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Welcome to Citi Perspectives for the Public Sector.

Today’s trends that are impacting the public sector are many and varied. Governments and other public bodies must find ways to improve the effectiveness of day-to-day activities. At the same time, they need to make long-term plans that address how society and the economy are changing.

In this edition of *Perspectives for the Public Sector* we tackle both sets of challenges with a series of articles that highlight potential efficiency gains and take a far-sighted view of critical issues facing the world.

In one article, we explain how the U.S. Federal Government can act as a catalyst for the uptake of faster payments and achieve significant efficiency benefits in information management and reconciliation. Another piece considers a variety of ways to hedge sovereign commodity exposure and overcome volatile prices, which can play havoc with government budgets. We also look at how central banks can make their reserves work harder.

Additionally, our Public Sector franchise leaders assess long-term challenges, such as pension reform, the need for sustainable infrastructure, and the role that national development banks can play in encouraging private sector investment.

One of the defining long-term challenges of our time is climate change. Following the international COP21 agreement to limit global warming, our article looks at opportunities and challenges for the public sector. An equally headline-grabbing issue is migration, refugees and integration. We explain how the public sector and financial services organizations can manage the needs associated with these trends as effectively as possible.

This annual publication, *Perspectives for the Public Sector*, is informed by the valuable relationships we have with you, our clients. We are grateful for the insights you provide and aim to reflect your priorities and objectives in the subjects we cover. As always, we welcome your feedback on the topics covered and your suggestions for future editions.

*Julie Monaco*
Over 1.6 billion people annually have to pay a petty bribe to receive public services, an astounding number.
Tech for Integrity

A week doesn't go by without a news article somewhere about a government-involved corruption scandal. The explosion of corruption onto our front pages and into mainstream debate creates the impression of a new epidemic - a recent surge in global corruption with tentacles deep into the public sector space. In fact, in a recent Kroll survey of global executives, 40% of those asked said they believe bribery and corruption risks are increasing. According to Transparency International, some 58% of Africans across the continent said corruption is on the rise.

That said, it is just as possible that recent global public frustration with governments, combined with the extraordinary spread of information communication technology (ICT), have simply shined a very powerful new spotlight into the longstanding dark room of corruption; the absolute magnitude of corruption may not be new, rather the world is simply discovering more of it and tolerating less. As the digital age pulls back the curtain on today's global “integrity” issues, the systematic application of technology will give us an opportunity for game-changing progress in the fight for integrity.

Needless to say, corruption, or the abuse of entrusted power for private gain, comes at enormous economic and social cost. It destroys the very trust that underpins democratic values and institutions, and puts cracks in the social contract that binds us together. 60% of young people see corruption as the most serious issue facing their local communities and the most important factor driving inequality. From a purely economic standpoint, according to the IMF, corruption is a tax on investors, undermining outcomes in virtually every global industry. While estimates vary, the WEF puts the cost of corruption at 5% of global GDP, or approximately $3.7 trillion dollars.

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1 I would like to thank my Citi colleagues for their contributions to this article, in particular Gabrielle Charnoff, Steven Holzer, Amor Sexton, Greg Baxter, Laura Gaviria Halaby, Alex McMahon and Tarun Ratan.
5 Transparency International, “What is Corruption?”
7 World Economic Forum
8 IMF, “Corruption Matters,” September 2015
Needless to say, corruption, or the abuse of entrusted power for private gain, comes at enormous economic and social cost.

From a business perspective, Angel Gurria of the OECD estimates that corruption adds 10% to the global cost of doing business and 25% to public contracts. Yet it is the world’s poor that are hardest hit! Over 1.6 billion people annually have to pay a petty bribe to receive public services, an astounding number. Recognizing this, the world’s new Sustainable Development Goals (SDGs), specifically SDG 16.5, targets substantially reducing corruption and bribery in all its forms.

The search for a new paradigm of integrity is now “top of mind” for the world’s political and economic leaders. A recent WEF survey points to 67 countries that consider corruption to be one of their top three problems. ICT may not be a magic bullet, but it is arguably the most powerful tool in the integrity tool kit. While governments have recognized this for years, the pace of technological advances is now supercharging these tools.

The inappropriate movement of money, payments and collections of any kind in the public sector is fundamentally enabled by legacy paper, manual and cash processes that only defy digital gravity by avoiding it all together. There has been significant progress in governments adopting electronic payments and collections, including the use of procurement and benefit cards to make payments. We have seen governments successfully implement mobile wallet payment and digital identity solutions; however, given the possibilities of existing and frontier technologies, we have only seen the tip of the iceberg.

While some may disagree, despite its historical significance and habitual societal entrenchment, cash is bad. Several years ago developmental organizations, including the UN and USAID, began an initiative supported by Citi that is directed at the poorest of the world’s population called the “Better than Cash Alliance.” Around the time of the launch of the Better than Cash Alliance, Citi and USAID published its Mobile Wallet Accelerator Principles, most of which are still highly relevant today. The Principles were driven by the belief that mobile phones, which are in the hands of 2 billion of the world’s poorest, could be transformational in connecting the poor to the economy and financial system. The fundamental objective of these mobile payment ecosystems is to replace cash, and by doing so, open up the door to a myriad of financially inclusive digital developmental solutions.

Commercial transactions in cash create a lack of transparency that contributes to suffocatingly low revenue to GDP ratios in the developing world. Citi estimates that a mere 10% improvement digitizing monetary flows has the potential to shift over $1 trillion dollars into the formal

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10 B20 Task Force on Improving Transparency and Anti-Corruption Speech, Angel Gurria, 2012
11 U4, “Reducing Bribery for Public Services Delivered to Citizens,” 2015
12 United Nations, Sustainable Development Goals
13 CSIS, “Costs of Corruption,” February 2014. 144 countries were surveyed.
15 CSIS, 2014
17 UN, Better Than Cash Alliance, https://www.betterthancash.org/about
18 USAID, Citi, “10 Ways to Accelerate Mobile Money,” 2012
19 Brookings, “Can Corruption Adversely Affect Public Finances in Industrialized Countries?,” April 19, 2010
economy. Further, Citi estimates that $350-$400 million can be saved by converting cash payments to digital. Yet, digital is disruptive, and many of the frontier solutions are still being developed. Just as the digital revolution has turned many industries on their head, from media to music and taxis to hotels, it is at the early stage of disrupting financial and government services.

The financial technology (FinTech) feeding this disruption is aimed at cash; 70% of the $19 billion spent on FinTech investments in 2015 was focused on the last mile, where the electronic payment chain breaks down. From Kenya’s digital wallets to India’s digital identity, to the disruption witnessed in P2P lending in China, the framework that anchors major components of our regulatory and financial system are being challenged. At the same time, this disruption requires new thinking around the safety and security demands of citizens. Governments should embrace technology with this in mind; CX must be the new UX.

Today, there are over 200 digital currencies in existence, the most well-known and first of many being Bitcoin, a decentralized “cryptocurrency.” Bitcoin developed its reputation as an anti-establishment, anti-centralized-trust, autonomous organization, which created opportunities for illicit financial flows beyond the reach of regulators and law enforcement. The extraordinary irony is that Bitcoin’s original purpose was to allow non-trusting parties to transact in a secure manner without a trusted intermediary. The “exaptation” of Bitcoin’s blockchain technology is likely to be a world of many, many blockchain platforms, with extraordinary wide ranges of permutations on the distributed ledger theme, including ones where there is, in fact, a third party of trust controlling and administering the chain. Some blockchain platforms will increasingly be permissioned, centralized while still distributed, where a government or Central Bank can have special permission to control a “master ledger,” with layers of permissioning depending on circles of trust.

Blockchain technology – for all its current uncertainties and risks – has the potential to challenge the backbone of global payment channels. The concept of a distributed ledger is not only potentially disruptive to centralized clearing as we know it, but also to all the legacy norms imbedded in and around paper currency, from economic policies and monetary policies to security policies and core social values. These challenges have moved into the rooms of regulators and Central Banks, as these Decentralized Autonomous Organizations, like Bitcoin, take aim at the heart of Central Banks’ trusted third-party role, causing many to be skeptical, cautious or outright concerned.
Despite these uncertainties, the power of having an immutable distributed ledger has meant that some governments have already begun using blockchain platforms. One use case is as an asset registry, for validation of physical world assets. For example, governments can immutably record real estate ledgers, data related to official development assistance, government assets, data related to monitoring of customs duties, or taxes of any kind. Estonia, Honduras, Ukraine, India, among others, have already implemented such blockchain platform solutions.34

In order to fully understand the power and potential of blockchain technology, one must understand smart contracts.35 Smart contracts will be transformational, as they will allow the electronic exchange of digital value or real assets to be programmed into a blockchain platform. Think of a smart contract as a contract made digital that executes itself autonomously based on certain programmed conditions. When the contract is made immutable by being put onto a blockchain as code, it becomes transparent and searchable. Imagine, therefore, in a world of smart contracts, a government being able to electronically audit digital contracts across an entire procurement supply chain, including the financing components. Integrity becomes exponentially easier to accomplish in a world of smart contracts.

