

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
OFFICE OF ETHICS, COMPLIANCE AND AUDIT SERVICES



1111 Franklin Street, 5th Floor • Oakland, California 94607-5200 • (510) 987-0479 • FAX (510) 287-3334

Sheryl Vacca
SENIOR VICE PRESIDENT
CHIEF COMPLIANCE AND AUDIT OFFICER

February 4, 2016

CHIEF INVESTMENT OFFICER BACCHER
ASSOCIATE CHIEF INVESTMENT OFFICER GUIMARAES

RE: Final Report Project No. P16A008: OCIO Cash Management Review

Attached is a copy of the final report for: Project No. P16A008 OCIO Cash Management Review. With the issuance of this final report, please destroy any previous draft versions. We very much appreciate the assistance provided to us by you and members of your staff during our review. If you should have any questions please feel free to contact me at 510-987-9646 (email: matthew.hicks@ucop.edu).

A handwritten signature in cursive script, appearing to read "Matt Hicks".

Matt Hicks
Systemwide Deputy Audit Officer

Attachment

cc: Senior Vice President Vacca
Assistant Director Pena
Manager Cataldo
Principal Auditor Wong
Contractor Adelman
Contractor Lencses
Contractor Mgbeke
Contractor Schneider
Contractor Washington
Contractor Weiss

UNIVERSITY OF CALIFORNIA
ETHICS, COMPLIANCE AND AUDIT SERVICES
OFFICE OF THE PRESIDENT
INTERNAL AUDIT SERVICES

OFFICE OF THE CHIEF INVESTMENT OFFICER
CASH MANAGEMENT REVIEW
Advisory Service Project No. P16A008
November 2015

Work Performed by:
Helen Adelman, Contractor
Laszlo Lencses, Contractor
Matthew Mgbeke, Contractor
Laura Schneider, Contractor
Marleenee Washington, Contractor
Jeffrey Weiss, Contractor
Benjamin Wong, Office of Ethics, Compliance, and Audit Services

Executive Summary

Introduction

As part of the University of California Office of the President (UCOP) 2015 – 2016 fiscal year internal audit plan, Internal Audit performed an advisory service project to assess the cash management and investment settlement processes within the Office of the Chief Investment Officer of the Regents (OCIO). OCIO manages the University of California's retirement, endowment, working capital, and cash assets under the policies, guidelines, and performance benchmarks established by the Regents. The mission of the OCIO is to implement those policies and guidelines by selecting, executing, and monitoring investment strategies designed to add value over the benchmarks within a risk-controlled framework. The Board of Regents governs the University of California and appoints its Chief Investment Officer (CIO) and Vice President of Investments. The CIO and staff of OCIO are charged with the responsibility for the day-to-day management of the investment program, operations, and the fiduciary oversight of all funds within their control. OCIO currently manages a portfolio totaling approximately \$91.0 billion dollars. These investments provide substantial benefits to current and retired employees and support the university's mission of education, research, and public service.

OCIO is organized into three functions:

- Investment Services
- Investment Risk Management
- Investment Management

The Chief Operating Officer (COO) of OCIO oversees the Investment Services function. Within Investment Services, the Cash & Liquidity Management and Investment Transaction Services functions report to the COO of OCIO. As of October 2015, the Cash & Liquidity Management team consists of six individuals and the Investment Transaction Services team includes seven individuals, though one is part-time. Personnel who work within the Cash & Liquidity Management team are cross-trained on activities performed by Investment Transaction Services.

Cash & Liquidity Management uses Treasura, a web-based treasury management system, as the primary tool for consolidating cash forecasts from campuses, medical centers, foundations, and affiliates for funds that are available for investment in the Short Term Investment Pool (STIP). Cash & Liquidity Management reconciles all activity in and out of the main concentration account daily and updates the cash forecast in Treasura as they receive notification of transactions. As STIP primarily consists of operating funds, Cash & Liquidity Management is also responsible for facilitating wire transactions between the STIP fund and the local campuses, medical centers, foundations, and affiliates to maintain sufficient operating liquidity.

State Street Bank is the custodian bank and accounting book of record for all asset classes. State Street is responsible for settling transactions involving public equity. The Investment Transaction Services team performs back office functions to support traders, including performing daily reconciliations and communicating with State Street regarding investment transactions from alternative investments. Investment Transaction Services consolidates the operating cash forecast from Cash & Liquidity Management with the investment cash forecast daily to provide traders with a single, consolidated view of available cash in STIP. Applications used by the Investment Transaction Services team include QED, the legacy portfolio tracking system, and eCFM, a State Street Bank module used to process wires. Investment Transaction Services initiates wires from State Street to fund the main Union Bank concentration account and to settle transactions for alternative investments and management fees.

