EXECUTIVE SUMMARY

- The Tax Cuts and Jobs Act of 2017 required companies to bring profits earned overseas back to the U.S. at lower tax rates than had historically been applied to foreign earnings. This change encouraged multinationals with significant overseas cash to reconsider the domicile of their liquid holdings.

- In light of this tax change, combined with the divergent rate paths of developed-market yield curves, investors should reevaluate their current cash investment policies, guidelines, goals, and objectives. We believe cash investors will benefit from quantifying the risks they are willing to take and then strategically constructing their cash portfolios to reflect that tolerance.

- By segmenting cash investment pools into tiers based on operational needs, time horizon, and risk appetite, investors may be able to increase the income generated by their cash portfolios while preserving sufficient liquidity.

- T. Rowe Price has developed a comprehensive investment framework that helps cash investors design customized cash strategies reflecting their income goals, risk tolerances, and liquidity requirements.

NEW TAX RULES, HIGHER U.S. RATES ENCOURAGE CASH INVESTORS TO RECONSIDER ALLOCATIONS

In December 2017, President Trump signed the Tax Cuts and Jobs Act of 2017, fundamentally changing the way the U.S. taxes foreign earnings of U.S. companies:

- Multinationals are required to repatriate foreign earnings previously untaxed by the U.S. back at a transitional 15.5% tax rate, as opposed to the prior 35%.

- A new U.S. minimum tax is imposed on earnings generated in low-tax havens.

- All future corporate profits will be taxed at the new 21% tax rate.

Compounding the effects of the tax changes are the divergent interest rate paths the U.S. and most other developed markets have followed over the past year. While short-term interest rates in the U.S. have risen, in many other developed economies yields have remained frustratingly low or even negative. As a result, companies with significant positive cash flow generated overseas may want to reconsider the best currency in which to hold their liquid reserves, given the differences in current yields.

Given the combination of tax changes and an evolving interest rate environment, we believe cash investors will benefit from a broader and more dynamic cash investment framework that models potential allocations based...
on three key inputs: income and return targets, liquidity requirements, and risk tolerance. This framework, which involves multiple steps, provides important guidance for cash investors and could lead to more effective cash investment programs.

**Step 1: Segment the Cash Investment Opportunity Set Into Tiers Based on Liquidity Needs**

Our cash investment framework begins with segmenting cash holdings into four tiers based on investment time horizons, which range from short term (immediate cash needs) to long term (strategic cash). By allocating cash investments into tiers, investors can better align cash income opportunities with liquidity requirements. The four tiers depicted in Figure 1 are segmented by maturity profile. They are further defined by a set of characteristics, including liquidity, representative vehicle options, and target asset quality.

Our ultimate goal is to allocate cash across the four tiers in a way that seeks to meet an investor’s income, return, risk tolerance, and liquidity requirements. The optimal allocation among the tiers is contingent on a detailed cash flow and risk analysis that investors should revisit periodically as cash flow needs and market conditions change.

**Step 2: Analyze Investor Cash Profile and Objectives**

After segmenting cash requirements into tiers based on time horizon, we start the cash investment analysis by defining an investor’s current cash allocation, investment objectives, liquidity needs, and constraints. In Figure 2, we present the profile and requirements for a hypothetical cash investor.

As shown in Figure 2, 80%, or USD $800 million, of the hypothetical investor’s cash is invested in bank demand deposits and money market funds—well in excess of the USD $400 million in expected operational cash and scheduled outflows over the next 12 months. Using our cash investment framework, we will consider the risk and return impact of reallocation cash across the four tiers consistent with the stated liquidity requirements and with a goal of increasing cash income.

**Step 3: Construct a Range of Cash Allocation Options**

As shown in Figure 3, the investment vehicles available in Tiers 2 to 4 offered more attractive income opportunities than money market strategies and bank demand deposits. However, they introduced default and interest rate risk.

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*Source for Average Quality: Bloomberg Barclays, based on data from Moody’s, S&P, and Fitch. Details presented herein are indicative and are for illustrative purpose only. These are subject to change without further notice. Please refer to the disclosures at the end of this material for important additional information on cash management model analysis.
We believe recent tax incentive changes and divergent interest rate opportunities will encourage cash investors to reevaluate their cash investment policies, guidelines, and objectives.

In Figure 4, we show our hypothetical cash investor’s current allocation and present a set of three alternative allocations based on the expected cash outflows and constraints outlined in Figure 2. Each of these options would meet the liquidity requirements of the investor but possess three different risk profiles: lower risk, moderate risk, and higher risk. The summary statistics for the four allocations demonstrate that higher cash income is achievable, but it comes with increased interest rate and credit risk.

As shown in Figure 4, the three proposed allocation combinations increased the total yield of the portfolio by a minimum of 53 bps over the current cash allocation, met the investor’s liquidity requirements by maintaining at least 40% of the total allocation in Tier 1 and Tier 2 investments, and had an average quality profile of at least AA-. The Lower-Risk Allocation offered 53 bps more yield than the current allocation, but with lower credit quality and more than double the duration. On the extreme end, the Higher-Risk Allocation increased yield by 105 bps compared with the current allocation. But it also introduced greater interest rate risk, with a duration of almost two years, and lower credit quality. While the Higher-Risk Allocation may appear to be the best option for maximizing return potential, we need to better understand the opportunities and risks of each of these allocations.

