

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Public Investment Memorandum

Galton Onshore Mortgage Recovery Fund IV, L.P.

High Yield Commitment

James F. Del Gaudio
Portfolio Manager

August 11, 2017



Recommendation:

Staff, together with Aksia, LLC, recommends to the Board a commitment of up to \$150 million to Galton Onshore Mortgage Recovery Fund IV, L.P. ("Fund IV" or the "Fund"). Mariner Investment Group, LLC is sponsoring the Fund to focus on investment opportunities within underserved sectors of the U.S. residential mortgage market.

Firm Overview:

Mariner Investment Group, LLC ("Mariner", the "Firm", or the "Investment Manager") is a global alternative investment firm with ~\$5.9 billion total assets under management as of June 30, 2017. The Firm was founded in 1992 by William J. Michaelcheck and is headquartered in Harrison, NY. Mariner employs 138 employees across the following locations: New York (Fund IV Strategy HQ), Philadelphia, London, Tokyo, Dallas, Seoul, Harrison (NY), Rowayton (CT), and Summit (NJ). Mariner is registered as an investment adviser with the Securities and Exchange Commission and, with respect to certain of its funds, is registered with the Commodity Futures Trading Commission as a commodity pool operator and is a member of the National Futures Association in such capacity.

Mariner serves as the investment manager to Galton Onshore Mortgage Recovery Fund IV, L.P. (the "Fund" or "Fund IV") and Galton Capital Group, LLC is the General Partner. Formed in 2007 by Matt Whalen and Kevin Finnerty, Galton is a fully integrated investment team within Mariner. As of June 30, 2017, Galton's team consisted of 20 full time professionals with approximately \$1 billion of committed capital and \$650 million of AUM invested across liquid strategies and closed-end funds. In April 2010, PSERS committed to invest ~\$350 million with Mariner in a Galton-related separately managed account, the PSERS Mortgage and Asset-Backed Securities Account (the "PSERS SMA") to focus primarily on opportunistic investments across the non-agency and agency residential mortgage and asset-backed securities markets. In May 2011, PSERS committed to invest ~\$300 million with Mariner to establish another Galton-related separately managed account, the Short Duration Non-Agency RMBS Portfolio ("PSERS Portfolio II") to focus primarily on high quality, short duration non-agency residential mortgage-backed securities assets. PSERS also previously committed \$150 million to the Galton Onshore Mortgage Recovery Fund III, L.P. ("Fund III"), a \$277 million closed-end fund formed in October 2013, focused primarily on investing in new issue subordinate credit through the establishment of a whole loan origination conduit. Fund III has been deployed and will reach the end of its investment period in October-2017. Galton is targeting \$500 million in new commitments for Fund IV to continue their core strategy of acquiring non-agency residential mortgages through their existing whole loan conduit.

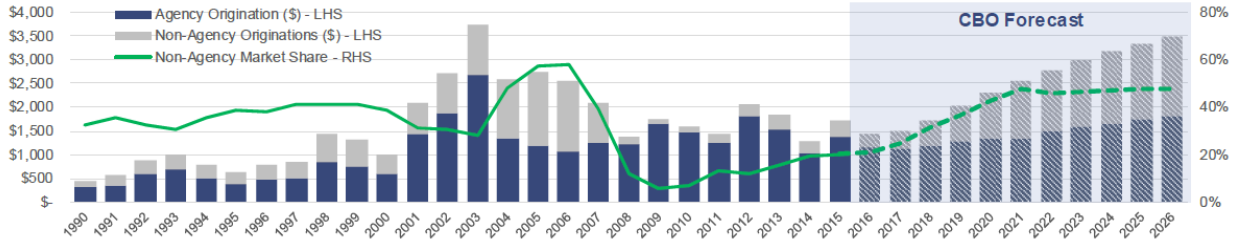
Market Opportunity:

The non-agency mortgage market represents a significant underserved sector within the U.S. residential mortgage market. Unlike agency mortgage-backed securities ("MBS"), non-agency residential mortgage-backed securities ("RMBS") are not backed by explicit or implicit government guarantees. The U.S. single-family residential mortgage market has undergone significant regulatory and structural changes since the 2007 housing crisis and as a result, banks have considerably retrenched from non-agency lending (with the exception of Prime Jumbo loans). While non-agency lending has recently shown signs of improvement, the recovery is still largely in its infancy, leaving a material population of borrowers without access to mortgage credit (i.e. borrowers that fall outside the very constrained credit and loan parameter requirements of the Government agencies and 'vanilla' bank-prime loan products).