Cash & Liquidity Management and Investment Transaction Services communicate daily to determine the amount of funds available from campuses, medical centers, foundations, and affiliates for investment in STIP or to identify the amount needed for withdrawal from STIP to fund ongoing operational activities.

This advisory service project was initiated by Internal Audit following a series of recent changes to personnel within the cash and investment settlement processes including:

- Loss of internal knowledge following the retirement of personnel within the Investment Transaction Services team at fiscal year end June 30, 2015.
- Leadership changes following the appointment of a CIO and Vice President of Investments in April 2014 and Associate Chief Investment Officer in November 2014.
- Reorganization of the Cash & Liquidity Management Department from the Office of the Chief Financial Officer to OCIO.

Objectives and Scope

The primary objectives of the advisory service project were to:

- Assess the current state of cash settlement and investment settlement activities (including how IT applications are utilized) to identify process efficiencies and improvement opportunities across Cash & Liquidity Management and Investment Transaction Services functions.
- Assess the current responsibilities around cash and investment settlement activities amongst the in-scope functions against leading practices within financial service institutions and identify opportunities to improve the organizational alignment across functions going forward.
- Assess the current use of Treasura and other existing systems as part of OCIO's investing activities and identify potential opportunities to drive improved process efficiency and effectiveness within cash settlement activities through elimination of or increased utilization of existing system functionality.
- Recommend appropriate internal controls in conjunction with process/operational improvement suggestions.

The scope of the advisory service project included the following OCIO functions within Investment Services:

- Cash & Liquidity Management
- Investment Transaction Services

IT applications used as part of the above functions were included in scope with the following limitations:

- Treasura was assessed only to the extent of evaluating the use of existing functionality.
- Additional applications such as eCFM were in scope only from the perspective of understanding how the application is used to execute day-to-day activities within the in-scope OCIO functions and to identify any potential opportunities for improvement or efficiency related to the existing use of these applications.

This review was not intended to advise on OCIO departments within Investment Risk Management and Investment Management, or Investment Services other than those identified above. In addition, investment activities performed by UC campus locations were deemed out of scope.

Procedures Performed

To accomplish the project objective and scope, the following procedures were performed:

1. Obtained and reviewed existing documentation around cash management activities within the Cash & Liquidity Management and Investment Transaction Services, including organizational charts, process flows, and desktop procedures.
2. Inquired with key personnel within the Cash & Liquidity Management and Investment Transaction Services teams to gain an understanding of cash management processes including:
 - a. Organizational structure and roles and responsibilities within Cash & Liquidity Management and Investment Transaction Services.
 - b. Current controls within the cash management process.
 - c. Systems, applications, and databases used by Cash & Liquidity Management and Investment Transaction Services throughout the cash management process.
3. Developed process flows to document current cash and investment settlement activities and identify internal controls performed by Cash & Liquidity Management and Investment Transaction Services.
4. Compared current OCIO cash management practices against leading practices to identify potential opportunities for improvement.
5. Leveraged process flows of cash and investment settlement activities to review the current use of system functionality within Treasura and identify improvement opportunities or instances to use additional tools within Treasura.

Conclusion

Based on Internal Audit's review and inquiry with individuals from Cash & Liquidity Management and Investment Transaction Services, we observed that both departments have established processes and controls utilizing current systems and have developed processes that allow them to better communicate with and coordinate with the departments they serve. The implementation of eCFM by Investment Transaction Services earlier in 2015 has strengthened controls around release of cash to ensure accuracy and validity. Daily reconciliations are performed to validate accuracy of fund balances per State Street Bank, the book of record. Additionally, recently implemented process improvements on the Investment Transaction Services side, including a new forecasting workbook linked to various data sources, have resulted in increased efficiencies.

However, we noted that opportunities exist to streamline existing cash and investment settlement activities. Significant manual data entry is performed by both Cash & Liquidity Management and Investment Transaction Services into multiple databases and systems. The various data sources maintained by OCIO create inefficiencies and duplication of effort and the manual data entry within the databases increases opportunity for error. There are opportunities to expand the use of

system functionality within the Treasura system and continue exploring ways to more effectively utilize data from State Street Bank rather than retaining internal “shadow” databases. Additionally, there may be opportunities to consolidate activities between Cash & Liquidity Management and Investment Transaction Services to streamline operations. Opportunities identified consider both short-term and long-term improvements to enhance the cash management process within OCIO.

