Higher Education

Liquidity Management in the Modern Era of Higher Education

Ian Prager
Managing Director,
Investment Banker
415.263.1162
ian.prager@hilltopsecurities.com

Michael Dymond
Vice President,
Investment Banker
917.206.3665
michael.dymond@hilltopsecurities.com

Sara Desens
Senior Vice President,
Investment Banker
917.206.3663
sara.desens@hilltopsecurities.com

Nick Simoncini
Analyst,
Investment Banker
917.206.3664
nick.simoncini@hilltopsecurities.com

The great financial crisis of 2008 – which resulted in material budgetary pressure on institutions – led to a sharper focus on liquidity management within higher education. Institutions were faced with plummeting endowment values, rising demand for financial aid, and reduced operating revenues against a fixed cost model, which pressured the ability to fund operations. Over the subsequent decade, steadier economic conditions enabled institutions to stabilize their finances and, in many cases, to increase net assets. However, the onset of the pandemic in March 2020 presented another crisis. Institutions faced material challenges to their operating budgets due to the impact of governmental restrictions and the practical implications of the pandemic on their ability to generate revenue.

These exogenous shocks have led to a greater focus on institutional funding backstops while changing market conditions, including a significant increase in short-term interest rates, have changed the economic dynamics of liquidity management. While events such as financial crises and the pandemic were major societal events that spilled over to universities, key sector risks abound, including:

- FAFSA (Free Application for Federal Student Aid) processing issues, which have an impact on institutions of all types;
- Periodic risks of government shutdowns, which would delay receipt of research funding and reimbursements;
- Sector headwinds which include ever-rising discount rates, stubbornly high inflation, and the demographic cliff.

In this paper, we discuss best practices in liquidity management, particularly around times of fiscal stress, to help institutions prepare for the next gray swan event. These best practices include approaches to cash forecasting as well as management and governance strategies for external liquidity.

Sector and Societal Influences, Market Factors, and the Demand for Liquidity

Major paradigm shifts often occur amid broad societal changes. The great recession and the onset of the pandemic each brought a renewed focus on liquidity management across almost every economic sector, including higher education.

Colleges and universities operate with fixed cost budget models and shared governance structures, making it challenging to respond rapidly to unexpected changes in revenues or expenses.

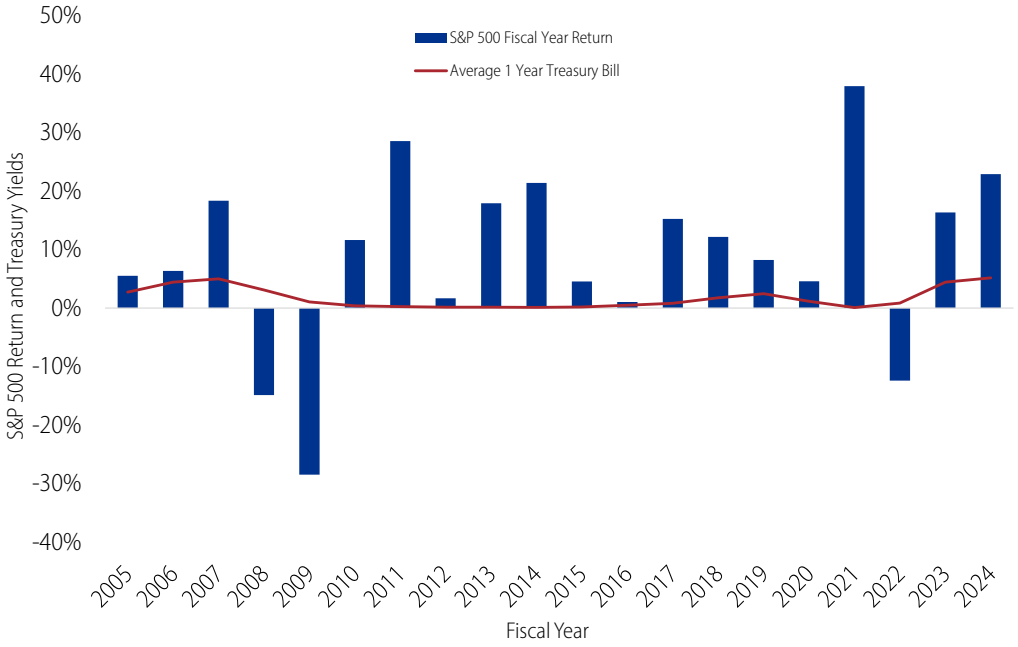
Colleges and universities operate with fixed cost budget models and shared governance structures, making it challenging to respond rapidly to unexpected changes in revenues or expenses. This is true over long-time horizons but particularly acute during unexpected and unforeseen economic events. Liquidity bridges short-term operating needs in these circumstances, though it is not a replacement for sustainable operations in the long-term. We demonstrate later the significant demand for rapid, additional liquidity during economic and societal shocks.