The below diagram presents historical and projected agency vs. non-agency market share. As you can see, non-agency loans historically represented a steady ~40% market share allowing borrowers that fell outside of agency guidelines to access mortgage credit (increasing to ~60% from 2003-2006). Since 2007, the non-agency market has virtually shut down cutting off a significant population of borrowers.



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Source: Historical Information: Inside Mortgage Finance (Years 1990-2015); Projections: Congressional Budget Office's March 2016 Baseline (Years 2016-2026) as of 3Q2016

This dynamic has the potential to create a compelling investment opportunity for alternative capital providers such as Galton, whose primary objective is to provide liquidity to non-bank mortgage originators as they rebuild non-agency lending businesses and fill the void left by banks. Galton is currently focused on acquiring non-agency loans, which they categorize as “Expanded Prime” (see *Investment Strategy*). These loans are typically originated at a spread of approximately 80-100 basis points over bank-prime loans. The securitization of purchased loans is a key element of Galton’s investment strategy given the permanent, non-mark-to-market, non-recourse features of this type of financing combined with the attractive securitization arbitrage that can exist for certain loan sectors. According to Galton, the higher risk premiums and strong expected performance of their “Expanded Prime” program creates the ability to generate attractive securitization economics in the current environment. Longer term, Galton will evolve its market participation to other sectors of the market that offer attractive securitization economics and the ability to scale volumes.

Portfolio Fit:

A commitment to the Fund will be allocated to the Real Assets bucket of PSERS’ High Yield portfolio. As of March 31, 2017, the High Yield portfolio (based on total exposure and including post Q1’2017 pending/closed commitments) was allocated 43% Opportunistic, 36% Senior Loans, 11% Mezzanine and 10% Real Assets. The table below summarizes PSERS’ projected exposure inclusive of a recommended \$150 million commitment to Fund IV:

Investment Type (\$M)	Active Commitments ¹	%	Market Value	%	Unfunded ¹	%	Total Exposure ¹	%
Opportunistic	\$ 3,600.0	40.3%	\$ 2,005.3	46.8%	\$ 962.8	34.4%	\$ 2,968.1	41.9%
Senior Loans	3,482.2	39.0%	1,318.2	30.8%	1,173.8	42.0%	2,492.0	35.2%
Real Assets	1,001.2	11.2%	653.3	15.2%	210.0	7.5%	863.3	12.2%
Mezzanine	854.4	9.6%	309.7	7.2%	449.5	16.1%	759.2	10.7%
Total	\$ 8,937.8	100.0%	\$ 4,286.5	100.0%	\$ 2,796.1	100.0%	\$ 7,082.5	100.0%

(1) Include post Q1’2017 pending/closed commitments.

A commitment to Fund IV will allow PSERS to continue its relationship with a high-conviction manager that is well positioned to take advantage of a compelling investment opportunity in the non-agency, U.S. residential mortgage market (see *Market Opportunity*). The Fund’s return target is in-line with PSERS’ objective of generating double-digit net returns over the life of the investment. In addition, PSERS’ High Yield portfolio is weighted to managers focused on corporate lending which has become more competitive in the current market environment. A further commitment to Galton will help diversify and increase PSERS’ High Yield portfolio to an attractive sector within the asset backed lending space.



Investment Strategy:

The Fund's core investment strategy is the acquisition of closed residential mortgages from non-bank, third-party originators that fit Galton's underwriting criteria (loan conduit strategy). Galton is focused on the "Expanded Prime" segment of the non-agency mortgage market and will seek to acquire both first and second-lien mortgages first using fund equity and bank warehouse facilities before obtaining financing through the securitization market. Galton modeled its credit guidelines in order to filter out the worst performing loan products and borrowers from the 2003-2006 vintage years. Upon securitization, Galton will retain subordinate tranches and certain interest-only ("IO") tranches as well as a risk retention strip (as required by Dodd-Frank Risk Retention Rule). Galton's core loan conduit strategy is expected to account for the majority of Fund IV exposure (~75%) with the remainder of investments in "Tactical" strategies including: Non-Core Loan Assets, Non-Core Retained Securities, and Third Party Securities (see *Investment Instruments*).