Some Central Banks have come to see the fintech revolution – blockchain, smart contracts and the variety of related technologies – as a digital freight train that can’t be stopped. A number of Central Banks are, therefore, constructively engaging with these new realities to understand them, use them, adapt them and regulate them. Regulators, like the Monetary Authority of Singapore, are even bear-hugging these technologies, proactively investigating, sandboxing, and kicking the tires to help shape their future use.36 Such regulators will be the ones that dominate the new field of “RegTech,” where the regulators themselves use cutting-edge technologies to continue to successfully perform their function in the digital age.37

There is extraordinary brainpower in Central Banks today focused on looking at digital currencies and their potential. Many are testing and modeling their own potential parallel national digital currency, while others have struggled and pulled back. These potential Central Bank owned digital currencies will strive to utilize the underpinning of a blockchain platform, while re-introducing the centralized safety, trust, reliability and “regulatable” components of their role.38 Some are attempting to project the resulting impact of these currencies on the economy. The Bank of England, for example, has modeled a national digital currency (a digital pound) projecting a potential 3% annual increase in GDP.39 Even with the extensive thought, modeling and experimentation, the issues are still highly complex. Yet, that will not necessarily slow the train.

As blockchain and its derivatives come to life, the potential of monster-size big data analytics used to supercharge the integrity fight is also significant. Artificial intelligence, machine learning and predictive analytics will allow powerful virtual “search and destroy” missions to be waged against corruption over the internet.40 While Citi, Mastercard and others have been running complicated anti-corruption algorithms on government flows for years, advanced technologies run by groups like Darktrace and Arachne will likely take this to a whole new level.41

When we add the advances in biometrics (facial, voice and fingerprints) that will allow digital and multi-factor identity to combine with device, location and behavioral identity techniques, we will see a leapfrog in progress in

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34 Tapscott, 2016
37 Duhaimes’s AML Law in Canada, “Fintech and Terrorist Financing – a major RegTech issue,” January 27, 2016
38 Tapscott, 2016
40 Tapscott, 2016
the identity space.\textsuperscript{42} This will not stop or defeat the challenges of cybersecurity, which will not be addressed here, but will at least create helpful defenses.\textsuperscript{43} Identity improvements will, however, radically change the dynamics of the so called “last mile” of the financial inclusion challenge and add another major arrow to the anti-corruption quiver.

The digital world of the future will increasingly be networked, open and collaborative, creating exciting opportunities for integrity initiatives, but only if governments embrace those same concepts.\textsuperscript{44} Open Application Programming Interface (Open-API), tools that enable software systems to communicate, will increasingly become the norm, with the opportunity to take an Appstore approach to technology solutions that solve government problems. This connected world, when bolted to the Internet of Things (IoT) through a trillion sensors, will take transparency to new levels, as it will add physical assets to the already monumental amount of data captured and subject to advanced analytics.\textsuperscript{45}

These connected technologies will change the development landscape, as they have the potential to extract manual processes, paper documentation and cash from development flows. When the last mile is made digital and transparent, and information and money can flow freely both ways, the spotlight on the entire digital chain will be bright and the myriad of corruption flash points will become muted.

All of these technologies can be applied to issues surrounding Anti-Money Laundering and Counter Financial Terrorism (AML-CFT) and should encourage regulators and law enforcement to expand their work with fintech and bank players. Promotion of technologies that automate and reduce the cost of the Know Your Customer (KYC) and AML-CFT processes will reap enormous rewards.\textsuperscript{46} We should use the full array of technology in our arsenal for this fight.

We will have to build a new social consensus around the appropriate rules, laws and regulations for the fast-changing digital age.

IDmission is one example of a company using integrated cloud-based capabilities, biometric identity solutions, data analytics and know-how on cross-border regulation to drive KYC and AML solutions globally.\textsuperscript{47}

While many of the emerging technologies will have to be adapted, tested, scaled and perfected, the bigger challenge may well be in changing societies’ paradigms. We will have to build a new social consensus around the appropriate rules, laws and regulations for the fast-changing digital age. Issues like thresholds of privacy, digital safety, security and protection, and citizen experience (CX) need to be urgently addressed.

Johnson writes about how technologies create building blocks that open new doors to solutions previously unthinkable.\textsuperscript{48} Take as an example the advent and convergence of broadband, the internet and digital compression technology that gave us YouTube. Johnson calls this concept the “adjacent possible.” Emerging fintech and the convergence of multiple technological building blocks are opening the door to brilliant new ways to apply technology to the needs of citizens and the role of government; if we relentlessly explore and apply the technologies in our "adjacent possible," we can win the integrity battle.\textsuperscript{\textbullet}

\textsuperscript{43} Citi Perspectives, “Responding to Cyber Threats through Public and Private Partnerships,” 2014
\textsuperscript{44} MIT, 2016
\textsuperscript{45} Schwab, 2016
\textsuperscript{46} Financial Action Task Force
\textsuperscript{47} IDmission was a Citi Mobile Challenge winner
\textsuperscript{48} Johnson, 2010
The rationale for government’s adoption of electronic payments at all levels is straightforward: they are faster and more efficient.
Faster Payments for Governments

Faster payments are coming to the U.S. The Federal Government has a unique opportunity to act as a catalyst for their uptake and achieve significant efficiency benefits in information management and reconciliation, write Gary Schneider, Head of Public Sector for North America, and Alberto Casas, Head of Payments and Receivables for North America at Citi.

In recent years, there has been a significant shift from paper-based to electronic payments by Federal, state and local governments in the U.S. At the Federal level, the U.S. government has been a leader in adopting electronic payments: a 2013 U.S. Treasury Mandate required anyone receiving a federal benefit payment to choose an electronic payment option, such as ACH or, for individuals without a bank account, prepaid cards. Similarly, there have been major advances in the use of electronic collections, for income tax payments, for example.

The rationale for government’s adoption of electronic payments at all levels is straightforward: they are faster and more efficient - previously paper check payments associated with benefits cost taxpayers $120 million. Electronic payments reduce float in the system, delivering value to both payer and payee. They also offer greater visibility and control, helping to reduce fraud and streamline administration associated with payments and enhance convenience for payers: paper Federal tax returns take eight weeks compared to just two weeks electronically.

Now attention is moving to faster and real-time payments. Around the world, 16 countries have implemented faster payments, with some delivering instant settlement and others batch payments. Interest in faster payments is driven by multiple factors: consumers, especially millennials, now expect faster transactions and greater visibility when making and receiving payments given their experience of using real-time apps. At the same time, there is unprecedented investment by fintech companies in payments (and significant investment by banks eager to retain their pre-eminence in payments).

In the countries that have so far implemented faster payments, such as the UK and Singapore, governments have mandated new payments infrastructure to ensure uptake and preparedness among banks and other payment providers. In the U.S., the Federal Government will not pick a faster payment system, in contrast to its support of ACH for low cost, low value, next-day payments and Fedwire for higher cost, high value, same-day payments. Instead, the government will allow the free market to determine the outcome, though it aims to influence its development. As a result, it is likely that there will be significant fragmentation initially until dominant and sustainable networks take hold.

2 Ibid.
Following a request for information by a Federal Government faster payments task force, 16 banks, fintech companies, credit card companies, and other providers submitted details of their solutions in May. Each submission explains how their offering—ranging from centralized directory management to closed multi-bank networks and blockchain-based products—meets the government’s 36 criteria, which include ubiquity, efficiency, safety and security, speed, and legal and governance. The task force intends to publicly comment on these submissions at the end of 2016 or in early 2017: its commentary will likely influence the commercialization of viable networks and adjacent technologies, as well as help facilitate early adoption by corporates and public sector entities.

Engagement by Federal Government through the task force on faster payments is welcome—it will help to provide clarity regarding the market leaders in what is a rapidly evolving and potentially confusing payment technology market. However, government at all levels needs to investigate the faster payments space and consider its potential application in their payments toolkit. Moreover, banks, fintech companies and other payment providers need to broaden what has been, to date, an insular industry-focused conversation to include corporates and governments.

