

MOODY'S

INVESTORS SERVICE

SECTOR IN-DEPTH

21 SEPTEMBER 2015

Rate this Research



ANALYST CONTACTS

John Medina 212-553-3604
VP-Senior Analyst
john.medina@moodys.com

Catherine N. Deluz 416-214-3836
Senior Vice President
catherine.deluz@moodys.com

Declan O'Brien 4420-7772-5409
AVP-Analyst
declan.obrien@moodys.com

Andrew Davison 44-20-7772-5552
Senior Vice President
andrew.davison@moodys.com

Christopher Bredholt 44-20-7772-1797
AVP-Analyst
christopher.bredholt@moodys.com

Nicholas Zhu, Ph.D. 86-10-6319-6536
VP-Senior Analyst
nicholas.zhu@moodys.com

Emily Raimes 212-553-7203
VP-Sr Credit Officer
emily.raimes@moodys.com

Spencer Ng 612-9270-8191
VP-Senior Analyst
spencer.ng@moodys.com

Arnon Musiker 612-9270-8161
VP-Sr Credit Officer
arnon.musiker@moodys.com

Alejandro Olivo 52-55-1253-5742
Associate Managing Director
alejandro.olivo@moodys.com

Douglas Segars 4420-7772-1584
Associate Managing Director
douglas.segars@moodys.com

Chee Mee Hu 212-553-3665
MD-Project Finance
cheemee.hu@moodvs.com

Global Public-Private Partnerships

Public-Private Partnerships: Frequently Asked Questions

- » **What is a public-private partnership (P3)?** In its most basic form, a P3 is a contractual partnership between a public sector entity, known as the offtaker, and a private developer to design, build, finance, operate and maintain government-related infrastructure for a specific period. The model historically has been used to finance publicly owned assets that fall under the responsibility of a government or one of its agencies.
- » **Why are governments interested in P3s?** Governments are interested in P3s because they not only attract private investment in public infrastructure, but they also allow government offtakers to transfer certain risks to the private sector at a fixed price that can accelerate project delivery, lower total project costs, and improve cost certainty to the offtaker on a whole asset life basis.
- » **Why do investors invest in P3s?** In general, P3 project bonds and project financed infrastructure assets provide relatively higher yields for what is perceived to be a lower-risk sector than comparably rated corporate bonds. Subject to appropriate structuring, P3 investors are comfortable with the construction completion, counterparty, and performance risks.
- » **Why are most P3s rated in the investment-grade category?** Most P3s are in the investment-grade category because of the essential nature of the asset and the project's contractual framework that efficiently allocates project risk over the life of the project to the party best able to manage it. Also, the financial structure provides lenders with project financing protections, including liquid reserves and covenants that limit additional debt and distributions.
- » **What have been the main reasons for rating actions on P3s?** Refinancing risk, tax-related risks and weakening counterparty credit quality have been the main reasons for availability-payment P3 downgrades over the years with lower than forecast revenue performance driving downgrades for demand risk P3s. We have upgraded the ratings of availability-payment P3s that have transitioned to steady-state operations or have established a record of adequate performance, among other reasons. Demand risk P3 upgrades are generally due to a history of steady demand resulting in sound and more predictable financial performance.

Q1. What is a P3?

In its most basic form, a P3 is a contractual partnership between a public sector entity, also known as the offtaker, and a private developer to design, build, finance, operate and maintain public infrastructure for a specific period. At the end of the contractual period, the asset generally reverts back to the government to operate and maintain. The government generally maintains ownership of the asset or the land on which the asset is located throughout the contract term.

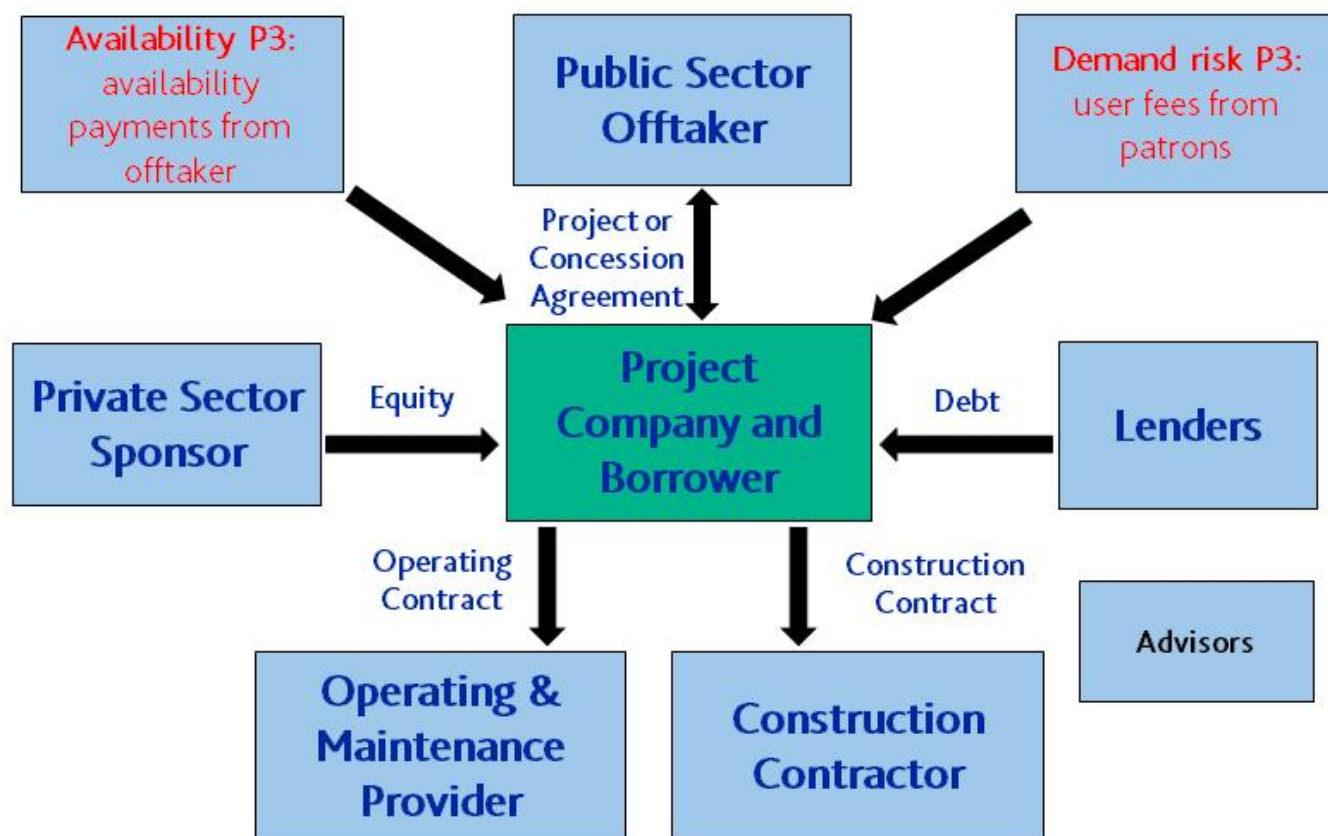
The term P3 is defined differently in each country. P3s in all countries fall along a broad spectrum, with the availability-payment model at one end, the demand risk model at the other and hybrids in between (see below). Availability-payment P3s include private-finance initiatives, or PFIs, which first appeared in the UK.