Please see disclosure starting on page 8.

The ultra-low interest rate environment which has characterized much of the last two decades – up until the recent rate hike cycle – has driven additional focus on liquidity management. Near-zero interest rates have limited earnings on working capital, which is invested in short-duration, low risk assets. This lower rate environment amplifies the opportunities in longer-duration asset classes with higher return potential, elevating the importance of strong liquidity management practices.

This lower rate environment amplifies the opportunities in longer-duration asset classes with higher return potential, elevating the importance of strong liquidity management practices.

S&P 500 Return Versus Average 1 Year Treasury Bill



Source: Federal Reserve Economic Data. Fiscal years extend from July 1 through June 30 to coincide with the fiscal years of most colleges and universities.

Fundamentals of a Strong Liquidity Management Program

Liquidity should be viewed in the context of an institution's overall capital structure and considered alongside other elements such as the endowment and central bank or debt portfolio.

Liquidity should be viewed in the context of an institution's overall capital structure and considered alongside other elements such as the endowment and central bank or debt portfolio. As liquidity supports both operations and long-term investments (e.g., capital calls on alternative investments), an overarching strategy that aligns short and long-duration investments with other institutional needs is critical to optimizing an institution's overall return and generation of incremental net assets. While many institutions primarily focus on a minimum cash balance, an optimized liquidity program could inform both a minimum and maximum liquidity balance. This helps bound costs related to an overweight cash balance and acknowledges the need for flexibility across various markets.

An institution's overall liquidity management program should include several core features:

1. A cash forecasting tool, involving an analytical approach to statistically projecting cash inflows, outflows, and balances;
2. Working capital requirements (e.g., boundary conditions identifying both minimum and maximum cash balances to assure optimal returns), sometimes encompassed as part of a board-approved liquidity or reserves policy;

3. A strategic approach to meeting working capital requirements, sometimes balancing a mix of internal and external liquidity sources;
4. Maintenance of the capabilities, tools, and expertise to be nimble to respond to changing conditions.

Cash forecasting often represents the most technically challenging aspect of a liquidity management program, while developing the appropriate level of working capital and the optimal mix of internal versus external sources requires strategic considerations.

Cash forecasting often represents the most technically challenging aspect of a liquidity management program, while developing the appropriate level of working capital and the optimal mix of internal versus external sources requires strategic considerations. This last aspect of liquidity management also offers the best opportunity for revenue enhancement and/or cost savings. With an assessment of the contemporaneous rate environment and long-term investment returns, options for external liquidity can be designed to enhance liquidity management and potentially, revenues, through a liquidity management program.

Some institutions choose to articulate a liquidity management philosophy through a formal liquidity and/or financial reserve policy and related operating procedures which is subject to Board oversight. A formal policy adds structure to liquidity management and provides a predetermined set of remedies to address shortfalls.

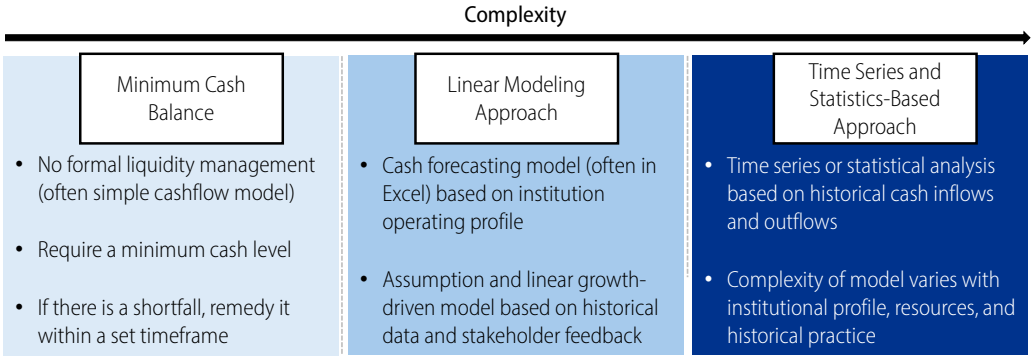
Approaches to Cash Forecasting in Higher Education