How faster payments can benefit government

For Federal, state and local governments, gaining an understanding of faster payments and its potential uses can be challenging. The large number of competing technologies makes evaluation time-consuming, although there are some emerging market leaders.

ClearXchange was established by seven banks and leverages the ACH network. It facilitates electronic payments from an existing bank account with immediate credit to the beneficiary’s account, through delayed settlement between the originating depository financial institution and receiving depository financial institution. Another leader is The Clearing House, which is owned by the largest 23 commercial banks, including Citi, and plans to launch a bespoke instant payment network offering irrevocable settlement using the Vocalink technology that facilitates the UK’s faster payments infrastructure. Despite the high profile of some providers, none have significant scale and many, including The Clearing House, have yet to launch their products.

As well as uncertainty about which providers will come to dominate the market, it is unclear how much faster payments will cost: the current consensus is that the cost per transaction will be somewhere between ACH and Fedwire, and that faster payments will ultimately take market share from both. Transaction dollar limits will likely determine the impact and financial attractiveness of faster payment networks as an alternative to existing channels. If the UK is any indication, transaction limits will start out low and increase as networks mature and gain acceptance.

Despite these ambiguities, the potential benefits of faster payments are clear. The most obvious is that faster payments are quicker and aligned with consumer expectations. In situations where speed of delivery and finality of settlement are crucial—such as disaster relief payments, emergency payroll or just-in-time supplier payments—faster payments offer a significant advantage. For routine payments, such as entitlements, this benefit is less pronounced as payments are scheduled and are received in line with expectations. Nevertheless, even for...
these payments, faster payments technology offers a significant advantage to governments: integrated payment data.

For ACH and Fedwire payments, information associated with payments is often dislocated and inadequate which makes reconciliation complicated. With faster payments, payment data can be bundled with the payment, improving efficiency and significantly enhancing reconciliation. As a result, faster payments should be seen not just as a payment solution but as a way for governments to improve their overall information management, and in particular their reconciliation capabilities. Integrated payment data offers potential benefits for both inbound and outbound payments: government can specify what payments are for; and payments by citizens, for a parking fine for example, can be applied quicker, improving customer satisfaction and avoiding unintended consequences, such as license suspension or impoundment.

Banks must work with Federal, state and local governments to help them understand the potential advantages offered by the emerging faster payments landscape – and how they can be quantified on a cost/benefit basis – rather than simply talking about the technology that underpins it. Further, banks can help clients to understand the operational and system implications of faster settlement and cash application, which are potentially significant.

**Why government involvement is critical**

While the faster payments task force report will be important in helping to identify the strongest contenders in the race to deliver faster payments, there remains a risk of market fragmentation that could slow adoption among corporates and consumers. The U.S. needs a catalyst to generate faster payments volume and create economies of scale. Despite the Federal Government’s decision not to mandate a faster payments system, government has the capacity to be the catalyst. Federal Government currently employs over four million people.1 Moreover, either through payment of entitlements or collecting income tax, it has a direct relationship with almost every citizen in the U.S. Federal Government therefore has a unique opportunity to drive the adoption of faster payments, and consequently prompt corporates and others to join the same payments ecosystem. The adoption of faster payments by Federal Government would lead the way for state and local government to embrace faster payments, ultimately increasing reconciliation and administration efficiency across government.

Indeed, some emerging faster payments technologies use standards that enable users to streamline formats across their payments and treasury infrastructure to deliver further efficiency gains. For example, The Clearing House Real-time Payment Network will use the ISO 20022 XML standard for information management and reconciliation data. ISO 20022 XML is widely used for corporate-to-bank communications and can play an important role in advancing automation and dematerialization: The Clearing House’s use of the standard for faster payments data should assist governments’ efforts to lower costs and improve control.

Leveraging a global remittance standard (ISO 20022 XML format) and promoting a light application program interface (API) structure (cost effectively connecting to multiple networks) will also ensure that the faster payments network(s) that prevails in the U.S. is interoperable with other faster payment schemes around the world. The potential importance of early adoption by the Federal Government therefore cannot be overstated. It will provide the much-needed scale to support the estimated $5 billion invested by the industry in new solutions and connectivity to existing infrastructure by banks and other fintech companies. Most importantly, it will deliver significant cost and efficiency benefits to government at all levels and advance the payments infrastructure of the U.S. – to the benefit of individuals, companies and the economy.

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If a country exports wheat and imports oil, a decrease in the price of wheat could skew the balance of trade and begin to drain its foreign currency reserves.
A New Dawn for Managing Sovereign Commodity Exposure

Steep falls in the price of many commodities have created new challenges and opportunities for sovereigns. A wide range of cost-effective hedging strategies are now available to manage commodity price risk but governments should work with experienced banks to assess their commodity-related exposures or opportunities, write Rafael Serrano, Director, Global Commodities Group and Marc Damoiseaux, Director, Commodities Structuring at Citi.

Market-leading companies that have commodities as a main driver of revenues or expenses proactively manage commodity price risk as best practice. For example, an oil producer may hedge its production to achieve cash flow certainty that allows it to meet its debt obligations, invest in new projects, and plan future dividends. Similarly, a significant user of oil-derived products, such as an airline, may want to manage expenses related to jet fuel, which is typically an airline’s second biggest cost after staff: to price a ticket 18 months ahead, it helps to have certainty around the cost of fuel at that time.

Over the years, a number of sovereigns – through their ministry of finance or energy, central banks or another state-owned entity – have sporadically sought to manage risk by executing similar hedges. However, the extreme commodity price environment of the past 18 months – copper and nickel prices fell to multi-year lows in November, oil hit a 12-year low in January and some soft commodities are at levels not seen since the financial crisis – is spurring renewed interest in hedging.

For commodity exporting countries, low prices have caused a slump in revenue and tax receipts. In some cases, they have made development of countries’ natural resources economically unviable. For commodity importing countries, low prices have created an opportunity to reduce or eliminate subsidies for fuel or food commodities – a move encouraged by the International Monetary Fund and the World Bank – which should reduce pressure on government budgets.

As most commodities are denominated in U.S. dollars, the continued dollar appreciation against G10 currencies – reflective of global economic uncertainty and the risk-off environment – has exacerbated the challenge facing sovereigns. In addition, for oil-importing countries, local currency tends to appreciate when commodity prices fall, with negative impact on the export sector. For oil exporters, a devalued currency potentially cushions the low oil price effect.
The risk for both commodity importing and exporting countries is further volatility in prices given global economic uncertainty and geopolitical instability. A potential solution is to hedge commodity price risk – a task that is neither as complicated nor as costly as is often imagined.

When to hedge
In assessing the attractions and viability of commodity price risk hedging, a sovereign must first ascertain how material commodity price risk is to its budget. Often large commodity exporters or importers dismiss hedging as an unrealistic strategy given the scale of their production or government budget: it is presumed that it would be impossible to hedge all production cost effectively. However, it is important to understand that not all production (or imports) needs to be hedged.

Instead, a sovereign should analyze its budget and work out a level of acceptable strain that would result from commodity price movements. A hedging strategy can then be devised to hedge, based on the sovereign’s budget requirements and risk appetite. Citi works with sovereigns to analyze their budget circumstances and model the impact of potential commodity price scenarios so that a best practice hedging strategy can be implemented.

In deciding whether to hedge, sovereigns need to not only consider the impact on budgets but also the potential to import inflation. For countries with a weak currency compared to the U.S. dollar, imported inflation is a significant risk. Similarly, countries need to be aware of potential social implications of commodity price changes. For energy importers that have deregulated fuel prices and eliminated subsidies, a price spike caused by poor weather or geopolitical instability could result in social unrest or require the costly reintroduction of subsidies. A hedge can act as an insurance policy against such a situation.

Sovereigns must also take account of the implications of commodity price changes on the balance of trade, current account deficit or foreign currency reserves. For example, if a country exports wheat and imports oil, a decrease in the price of wheat could skew the balance of trade and begin to drain its foreign currency reserves (which are necessary to pay for imports).

Simplicity and transparency
The most straightforward hedging strategy – which is widely considered best practice given its simplicity and transparency – is the use of options. The easiest way to think of options is as an insurance policy. When options mature, they pay off the difference between the trading price of the commodity and the strike price of the option: if the price of the commodity moves away from the insured level, there is no impact for the option-holder. If the price moves toward and through the strike price – for example if the price of oil increases when a rise has been hedged against – then the option-holder realizes the benefit of having protection against a price increase.