According to Galton, "Expanded Prime" represents loan borrowers with prime credit characteristics but needing expanded loan parameters. Prime credit profile of borrowers are evidenced by: (1) no recent mortgage or non-mortgage delinquencies; (2) high FICOs; (3) higher income; (4) lower debt-to-income ("DTI"); (5) substantial post-closing residual income; and (6) substantial equity in the home. "Expanded Prime" loans feature all the favorable characteristics of prime borrowers, with variation in product and documentation types as described below:

Characteristic	Description
Alternate Documentation	<ul style="list-style-type: none"> Borrower cash flow determined using bank statements Self-employed borrowers must have a minimum 2-year business history Business owners exhibit reasonable expenses
Investment Properties	<ul style="list-style-type: none"> Underwrite borrower inclusive of profit/loss on subject property Income haircut to address potential vacancy
High LTV Program	<ul style="list-style-type: none"> Limited to higher FICO and lower DTI borrowers No mortgage insurance drives higher borrower coupon
Cash Out Program	<ul style="list-style-type: none"> LTV restricted by FICO and DTI Minimum seasoning requirements
2nd Lien Program	<ul style="list-style-type: none"> Historically low combined LTV to high credit borrowers

Investment Instruments:

The table below provides a summary of the core and tactical investment instruments the Fund will use to implement its investment strategy:

Instrument	Description
Core Assets	Closed non-agency mortgage loans originated by approved originators and purchased via Galton Funding, the mortgage conduit platform. Galton intends to utilize warehouse leverage during the aggregation period while seeking long-term financing including securitization where subordinate, excess interest, risk retention and other securitized risk is intended to be retained in the Fund.
Core Retained Assets	Securities retained in the Fund as a result of securitization activity related to the Core Assets. The Manager intends to utilize financial leverage on these assets including repurchase ("repo") financing.



Instrument	Description
Non-Core Loan Assets	Galton may utilize Galton Funding and other channels to opportunistically source un-securitized assets falling outside the scope of the Core Strategy. This may include non/re-performing loans, real estate owned, MSR, agency mortgage loans, consumer loans, bridge loans and other assets. Similar to the Core Strategy, the manager would seek warehouse leverage on these assets with the intention of ultimately securing long-term financing which may include securitization.
Non-Core Retained Securities	Similar to the Core Strategy, Galton expects to retain securities in the Fund, potentially including risk retention related securities, created by securitizing all or any portion of the Non-Core Loan Assets. Galton expects to utilize financial leverage on these assets including repurchase financing.
Third Party Securities	Galton may opportunistically invest in mortgage related securities created by third parties with collateral similar in nature to those sectors defined in the Non-Core Loan Assets. Galton expects to utilize financial leverage on these assets including repurchase financing.

Investment Team:

The Galton team has day-to-day portfolio management responsibility for the Fund, while other Mariner departments may perform a variety of middle and back office support functions. Galton’s responsibilities, as overseen by Mariner as the Investment Manager, include but are not limited to the following:

- Identification of Fund investment opportunities
- Creation and ongoing management of the products
- Policies, procedures and loan due diligence requirements related to the acquisition of mortgage loans from approved mortgage originators
- Management of all third parties related to the acquisition and servicing of the mortgage loans;
- Surveillance and ongoing monitoring of all investments
- Approval and ongoing performance monitoring of the originators who sell loans to the Fund
- Financing and hedging of all Fund investments
- Management of the Fund’s exposures

The Portfolio Managers (K. Finnerty & M. Whalen) and the Loan Strategy (“Galton Funding”) Manager (D. Potolsky) evaluate all potential investment opportunities and investments on an ongoing basis with full portfolio transparency to and oversight by the Investment Manager. Listed below is a summary of the experience of Messrs. Whalen, Finnerty and Potolsky:

Name	Role	Investment Team	Yrs. Experience Mariner / Total	Prior Experience
Matt Whalen	Galton Team Partner, Co-Founder & PM	Yes	10 / 24	Head of Mtg. Banking & Warehouse Finance – ML; Capital Markets MD – Chase
Kevin Finnerty	Galton Team Partner, Co-Founder & PM	Yes	10 / 37	Head of RMBS Sales & Trading - Bear Stearns, UBS and JPM
Doug Potolsky	Head of Galton Funding (“GF”)	Yes	5 / 37	Head of Home Loan Capital Markets – Chase, Head of Conduit Business -WaMu