Q2. Who are the key parties in a P3?

There are several, and each plays an important role.

Exhibit 1

Typical Public-Private Partnership (P3) Structure



Source: Moody's Investors Service

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moody.com for the most updated credit rating action information and rating history.

The offtaker. The offtaker drafts the project or concession agreement to outline the project scope, specifications and performance standards and negotiates the agreement's risk allocation with the private-sector sponsor.

The sponsor. The sponsor, which may be a private developer and/or a financial institution (in consortium), creates a limited special purpose vehicle (known as the project company) to enter into the project agreement to design, build, finance, operate and maintain the project. The sponsor owns the project company, that is mostly financed by nonrecourse debt (whereby neither the sponsors nor the offtaker would be responsible in case of a project company default). The sponsor also contributes equity to the project company.

The project company. In general, the project company subcontracts the design and construction obligations to the **construction contractor** — typically a joint venture among multiple construction companies in order to diversify the risk. The project company may also subcontract the operating and maintenance requirements to the **operating and maintenance services provider**, who might also be responsible for long-term lifecycle, rehabilitation, and handback requirements.

The advisors. Legal, financial, technical, insurance and other advisors are crucial to the development of a P3. All P3s are a construct of multiple contracts that establish the relationship between all key parties and specify how they will interact over the course of the contracted project life, generally 25 to 50 years.

The lenders . The lenders and underwriters can play a key role as they will ultimately determine the cost of financing a P3 project can obtain, which can impact the project's financial feasibility. Potential underwriters are engaged early in the P3 development process in order for the sponsors to understand which risks the lenders are and aren't willing to take for a specific project. This can influence the project agreement's risk allocation as well as other aspects of the P3 contractual structure, including levels of construction and operating security, reserves and financial resiliency, amongst other considerations.

Q3. What are availability-payment P3s?

The private developer receives payments called availability payments for making the asset available for public use at the standard required in the project agreement during the term of the contract.

The private developer is entitled to availability payments from the offtaker as long as the asset is available and performing according to the standards in the project agreement. Availability payments usually have a fixed component sized to cover debt-service costs and equity returns and a variable component sized to cover operating, maintenance and lifecycle costs.

A key attribute of availability payments is that they are not subject to swings in demand, such as traffic levels in the case of toll roads, for example, and are adjusted only for lack of performance or if the asset is unavailable for use. Availability payments are usually subject to the offtaker's annual budget appropriation.

Which projects use which model?

Social infrastructure projects, including hospitals, schools, courthouses and prisons, to name a few examples, primarily use the availability-payment model, particularly where the number of users is set by government policy and beyond the control of the P3. Transportation projects, such as roads, bridges and railways, can use either model or a hybrid of both. Universities generally use a demand risk P3 model for student housing while stadiums and combined cooling, heating, and power systems use hybrid P3 models.

Q4. What are demand risk P3s?

In this model, the offtaker grants the private developer the right to collect user fees for the use of the asset by the public. This right is sometimes called a concession, since the offtaker is conceding the asset to the developer for a defined period. The private developer retains the revenue risk under this fee-for-service model, because it relies on fees for use of the asset to pay for operations and to pay any debt related to building the asset before equity returns are earned.

Q5. What is a hybrid P3?

Hybrid P3s are just what they sound like, a mix of both models. As such, they have a range of risk profiles. With the hybrid model, the project is exposed to some degree of volume or price risk, similar to the demand risk model, but the project developer also has some revenue certainty from the offtaker, similar to the availability-payment model. Hybrid models allocate risks in order to minimize the downside should the project underperform expectations, which helps the project obtain financing. Also, the offtaker can share in the asset's revenue potential over time.

What is an example of a hybrid?

An example of a possible hybrid P3 is a university that enters into a contract with a private developer to build a new student housing project on the university's land and the university guarantees a minimum occupancy level or agrees to place students in the new housing project before it fills existing university housing (also known as first-fill). [This type of agreement helps mitigate demand risk](#), which helps the project obtain third-party financing even when it does not have an operating history.

Another example might be a toll road whereby the offtaker agrees to pay the private partner a minimum payment that would cover debt and operating costs under severe downside traffic scenarios. The toll road's revenues come from government payments (rather than directly from the drivers) but is ultimately based on traffic performance. In this example, the project is exposed to an element of demand risk, despite the payments from the offtaker, but is protected by these payments when demand is weak. Correspondingly, this structure might also allow the offtaker and private developer to share the revenue when demand is high.

Q6: Why are governments interested in P3s?

Broadly speaking, governments are interested in P3s because they not only attract private investment in public infrastructure, but they also allow government offtakers to transfer certain risks to the private sector at a fixed price that can accelerate project delivery, lower total project costs, and improve cost certainty to the offtaker.

In developing P3 markets, including Colombia and Peru, governments have increased their investments in infrastructure in order to stimulate long-term economic development. The P3 model can help speed the delivery of large projects already in the government's long-term capital plan and project pipeline. Some growing P3 markets, like the US, are starting to establish a pipeline of P3 projects that generally have been completed on time and on budget. These initial projects serve as a model for future projects, and their success is critical to the long-term view of the P3 model.

In mature P3 markets, such as the UK and Canada, governments generally take a more methodical approach to evaluating whether a project is to be procured under a P3 model or a traditional development model. This is typically referred to as a "value-for-money" analysis or a "public comparator" analysis. Projects that are deemed to generate more value for the money if they are procured as a P3 are put into the P3 project pipeline and moved forward using the P3 model. Other projects that are deemed to provide more value under a traditional procurement are put in that pipeline. Governments in these mature P3 markets have more experience with a wide range of P3 projects delivered on time and on budget, and there is now a history of satisfactory long-term operating performance in some regions. Mature P3 markets also have centralized P3 knowledge-sharing organizations or procurement agencies that support regional and local governments that decide to pursue P3s.