Cash forecasting, for some institutions, is simpler relative to other economic sectors: (i) tuition inflows occur (typically) semiannually or quarterly; (ii) endowment spending is intentionally smoothed; (iii) capital and endowment gifts are often scheduled well in advance; and (iv) personnel costs, a significant component of an institutional budget, are largely fixed and spread evenly throughout the fiscal year.

In our experience three primary approaches for cash forecasting are in use; though, actual practice at institutions often blends one or more approaches.

In our experience three primary approaches for cash forecasting are in use; though, actual practice at institutions often blends one or more approaches.

Higher Education Cash Forecasting Methodologies



Source: HilltopSecurities.

- **Minimum Cash Balance**
  Some institutions do not have formal liquidity management programs. These institutions will often employ a simple spreadsheet model to forecast cashflows and a target to maintain a minimum cash balance. This less formal approach is often in place at highly tuition dependent institutions with lean treasury operations.

- Linear Modeling Approach
  Under this approach, an institution builds and maintains a spreadsheet-based cash forecasting model. Finance staff maintain a model of cashflows by source and timing (e.g., tuition, endowment, payroll expenses, etc.) and evaluate the change in cash position based on model outputs. This model typically entails growing certain, if not all, revenues and expenses with linear inflators. As a best practice, inputs into the model are informed by historical data and assumptions are driven by the advice and counsel of stakeholders from across the institution.

As a best practice, inputs into the model are informed by historical data and assumptions are driven by the advice and counsel of stakeholders from across the institution.

- Time Series and Statistics-Based Approach
  A more sophisticated version of the 'linear modeling approach', this type of cashflow forecasting uses time series and statistical analysis to refine projections. Time series analysis is an approach that provides further insight into multi-year trends by addressing seasonality, cyclicality, and irregularities in the data over time.

For institutions with liquidity management strategies, institutional governance traditionally assigns financial oversight to a committee that meets periodically to evaluate liquidity and funding needs. The administration presents forecasts to this committee. As a liquidity program matures, best practices also involve the comparison of forecasts to actuals to identify areas to improve accuracy and reduce unknowns.

For institutions with liquidity management strategies, institutional governance traditionally assigns financial oversight to a committee that meets periodically to evaluate liquidity and funding needs.

Advanced Cash Forecasting in Strategic Situations

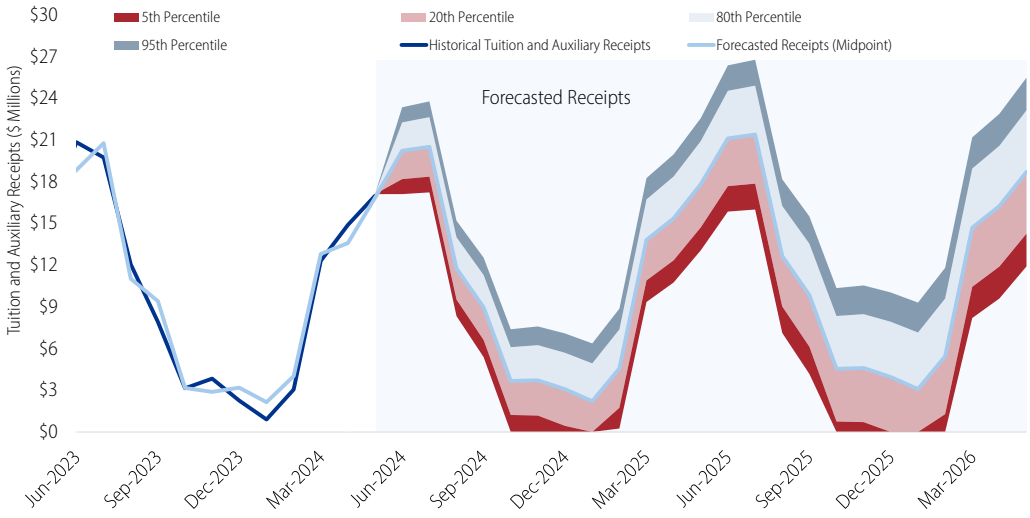
Enhanced cashflow forecasting can improve liquidity management, and may be particularly prudent for strategic decision making (e.g., the optimization of long versus short-term investment allocations). The mechanism for elevating cash forecasting varies, but we have observed that time series and statistical approaches can improve accuracy. In particular, the use of a time series approach allows an institution to better account for both long-term trends and intra-year seasonality which characterizes certain cashflows (e.g., tuition and auxiliary, athletics revenues).