Deliverables

Deliverables for the advisory service project included:

1. Process flows outlining the current state cash and investment settlement activities within Cash & Liquidity Management and Investment Transaction Services. See “UCOP OCIO Cash Management Process Flow”.
2. An Observations Log detailing key observations and improvement opportunities **(Appendix A)**.

As this was an advisory service project, no management corrective actions will be tracked by Internal Audit as a result of this review.

Appendix A – Opportunities for Improvement

1. Inefficiencies in Maintaining Legacy System

Observation:

QED, the legacy in-house portfolio tracking system, is maintained by Investment Transaction Services as a shadow system to reconcile daily against State Street Bank, the book of record. At least three individuals in the Investment Transaction Services team are involved in maintaining QED throughout the day, as the majority of data entry is performed manually. Additionally, multiple individuals perform the following QED reconciliations daily:

- QED to State Street Bank cash position by fund
- QED to State Street Bank DRS shares reconciliation by fund
- QED to the internally maintained Liquidity Access Database by fund

Time and effort spent maintaining QED has resulted in lost efficiency and duplication of efforts in retaining similar information across multiple data sources with questionable benefit.

Improvement Opportunity:

While it is common to maintain shadow systems, there may be an opportunity to eliminate the QED system. Internal Audit recommends following a phased approach to evaluate continued use of QED:

1. State Street Bank, as a third party service provider, issues a SOC 1 Type 2 Report highlighting the service auditor's opinion on the operating effectiveness of the controls within the service organization, including a description of the service auditor's tests of the operating effectiveness of the controls and the results of those tests. OCIO should request and review the State Street Bank SOC 1 Type 2 Report to confirm the adequacy of the internal control environment at State Street Bank and assess whether the user control considerations outlined in the report are adequately addressed by current OCIO processes and controls. Should gaps be identified between the user control considerations and current internal controls within OCIO, we recommend addressing these gaps by reconfiguring existing controls and / or implementing new controls before proceeding to steps 2 - 4.
2. Verify whether other data sources that are currently reconciled to QED, such as the Liquidity Access Database, can be reconciled directly to State Street Bank to confirm data integrity. In addition, identify data sources that feed QED to determine whether the data can be reconciled against State Street Bank to function similar to a shadow system. Should other existing data sources not reconcile directly to State Street Bank, evaluate the information gap and determine whether the gap can be addressed.
3. Evaluate any existing data needs fulfilled via QED reporting to determine whether the information can be retrieved elsewhere. Should QED reporting be used for risk management purposes, assess whether reporting via the My State Street portal within State Street Bank can be used as a substitute.
4. Implement an annual assessment of the State Street Bank SOC1 Type 2 Report to ensure all user control considerations are addressed by OCIO on an ongoing basis.

Should any of the steps above not be completed successfully, OCIO management should consider whether maintaining QED as a shadow system is appropriate for the organization.

2. Use of Main Concentration Account as a Depository Account

Observation:

Inefficiencies exist in reconciling the main Union Bank concentration account as the Cash & Liquidity Management team invests time to validate small value transactions specific to individual foundations or departments deposited directly into the Union Bank account. These recurring, small value transactions are deposited into the concentration account with minimal or no communication from the corresponding foundation or department. As Cash & Liquidity Management is responsible for validating the transactions that flow through the concentration account daily, this results in significant time spent in following up with departments to obtain backup documentation and validate transactions. Using the main Union Bank concentration account as a depository account by some organizations (e.g., Benefits department) for frequent, recurring activity increases the workload for the Cash & Liquidity Management team to validate operational activity that can be reviewed instead by the applicable organization if a separate depository account were used.

Improvement Opportunity:

Office of the President departments and other affiliates should be using separate, individual depository accounts for multiple or recurring transactions that are currently deposited directly into the main Union Bank concentration account. By moving deposits from the main concentration account to a depository account, the responsibility for reconciling and maintaining these bank accounts transitions from Cash & Liquidity Management to the applicable department. This reduces the time spent by the Cash & Liquidity Management team in validating the main concentration account, allowing time for supporting other treasury service activities.