Mariner and its affiliate the Back Office Services Group (“BOSG”) in their respective capacities provide certain middle office and operational support. In addition, Mariner oversees all month-end accounting prepared and provided by the Administrator, including final approval of the release of the monthly net asset values by the Administrator, and assists the Administrator in preparation of the annual audit. All members of the Galton team are Mariner employees and as such the Mariner in-house Legal and Compliance Departments provide oversight on all compliance related matters and evaluate all relevant Galton activity against the Mariner Compliance Manual of Policies and Procedures.



Investment Highlights:

Experienced and Cohesive Senior Management Team focused on the U.S. Residential Mortgage Market
Galton's core loan conduit team has worked together, directly or indirectly, for the past 20+ years and collectively has over 170 years of combined investment experience. Matt Whalen and Doug Potolsky have extensive experience building loan conduit platforms at their prior firms (JP Morgan Chase and Merrill Lynch).
Compelling Market Opportunity
As discussed above (<i>see Market Opportunity</i>), the non-agency mortgage market represents a significant underserved sector within the U.S. residential mortgage market and has experienced significant regulatory and structural changes since the 2007 housing crisis. According to Aksia, balanced supply/demand (with a bias towards under-supply), low unemployment, a healthy household balance sheet and relatively tight credit underwriting standards all point to a supportive backdrop for U.S. single family residential lending. This dynamic has the potential to create a compelling investment opportunity for alternative capital providers such as Galton, whose primary objective is to provide liquidity to non-bank mortgage originators as they rebuild non-agency lending businesses and fill the void left by banks. Furthermore, in the event that the market share of the Government Sponsored Enterprises (Fannie Mae, Freddie Mac and potentially the Federal Housing Administration) is successfully managed lower, consistent with the announced intentions of the U.S. Government and regulators, the non-agency market will likely increase in scope. This has the potential to create a greater supply of investable assets for Galton and a larger need for alternative capital sources.
Focus on High Quality Collateral and Strong Underwriting
The current borrower profile for Galton's loan conduit strategy consists of high FICO borrowers (740-745 average original FICO), low debt-to-income ratios (33%-36%), lower loan-to-value loans (~70% for first-liens) and high-value properties (>\$750k). Notwithstanding the high quality nature of this collateral, Galton is able to achieve loan yields in excess of agency loan yields given the "Expanded Prime" characteristics of the targeted borrowers (<i>see Investment Strategy</i>). With regard to underwriting, Galton's process is strong with each securitized loan effectively diligenced three times (once at the originator, once prior to Galton's purchase and again before securitization).

Investment / Risk Considerations:

Reputational Risk Associated with Residential Mortgage Origination
While there is always the potential for reputational risk when pursuing a strategy focused on residential mortgage origination (i.e. foreclosure), this risk is largely mitigated given Galton's "Expanded Prime" collateral focus. The current borrower profile for Galton's loan conduit strategy consists of high FICO borrowers (740-745 average original FICO), low debt-to-income ratios (33%-36%), lower loan-to-value loans (~70% for first-liens) and high-value properties (>\$750k). Furthermore, Galton is not technically an originator as their strategy is to purchase closed residential mortgages from non-bank, third-party originators. As such, their strategy is focused on secondary capital market transactions. With regard to servicing (which Galton typically retains when purchasing closed loans), Galton outsources to a third party. As a result, Galton has no direct interface with a borrower. It is also important to note, to date no whole loans purchased through Galton's conduit strategy have gone into foreclosure. That said, nothing precludes Galton from pursuing this remedy, however, a number of alternative remedies will be considered prior to foreclosure (as required by the Consumer Financial Protection Bureau).
Liquidity Profile
The Fund is expected to be invested within three-years of its initial closing (the "Investment Period"), with the ability to fully recycle proceeds throughout the Investment Period. However, Galton has the ability to draw unfunded commitments throughout the term of the fund for limited purposes (i.e. to satisfy margin requirements). The total term of the Fund will be five years from the initial closing date, subject to up to three consecutive one-year extensions at the discretion of the General Partner. The term of the Fund may be further extended due to risk retention rules (i.e. if the Fund holds risk retention assets and the risk retention period has not expired with respect to such assets). As such, per current interpretation of risk retention requirements, it may be required to hold these assets for up to seven years following securitization.