Time series approaches produce a 'best fit' line based on multi-year growth (or decline) and in-year seasonality. This level of sophistication in forecasting allows an institution to generate a clearer, more granular view of monthly cashflows relative to linear growth techniques alone.

While the level of complexity for an analysis varies with an institution's profile, time series analysis generally uses historical cash inflows and outflows by type to produce a picture of net cashflows based on underlying patterns in the data. Statistical percentiles (which can also be represented as standard deviations from the mean) on the forecast can be used for scenario planning. These percentiles depict the likelihood that actual cashflows fall outside of the illustrated ranges. For example, in the ensuing chart the 20th percentile line indicates that in 80% of real-world situations, actual tuition and auxiliary inflows will be above this area.

While the level of complexity for an analysis varies with an institution's profile, time series analysis generally uses historical cash inflows and outflows by type to produce a picture of net cashflows based on underlying patterns in the data.

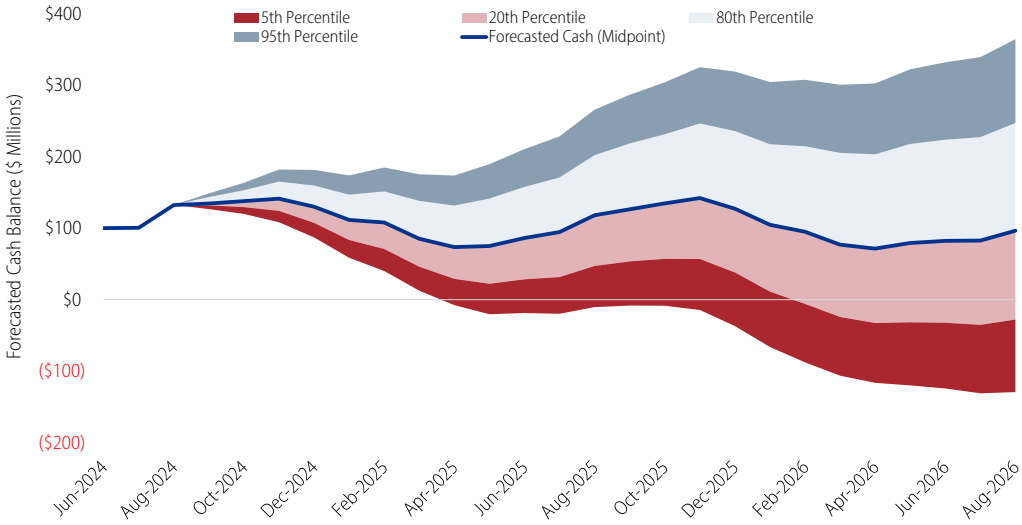
Time Series Analysis: Tuition and Auxiliary Cash Inflows Forecasting



Source: HilltopSecurities.

In the following chart we demonstrate how an institution's forecasted cash flows can be juxtaposed onto a starting cash balance. Known revenues and expenses should be excluded from the statistical analysis, and instead be included as part of a rolled-up analysis to produce a picture of an institution's expected cash balance.

Time Series Analysis: Institution's Forecasted Cash Balance



Source: HilltopSecurities.

Additional precision in cash forecasts can be employed to make strategic decisions around liquidity, including:

- The mix of short-term assets (e.g., cash, CDs, treasuries) versus current liabilities (e.g., revolving credit facility, commercial paper) used to fund working capital;
- The amount of working capital deployed to selected liquidity tiers of short-term investments; and
- Tailored short-term investment management approaches including short-term asset allocation and duration decisions.

Funding Working Capital with Internal and External Liquidity

Institutions develop requirements for working capital and a framework to meet needs under a liquidity management program.