3. Database Management

Observation:

Multiple workbooks and databases are used within OCIO. Workbooks and databases involved in the Investment Transaction Services process include:

- STIP Forecast Workbook: Excel workbook maintained by Investment Transaction Services that is linked to an SQL Database to combine data from asset class groups, State Street Bank, and Cash & Liquidity Management to provide a consolidated cash forecast for traders.
- Liquidity Access Database: Database internally maintained by Investment Transaction Services to track trade date available cash as requested by traders.
- SQL Database: Database assigns allocation and accounting treatment for transactions from alternative investment asset class groups (private equity, real estate, real assets). Investment Transaction Services sends exports from the SQL Database to State Street Bank daily as notification of transactions for these alternative asset classes.
- Databases maintained by Alternative Investments function: The various asset class teams (private equity, real estate, real assets) within the Alternative Investments department of the Investment Management function of OCIO maintain individual databases to track investment activity. These databases are linked to the SQL Database to facilitate communication with Investment Transaction Services for accounting purposes.

Maintaining similar data in multiple locations creates increased opportunity for error, duplication of effort, and inefficiencies as more time is spent manually updating various data sources and performing additional reconciliations to verify data integrity across databases.

Improvement Opportunity:

OCIO should inventory all databases used across all OCIO departments and identify the following: (a) Data elements captured within the database, (b) Stakeholders with access to the database, and (c) Business decisions made based on the information contained within the database. Reviewing this information can help identify data being captured in multiple databases and opportunities to consolidate information across OCIO.

In addition, OCIO should explore opportunities to use existing systems and tools to track information contained in separate databases. Specifically, Investment Transaction Services should continue to work to use State Street Bank reporting via the My State Street portal to provide trade date available cash in lieu of tracking it separately in the Liquidity Access Database. Leveraging capabilities within existing systems can eliminate the need to maintain additional internal databases.

Going forward, OCIO should consider establishing protocols and principals around database management. Protocols and principals should govern decision making around creation of new databases and address procedures around database management including periodic testing, access controls, backup and recovery, and controls in place to ensure data integrity (e.g. reconciliation, edit checks).

Efforts to better understand existing databases and informational needs can help facilitate future discussions around a long-term solution for Cash & Liquidity Management and Investment Transaction Services should OCIO begin to explore a new system. While new system solutions may help address risks around maintaining multiple databases within the OCIO team, discussions regarding a potential new application should include all stakeholders to evaluate whether there is a single solution that can incorporate the needs of multiple departments in one unified tool.

4. Increase Use of Treasura Functionality

Observation:

The Treasura system is used by the Cash & Liquidity Management team for cash positioning and forecasting. Not all functionality within the Treasura system is utilized by the Cash & Liquidity Management team which has created inefficiencies in the current cash management process. Examples of these inefficiencies include:

1. Wire Transfers: Upon receiving requests from campuses, foundations, or affiliates, the Cash & Liquidity Management team initiates wires through the applicable online banking portals (e.g., Wells Fargo). This may cause inefficiencies by adding a step for the Cash & Liquidity Management team in the wire transfer process by having to update both Treasura with the forecasted cash activity and initiate the transfer in the applicable online banking portal.
2. Importing Data: Manual entry of data into Treasura is inefficient and increases the opportunity for error. While banking files automatically interface from the individual banking websites to Treasura daily, cash forecast updates are manually entered into Treasura by the Cash Manager throughout the day upon receiving an email notification of cash activity. Emails are currently submitted by campuses, medical centers, foundations, and affiliates in multiple formats and at times include attachments.
3. Reporting: Inefficiencies exist in generating standard and custom reports within Treasura when large volumes of data are queried. Specifically, rather than generating one report for a given period, users are required to run multiple reports for shorter intervals and manually combine the outputs into a single report (Note: OCIO has inquired with Treasura regarding this issue and Treasura suggested running reports for a shorter period of time). Additionally, reports generated from Treasura are often not in a user-friendly layout (e.g., columns wrap onto multiple rows) and require additional time from Cash & Liquidity Management to re-format. Time spent by the Cash & Liquidity Management team generating and manipulating data from Treasura into a readable format for reporting requests received (e.g. historical cash flow for the last 12 months) takes away from time available to spend on more strategic operational activities and prevents timely reporting to stakeholders.
4. User Access: Access to Treasura is limited to the Cash & Liquidity Management team at OCIO. This may cause inefficiencies as all campus / medical center / foundation / affiliate specific transactions to and from the main concentration account must be communicated to Cash & Liquidity Management for entry into the forecast in Treasura. As UCOP Financial Accounting independently performs the bank account reconciliation for the main concentration account, extending access to enter forecast data should not present any segregation of duties conflicts. Additionally, as Treasura houses all historical cash flow data by campus location, Cash & Liquidity Management receives campus-specific reporting requests that must be processed by the OCIO team as the campus does not have access. As access to Treasura is limited, significant time from Cash & Liquidity Management is spent processing campus-specific transactions and requests in Treasura.