Oil-consuming countries wanting to limit their exposure to increasing prices would buy a call option, giving them a right to buy a fixed quantity of oil at a set price at a certain point in the future. Such a strategy might enable a sovereign to avoid having to reintroduce recently removed fuel subsidies and subject its budget to unquantifiable risks. Commodity exporting countries wishing to hedge against the risk of oil price falls – perhaps when they
are setting their government budget and need certainty of cash flow to plan their expenditure – would buy a put option, giving them the right to sell at a set price in the future.

The simplicity of options has several advantages for sovereigns. A primary attraction is that the total cost is known in advance and cannot change, giving sovereigns the confidence to budget. This also minimizes the political risk associated with hedging as the concept of insurance is widely understood. Some sovereigns specifically earmark certain taxes to pay for option-based hedging, making the process – and its benefits – more transparent to citizens. Nevertheless, in some countries, it is necessary to have a program champion and careful coordination among relevant government entities to institutionalize a commodities risk-hedging program.

Option based hedging strategies can be interpreted as costly relative to other derivatives-based strategies since there is a known cost in the beginning. When the option is not exercised (the market moved away from the protection) – just like an insurance policy that does not pay out, it may generate the feeling that money was not well spent. Against this argument, one could state that fire insurance is not considered a waste when there is no fire.

Bespoke hedging strategies
While basic options-based strategies are straightforward to understand, they may not necessarily reflect the specific risks facing a sovereign. In the example described above, a country that exports wheat and imports oil would be affected both by an increase in the price of oil, a fall in the price of wheat and the potential depreciation of its currency against the dollar. A simple hedge against higher oil prices would mitigate only part of the risk the sovereign faces.

Instead, a more sophisticated bespoke options-based hedging strategy might be appropriate as it could effectively insure against a change in the spread between wheat and oil prices: changes in one or both variables are hedged against. And by pricing the hedge in local currency, its depreciation could also be effectively hedged.

Bespoke hedges have multiple uses. They can safeguard a sovereign’s balance of payments position, for example, or be used to manage foreign currency reserves. These hedges can also be delivered in multiple formats. Instead of a government-sponsored investment vehicle purchasing regular debt securities for its portfolio, it can purchase debt securities with an embedded macro hedge that would protect the sovereign’s FX reserves in the event of a worsening economic environment.

Necessarily, structuring such bespoke hedges is more complex than buying straightforward options: sovereigns need to work closely with an experienced bank to understand their exposure and hedging needs. Deciding to implement more sophisticated hedges also requires sovereigns to be able to take a macro view. However, despite being bespoke, such structures can be more cost-effective than simple options-based structures and offer far greater flexibility.

Choosing the right partner
The commodity price environment remains volatile and the outlook is uncertain, creating challenges for sovereigns. However, there are a variety of hedging strategies available that can address the risks sovereigns face and deliver the greater visibility and certainty that they need to plan budgets and ensure economic and social stability.

Implementing a hedging strategy requires guidance and support. Sovereigns must decide whether to hedge outright exposure to a commodity or use a more complex bespoke solution. They may wish to combine both strategies: they are not mutually exclusive. Similarly, the way in which the hedge is packaged is important. For example, both options-based hedges and bespoke solutions can be embedded into investment instruments that allow them to be held in regular securities portfolios as assets. Sovereigns must ensure that they work with a bank that has the expertise and capabilities necessary to provide informed advice, structure appropriate solutions and ensure their hedges achieve the desired results.
Efficient and reliable infrastructure such as roads, bridges, electricity grids, telecommunications, sewers and water supply is necessary for a healthy economy and to facilitate economic competitiveness and growth.
Financing Sustainable Infrastructure

Infrastructure is critical to economic growth, and there is a growing investment gap in emerging markets. New strategies that integrate economic, social and environmental perspectives are needed to meet the world’s infrastructure challenges.

A high-speed rail project faces cost overruns from poor budgeting. A toll road is plagued by opposition and construction delays due to its routing through a populated area. A hydropower plant has become unviable due to the persistence of drought. These are a few examples of the challenges that governments face when ensuring the sustainability of infrastructure.

Efficient and reliable infrastructure such as roads, bridges, electricity grids, telecommunications, sewers and water supply is necessary for a healthy economy and to facilitate economic competitiveness and growth. Increasing attention is being paid to the concept of sustainable infrastructure: decisions about infrastructure determine whether an economy will be green because they lock in carbon, water and land use patterns of development for decades. Climate change also requires infrastructure that is more resilient and adaptable and can mitigate or withstand the impacts of severe weather threats.

The World Economic Forum estimates that the unmet demand for infrastructure investment is $1 trillion annually. New strategies will be needed to fund infrastructure programs in emerging markets where the gap is greatest. Moreover, financing sustainable infrastructure will require greater public-private partnership, increased participation in the capital markets, and an integrated approach to addressing economic, social and environmental challenges.

Infrastructure finance toolbox
As public sector budgets become more constrained, a key challenge for governments will be attracting private sector capital for infrastructure investment. This will require governments to look beyond bank lending.

Bank lending
Following the 2008 financial crisis, banks were compelled by regulation and return requirements to become more disciplined in the deployment of longer-tenor loans. Consequently, many banks (outside of Japan) are no longer well-positioned to hold long-term assets on their balance sheets. Currently only around $400 billion of the $3.3 trillion of demand in the project finance market is met annually.

However, banks, given their longstanding experience in project and infrastructure finance, are well-positioned to facilitate construction via so-called mini-perms (short-term financing) and construction loans, which are subsequently refinanced with institutional investors.

Risk-sharing mechanisms, such as credit enhancements, subsidies, co-investment in either equity or subordinated debt, and first loss guarantees, are also important for attracting private capital.
Capital markets
Banks and export credit agencies have traditionally been providers of infrastructure finance, but meeting the demand for sustainable and resilient infrastructure will require solutions that push more infrastructure finance into the global and local capital markets. Approaches include expansion of the project bond market, possible greater use of yieldcos (listed equity securities in infrastructure-based companies), and the creation of institutional investor-funded lending platforms.

A developed market for project bonds can complement syndicated loans for project finance. However, the further development of a project bond market will require greater refinement of rating agency criteria and more attractive economics for investors than would be available from merely investing in the sovereign bonds of emerging market countries.

Yieldcos have provided attractive opportunities for utilities to bundle power plants and projects into subsidiaries, which are then listed on stock exchanges through an IPO. They provide investors with stable attractive returns through multi-year power purchase agreements (contracted tariffs for power generation). This financing vehicle has been especially applicable for renewable energy projects in the wind and solar sectors.

Below is an overview of some of the financial instruments available for infrastructure finance (adapted from an analysis by the OECD).

<table>
<thead>
<tr>
<th>Asset Category</th>
<th>Instrument</th>
<th>Infrastructure Project</th>
<th>Capital Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Income</td>
<td>Bonds</td>
<td>Project Bonds</td>
<td>Insurance Companies, Emerging Market Money Managers</td>
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<td></td>
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<td>Municipal, Sovereign Sub Bonds</td>
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<td>Green Bonds, Sukuk</td>
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<td>Loans</td>
<td>Syndicated Project Loans</td>
<td>Debt Funds</td>
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<tr>
<td>Mixed</td>
<td>Hybrid</td>
<td>Subordinated Loans, Mezzanine Finance</td>
<td>Mezzanine Debt Funds, Hybrid Debt Funds</td>
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<tr>
<td>Equity</td>
<td>Listed</td>
<td>YieldCos</td>
<td>Listed Infrastructure Equity Funds, Indices, ETFs</td>
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<tr>
<td></td>
<td>Unlisted</td>
<td>Direct Investment, PPP</td>
<td>Unlisted Infrastructure Funds</td>
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</tbody>
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Expanding institutional investor participation
Institutional investors, such as insurance companies and pension funds, have shown increasing interest in investing in infrastructure to diversify their portfolios and hedge against inflation. Key considerations in expanding their participation in infrastructure finance include possible third-party cover of construction risk, foreign exchange risks and counterparty risks where availability or purchase agreements entail counterparties that have poor credit. Such cover can, for example, come via new product development by multilateral institutions.

Blended finance
A new trend in development finance is the deliberate use of public funds to attract private capital in emerging markets. There are a range of blended finance instruments, but their primary objective is to mitigate investment risk and/or enhance returns for private investors.