Exhibit 2

[Mature and Expanding Availability-Payment P3 Markets](#)

	Mature	Expanding
	UK, Canada, Australia, India, Chile	US, Brazil, Peru, Mexico, Colombia
Regulatory Framework	The framework is established, enforceable, tested and widely understood.	Authorizing legislation is in place and enforceable but yet to be fully tested, or legislation is being clarified, expanded or passed for the first time.
Project History	Projects are built, operating and entering initial rehabilitation cycles.	Projects are mostly in the construction and procurement phases, with some in operation.
Project Pipeline and Type	The pipeline is predictable across multiple asset classes, like social, transportation, defense and environmental projects.	The pipeline is growing, with projects primarily in the transportation sector at first, expanding to social infrastructure and others
Project Contracts	Project contracts are relatively standard and widely understood.	Project contracts are modeled after others and are not standardized; long-term enforceability may be uncertain.
Investor Base and Capital Market	Investor base is large, deep and sophisticated.	Local P3 investor base is growing; there are varying levels of capital-market sophistication among market participants, or projects may receive significant development-bank financing.

Source: Moody's Investors Service

US state and local governments. The US has underinvested in infrastructure for many years. At the same time, economic growth has led to a greater use of existing infrastructure. The upshot of these two trends is a growing need to invest in infrastructure. Against this backdrop, the availability-payment P3 procurement approach allows state and local governments to access private capital to pay for upfront project costs, avoid directly issuing traditional bond debt and transfer certain risks to the private sector for a fixed price. We expect US governments to continue to use the P3 procurement process and to use it in sectors beyond transportation, including judicial, education, water and waste water. For example, [KentuckyWired Infrastructure Company, Inc. \(Baa2, stable\)](#) is a new statewide fiber optic network availability-payment P3 project that just reached financial close. There is also an increase in P3 projects entering the project pipeline, per InfraDeals.

Canada. For several years now the three levels of government in Canada have focused on infrastructure spending to renew the stock of physical assets of the country and, during the economic crisis, to sustain the economy. P3s have been adopted by an expanding range of governments to build infrastructure, given the generally good track record of P3s in terms of delivering projects on time and on budget (for the government) and the perceived value of the long-term risk transfer from the government to the private sector.

Generally, Canadian governments do not favor P3s over traditional procurement of infrastructure in order to achieve off-balance-sheet treatment of the P3 obligations. In addition, budget restrictions play a minor role in selecting the P3 model over traditional procurement, since most Canadian P3s are funded by a substantial amount of government contributions during construction.

China. China is promoting P3s as a replacement of the current public financing of infrastructure by regional and local governments (RLGs). The Chinese government's policy to promote P3s has four objectives: (1) to improve infrastructure project management; (2) to improve local government management; (3) to facilitate local public finance reform; and (4) to address local government debt problems. Of the four objectives, addressing the short-term funding issue has been the primary driver of P3s in practice.

Previously, infrastructure was financed through various local government financing vehicles (LGFVs). As part of a broader fiscal reform, the central government has required regional and local governments to phase out LGFVs and rely on direct issuance of bonds and P3s to finance local infrastructure investment. As a result, P3s are proposed/used in China as an alternative financing source for RLGs, and a large number of proposed P3s have been announced. The Ministry of Finance announced a pilot program of 30 P3 projects at a total project cost of RMB180 billion. The National Development and Reform Commission has set up a database with 1,043 projects requiring close to RMB2 trillion (\$300 billion) of total investment. These partnerships span multiple industries in China, including transportation, municipal utilities and social infrastructure.

Latin America. Government interest in P3s continues, with a recent ramp-up of new projects in countries like Colombia and [Peru](#). Larger P3 markets, like [Brazil](#) and Mexico, continue to announce project pipelines, yet the rate at which they have reached financial close has been relatively slow with several projects canceled or delayed due to other government priorities, lack of public sector expertise, bureaucratic legal and contractual processes, and/or a relatively short duration of political mandates. Nevertheless, fiscal pressures in Brazil and Mexico may lead to more public-private partnerships to help balance lower direct government financed infrastructure investment.

Some governments in Latin America also use availability-payment P3s for social infrastructure development, including sanitation, water treatment, and hospital projects. The availability-payment P3 model has become more attractive as some sovereign and sub-sovereigns establish a track record of developing P3s and maintain a relatively stable and predictable contractual environment. These governments are motivated by population and economic growth that require additions to existing infrastructure assets as well as the development of new assets to relieve congestion and promote long-term economic development.

With development banks mandated to invest in new development-oriented projects in developing nations, the P3 model serves as a vehicle for this direct project investment. The abundance of development bank funding for Latin American infrastructure projects, however, continues to limit growth in capital-market activity for P3 project funding.

Europe. While the volume of European P3s increased significantly in 2014, many of these transactions were legacy deals or refinancings. The appetite for new projects in the UK and France, Europe's two largest P3 markets, has been impacted by fiscal austerity, public concerns around the value-for-money debate, and Eurostat's developing interpretation of accounting rules that will make it more difficult to treat the associated debt as "off balance sheet." We expect that the pipeline in other active European markets — Belgium, Turkey, Ireland, the Netherlands and Germany, for example — will be stable over the short to medium term.

Australia. Australia will need to increase its infrastructure spending in order to address existing infrastructure gaps and to support increased demand from population growth. At the same time, government views infrastructure investment as a source of fiscal stimulus that compensates for the decline in resource-sector investment.

Although availability-based P3s remain on balance sheet for governments and raise debt at higher rates than traditional government-funded projects, we believe that P3s are an attractive procurement model because they transfer certain risks to the private sector, have a good track record of project delivery in Australia and generally involve cost savings over the whole of the asset life.

Given the weakening investment spending in Australia following the fall in commodity prices, we expect P3s will remain an important policy tool for government to deliver infrastructure.

Q7: Can all infrastructure assets be developed using the P3 model?

No. The model historically has been used to finance publicly owned assets that fall under the public sector's responsibility, including public universities.