Improvement Opportunity:

There are opportunities to increase the functionality and use of Treasura, including:

1. Wire Transfers: Wire transfers can be initiated in a consolidated platform within Treasura rather than through multiple, separate online banking portals, increasing the efficiency within the wire transfer process. The wire functionality within Treasura should be explored further to gain an understanding of controls related to user access, two-factor authentication, and any other control requirements UC may have.
2. Importing Data: Cash & Liquidity Management manually enters data into Treasura upon

email notification of cash activity from a campus, medical center, foundation, or affiliate. There is an opportunity to use a standard template for importing data into Treasura to reduce the amount of data manually entered into the system. A standard template completed by the campus, medical center, foundation, or affiliate and submitted to Cash & Liquidity Management could be imported rather than manually entered into Treasura. This reduces the risk of data entry error and increases efficiency in the process as the Cash Manager would spend less time on data entry. Additionally, reviewing opportunities to consolidate cash activity into one master template maintained on a shared drive or other central repository could further consolidate the data entry process.

3. Reporting: Crystal Reports is an application that is often used as a tool to facilitate Treasura reporting. Using Crystal Reports would allow Cash & Liquidity Management to create custom reports when needed to address ad hoc report requests received from campuses. This can increase efficiency for the Cash & Liquidity Management team as less time would be spent in exporting and manually manipulating multiple Treasura reports. OCIO should consider exploring the use of Crystal Reports (or another possible reporting application) to address reporting needs by the Cash & Liquidity Management team.

Additionally, whether Crystal Reports or a different reporting application is used, internal controls to test customized reports, such as reviewing configuration and periodic testing, should be established to ensure data integrity for internally developed customized reports.

4. User Access: While user access to Treasura is currently limited to the OCIO team, there may be opportunities to extend user access to individuals at the campus or medical center. This would allow individuals at the campus and medical center to (a) utilize Treasura functionality (i.e., centralized wire transfer function through Treasura), (b) enter or import forecasts directly into Treasura reducing the current turnaround time in processing through OCIO, and (c) generate campus/medical center specific reporting independent of Cash & Liquidity Management. Extending access to campus and medical center users would enable the Cash & Liquidity Management team to focus on more strategic operational activities within OCIO.

5. Consolidation Between Cash & Liquidity Management and Investment Transaction Services

Observation:

There are activities performed by the Cash & Liquidity Management and Investment Transaction Services teams that can be consolidated to increase efficiency and reduce duplicative activities. Specifically, wire processing is performed by both Cash & Liquidity Management and Investment Transaction Services. Investment Transaction Services initiates wires via the eCFM application on the State Street Bank portal for items including management fees and drawdowns upon instruction and approval from the corresponding asset class group (e.g., private equity, real estate, real assets). Cash & Liquidity Management processes wires in the Wells Fargo online banking portal when instructed by foundations and affiliates. Having wires processed within the Cash & Liquidity Management and Investment Transaction Services functions appears to be a duplication of effort.

Improvement Opportunity:

There is an opportunity to consolidate activities of the Cash & Liquidity Management and Investment Transaction Services teams. While wires may be initiated via separate online banking portals, this can be assigned to a single function with responsibility for initiating all wire transactions within the Cash & Liquidity Management and Investment Transaction Services functions. When combining wire processing into a single function, it is important to ensure segregation of duties between processing wires, communicating activity to State Street, and reconciling accounts. If the wire initiation function is consolidated, the wire instructions provided for processing should be received independently from the group executing the transaction to maintain segregation of duties.

6. Develop a Vendor Management Program

Observation:

In discussions with Cash & Liquidity Management and Investment Transaction Services, we observed that there is no formal monitoring of existing vendor relationships. As OCIO is relying on third party vendors, including State Street Bank as the book of record in addition to other banks, for key outsourced activities, these relationships should be reviewed on an ongoing basis to evaluate vendor performance and address associated risks. Additionally, vendors are not being monitored to ensure contractual commitments are being met. Without ongoing monitoring, OCIO does not have a mechanism to enforce contractual terms and commitments. As a result, OCIO may be overpaying for existing services or may not be fully utilizing all services covered by the agreement.

Improvement Opportunity:

OCIO should consider developing a more formal vendor management program to monitor vendor performance and assess compliance with existing service level agreements and identify a member of the organization to be responsible for managing vendor relationships. A formal vendor management program should consider policies and procedures for a) assessing vendor risk, b) vendor selection, c) monitoring vendor activities and performance against service level agreements, and d) reviewing SOC1 Type 2 Reports for applicable service providers.