Blended finance is increasingly seen as a way to help transition developing countries to a low-carbon economy. For example, blending mechanisms can be used to address externalities, where the environmental benefits of a project are not reflected in the financial rate-of-return. Blended finance may also mitigate the risk of unproven technologies or business models for low-carbon infrastructure.

1 OECD (2015) 
Enabling conditions for sustainable infrastructure
To unlock greater private capital for infrastructure investment, governments can ensure the following enabling conditions are met.

First, ensure a transparent, long-term pipeline of investable projects. Several Development Finance Institutions (DFIs), including the Asia Development Bank, African Development Bank, and European Bank of Reconstruction and Development, have launched initiatives to help build investable project pipelines. Other DFI infrastructure initiatives include the Africa50 Fund and the Global Infrastructure Facility (World Bank Group), which aim to catalyze private sector investment.

Second, provide asset-level data in a time series to enable investors to assess the risk/return profile. This typically includes information on:
- Cash flows and ability of the project to meet financial obligations;
- Predictability and source of revenues (e.g. large number of users versus single counterparty);
- Construction risk, including an assessment of the financial strength and experience of the construction company;
- Operating risk;
- Engineering design and technology

Related to these points, contracts and the credit risks of counterparties must be seen as bankable, while market risks that cannot be quantified and/or have a profile that is not consistent with the approach of infrastructure investors, will need creative mitigation schemes.

Third, minimize political, legal and regulatory risk. This can take many forms, including government instability, expropriation, nationalization, currency inconvertibility, changes in the taxation regime, and security of personnel. The World Economic Forum recommends the following public sector measures to reduce political and regulatory risk in infrastructure finance:

- Robust infrastructure regulation and contracts
- General stability of laws and regulations
- Reliable and efficient administration
- Reliable dispute resolution mechanisms
- International investment agreements
- Enforceability of contracts

Finally, integrate environmental, social and governance (ESG) aspects into infrastructure planning. Examples of how ESG aspects can change the assumptions in the financial model are numerous. A few examples are highlighted below to illustrate the linkages.

A new trend in development finance is the deliberate use of public funds to attract private capital in the emerging markets. There are a range of blended finance instruments, but the primary objective of all of them is to mitigate investment risk and/or enhance returns for private investors.

2 WEF (2015)
### Key Assumption Linkage to ESG aspects

<table>
<thead>
<tr>
<th>Key Assumption</th>
<th>Linkage to ESG aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project delays and/or cost overruns</td>
<td>Social opposition to a project can delay construction and result in cost overruns.</td>
</tr>
<tr>
<td>Efficiency, output and performance</td>
<td>Assets and equipment may lose productivity due to changes in environmental conditions with consequence for revenue. For example, drought can severely impact production of hydropower.</td>
</tr>
<tr>
<td>Maintenance costs</td>
<td>Repair and maintenance costs may increase due to climate-related impacts (e.g. rain-induced landslides, flooding). For example, railways often experience operational disruptions during the rainy season due to damage.</td>
</tr>
<tr>
<td>Additional CAPEX</td>
<td>Asset damage or decreased performance resulting from extreme weather events may require additional CAPEX. More stringent regulations may also require additional CAPEX to upgrade facilities or equipment to mitigate pollution.</td>
</tr>
</tbody>
</table>
The Environmental and Social Impact Assessment (ESIA) process should feed into the engineering design and feasibility studies that underpin the decision making process. Regular interaction between the engineering team and environmental and social specialists involved in the ESIA process is necessary to ensure optimal project design, avoid and minimize environmental damage, and obtain a social license to operate from all stakeholders. Rather than simply meeting permitting and regulatory requirements, the ESIA should be driven by international best practice and address lender requirements as well.

Working with an experienced partner
Financing infrastructure to meet 21st century challenges requires an experienced team, combining a wide range of skills and local market insight. Citi is one of the few banks that can provide a fully integrated capability covering the public sector, structured finance, capital markets, export and agency finance, industry expertise and a dedicated environmental and social risk management team.

Financing infrastructure to meet 21st century challenges will require an experienced team, combining a wide range of skills and local market insight.
Citi believes National Development Banks are well-positioned to adapt their current business models and take on a catalytic role in mobilizing private sector investment in support of long-term sustainable development.
The New Model for National Development Banks: Agents and Catalysts for Private Sector Investment

Following the 2007-2008 global financial crisis, the role of National Development Banks1 (NDBs) has evolved. Initially they focused on mitigating the effects of the crisis and effectively occupied the gap between public investment and private capital. More recently, they have assumed a greater role in the economies in which they operate, promoting economic and social development.

The governments and Development Finance Institutions (DFIs) that fund NDBs have called on these institutions to widen their scope beyond long-term lending and address market failures, implement socio-economic initiatives and act as national economic champions. Citi believes NDBs are well-positioned to adapt their current business models and take on a catalytic role in mobilizing private sector investment in support of long-term sustainable development.

NDBs can be traced back to the time of the Industrial Revolution, with institutions such as the Crédit Mobilier2 in France, for example, financing railroad and infrastructure projects by utilizing the savings of middle class French investors. The evolution of the role and mandate of NDBs since that time has been largely idiosyncratic, subject to shifting political philosophies, seismic geopolitical and economic events, and volatile financial cycles. However, there was a concerted focus on the role of NDBs in society after World War II, when the lack of long-term funding for investment projects necessitated sovereigns to channel public funds into national finance institutions to address critical development issues.3

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1 Defined as financial institutions, created and funded by a country’s sovereign, to support domestic economic development through the provision of long-term financing for projects promoting positive externalities.


In the wake of the financial crisis there has been a resurgence of interest in NDBs, with new institutions created in low- and middle-income countries including Bosnia and Herzegovina, Mozambique and Serbia; developed, high income countries, like the UK, have also established new institutions such as the Green Investment Bank and the British Business Bank. Access to government support continues to enable NDBs to supply credit to fund economic and social development projects at subsidized or concessional rates. However, constrained fiscal budgets cannot keep pace with growing infrastructure deficits and the development goals of most countries. NDBs now need to further leverage their position and underpin the necessary participation of private investors to supply additional capital to bring about required infrastructure and social development. Despite being domestic actors, multilateral organizations are calling on NDBs to take a leading role in supporting and facilitating global agendas such as digital connectivity, climate change and the development of effective, functioning markets for infrastructure development.

In particular, over the past two years the requests made of NDBs have significantly increased. The Global Connectivity Initiative led by the U.S. State Department and the World Bank Group, for example, which aims to establish the internet as an essential component for domestic economic and infrastructure development, and the New Climate Economy (NCE) group report (April 2016), which states that $700 billion will be needed to achieve universal energy access by 2030, both underline the crucial fact that development institutions will need to act as catalysts to attract additional required investment.

NDBs will also seek to play a pivotal role in financing the United Nation’s Sustainable Development Goals (SDGs), where there is currently an annual investment gap of $1.9-$3.1 trillion across energy, infrastructure, agriculture, health and education, on top of filling the existing annual $2.5 trillion infrastructure financing gap faced by developing countries. The World Investment Report 2014: Investing the SDGs: An Action Plan notes that, “a doubling of the growth rate of private investment would be a desirable target.”

In order to effectively and efficiently achieve these aspirations, and do so in a way that also appeals to voters and policymakers, NDBs and their sovereigns will need to reassess the potential to widen the scope of NDBs’ competency.

Citi believes the NDB model can evolve in a way that further mobilizes private sector capital and fills the funding gap. A suggested model includes the following points of focus:

- Transition of ownership and governance of select state assets to NDBs;
- Use of risk transfer solutions to do more with existing levels of risk capital;
- A defined mandate for NDBs to mobilize private sector capital, attract FDI and complement additional DFI inflows.

Transition of ownership and governance of select state assets to NDBs

Sovereigns should explore the potential to transfer an increased portion of state-owned assets on to the balance sheets of NDBs. As underlined in Citi’s Global Perspectives & Solutions Publication, The Public Wealth of Nations (June 2015), “governments around the world have an estimated $75 trillion dollars of public assets, ranging from corporations to forests, which are often badly managed and frequently not even accounted for on their balance sheets.”

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4 https://share.america.gov/globalconnect/
5 http://static1.squarespace.com/static/532f79fae4b07e365bafe1c64/f/5394968ce4b0d85a0d782d5/1402246796514/Power_for_All_June2014_140608.pdf
7 http://willembuiter.com/PWON2.pdf
The transfer of appropriate assets to the balance sheets of NDBs could generate the following benefits:

- Achieve better governance and oversight of the assets to maximize the commercial effectiveness and returns of the state assets or companies;
- Provide uncorrelated and steady income to augment the revenues stream of the NDB;
- Allow NDBs to leverage their balance sheet against the value of the assets/holdings on their books that would significantly increase their lending capacity; and
- Establish a mechanism for the strategic monetization of assets, pursuant to authorizing legislation, that would seek to maximize value.