Also, the government entity must have legislation that authorizes the use of the P3 model to procure a specific asset type. For example, some governments might be able to use a P3 to build a courthouse, but not a road or bridge. The breadth of the P3 authorizing legislation determines which assets can be procured under the P3 model and, more fundamentally, the scope of the government's responsibilities.

In addition, given the typically higher procurement costs associated with P3s and the material amount of additional upfront due diligence they require, P3s tend to be larger, so the initial costs are balanced against the long-term savings versus a traditional procurement. Most P3 projects exceed USD \$50 million and are generally above USD \$100 million.

Finally, there must be a market appetite to lend to P3 projects, and investors have different risk appetites and varying levels of understanding of the complex aspects of a P3 project.

More detail on these points follows below.

P3 authorizing legislation. The government offtaker in the P3 project must have the legal ability to enter into the master multiyear P3 project agreement. This authorization can occur at the federal level for all levels of government, like in many European countries, or it can occur at the regional and local government level, like in the US and Brazil. Moreover, some authorizing legislation might be broad in order to cover all assets, or it might be specific to a single asset type (for example, only transportation or social infrastructure projects). Further, some governments might only authorize the use of demand risk P3s and not availability-payment P3s, like in Texas and Virginia in the US and some Latin American countries.

Government scope of operations. The scope of a government's operations varies by country and determines the asset types that can be procured under the P3 model.

For example, the UK has a national healthcare system and the provision of healthcare is a provincial responsibility in Canada. When the P3 markets in these countries first started, the result was a disproportionate number of hospitals procured under the P3 model. Given that the UK federal government and the Canadian provincial governments ultimately pay the majority of public healthcare costs, they could decide to build new hospitals or upgrade existing hospitals using a P3 or a traditional procurement.

Also, the initial hospital P3s in these two countries were quickly followed by other assets, including courthouses, schools, prisons and roads. These social infrastructure assets generally do not have a direct revenue source and are funded by general government revenue. As such, an availability-payment P3 is more often used for social infrastructure assets, whereas either the availability-payment or the demand risk P3 model can be used for roads, bridges, and transit where a user fee can be charged.

By contrast, transportation projects led the development of the P3 market in the US, given that state departments of transportation are responsible for the majority of the state's roads and bridges. These state transportation departments also have familiarity working with the private sector on large-scale greenfield projects, which lend themselves more easily to the P3 model for some projects.

P3s are now spreading into the social infrastructure space in the US, given that these responsibilities reside with varying levels of municipal local governmental entities. Even so, it is unlikely that a material number of US hospitals will be built through P3s; the US has a diverse mix of public, private, and not-for-profit hospitals that each derive revenue from numerous sources, including a mix of private and public insurers. As such, hospitals will likely remain a small component of the US P3 market.

Typically, a certain scale is required, and the asset type must allow for private-sector control. The size of the project might be more important than the type of project, given the higher procurement costs associated with the P3 model, compared with a traditional procurement. In order to obtain the highest value-for-money to offset these higher procurement costs, P3 projects are usually of a certain scale in order to allow the private partner to provide more value for the money from construction cost-savings due to competitive bidding, fixed-price contracts and risk transfer. This may limit the use of the P3 model to projects with a value of at least USD \$50 million.

In addition to scale, the asset being procured as a P3 must lend itself to private-sector control during the contract period to allow for clear separation of duties between the private and public sectors for a specific project. This risk allocation, with clearly defined responsibilities, is negotiated upfront in the project agreement.

Government buildings with highly sensitive or specialized operations might be more appropriately operated and maintained by the government, rather than a private partner. A student-housing project is another example; student housing might be managed better by the university in terms of student demand and logistics, but the maintenance and rehabilitation of the housing facility might be handled better by a private party.

Q8. Who invests in P3 projects?

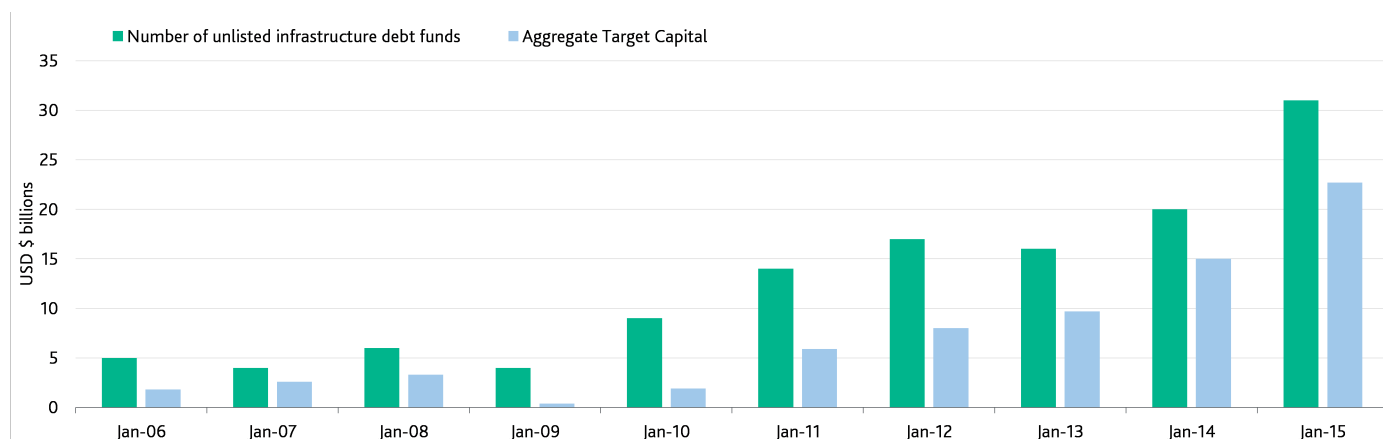
The P3 investor base varies by market. The US has a robust and deep capital market as well as a history of tax-exempt bond financing for infrastructure. Canada also has a liquid debt market. Outside the US and Canada, banks historically have been the predominant source of long-term debt for infrastructure investment, yet [institutional investment is on the rise in some regions, including Europe](#). Latin America and Asia benefit from international economic development bank funding for infrastructure.

P3 projects are a subset of project finance. The project structures can be complex and require a certain sophistication among investors, so it can take time for individual markets to develop a deep and knowledgeable base of institutional investors. In general, P3 projects are financed with equity from specialized infrastructure funds, short-term bonds or revolving bank loans through construction, or with long-term bonds or a long-dated bank loan that is repaid from operating cash flow. The long-term debt can be raised in the bond market or through a direct private placement with an institutional investor. Infrastructure funds are increasingly looking to provide direct equity or debt investment to individual projects in order to deploy more capital in this asset class.