Institutions develop requirements for working capital and a framework to meet needs under a liquidity management program. Best practices employ additional features including liquidity targets (e.g. ratios such as days cash on hand) and guidelines relating to risk management, monitoring, reporting, and liquidity tiers across a defined minimum and maximum range. Liquidity decisions do not have an operating impact alone; rating agencies also assess institutional liquidity as a credit factor.

Options vary for determining working capital requirements. The decision is influenced by an institution's operating profile, risk tolerance, and culture, among other factors. Though not exhaustive, institutions sometimes look to the following targets to determine these requirements:

- Multiple of monthly operating expenses;
- Days cash on hand (the number of days operating expenses can be paid with cash and liquid assets);
- Minimum cash level, set independent of a specific ratio.

The optimal choice for an institution varies with its operating profile and risk tolerance and often includes a combination of several alternatives, some of which allow for incremental revenues and/or cost savings.

Institutions have various internal and external options to fund working capital requirements. The optimal choice for an institution varies with its operating profile and risk tolerance and often includes a combination of several alternatives, some of which allow for incremental revenues and/or cost savings.

Options for Internal and External Liquidity

		Access Period	Costs	Index
Internal Liquidity	Cash	▪ Immediate	▪ Foregone investment earnings	
	Cash Equivalents (Treasuries, CDs, etc.)	▪ Immediate	▪ Foregone investment earnings	
External Liquidity	Revolving Line of Credit	▪ 1 – 7 days	▪ Interest expense ▪ Facility fee	▪ SOFR, Prime, Federal Funds
	Commercial Paper (Taxable or Tax-Exempt)	▪ 1 day	▪ Interest expense ▪ Issuance costs	▪ SOFR, SIFMA
	Taxable Bond or Loan	▪ After issuance, immediate	▪ Principal and interest expense ▪ Issuance costs	▪ US Treasuries

Source: HilltopSecurities.

The decision points relating to internal liquidity are influenced by market conditions and, often, banking relationships and indebtedness.

Internal liquidity is maintained through cash or cash equivalents (e.g., CDs, treasuries, other short-duration investments). The decision points relating to internal liquidity are influenced by market conditions and, often, banking relationships and indebtedness.

Institutions may use short-term liabilities in combination with cash and investments to meet their needs. The use of external liquidity may allow institutions to allocate cash to longer-duration, higher-yielding assets.

Revolving lines of credit are the most common external liquidity source, in part due to their flexibility. These facilities are structured with a bank or banks and allow an institution to borrow up to the amount of the facility and repay in installments. Revolving

lines are typically accessible within 1 to 7 days and are priced at a spread to SOFR, Prime, or the Federal Funds Rate. In practice, institutions often run a 'trial draw' on these vehicles to ensure they have the procedural know-how to access such facilities when needed. Although available quickly, revolvers carry considerations such as:

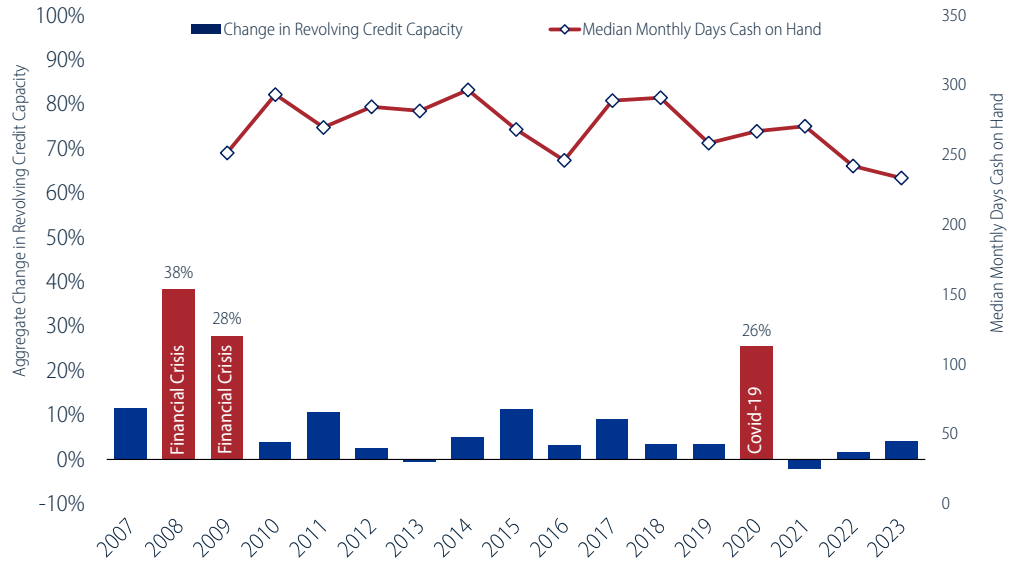
- A facility fee which is an annual fee based on the size of the facility;
- 'Clean-out' provisions, requiring the balance be paid down for a certain period every 12 months;
- Lower-rated credits may be required to post cash collateral or may face restrictive covenants.