The role of steward for state assets can also foster a better and more consistent level of disclosure and transparency for NDBs. Detter & Fölster in their text, *The Public Wealth of Nations* comment that “techniques for better management can be borrowed from the best in corporate management. This would include transparency, proper accounting and realistic balance sheets.”

NDBs will need to concentrate on reporting in a more consistent, transparent manner in order to continue to access public funds, as well as to partner with private investors to increase available capital. A World Bank survey from 2012 points out that, “only 71% of DBs disclose off-balance sheet items, when applicable. A smaller percentage of DBs (63%) disclose their governance and risk management framework, and 64% of their regulatory capital and capital adequacy ratio.”

A lack of regular, adequately transparent reporting can hamper the ability of lending institutions to sign-off risk assessments and could therefore greatly hinder NDBs’ ability to put mandates to crowd-in capital into practice. In the current economic environment, where financial institutions have tight lending limits, NDBs must adapt and strive to report to higher standards or face potentially significant roadblocks to their aim of attracting private investors to put capital to work alongside them.

Use of risk transfer solutions to do more with existing levels of risk capital

Given the previously mentioned $1.9-$3.1 trillion gap in financing the SDGs, NDBs are seeking ways to unlock more capital to increase their finance capacity. However this capacity is often constrained by concentration risk in their loan portfolios because of their domestic, regional and sectorial mandates. The most active borrowers and sectors can quickly exhaust their limits as a result of concentration risk, inhibiting their lending activities. This cannot only deteriorate an NDB's capital adequacy position but also put pressure on their credit ratings.

NDBs have entered a new age of collaboration to identify innovative ways to improve collective financial capacity and maximize resources to meet development needs, while optimizing their balance sheets. While the Multilateral Development Banks (MDB) Exposure Exchange Agreement is one risk management solution being used to disperse concentration risk and improve capital management, Citi views the structured credit market as a means through which NDBs can further achieve these aims. Additional risk mitigation strategies include risk participations, securitization of assets and the use of bespoke portfolio risk-transfer transactions.

Citi’s experience with risk hedging, mitigation and balance sheet optimization using market-based solutions can help NDBs accomplish their mission and accelerate progress toward the ambitious SDGs.

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A defined mandate for NDBs to mobilize private sector capital, attract FDI and complement additional DFI inflows

For sovereigns, the crowding-in of private sector and additional DFI investment is a core aim of the NDBs they support. Putting scorecards in place to determine and monitor how successfully this mandate is fulfilled is an important step to encourage NDBs to play a greater role in encouraging private investor involvement.

Collaboration between NDBs and bilateral partners is also evolving. NDBs can crowd-in private sector investment by assisting investors in pinpointing where to put their capital to work through the provision of a viable pipeline of blended finance investment opportunities. Sovereign wealth funds, insurance companies and pension funds have expressed an interest in increasing their exposure to infrastructure assets. NDBs, by acting as infrastructure financing anchors through the provision of cheaper capital, create return-enhanced investment opportunities and improve incentives for private investors to get involved.

In this way, NDBs can further align their mandate with those of the sovereign that supports them by acting as a bridge between strategic development plans and the creation of a sound transaction structure which promotes private capital involvement.

There has also been a call for NDBs to further diversify their asset portfolios, with the head of the World Bank-affiliated Climate Investment Funds, Mafalda Duarte, commenting that DBs need to diversify by tapping into alternate resources to fund investments in energy, transport and infrastructure and suggesting that government funded entities need to be, “innovative and strategic to get the most out of precious public resources”. NDBs can follow the lead of sovereign wealth funds in this regard, as they have been promoting this model of identifying and attracting co-investment for some time, leaving NDBs well-placed to leverage their expertise and network of relevant contacts.

NDBs are co-investing to a greater extent with MDBs and this trend is set to continue, given the benefits of sharing investment risk with another party, particularly where they have favorable underlying funding rates, which facilitate higher returns for all parties involved. NDBs, being both providers and recipients of guarantees, can take full advantage of available opportunities, given the flexibility of playing different roles in transactions with other DFIs. They can participate where needed and therefore also encourage private parties to invest. NDBs can also potentially exploit these opportunities even further by getting involved in cross-border investments alongside MDBs, potentially providing even higher returns and helping NDBs to more effectively achieve their domestic development ambitions.

Another important source of private capital that NDBs can tap is remittances. In Sub-Saharan Africa, remittances represent 25% of total capital inflows for example, according to World Bank DataBank. The use of remittances is evolving from direct consumption to broader investment. One way in which NDBs can access this form of private capital is via the issuance of diaspora bonds, which provide expatriates living elsewhere with an opportunity to put their offshore capital to work supporting domestic development in their motherland. Israel has been at the forefront of using this mechanism to attract private investment from overseas expatriates - bolstering the domestic economy - with investors committing billions of dollars to sustainable development projects.

Another avenue through which NDBs can source private individual capital is the relatively new channel of crowdfunding. This mechanism also permits NDBs to further diversify their balance sheets, deploy additional capital on other worthy projects and potentially increase their social impact. This method allows private and retail investors to invest in local development projects utilizing the project preparation and due diligence undertaken by the initial NDB project finance team. By incorporating

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crowdfunding into the project lifecycle, the project is also more likely to receive increased coverage in the media, helping to increase social awareness and causing a multiplier effect which encourages further investment in social impact projects. Establishing a wider investor base would additionally allow the NDB to more effectively and more efficiently raise the required capital for future development projects, and also creates a more active, competitive market for involvement in each project, creating additional liquidity for all parties involved.

One institution that supports the development project crowdfunding concept is AlliedCrowds, which gathers and analyzes crowdfunding data for developing countries, successfully connecting potential investors with the correct investment platform to put their capital to work. With the World Bank estimating that crowdfunding could amount to $96 billion by 2025, it offers significant potential for NDBs to fulfill their mandate of bringing in further private capital, where required, to achieve their assigned development goals.

NDBs as catalysts for private sector investment
Citi believes it is critical for NDBs to play a central role in the economic and social development of their respective countries. These institutions need to continually and dynamically maximize their lending capacity through leveraging selective state assets, churning their loan portfolios and supporting the crowding-in of private capital to plug the funding gap for development and social impact projects. In order to do so it is essential that they develop a more dynamic business model which promotes ways to put that into action: these include managing risk more effectively and acting as an investment anchor to effectively encourage private investors to put their capital to work.

Given the pace of technological development and innovation, NDBs adopting the model described in this article would be strategically well-placed to leverage the new collaborative, on-demand economy, including crowdfunding models and digital platforms. This use of innovation and technology would further support public sector initiatives to eliminate the funding gap by stimulating additional competition and highlighting to private investors the gains to be made by putting their capital to work alongside the NDB in their domestic economy.

Citi stands ready to partner with NDBs, other DFIs and their supporting sovereigns globally as they focus on maximizing the impact of public resources through increased private investor involvement. Citi is best-placed to support this effort through communication of best practices and working with public sector clients to connect them to interested private sector parties.

...the low yield environment is bringing to the fore a newer focus on risk-appropriate return opportunities for incremental yield, moving reserve strategies beyond the traditional fixed income portfolio.
Central Bank Reserves – Making Every Asset Count

With the dramatic shift in fiscal and monetary policy, reflected by quantitative easing (QE) and low or negative yields in many countries around the world, central banks are reviewing their risk management and reserve management policies. This environment further highlights the growing tensions between central banks’ traditional focus on preservation and liquidity of reserves with their considerations around return on reserves.

The traditional risk-adjusted return allocation strategies of central banks - based on rebalancing and diversifying fixed income and currency-focused portfolios - have been explored to great extent in industry news, analysis and market commentary. Now, however, the low yield environment is bringing to the fore a newer focus on risk-appropriate return opportunities for incremental yield, moving reserve strategies beyond the traditional fixed income portfolio.