The 2015 Preqin Global Infrastructure Report notes that the market for infrastructure funds (both debt and equity) is strong, with 40% of the investors surveyed expecting to increase their allocation to infrastructure in 2015 compared to 2014, 44% expect to maintain the same allocation and only 16% expect to decrease their exposure to the asset class. Preqin also observed a growing number of unlisted infrastructure debt funds seeking to raise capital (see Exhibit 3). These specialized infrastructure funds are usually capitalized by large institutional investors (i.e., pension funds, insurance companies and investment funds). This influx of institutional investors reflects the relatively high yield and low-risk nature of the asset class.

Exhibit 3

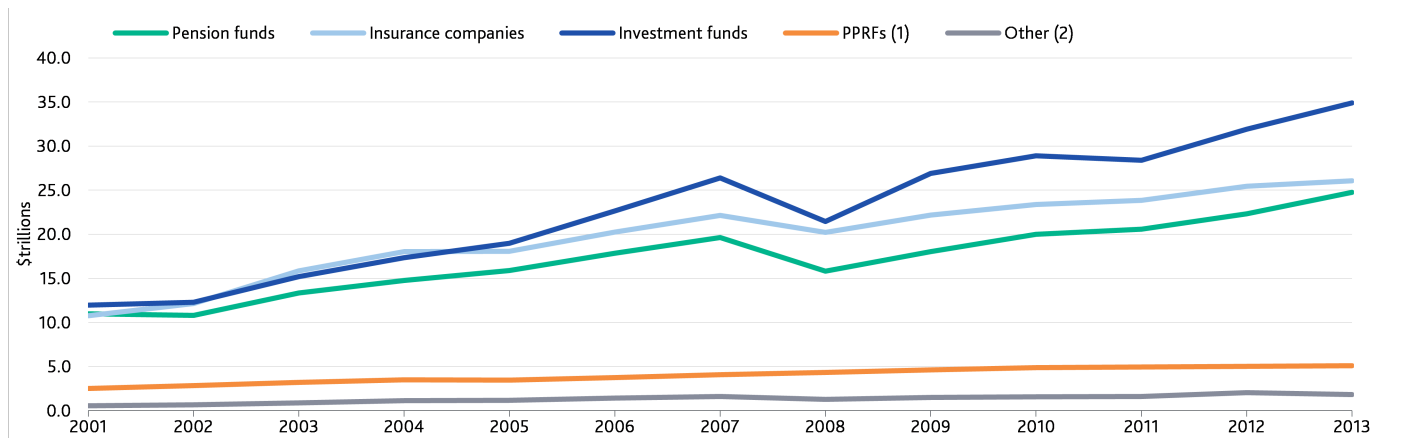
The number of unlisted infrastructure debt funds and their aggregate target capital has grown rapidly since 2009



Source: Preqin Infrastructure Online

[Institutional investors are providing a growing source of financing for P3s and project finance](#), in general. However, institutional investment in infrastructure remains limited, with less than 1% of pension fund assets allocated to infrastructure, on average, according to data compiled by the Organisation for Economic Co-operation and Development (OECD) through 2013. Even a small increase in this allocation could significantly increase the amount of debt capacity available for infrastructure investment, especially given that the OECD estimates that institutional investors in member countries had about \$92.6 trillion of assets under management at the end of 2013.

Exhibit 4

Total assets by type of institutional investors in the OECD, 2001-2013

(1) Public Pension Reserve Fund (PPRF). Data include Australia's Future Fund, Belgium's Zilverfonds (2008-2013), Canada Pension Plan Investment Board, Chile's Pension Reserve Fund (2010-2013), Japan's Government Pension Investment Fund, Korea's National Pension Service, New Zealand Superannuation Fund, Government Pension Fund - Norway, Poland's Demographic Reserve Fund, Portugal's Social Security Financial Stabilisation Fund, Spain's Social Security Reserve Fund, Sweden's AP1-AP4 and AP6, United States' Social Security Trust Fund. (2) Other forms of institutional savings include foundations and endowment funds, non-pension fund money managed by banks, private investment partnership and other forms of institutional investors.

Source: OECD

Given the low interest rate environment, coupled with rising institutional investor demand, several governments have developed [support mechanisms](#) to incentivize project investment. In the US, these include low-cost funding streams like tax-exempt private activity bonds or low interest federal [Transportation Infrastructure Finance and Innovation Act \(TIFIA\) loans](#). Credit enhancement programs in regions like Europe, including the [Project Bond Initiative](#), help accelerate the financing and deliverability of P3 projects.

Such credit support mechanisms can improve the terms and conditions of long-term funding available for infrastructure investment, or reduce associated credit risks. These mechanisms include, among other things, debt guarantees and other unfunded credit enhancements, as well as tax incentives that directly benefit infrastructure debt investors. Development banks continue to provide funding for P3 projects in developing nations globally, but they are also looking for ways to extend their capital allocations to infrastructure while creating new investment opportunities for global institutional investors that want to diversify their portfolios with exposure to new emerging markets.

Q9. Why do investors invest in P3s?

In general, P3 project bonds and project finance infrastructure assets provide relatively higher yields for what is perceived to be a lower-risk sector than comparably rated corporate bonds. The higher yield for projects incorporates a liquidity premium, given that the secondary market is not as liquid as the corporate bond market (see Exhibit 5 for global project finance loan margins compared to corporate loan margins). As such, this can be attractive to long-term buy-and-hold institutional investors. Investors are also attracted to P3s because they are viewed as creditworthy investments in essential infrastructure assets that [yield relatively stable long-term returns that can match long-dated liabilities of institutional investors](#), like pension funds.

P3 projects generally have low long-term operating risk once steady-state operations are reached, supporting higher investment-grade ratings. This credit profile can be attractive to banks that can reserve less capital for these long-term loans under new [Basel III regulations](#). Equity investors are attracted to the stability of the asset class and the amount of equity returns these projects can yield, given that infrastructure assets can support higher levels of debt to equity given their long useful life and essentiality. Demand risk P3s also have the potential to yield strong upside returns to the sponsors, yet asset underperformance could result in equity losses or debt defaults.

