Top Down, Bottom Up Risk Best Practices to Elevate Your Treasury Team

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Agenda

- Vanguard at a glance
- Fund Financial Services (FFS) Fund Treasury
- FFS Fund Treasury risk and control program
  - Top down, bottom up approach
  - Risk model
  - Six sigma and risk/control integration
- Leadership growth and development
- Crew engagement
- Risk and control program performance results
Vanguard at a glance

Vanguard total assets

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Assets ($B)</th>
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<tbody>
<tr>
<td>1999</td>
<td>$1,150</td>
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<tr>
<td>2000</td>
<td>$1,350</td>
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<tr>
<td>2001</td>
<td>$1,550</td>
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<tr>
<td>2002</td>
<td>$1,750</td>
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Vanguard profile
- No outside owners: we serve only client interests
- An enduring commitment to lowering costs because low costs often provide a distinct advantage for investors
- 35 years of investment

Market leadership
- Nearly $1.5 trillion in assets under management (U.S.-based mutual funds)
- Broad lineup of 164 mutual funds, ETFs, and other products

Investment management
- Active equity: leading institutional subadvisors
- Index equity: internal management provides state-of-the-art execution
- Fixed income: offering deep expertise and risk management

Depth of experience
- More than 12,000 crew based in Pennsylvania, Arizona and North Carolina
- Growing international operations including:
  - Asia, Australia, Canada
  - Continental Europe
  - Mexico, South America
  - United Kingdom

U.S.-based mutual funds
Other

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Fund Treasury purpose and control objectives

**Mission Statement**
To provide accurate and compliant Treasury services for the Vanguard mutual funds incorporating Vanguard Unmatchable Excellence, risk and control effectiveness and a goal of developing best in industry Treasury professionals.

**Our values/culture, how we pursue our purpose**

- Discipline, Long-term Planning
- Crew Growth, Empowerment
- VUE, Risk Control Culture
- Technology for Effectiveness
- Client Relationships

**Fund Treasury**
- Capture payment inputs
- Process/report payment instructions
- Calculate investable cash
- Project cash investment
- Capture and report intraday trade activity
- Reconciliation activities

**Best Place to Invest**

**Best Place to Work**
Fund Treasury risk management timeline

Risk Awareness & Assessments
- Risk leads
- Treasury leadership
- Entire teams

Risk & Control Governance
- Treasury leadership
- Internal risk champion
- Risk leads and crew

2007 2008 2009 2010

Control Manifests, 100+ control activities
- Risk leads
- Treasury leadership
- Team SMEs
Fund Treasury Enterprise Risk and Control
COSO-like framework

Document Control
Manifest

Implement Controls

Identify and Utilize Risk Models

Identify Risk Action Items

Critical Incident Reporting

Risk Committee Meetings

Empowerment

Ownership

Commitment

Continuous Improvement Culture
Top Down, Bottom Up Approach!

**Treasury Leaders**

**Goal:** Lead Treasury’s risk/control efforts to mitigate the possibility that a risk occurrence will impact the achievement of Treasury’s mission and core business objectives

**Driven by:** Treasury Management Team

**How:** Governance, risk models, incident tracking, leverage Control Manifests, Risk/Control driven planning and technology projects

**Treasury Crew**

**Goal:** Engage in team’s process risk related activities to achieve team business objectives

**Driven by:** Treasury Crew of all Levels

**Outputs:** Process Improvement Ideas (PIPs), daily involvement in improvement efforts, logging risk incidents, partnership with leaders
Fund Treasury Six Sigma and risk integration

Six Sigma
- Data driven management
- Key metric dashboards
- Metrics meetings
- Process mapping
- Metrics placemats

Risk/Control
- Historical looking analysis
- Ambassadors
- Process Improvement Pipeline (PIPs)
- Measurement and monitoring of key risks
- Crew process improvement sessions
- Risk assessments
- Key risk models
- Risk governance meetings
- Risk/Control placemats

Fund Treasury
Unmatchable Excellence
Fund Treasury risk models

- Iterative process, leveraged industry resources and best practices
- Identifies greatest areas of risk, rated by likelihood and significance
- Risk occurrences reviewed monthly during risk governance meetings, led by Risk Champion
- Model evolved into internal (controllable) and external (uncontrollable) versions
- Adequacy of control activities evaluated, actions taken
Fund Treasury leadership growth and development

- Evolved from Risk Awareness to:
  - assessments and hands-on application of tools
  - risk models
  - control activity adequacy measurements
  - risk/controls drives business planning strategy decision making!

- Full accountability and ownership of control activities

- Leadership lens
  - Endogenous – inward looking at what we control
  - Exogenous – outward, we don’t control
    - Preparedness, readiness, react, communicate
Endogenous (inward) vs. Exogenous (outward) Leadership takeaways

Uncontrollable events are more common:

- React effectively
- Understand downstream impacts
- Build communication plans
- Establish end-to-end process relationships
- Enhance contingency plans
- Crew engaged via table top sessions
- Prepare for black swans catastrophic-like risk events
Fund Treasury annual improvement goals
Leaders/crew focus on greatest risks for improvement

Crew and leaders work together to identify and achieve goals

2010 Goals

- Money movement risk and efficiency initiatives
- Investable cash projections
- Intraday cash transactions risk
- Business Design Methodology

- 400 Treasury PIPs over past four years! 75% risk related
Fund Treasury crew engagement
Increasing risk improvement ideas

"The PIP program provides an avenue where I can increase efficiency and reduce risk resulting in better service for our clients."  Treasury crew member

"The PIP process has truly empowered the crew. They take pride in improving their team processes and continually challenge each other to come up with unique solutions to VUE or Risk concerns."  Treasury manager
Fund Treasury risk management
Crew engagement – idea types

Crew risk related ideas (PIPs)

- 15% New control activity
- 85% evolving Existing control activity

Method to implement

- 25% via Technology
- 75% via process change

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Fund Treasury business plan
Risk as a key component

- Treasury leaders actively involved in business planning
- Leverage risk and control body of work
- Risk and control key driver for business planning technology plan

2011-2013 Business Plan

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Fund Treasury results
Money Movement/Payments

- Moved to SWIFT platform in 2007 for all TA/custody payments
  - Risk assessment was a key driver for SWIFT automation
- 97.8% STP with 2.6 million instructions annually
- 5+ improvement/risk related ideas per crew, annually
- Improved sigma from 5.56 to 5.78
- 2010 netting payment project elevated in October 2010 mitigated large wire risk, built efficiencies and reduced overall wire costs

Daily payments instructions post netting

Team time distribution
Fund Treasury results
Cash Management

- 175 process improvement ideas submitted by crew members
- Risk assessments primary driver to modernize three core cash systems
- Measureable improvements for cash and billing processes
- Consecutive year winner for Corporate Six sigma initiative of the year
  - Both projects were Risk/Control efforts
- Risk based business design methodology rolled out, efforts aligned for 2011