Exploring this new focus raises interesting aspects of what have traditionally been non-core issues: some are intertwined with the policy competencies of the central bank while others are operational in nature given market uncertainty and the rise in funding costs from the cumulative impact of new liquidity and balance-sheet regulations. The search for incremental yield has caused a greater weight to be placed on shorter-term investments and asset diversification away from traditional asset classes such as sovereign debt, Treasury bills and supranationals towards gold, equities, exchange-traded funds (ETFs), new currencies and securities lending. A return-on-reserves mindset is also driving central banks to review cost optimization opportunities through the use of external managers and outsourcing payments capabilities. This trend is further driven by a global focus on improving public sector accountability and efficiency.

Reserve managers’ focus on efficiency and portfolio profitability will be sharpened in light of the recent vote by the UK to leave the European Union (EU), widely known as Brexit. Market risks associated with Brexit, a China slowdown, and globally low inflation expectations may cause long-term rates to remain as they are. However, given how low short-term rates currently are, a move in inflation may see a shift in long-term rates. Market divergence could also result from a U.S. interest rate hike; despite safe haven flows strengthening the USD, Federal Reserve chair Janet Yellen’s statement at the 2016 Jackson Hole Economic Summit implied that the possibility of an increase remains strong. However the likelihood of a continuous increase remains low. Despite
Two crucial sources of creative thinking that can yield results for cities are the worlds of finance and technology.

these concerns, optimism is possible given the resilience of new issue markets, the support that will be provided to markets by central bank liquidity, relatively moderate levels of supply, and excess cash in many places. More than ever central banks and their impact on liquidity - offering an effective global liquidity hedge for investors - will play a fundamental role in shaping market functioning and economic development. Yet the question remains: what does the new environment mean for central banks as market users?

Traditional reserve management and the challenge of low yields
Central banks remain an important component of demand for core government, agency and supra bonds. Importantly, unlike some other investor types they are primarily focused on liquidity. This means that the characteristics of core fixed income markets (such as general high quality and relatively low volatility) are often beneficial and sought after.

Following Brexit, there has been relatively low volatility, and fixed income markets appear to have weathered the event risk relatively well. Despite the credit rating downgrade of the EU by S&P after its downgrade of the UK, impact on the markets has been limited: government, supra and agency bond spreads to Germany did not widen outside pre-established ranges. Furthermore, despite geopolitical and market volatility, bond markets have delivered healthy total returns so far in 2016. Citi’s German government bond index has an overall year-to-date total return of 6.59% and longer-dated sectors have returned more. While these returns are received by entities such as hedge funds, central banks – as buyers of core treasury assets – do not receive the same benefits. Moreover, central banks often hold bonds to maturity limiting the benefits of a rising price environment. Steps taken by central banks to mitigate current negative EUR yields include lengthening maturity durations or even rolling out of Bunds into U.S. Treasuries. Other strategies include buying non-risk free assets that carry credit risk and buying more sub-AAA names.

Focus on Europe
In Europe, some 51% of the bond market is trading with a negative yield. Nearly 80% of German government bonds have a negative yield and almost 60% is trading below the European Central Bank (ECB) deposit rate of 0.40%. Much of this is due to the ECB’s monetary policy of low (and negative) rates and the new super-charged €80 billion-a-month expanded asset purchase program (APP), which as of June 2016 included a corporate sector purchase program (CSPP).

The muted reaction to Brexit in credit markets highlights the overwhelming importance of central bank purchases in influencing market moves, with recent programs driving prices down. For EUR, the overwhelming factor driving performance has been the CSPP. The third of the EUR investment grade (IG) credit universe that is CSPP-eligible has outperformed the rest of the market by 35% since June 2016. Though Citi remains skeptical of the prospect for additional outperformance of CSPP-eligible bonds, it is likely the CSPP will keep IG spreads well-supported over the rest of the year, especially given Citi’s economists’ expectation that the ECB will extend the soft-end date of March 2017 for the APP by at least six months. Further changes to QE modalities also remain possible with bond scarcity issues frequently debated. This means that European fixed income markets are likely to be lower (and flatter) for longer than previously anticipated.

Where do central bank reserve managers go now?
Given the current environment, the private sector has taken measures to avoid low returns, such as diversification and increasing risk appetite. Central bank reserve managers also face the same low and negative return phenomena but with the added complication that they run more conservative portfolios. With even lower yields expected, central banks will likely be motivated to rotate more into high yield bonds and in some cases outsource funds to external managers to exploit credit spreads and other risk premia. Some central banks may mitigate negative EUR yields by lengthening

durations, with a possibility of shifting from Bunds to U.S. Treasuries. Other strategies include buying non-risk free assets that carry credit risk and buying more sub-AAA names: a further renewal of interest in other asset classes will also result from current risk-free rate dynamics.

The new central bank reserve management portfolio

Equities
Historically, central banks have eschewed purchasing equities for various regulatory, mandate and risk reasons; any national intervention in equity markets is typically the purview of sovereign wealth funds accountable directly to government. Sovereign wealth funds have little or no influence over monetary policy and so invest without prohibition in risky corporate assets (given their limited need for readily accessible liquidity). Central banks, however, have traditionally shied away from owning risky corporate assets – however strategic they might be from a portfolio management perspective – due to their need for liquidity and risk-appropriate returns that enable them to fulfill their crucial mandate of ensuring financial stability.

Yet with a shortage of safe assets, examples of central banks using equities to diversify their portfolio by investing in riskier assets may increase, leading to an interesting convergence of central banks’ roles as market participants and policymakers. Pressure may also mount on central banks to invest in equities as a core policy tool should there be future slowdowns or as a consensus builds that current measures are not sufficient. There have already been purchases by the Bank of Japan (BoJ) and the Swiss National Bank (SNB)2 of equity or equity-linked products as part of strategies to achieve their primary mandates of inflation targeting and financial stability.

Roughly 2%3 of the BoJ’s existing balance sheet has been deployed to purchase stocks and ETFs, primarily to help achieve its inflation target by improving investor confidence. In contrast, in an effort to manage a strong currency and maintain stability while holding large FX reserves, the SNB has targeted the exchange rate using a strategy analogous to a synthetic FX trade – purchasing foreign assets across different asset classes to limit risk. SNB’s approach is one of a short-term view on equities, contrasting with the BoJ’s aim to take a greater amount of risk to enhance the effectiveness of its policy.

Managing the risk of entering and exiting equities positions is leading central banks to turn to investment banks for advice and innovation. As with bonds, Brexit has seen a run for yield, driving U.S. equities to new highs. This performance is more a function of risk premia than earnings expansion as yields on sovereign debt have fallen. With equities one of the few remaining sources of yield, central banks may embrace the asset class more fully.

Commodities/gold
Over the last eight years central banks have been net buyers of gold; in 2015 they purchased a total of 590 tons and represented approximately 14% of global bullion demand. For 2016, countries are expected to buy between 400 and 600 tons of gold. This diversification into gold has been spurred by the use of QE and negative interest rates, and uncertainty over their effectiveness.

The main accumulators of gold are emerging market countries. While they may only have a relatively small percentage of gold in their total reserves, their accumulation is likely to continue in the future. Across both advanced and emerging economies, there is a trend of holding gold for asset diversification purposes and, despite lower deposit yields, central banks continue to deposit more.

This trend will only increase in the aftermath of Brexit, with investors turning towards safe-haven assets like gold and other precious metals, and away from riskier commodities like oil and copper, which are sensitive to global economic growth. The World Gold Council has shown that in a low interest rate environment, the price of gold tends to produce risk-adjusted

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2 http://www.ft.com/cms/s/0/f36bb9a4-4349-1e6-b22f-79eb4f89c97d.html?siteedition=uk#axzz4EG2r5eJ
returns twice as high as the long-term average and, with short-term real rates lower than 4%, the risk-adjusted returns of gold remain positive. However, it is important to remember that gold is sensitive to inflation and market sentiment.

As a reserve instrument, gold can be held via short-term deposits or gold-denominated bonds, which do not require a sale or conversion into other currencies. Citi has also developed other solutions such as a USD-denominated swap that allows central banks to swap their USD holdings in an unsecured account in exchange for gold. For example, an emerging market sovereign recently used gold swaps to create dollar liquidity. These instruments can generate yields that are low but positive, making gold become a relatively higher-yielding instrument compared with risk-free sovereign currencies, which are negative. Central banks’ appetite for risk-adjusted returns has been translated into growing interest and volumes transacted by Citi in these yield-generating instruments over the last few years, as opposed to central banks simply paying for the metal to be stored with a custodian.

The bigger role of gold as a reserve asset has prompted an increase in gold repatriation plans from several European central banks, reducing their share of gold held abroad, and in upgrade and re-melting programs, such as Citi’s, designed to bring old bullion bars to the internationally accepted London Bullion Market Association Good Delivery standard. Upgrade programs make gold available for yield generation via deposits or, in certain cases, for monetization structures which leverage bullion as a way to raise financing without the need to sell inventory outright.