Market-specific drivers of investor demand, including investors' return targets, risk appetite, and tax implications, also play a role. For example, in Canada, there is a limited supply of high-quality bonds in the debt market, making P3s attractive investments. In the US,

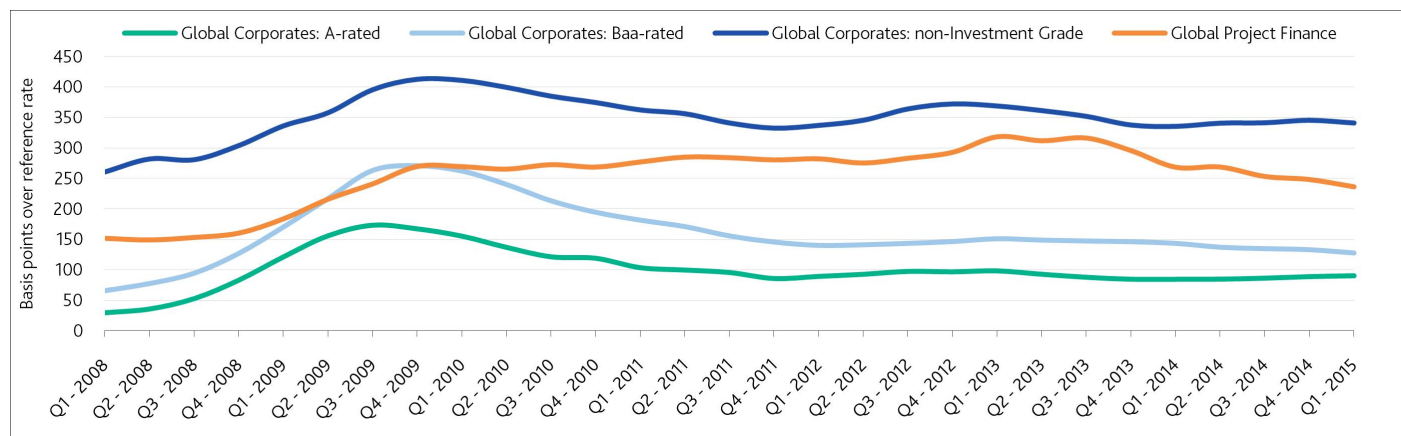
there is a limited supply of higher-yielding but low investment-grade rated government-related rated debt and, in recent years, there has been a diminished supply of municipal bonds.

Generally speaking, P3 investors are comfortable taking the main P3 risks, including construction risk, operating performance risk and counterparty risk. Construction risk is generally well mitigated in a P3, but completion delays have been known to occur. Weak operating performance for an availability-payment P3 can result in higher deductions and lower equity returns. To date, most operating availability-payment P3s have performed well with the majority of deductions incurred in the initial operating transition period after construction. Weak operating performance for a demand risk P3 directly affects revenues and can materially diminish long-term revenue growth, resulting in a debt refinancing or a default.

Counterparty risk has generally stabilized among many government offtakers and other key counterparties in P3 transactions, yet this remains a key risk factor for P3s where there are numerous counterparties. These critical counterparties include construction companies or design-build joint ventures during the construction phase; providers of operating services during the operating phase; banks and other financial institutions as lenders, providers of swaps and providers of debt-service reserve fund letters of credit or monoline insurance; equity sponsors; and providers of construction-period security. The credit deterioration of any key counterparty could have an impact on the rating of the related P3 project.

Exhibit 5

Global project finance loan margins remain attractively priced compared with other classes of corporate loans
(Loan margins, 12-month moving average)



Note: Data on project finance loan margins are sparse. The 12-month moving averages are lagging indicators.

Sources: Dealogic, Credit Agricole, Moody's Investors Service

Q10. Why are most P3s rated in the investment-grade category?

Most P3 projects are in the investment-grade category because of the essential nature of the asset and the project's contractual framework, which adequately allocates project risks to the party best-equipped to manage them throughout the project's life. The financial structure also provides lenders with project-financing protections, including covenants that limit business activity and additional debt, distribution limitations, debt service, operating and major maintenance reserve funds and lender contractual step-in rights.

Also, the ratings of availability-payment P3s are usually supported by an investment-grade government offtaker that provides the ultimate source of funds to repay debt service after the project is completed. A key component of availability-payment P3s is the inclusion of a termination payment regime with the offtaker, whereby the offtaker will fully repay all debt outstanding should a catastrophic force majeure event occur during operations. However, if the project agreement is terminated due to weak operating performance by the private project company, then the offtaker's termination payment to the project company does not include full

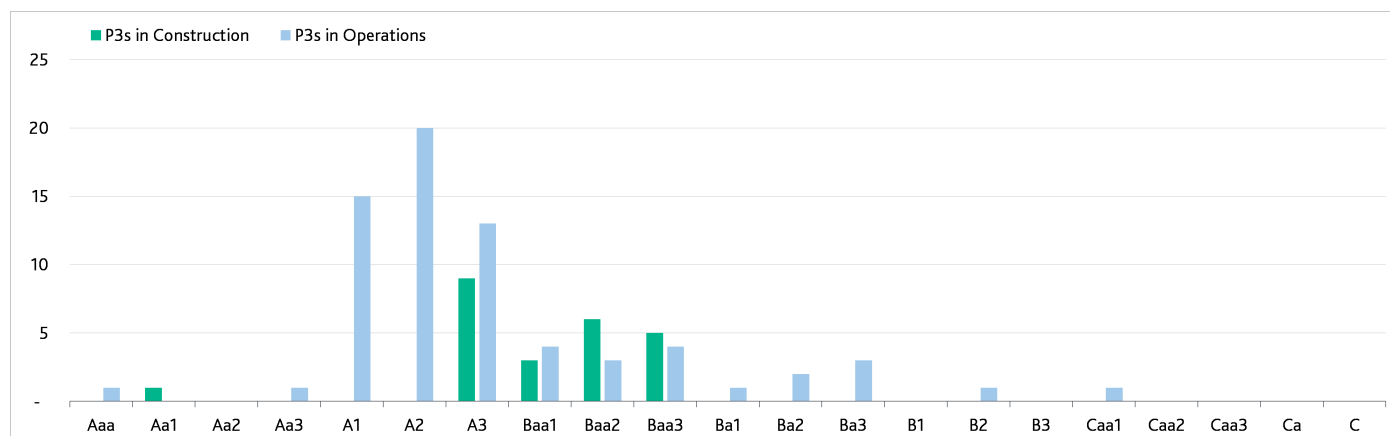
debt repayment; however, the termination payment in this case is generally sized to ensure a high level of debt recovery, thus limiting losses.

