventory management; and automated data collection, mining and warehousing systems.
2. Benefits of E-Commerce

E-commerce can offer several benefits, including:

- Improved productivity, thereby enhancing working capital management
- Reduced data reentry, thereby reducing error rates and enabling faster data processing
- The elimination of mail time, thereby enhancing cash flow processes
- Improved communication capabilities
- The ability to perform straight-through processing (STP)

Once data are entered at the beginning steps of any transaction, the same data can move from one business application system to another without manual intervention, so that information provided in a purchase order, for example, is automatically replicated in subsequent invoices, A/R systems and A/P systems. E-commerce eliminates manual processes such as filing, matching, sorting and retrieving material, as well as envelope stuffing, stamping and mailing. It also significantly reduces cycle times, because e-commerce transactions have no mail time delays, involve minimal processing time, and facilitate just-in-time (JIT) inventory management in many companies, all of which serve to meet key objectives of working capital management.

Since e-commerce makes data reentry unnecessary, it allows for straight-through processing, which reduces error rates and enables more efficient processing. For example, using e-commerce for the receipt of remittance information allows for greater accuracy in the posting of payments to the A/R ledger. E-commerce eliminates mail time in both receipts and disbursements, thereby reducing any uncertainty in cash flow timing, enabling more accurate cash flow forecasting, and improving working capital management. It also offers improved communication capabilities. For example, acknowledgment that a customer has received an invoice helps to resolve issues of payment collection between buyers and sellers.

3. Using the Internet for E-Commerce

Increasingly, colleges use the internet as a payment and financial information channel. Because the internet is accessible by virtually anyone in the world who possesses the necessary hardware, software and communications systems, it is attractive to many colleges as a means to reach more customers and to facilitate sales and service. However, the openness and accessibility of the internet makes security a major concern. In addition, some countries may have restrictions on data shared via the internet or across international boundaries.

Many proprietary, internet-based systems have sophisticated security schemes to ensure the confidentiality of information, protect college networks and databases from unauthorized access and prevent fraud. Properly secured systems can handle business-to-business (B2B) or business-to-consumer (B2C) transmissions, or a combination of both. Whenever new communications services are established, the file transmission formats and languages must be agreed upon by all parties prior to implementation. In addition, rigorous testing routines should be in place in order to verify that all transmissions are secure.

A college must have a deep level of trust in its e-commerce partners. Reasons for this include the following:

- Business dealings with an e-commerce trading partner often involve access to the college’s internal systems and information.
- Errors may be propagated quickly through the electronic trading channel.
- There are many financial, reputational and operational consequences of security breaches to a college’s system.
H. FinTech and Other Technology Developments

1. Application Program Interfaces (APIs) and FinTech

A number of recent developments will likely reshape the future of the financial services industry. Application program interfaces serve as software gateways between programs, allowing the use of data from one application to be in another platform or service. Although APIs have been used for years, the impact on financial services is just beginning to unfold. Banks are beginning to share their APIs with outside partners for app development. These partnerships result in new applications related to services, including payments, borrowing, investments and insurance. Although an API may allow access to bank data, the bank may limit that access to a very narrow set of data points.

Banks opening up APIs to outside firms has helped fuel the rapid growth in financial technology (FinTech). FinTech firms apply technology to provide services that are traditionally provided by banks, insurers and investment companies. According to a recent survey by EY, 47% of respondents used FinTech services to make payments or transfer money overseas, and 16.7% of respondents used services for investments and budgeting. According to the EY FinTech Adoption Index, only 15.5% of digitally active consumers had used at least two FinTech products in the six months prior to the survey, indicating significant potential for future growth.

The past few years have also seen the introduction of crypto-currencies and related technological innovations. One of these innovations is distributed ledger technology, or blockchain. Distributed ledger technology creates transaction records that are linked and distributed across all participating network computers. Distributed ledger has the potential to increase transaction efficiency and lower costs. Blockchain is currently being used for some cross-border payments.

2. Mobile Banking and Mobile Payments

Mobile banking refers to the provision of banking and financial services through mobile telecommunication devices (e.g., mobile smartphones and tablets). This service has become a reality for consumer banking, and as a result, some corporate bank customers utilize mobile banking to address their needs. Mobile banking functions that relate specifically to treasury include transaction initiation and verification, remote deposit capture and card acceptance. In addition to mobile banking, mobile payments (i.e., the use of mobile devices for payments or other transactions) are increasingly relevant for businesses, as a growing number of consumers opt for mobile payments.