AAU private universities are high-grade credits, have broad access to such external vehicles, and some have less access to government funding than their public sector counterparts.

To assess the demand for this type of flexible liquidity during periods of fiscal stress (e.g., fiscal crisis, Covid-19) we prepared an analysis to demonstrate the change in aggregate revolving credit facility capacity for operating purposes at the 30 U.S. Association of American Universities ("AAU") private universities. AAU private universities are high-grade credits, have broad access to such external vehicles, and some have less access to government funding than their public sector counterparts.

In our analysis we observe a 38% and 28% rise in aggregate revolving credit facility capacity in fiscal years 2008 and 2009, respectively. Fiscal year 2020 showed a similar increase. This is markedly higher than the 5% average increase in all other years.

AAU Private Universities: Annual Change in Aggregate Revolving Credit Facilities Capacity



Source: Audited financial statements and Moody's. Median days cash on hand includes all AAU privates except for one school which is not Moody's rated. In limited instances where revolving credit facility figures are not available, the figure from the most recent available year is used. Excludes revolving credit facilities dedicated to variable rate debt support.

Colleges and universities are long-standing, often highly conservative institutions and, in our experience, we have observed that broader societal and economic challenges drive sector demand for additional financial security.

Colleges and universities are long-standing, often highly conservative institutions and, in our experience, we have observed that broader societal and economic challenges drive sector demand for additional financial security. In some cases, institutions were sufficiently liquid in these periods of fiscal stress but structured additional revolving credit capacity (often in combination with other measures) to provide additional financial safety. We observe in our sample instances in which these facilities were set up

to provide near-term liquidity, but were not drawn upon. It should be noted that during the period reviewed, interest rates were at historical lows and external liquidity was plentiful and inexpensive, and as such this liquidity option was particularly attractive. We also observe a slight downward trend in median monthly days cash on hand over the sample time period, suggesting either operating expenses increasing slightly faster than liquidity or the movement of short-duration funds to longer-term pools, or some combination thereof.

Commercial paper ("CP") is another option for external funding. CP is often available to stronger credits and is a flexible funding source that provides cash within 24 hours.

Commercial paper ("CP") is another option for external funding. CP is often available to stronger credits and is a flexible funding source that provides cash within 24 hours. Taxable CP may be used for any purpose while tax-exempt CP carries usage restrictions (similar to tax-exempt bonds). As with revolvers, CP has considerations, including:

- Requires establishment of a CP program if one is not already in place, which takes 60 – 90 days and includes tax diligence for any projects expected to be funded by tax-exempt CP;
- Requires internal liquidity or a standby liquidity facility;
- Requires engagement with rating agencies;
- Availability is limited to higher-rated institutions;
- CP may require internal socialization for institutions without prior experience.

Finally, institutions can also issue taxable debt to provide liquidity. This option requires advance planning; however, the permanent form of funding has no restrictions on the use of proceeds.

The right mix of liquidity sources for an institution varies with risk tolerance, market conditions, ratings, and historical practices.

The right mix of liquidity sources for an institution varies with risk tolerance, market conditions, ratings, and historical practices. A strategic mix of internal and external funding sources, however, can aid institutions in meeting cash flow needs while enhancing revenues from strategic asset and liability management.

Conclusion

Higher education is under pressure from myriad sector headwinds and the lagging financial impacts of the pandemic, among other pressures. While institutions often stick with their historical liquidity and cash forecasting practices due to comfort and familiarity with such processes, formalizing a strategic framework that identifies minimum and maximum balances, monthly forecasting, and reporting and oversight requirements can offer opportunities for revenue enhancement and/or cost savings associated with strategic balance sheet management.