Greenfield demand risk P3s are usually structured with notably higher levels of equity and initial liquidity compared with higher rated greenfield availability-payment P3s in order to ensure that there is sufficient operating resiliency and cash reserves to help mitigate long-term demand uncertainty and the project's lack of performance history.

The majority of speculative-grade ratings for demand risk P3s are for projects that underperform their original forecast after construction and the initial ramp-up years. The four operational availability-payment P3 projects we rate below investment-grade are roads that receive revenue under a shadow toll structure. We originally rated all of these projects in the investment-grade category, but downgraded their ratings following a combination of deteriorating offtaker credit quality, payment delays or disappointing traffic levels.

Exhibit 6

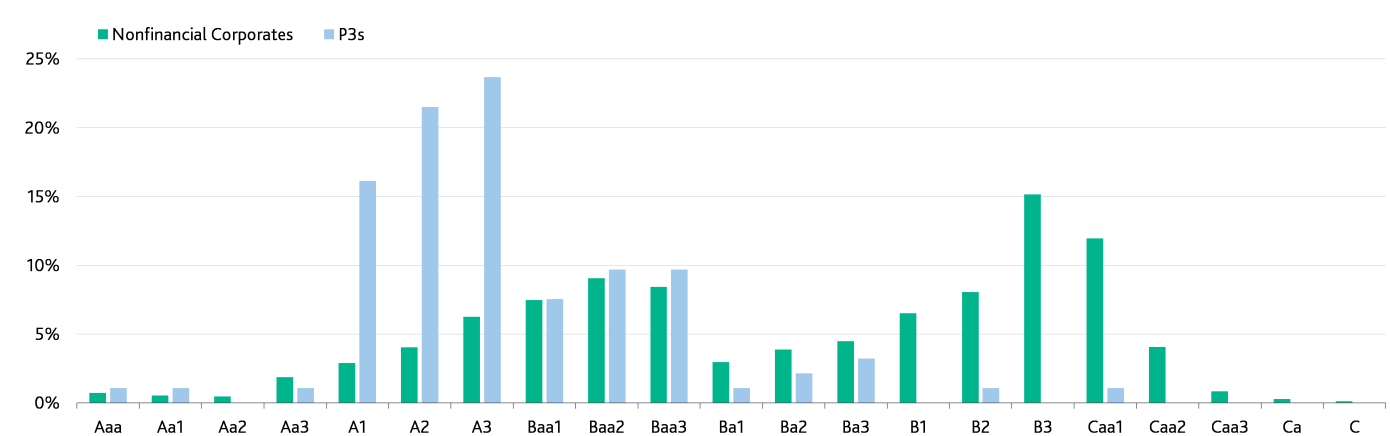
Availability-payment P3s are generally rated higher in the operating period than during the construction phase



Source: Moody's Investors Service

Exhibit 7

Availability-payment P3s are generally rated investment grade, compared with nonfinancial corporates



Note: The chart shows the percentage of P3s in the investment-grade category and the percentage of nonfinancial corporate issuers in the investment-grade category.

Source: Moody's Investors Service

The risk profile of availability-payment P3s often improves after construction when the asset is completed by the private developer and accepted by the government entity.

Moody's study, [Default and Recovery Rates for Project Finance Bank Loans, 1983-2013](#), shows that marginal default rates for the discrete P3/PFI sector were higher in the first few years following financial close, akin to the construction period, and declined notably thereafter. In our view, this initial period of elevated marginal default rates is strongly linked to construction phase risk and/or the commencement and ramp-up of operations, while the improvement in marginal default rates thereafter is associated with the maturity of project operations.

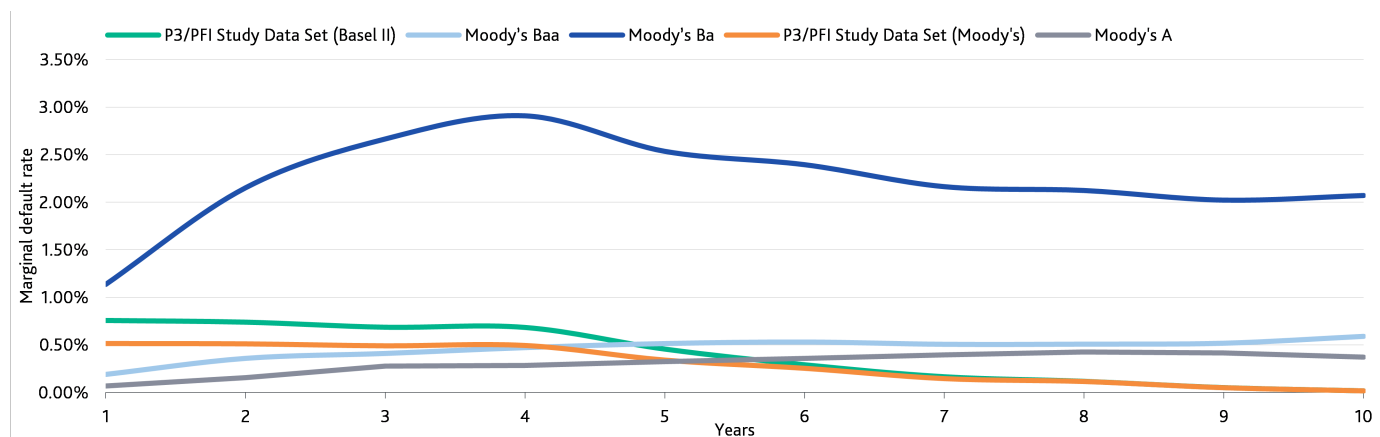
This default experience is consistent with our rating approach to availability-payment P3s. We use two separate methodologies, one for [projects in the construction phase](#) and one for [projects in the operating phase](#). The initial rating on the project reflects our view of which phase is more constraining, typically the construction phase.

The findings of the default study support the market's view that P3/PFI projects are at the low-risk end of the project-finance spectrum. Two caveats to the study, however, are that there is a degree of subjectivity when classifying projects as a P3/PFI, and that there are few defaulted projects, with 57 defaults (based on the Basel II definition of default) out of 1,296 projects identified as P3/PFIs in the study's data set.

Exhibit 8

P3/PFI projects' marginal default rates decline over time from financial close, compared with Moody's-rated corporate bond and loan issuers

Marginal Annual Default Rates for P3/PFI Projects



Marginal default rates for the study data sets are calculated using both Basel II and Moody's definitions of default.