Currently, the primary mobile banking applications in the treasury area relate to information transmittal and transaction authorization. Treasury professionals are often on the go or are simply away from their desks at critical moments in the day when they need to control the disbursement of funds. Being able to do so from a mobile device is a significant benefit in terms of convenience. The informational feature of mobile computing provides instantaneous access to balance information, alerts on significant fund or market movements, and confirmation of important transaction events or credit line availability.

The major barriers to widespread acceptance of corporate mobile banking include 1) security requirements for both the networks and the mobile devices (especially for the initiation of large-dollar transactions), 2) technology issues related to the increased data and complexity associated with corporate transactions and 3) the need to accommodate multiple users for a given bank account or relationship.

X. The Future Role of Treasury and the Treasury Manager

A. The Treasury Manager

The credit and related crises that began in 2008 have stressed institutions’ budgets and liquidity. This environment has enhanced the importance of treasury management. The three elements in the evolution of treasury management over the past decade—more use of technology, a greater focus on process management, and increased global focus on and heightened concern about risks and security—have raised the demand for specialized and up-to-date skills.

The roles of treasury and the treasury manager continue to evolve. Not long ago, when the environment was simpler, internally managed cash accounts were prevalent in higher education. Opportunities and risks are significantly more complex now, and it takes more resources and greater sophistication to manage a cash portfolio. As a result, treasury managers are required to have more specialized knowledge about banking and investments.

Continuing education is a must, and treasury managers can access resources through NACUBO, the Treasury Institute of Higher Education (TIHE) and the AFP. The latter organization offers the professional designation of Certified Treasury Professional (CTP). The treasury manager should continually scan the environment for new practices, systems and solutions that can improve effectiveness and manage risk. Networking is very important, and meetings of regional associations are a low-cost way of ensuring that staff gain CE credits and remain connected with the profession.

Because of the importance of changing cash management practices throughout the institution, treasury management cannot just be a backroom function. Treasury needs to put in place a payment culture and processes that lead and facilitate the transition to an electronic environment. Even where a full-blown internal bank is not instituted, the treasury manager needs to be aware of proposed projects and provide appropriate financial analysis so that the impact on cash flows and budgets is fully understood. This demands that the treasury manager also have communication and change management, as well as technical, skills.

That growing sophistication has also increased recognition that the treasury function should be set up as a separate organizational entity. How the office is configured will depend in large part on the size and wealth of the college or university. But whatever the institutional particulars—and however far removed cash management might seem from the core mission of the institution—treasury will have an important role in achieving and maintaining the financial health of a college or university.

B. Financial Planning and Analysis (FP&A)

In recent years, there has been increased emphasis on the area of Financial Planning and Analysis (FP&A) in relation to the finance area of organizations in general, and specifically the treasury area. The Association for Financial Professionals has recently expanded their scope to include the FP&A area. From their website: “An FP&A professional would provide insights to the financial decision making process in an organization through analysis, financial projections (planning, budgeting and forecasting) and reporting. They may work as a member of a team of financial analysts but they are also able to work independently.

They understand the entire decision support process and are able to contribute to and be responsible for individual components of the process. They are able to perform these functions accurately and in an efficient manner and to identify, assess and adapt their processes to changes in the business environment. FP&A professionals understand and abide by professional conduct standards.

FP&A professionals communicate with others in a wide range of positions internal and external to the organization to understand and gather qualitative and quantitative information on factors affecting the financial performance of the organization. They are also able to analyze data and relevant facts, consolidate and convey insight to support decision makers and other stakeholders.”
To this end, the FP&A area is really a blending of the traditional cost/managerial accounting functions with those of financial planning, analysis and forecasting. The primary objective of the FP&A professional is to help decision-makers by gathering, analyzing and making recommendations for future actions of the organization. There is a large emphasis on developing forecasting and budgeting models and then tracking the variance between the actual results and budgets. While a detailed discussion of the FP&A area is beyond the scope of this reading, this is an area that the treasury function will embrace more and more in the future.