Leverage

Galton expects to utilize multiple forms of financial leverage throughout the life of Fund IV as it seeks to fund asset purchases with efficient equity capital usage and achieve investment results consistent with the risk/return targets of the Fund. For un-securitized assets, including both Core Assets and Non-Core Loan Assets, the Manager expects to seek leverage through warehouse financing agreements. Galton is currently financing first-lien loans on warehouse with 7x-9x debt-to-equity (2x-3x for second-liens). Warehouse financing is typically intended to be shorter term financing and Galton intends to seek longer term financing alternatives which may include securitization. Longer term financing alternative would be intended to replace related financial leverage with structural leverage more closely matching the term of the underlying assets and is non-mark-to-market and non-recourse to the Fund. Galton's first securitization in Fund III resulted in a 13.5% credit enhancement to AAA with the ability opportunistically sell additional mezzanine tranches to add incremental structural leverage to the retained positions. The strategy of the Fund is to retain substantial risk off of this securitization activity including opportunistically retaining subordinate and excess spread (or interest only) bonds as well as holding risk retention assets that the Fund may be required to hold given regulatory requirements.

For all securitized assets, including Core Retained Assets, Non-Core Retained Securities and Third Party Securities, the Manager intends to utilize financial leverage which would currently be in the form of repurchase financing. Repurchase financing on retained assets typically implies a lower amount of recourse indebtedness than would likely have been associated with the underlying collateral prior to securitization although this type of financing would likely remain in place for the entire holding period of the securitized assets. Repurchase financing and other similar forms of financial leverage typically generate mark-to-market, termination and recourse risk to the borrower. These risks cannot be eliminated; however, Galton intends to manage these risks through multiple means including active surveillance of asset performance, maintaining available financing alternatives and counterparties as well as maintaining excess unencumbered capital and available borrowing capacity. PSERS has negotiated a leverage limitation that provides for an 80% haircut to the most restrictive debt-to-equity constraint across the Fund's third party leverage agreements. This implies a current 4.8x debt-to-equity cap with current leverage providers. Fund III's total debt-to-equity has remained below 3x throughout the life of the fund.

PSERS History & Performance:

As of May 31, 2017, Galton generated a 9.6% net IRR and a 1.36x net MoC for PSERS across their two active mandates, summarized by partnership in the table below:

<u>Fund (\$M)</u>	<u>Portfolio</u>	<u>Vintage</u>	<u>Commitment</u>	<u>Contributions</u>	<u>Distributions</u>	<u>NAV</u>	<u>Net IRR</u>	<u>MoC</u>
Fund III	HY	2013	\$ 150.0	\$ 164.8	\$ 45.0	\$ 134.6	6.3%	1.09x
PSERS SMA	HY	2010	\$ 326.2	\$ 326.2	\$ 304.7	\$ 181.3	9.9%	1.49x
Total			\$ 476.2	\$ 491.0	\$ 349.7	\$ 315.9	9.6%	1.36x

As discussed above (see *Firm Overview*), PSERS previously committed to invest up to \$300 million in PSERS Portfolio II in June 2011 (~\$200 million maximum drawn capital) and was included PSERS' LIBOR+ portfolio. This investment was successfully wound down as of January 2013 and achieved 10.33% cumulative net performance from inception through completion, relative to 1.05% for its benchmark (3-Month LIBOR).

In addition to fund/SMA commitments, PSERS' Internal Fixed Income Group owns the following Galton-issued debt:

- \$5M - Galton Funding Mortgage Trust (GFMT) 2017-1 A21



Finance Committee Disclosure:

Relationship with Aksia, LLC:	Aksia has discretionary clients with an aggregate commitment to Fund III of \$10.0 million. Fund IV has not yet launched.
Introduction Source:	Fund Sponsor
Placement Agent:	<p>With the exception of Mariner Group Capital Markets, Inc. ("MGCM"), an affiliated FINRA registered limited purpose broker dealer, which has been previously disclosed to PSERS as an affiliated placement agent; Mariner has not retained a placement agent for the Galton Team and their funds, nor has it used a third party placement agent to solicit business from PSERS.</p> <p>MGCM was established almost 25 years ago with the primary objective of satisfying regulatory obligations associated with the marketing and private placement of securities interests in private investment vehicles advised by Mariner and its affiliates. The majority of Mariner's sales and marketing efforts are conducted by registered representatives of MGCM (who are dual employees of Mariner), who deal directly with investors and consultants and have a financial interest in the distribution of the securities offered for sale (e.g., shares of the fund). It is important to note that: i) all remuneration paid to MGCM is paid by Mariner, and not the fund; and ii) MGCM is a limited-purpose broker-dealer and, as such, cannot execute trades on behalf of any of client accounts (including the fund).</p>
PA Political Contributions:	None Disclosed
PA Presence:	No
Potential Conflicts:	We are not aware of Galton having any investment conflicts.
First Time Fund With PSERS:	No
PSERS AIC Approval:	August 11, 2017

Oversight Responsibility:

Investment Office:	Charles J. Spiller Deputy CIO, Non-Traditional Investments James F. Del Gaudio Portfolio Manager
External Consultant:	Aksia, LLC & Hamilton Lane

Manager Recommendation Memo

August 8, 2017

Board of Trustees
Commonwealth of Pennsylvania,
Public School Employees' Retirement System ("PSERS")
5 North Fifth Street
Harrisburg, PA 17101

Re: Galton Onshore Mortgage Recovery Fund IV, L.P.

Dear Trustees:

Aksia LLC, having been duly authorized by the Board of PSERS, has evaluated and herewith recommends a direct allocation to Galton Onshore Mortgage Recovery Fund IV, L.P. ("Fund IV"), in line with PSERS Investment Policy Statement, Objectives, and Guidelines. It is further recommended that PSERS commit up to \$150 million to Fund IV.

Galton Capital Group ("Galton" or the "GP") is among the small group of investment managers and non-banks focused on originating or acquiring non-agency residential loans through a conduit (i.e. an aggregate to securitize infrastructure). The GP is focused on near-prime and Alt-A collateral (compared with many peers focused on non-prime), which is a result of the calibration of its credit guidelines to eliminate the worst performing collateral from the 2003-2006 vintages. These loans are typically not agency loans due to size, borrower characteristics or collateral type and as a result are originated at a spread over comparable agency loans. Galton has an in-place team and network of originators from which it is currently acquiring \$50 million per month of its targeted collateral and with the capital it is seeking for Fund IV will seek to ramp to a peak of \$300 million or more per month by 2020.

Galton raised its first fund targeting a conduit strategy in 2013, Galton Mortgage Recovery Fund III ("Fund III"), which initially underperformed modeled execution, as loan acquisition volume was slower than expected as originators, financing providers and rating agencies worked through numerous regulatory uncertainties. Today, with greater market clarity and proven financing execution, we believe Galton is well positioned given its existing infrastructure, strength of underwriting, demonstrated access to capital markets and available financial resources to scale its business.

Aksia's recommendation is based upon the following analytical factors and is made within the context of PSERS' investment guidelines:

- Due diligence of Fund IV's investment process, including a review of the sponsor, investment strategy, market positioning, investment personnel, and risk management;
 - Most recent on-site investment due diligence visit conducted March 8, 2017.
- Due diligence of Fund IV's operations, including a review of its organizational structure, service providers, regulatory and compliance, trade flow process, PPM & LPA, and financial statement analysis;
 - Most recent on-site operational due diligence visit conducted June 12, 2017.
- Evaluation of Fund IV's strategy within the context of the current investment environment; and
- Appropriateness of Fund IV as a component of PSERS' portfolio.

This recommendation is given solely for the benefit of PSERS and cannot be relied upon by other investors considering an investment in Fund IV, since their needs, objectives, and circumstances may not be identical to those of PSERS. The scope of this recommendation is limited to the investment merits of Fund IV. This Aksia recommendation memo should be reviewed in conjunction with other Aksia due diligence materials, including the full Due Diligence Report. In addition, please consult your tax, legal and/or regulatory advisors before allocating to any private investment fund.

Please feel free to contact us should you have any questions about this recommendation.

Respectfully,



Matt Mullarkey
Head of Advisory, Americas



Simon Fludgate
Partner, Head of Operational Due Diligence