**Step 4: Perform Scenario Analysis to Assess Potential Income and Principal Volatility in Different Market Environments**

The relationship between interest rate movements and cash investment outcomes is quite complex. Rising interest rates are a double-edged sword for cash investors: The cash portfolio may initially sustain marked-to-market losses, but subsequent coupon and maturity payments can be reinvested at higher yields. Depending on the maturity profile of current holdings and cash flow timing, the break-even point for a cash investor to recover from rising rates may actually be shorter than many investors perceive. Similarly, a decline in interest rates may produce capital appreciation in the short term, but reinvested cash flows will have less return potential in the future.

Applying a range of interest rate scenario analyses can help cash investors quantify the opportunity and risk trade-offs of each cash allocation, which we define as higher income versus principal volatility. The former addresses the goal of our hypothetical investor to increase cash income; the

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latter represents the potential marked-to-market losses that the portfolio may experience based on interest rate and spread changes. The goal is an analysis that integrates income opportunity with market risk.

We advocate the use of multiple interest rate and credit spread scenarios that reflect both hypothetical as well as market-defined outlooks, including extreme market conditions. To provide an example of some modeling output, Figure 5 compares the variability of market values with the prospective income generated from each of the hypothetical cash allocations after one year. To create these ranges, we modeled several simple interest rate scenarios:

- No interest rate or spread changes from the levels as of 30 June 2018; two-year Treasury yield remains at 2.53% and the 2s30s curve at 50 bps;
- A bear flattener, with the two-year Treasury yield rising to 3.43%, the 2s30s curve flattening to 15 bps, and constant credit spreads; and
- A bear steeper, with the two-year Treasury yield rising to 3.48%, the 2s30s curve steepening to 60 bps, and constant credit spreads;
- A bull flattener, with the two-year Treasury yield rising to 3.18%, the 2s30s curve inverting 10 bps, and constant credit spreads.

As Figure 5 shows, the current allocation has—perhaps counterintuitively—the highest income volatility, ranging between roughly USD $21 million to USD $28 million. This variance is due to the fact that the short-dated investments are more frequently reinvested. Therefore, yield changes have a significant impact on total income earned but not much impact on the ending market value. Conversely, the higher-risk allocation has a much wider market value range of USD $1,020 million to USD $1,041 million but a tighter income range centered near USD $34 million per year. As the potential for higher annual income increases, so does the volatility of the market value.

Importantly, these results represent a range of outcomes from just a few interest rate scenarios. The relative performance of the four prospective allocations will differ—in some cases significantly—in other interest rate situations. As such, we again stress that investors should consider the outcomes of multiple interest rate and credit spread scenarios, including some extreme cases, when determining an appropriate cash investment strategy. This process of determining a suitable asset allocation requires significant collaboration between the cash investor and the investment manager. The analysis will likely take several iterations and requires constant monitoring to ensure the design consistently meets the objectives of the investor.

CONCLUSIONS

As noted above, we believe recent tax incentive changes and divergent interest rate opportunities will encourage cash investors to reevaluate their cash investment policies, guidelines, and objectives.

By segmenting their cash into different liquidity tiers, cash investors can more efficiently deploy their capital across the risk and return spectrum. T. Rowe Price has developed a cash investment framework that we believe will enable cash investors to more acutely define their risk and return objectives while optimizing the total income produced by their cash investments.
Important Additional Information On Cash Management Model Analysis

The information presented herein is hypothetical in nature and is shown for illustrative, informational purposes only. It is not intended to forecast or predict future events, but rather to demonstrate T. Rowe Price’s capability to manage assets in this style. It does not reflect the actual returns of any portfolio/strategy and does not guarantee future results. Certain assumptions have been made for modeling purposes and are unlikely to be realized. No representation or warranty is made as to the reasonableness of the assumptions made or that all assumptions used in modeling analysis presented have been stated or fully considered. Changes in the assumptions may have a material impact on the information presented. Data shown for the cash management model analysis is as of 30 June 2018 and represents the manager’s analysis as of that date and is subject to change over time. Model strategy results were developed with the benefit of hindsight and have inherent limitations. Model strategy results do not reflect actual trading. The model strategies do not reflect the impact that material economic, market or other factors may have on weighting decisions. If the weightings change, results would be different. Management fees, transaction costs, taxes, potential expenses, and the effects of inflation are not considered and would reduce returns. Actual results experienced by clients may vary significantly from the hypothetical illustrations shown. This information is not intended as a recommendation to buy or sell any particular security, and there is no guarantee that results shown will be achieved. Results have been adjusted to reflect the reinvestment of dividends and capital gains.

Active model strategy returns are based upon gross returns of the representative vehicles and the allocations set out on pages 2 and 3 and the scenario assumptions on page 4. The gross model performance results do not reflect the deduction of investment advisory fees. Returns shown would be lower when reduced by the advisory fees and any other expenses incurred in the management of an investment advisory account. For example, an account with an assumed growth rate of 10% would realize a net of fees annualized return of 8.91% after three years, assuming a 1% management fee.
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