Source: Moody's Investors Service

Q11. What have been the main reasons for rating actions on P3s?

Downgrades for availability-payment P3s have primarily been related to [refinancing risk in Australia](#), tax risk in Canada, changes in laws in the UK, and weakening [counterparty credit quality](#) in Europe. Construction-related delays have resulted in limited rating actions. Downgrades for demand risk P3s are primarily driven by lower than forecast revenue performance, as was the case for the [SH130 Concession Company LLC \(Caa3, negative\)](#), a toll road in Texas.

Notable availability-payment P3 downgrades include a couple of UK hospital PFI/PPP projects which were due to the offtaker's response to contractual disagreements. Over the last 12 months, [several Trusts have taken a more exacting approach to the management of PFI/PPP contracts](#) in response to funding pressures and to ensure value-for-money. During this period, we downgraded three of our rated issuers – [Healthcare Support \(Newcastle\) Finance plc \(Ba3, developing\)](#), [Peterborough \(Progress Health\) plc \(Ba3, developing\)](#), and [Catalyst Healthcare \(Manchester\) Financing plc \(Ba1, rating under review\)](#) – following contractual disagreements with the procuring Trusts.

Availability-payment P3 upgrades over the past few years primarily have been for projects that have transitioned to steady-state operations or have established a record of adequate performance while building a solid working relationship with the government offtaker. The importance of establishing a strong working relationship and a history of strong performance cannot be underestimated.

and has been a driver of upgrades across multiple asset classes, including [Alpha Schools \(Highland\) Project plc \(A3, positive\)](#) , [Aspire Defence Finance plc \(A3, stable\)](#) , and [Reliance Rail Pty Ltd \(Ba3, positive\)](#) .

In Australia, we [upgraded the ratings of Ancora \(OAHS\) Pty Ltd and Ancora \(RCH\) Pty Ltd](#) to A3 from Baa1 after the projects' prolonged transition to steady-state operations following initial challenges in the operating phase.

In the UK, several availability-payment P3 upgrades have occurred over the past 12 months given a number of PFI/P3 projects having reached a level of steady-state operations with a long-demonstrated history of successful operating performance. The upgrades were mostly in our rated hospital portfolio but also included other asset types. Some notable hospital PFI/P3 upgrades include [Capital Hospitals plc \(Baa1, positive\)](#) , [Walsall Hospital Company plc \(A2, stable\)](#) , [BY Chelmer plc \(A3, stable\)](#) , [Derby Healthcare plc \(A3, stable\)](#) , [Central Nottinghamshire Hospitals plc \(A3, positive\)](#) .

Demand risk P3 upgrades have primarily been due to consistent demand and revenue growth resulting in strong and more predictable financial performance. For example, in Chile, we upgraded [Sociedad Concesionaria Autopista Vespucio Sur S.A. \(Baa1, stable\)](#) and [Sociedad Concesionaria Autopista Central S.A. \(Baa1, stable\)](#) over the last couple of years due to their consistent traffic and revenue growth and steady and strong financial performance and credit metrics.

Moody's Related Research

Special Comment:

- » [Public-Private Partnerships: Global P3 Landscape, September 2014 \(174672\)](#)
- » [Brazil's new infrastructure program unlikely to stimulate P3 market , August 2015 \(1007015\)](#)
- » [P3 Student Housing Projects Receive Boost from University Management, June 2015 \(1003681\)](#)
- » [Default and Recovery Rates for Project Finance Bank Loans, 1983-2013, March 2015 \(179524\)](#)
- » [Deferred Drawdown Debt Structures For Greenfield Infrastructure Present New Credit Risks, September 2014 \(175408\)](#)
- » [Basel III Implementation in Full Swing: Global Overview and Credit Implications, August 2014 \(170763\)](#)
- » [Insights on Global Infrastructure Expansion: Not All Government Infrastructure Funding Mechanisms Are Created Equal, June 2014 \(171101\)](#)
- » [Q&A: State Aid Risk and the UK Guarantees Scheme, June 2014 \(169567\)](#)
- » [Brazil & Mexico: Gaps in Infrastructure Investment Uneven Across Sectors, June 2014 \(171999\)](#)
- » [Is PPP an Alternative Funding Channel for Infrastructure in China \(presentation\), June 2014 \(172168\)](#)

Credit Focus:

- » [Peru: PPPs Complement Public Investment Drive, a Credit Positive, August 2014 \(171807\)](#)

Outlooks:

- » [EMEA PFI/PPP: Easing of Counterparty Risk Supports Stable Industry Outlook, November 2014 \(1001024\)](#)

Sector Comments:

- » [A wave of capital for infrastructure, but mismatched with investment opportunities, May 2015 \(1001712\)](#)
- » [Pilot phase of the Project Bond Initiative demonstrates early proof of concept, November 2014 \(1001255\)](#)
- » [Public-Private Partnerships: Latest US Infrastructure Initiatives Promote Visibility of P3s, July 2014 \(173355\)](#)
- » [Australian Public Private Partnerships \(PPPs\) – Rating Actions on PPPs with Refinancing Exposures Explained, July 2014 \(172384\)](#)
- » [US Toll Roads: Federal TIFIA Loans Provide Low-Cost Capital, but Not Without Risks, March 2014 \(166047\)](#)

Rating Methodologies:

- » [Construction Risk in Privately-Financed Public Infrastructure \(PFI/PPP/P3\) Projects, April 2014 \(165887\)](#)
- » [Operational Privately Financed Public Infrastructure \(PFI/PPP/P3\) Projects, March 2015\) 176194](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

© 2015 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND CREDIT RATINGS AND RESEARCH PUBLICATIONS PUBLISHED BY MOODY'S ("MOODY'S PUBLICATIONS") MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS FOR RETAIL INVESTORS TO CONSIDER MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS IN MAKING ANY INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moody's.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

For Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail clients. It would be dangerous for "retail clients" to make any investment decision based on MOODY'S credit rating. If in doubt you should contact your financial or other professional adviser.

For Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJKK or MSFJ (as applicable) for appraisal and rating services rendered by it fees ranging from JPY200,000 to approximately JPY350,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

AUTHORS

John Medina
Catherine Deluz
Declan O'Brien
Andrew Davison
Christopher Bredholt
Nicholas Zhu
Emily Raimés
Spencer Ng

ASSOCIATE ANALYSTS

Alex Liu
Natalie Bowlus