There are now numerous FP&A software platforms that can be used to help with this function. As was discussed in the Treasury Technology section, many of these platforms are designed to work with the organization’s existing accounting or ERP (enterprise resource planning) software in order to enhance the strategic planning function of the university or college. There are often cloud-based, which makes for easy and scalable implementations in organizations of almost any size.
Resources

Text Sources


AFP Treasury in Practice Series

Best Practices in Treasury Connectivity – Issue #19
Selecting the Right Treasury Management System – Issue #18
Navigating the Top Tasks in Treasury – Issue #17
Fintech: Breaking Down the Barriers – Issue #15
In-House Banking: Is it Right for Your Treasury Function – Issue #12
How to Conduct a Successful RFP for Banking Services – Issue #5

Web Sites

Government

Federal Reserve Financial Services:
www.frbservices.org/

The Office of the Comptroller of the Currency within the Department of the Treasury offers a series of handbooks, guidance and bulletins related to banking activity.
www.occ.treas.gov/netbank/netbank.htm#Handbooks

Industry associations

American Bankers Association
www.aba.com/

American Payroll Association
www.americanpayroll.org/

Association for Financial Professionals
www.afponline.org/

CheckImage Central
www.checkimagecentral.org/

Clearing House Interbank Payment System
www.chips.org

National Automated Clearing House Association (NACHA)
www.nacha.org/

National Check Fraud Center
www.ckfraud.org/menu.html

PCI Security Standards Council
www.pcisecuritystandards.org/

Society for Worldwide Interbank Financial Telecommunications
www.swift.com/

The Treasury Institute for Higher Education
www.treasuryinstitute.org/

Discover
www.discovernetwork.com/fraudsecurity/disc.html

Mastercard
www.mastercard.com/sdp/

Visa
www.visa.com/cisp
List of Sources for Exhibits

1. Cash Conversion Cycle – Pg. 8 (ETM5 – EX 1.1)
2. Four-Corner Payment System Model – Pg. 18 (ETM5 – EX 4.1)
3. Check Payment System – Pg. 21 (ETM5 – EX 4.2)
4. Sample of U.S. Business Check – Pg. 22 (ETM5 – EX 4.3)
5. Large-Value Funds Transfer System – Pg. 27 (ETM5 – EX 4.4)
6. ACH Payment System – Pg. 31 (ETM5 – EX 4.5)
7. Participants in a Credit Card Transaction – Pg. 36 (ETM5 – Ex 4.6)
8. Credit Card Transaction Process – Pg. 37 (ETM5 – EX 4.7)
9. October 2016 Money Market Fund Changes – Pg. 51 (ETM5 – EX 5.3)
10. Account Analysis Statement – Pg. 70 (ETM5 – EX 7.4)
11. Earnings Credit Calculation – Pg. 73 (ETM5 – EX 7.5)
12. Calculation of Required Collected Balance – Pg. 74 (ETM5 – EX 7.6)

All exhibits are from Essentials of Treasury Management, 5th Edition (ETM5), published by the Association for Financial Professionals (AFP). The page references provided are also from ETM5.
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Dubos Masson is President of The Treasury Academy, a training and consulting firm specializing in treasury management, international finance, business forecasting, risk management and business valuation. Over the past 25 years, Dr. Masson has been providing business and financial consulting and training services to a wide variety of corporations, financial institutions, and not-for-profit organizations all over the world.

He is currently serving as Associate Clinical Professor of Finance at Indiana University’s Kelley School of Business and is a frequent conference speaker and author in a variety of financial and treasury management areas. His areas of specialty include: treasury management, working capital management, financial modeling, global cash management, risk management, financial planning & analysis, and corporate valuation. Dubos is also an instructor and curriculum developer for the Association for Financial Professionals (AFP), the Association of Corporate Treasurers (ACT) in the U.K and Citibank’s Global Transactions Services unit. In addition, he is the author of the college textbook, Short-Term Finance and Working Capital Management and author/editor of the first and third editions of AFP’s Essentials of Treasury Management.

Dr. Masson has extensive experience in developing curriculum for a wide range of teaching and training environments, both residential and on-line. He has developed classes and taught at all levels of university education, including: undergraduate, MBA, Executive MBA, not-for-credit and custom-designed courses. Dubos also has worked with professional associations to develop curriculum, training materials and certification programs in the areas of Treasury Management, Credit Management, Global Cash Management, Forecasting, Financial Planning and Analysis, Commercial Banking, Valuation and Risk Management. Finally, he has over 25 years of experience in developing training and education programs for commercial banks, ranging from small regional institutions to large global financial institutions such as Bank of America, Citibank, JPM Chase, HSBC and Royal Bank of Canada.

Dr. Masson’s educational background includes a B.A. in business from the University of New Orleans and an MBA and Ph.D. in Finance from Indiana University. Dubos earned his Certified Cash Manager (CCM) credential in 1988, attaining permanent status in 1995 and transitioning to the Certified Treasury Professional (CTP) credential in 2003. Dr. Masson also holds the Cert ICM, an international cash management certification from the Association of Corporate Treasurers (ACT) in the UK, and in 2014, he passed the first offering of AFP’s Financial Planning and Analysis (FP&A) certification exam.