Nations Hoard Gold to Diversify From Currencies

Eighth year of buying is longest run since Vietnam War

China

The renminbi (RMB) is fast becoming an attractive global currency and the China bond market has also gained international prominence in terms of bond issuance, trading volume and yield.

China is now the world’s largest economy measured by purchasing power parity and the largest trading nation; the RMB has showed consistent growth with an increase in the value of payments by 321% over the past two years. The RMB’s inclusion in the International Monetary Fund (IMF) Special Drawing Rights (SDR) basket, in effect from October 2016, will shake up the world’s view of RMB as a reserve currency. Unlike traditional reserve currencies, the RMB is volatile and is unlikely to be a long-term yield enhancer.

This inclusion, together with other endeavors of the Chinese monetary authorities, marks a large step for RMB internationalization, highlighting the progress of reform of China’s financial system. The gradual liberalization of RMB and inclusion in the SDR are milestones in this process and they will have a profound impact on the global financial system over the long term.

FX conversions by IMF members to maintain their SDR quotas in the appropriate proportion by the end of September 2016 will generate $280 billion of flows (based on the third quarter of 2015 figures). As China opens up channels for investment, private and public sector allocation to RMB assets is expected to rise with the RMB’s share in global reserves – potentially reaching 5% in five years, and 10% in 10 years. For central banks and FX reserve managers, RMB is seen as a strategic opportunity to improve liquidity and funding effectiveness. As the RMB becomes more internationalized it will quickly develop as a functional currency for trade settlement and cross-border investment.

In 2015, China allowed foreign central banks, entities designated as international financial institutions and sovereign wealth funds (defined as Relevant Overseas Institutional Investors (ROIIIs)) with RMB funds to directly invest in the China interbank bond market (CIBM) and China interbank FX market (CIFM) without any quota limit. Following the awarding of reserve currency status to the RMB and the reallocation of central banks’ reserves, global investors recognized the need to include the RMB in their...
strategies, prompting the need for greater access to China's onshore markets. Facilitating this, in February 2016, China expanded CIBM access for foreign institutional investors by removing the previous investment quota cap and easing the market entry process.

The opening up of CIBM access to ROIIs was not only a key action that catalyzed the SDR inclusion, but also an important step to encourage the wider use of RMB. The latest deregulation development removed the approval process and quota requirement for ROIIs and did not impose restrictions on investable assets. ROIIs now enjoy the most relaxed regulation in CIBM and as the demand for RMB continues to grow, they are likely to play an increasingly important role in this $5.4 trillion market.

Who Is Already In?

No. of Foreign Institutional Investors allowed access to bond market as of December 2015

While there are currently only a small number of foreign investors in the China bond market, the investor base is expected to grow as ease of market access increases (see Figure 2).

Central banks, alongside sovereign wealth funds, are the entities with the greatest amount of access to Chinese government bonds traded domestically. The recent deregulation will allow them and other foreign investors access to CIBM instruments other than spot bonds; considering rising nominal GDP, doubling the ratio of bond market cap/GDP ratio (53%) in the next decade could quadruple the size of the bond market.

Given changing regulatory trends in China regarding market access and currency control, it is crucial for ROIIs to find reliable business partners to understand the market and minimize risk. Citi provides services for accessing local bond trading and settlement and its unique open architecture grants ROIIs the flexibility to select their bond settlement agents (BSA) based on their requirements in terms of trading options, compatibility, trading fees and service capabilities. In addition, ROIIs have the flexibility to trade with their bond and onshore/offshore FX trading counterparties. ROIIs can benefit from a strong local BSA partner while enjoying international custody platform and services from Citi.

Citi’s end-to-end solution covers all eligible bond and FX products, T+0/T+1 trading in the bond and FX market and same day cross-border payments (where Citi is a market leader and direct participant in major clearing systems in China). Citi’s strong presence in China and robust product capabilities makes it well-positioned to help public sector and multilateral clients take advantage of regulatory and market developments while achieving their strategic goals.

Asset Financing

Central banks hold the key to the liquidity of the fixed income markets globally. The Basel III Leverage Ratio and other regulatory requirements are putting pressure, directly and indirectly, on banks’ and broker dealers’ ability to trade. At the same time, the Basel III Liquidity Coverage Ratio (LCR) is creating increased demand for high quality liquid assets (HQLA). However, these assets are currently being repurchased via QE and are not being fed back into the system to satisfy that demand. As a result, there is a squeeze on supply and volatility and specialness in general collateral have increased volatility over sensitive periods such as quarter- and year-end.

How can central banks help? By lending or repo-ing those assets back into the marketplace on a secured and term basis versus non-cash or cash collateral trades. This allows banks and broker-dealers to shore up their balance sheets by satisfying Basel III liquidity ratios. It is essential that the repurchased assets, for which there is increasing demand, are made available and not left unutilized. Central banks have a number of options open to them in terms of distribution,
such as principal repo or lending relationships, and agency stock loan trades versus cash and non-cash.

The most lucrative trades are evergreen structures, where the beneficial owner agrees to lend a nominal amount of a given asset set to a borrower for a certain period, such as three or six months. This trade type is usually agreed with a right of substitution which allows the beneficial owner to sell an asset and simply replace it with a pre-agreed substitute. A number of central banks and other institutions already engage in such activity. This trade type is growing in popularity and generating excellent risk-adjusted returns for the underlying asset owner.

Central banks also continue to become more comfortable with securities lending, with some adjustments, including cash collateral management. Increased exposure and applicability for securities lending is also being driven by broadening of the asset base that can be lent, further enabling beneficial owners to generate incremental income on their portfolio securities.

**Securities Lending Market**

**Year Over Year**

As of September 2016, the total lendable inventory is $15 trillion and $2 trillion value on loan.

Figure 3: Securities Lending Market Year over Year.
Sources: Markit.

**Cash Reserves**

Following the financial crisis, with prolonged low or negative interest rates and commercial banks improving their reserves and liquidity ratios, there has been a discernable change in central bank investment policy towards investing cash reserves with commercial banks. However, the current interest rate environment presents significant challenges for central bank reserve management, with negative to near zero yield curves on many European currencies and diverging USD yield. Additionally, changing regulations such as the Basel III LCR continue to impact deposit treatment of operational and non-operational balances held at banks; non-operating balances are costly for banks as the perceived liquidity risk posed by short-term wholesale funding requires significant buffer requirements, in this instance, assets equal to 40% of deposits. Consequently, reserve managers are seeking new ways to optimize short-term liquidity as traditional interest-bearing accounts and time deposits are proving less effective to meet reserve preservation and risk-adjusted return objectives. While reserve management strategies will vary by time horizon and liquidity needs, new short-term investment options are emerging to provide optionality and mitigate against negative or low yields. The Minimum Maturity Time Deposit (MMTD) is one example of an investment option that offers enhanced yields over traditional time deposits for longer-dated core/stable cash, without the need to rollover monthly. It offers a fixed deposit rate at the time of funding, which changes according to a variety of advance notice periods.

As the economic and regulatory environment remains challenging for commercial banks, central banks continue to focus on counterparty risk management by closely monitoring the credit quality of each counterparty they invest with. As awareness of credit default swap spreads and reputational risk have become more prevalent since the financial crisis, credit ratings have become widely used as quantitative metrics. However, given the need to achieve incremental risk-adjusted returns, central banks will likely need to review their counterparty strategies, perhaps adjusting their minimum credit rating threshold from A- to BB+. This essential widening of their pool of counterparties would allow them to optimally manage their risk-adjusted returns and protect the value of their reserves. However, it will require an evolution of central banks’ investment decision making and governance processes to address credit quality and risk.
Central banks’ operational optimization

Macro-economic constraints, increasing service and efficiency expectations from citizens, and digitization are driving central banks to strive for greater levels of operating efficiency, reduced operational costs and improved service delivery to government departments and citizens alike.

A clear example of the trend toward expense optimization is the increasing number of Request-for-Proposals for custody providers. Previously, central banks used their traditional partner. Now the process has become competitive with partners required to offer their best deal in terms of security (including cyber security), low latency, accuracy, risk mitigation and market intimacy.

Another example of expense optimization is central banks’ increasing outsourcing of payments. Central banks manage a wide array of financial transactions that require an increasingly high level of financial control, transparency and efficiency. Furthermore, latest technologies and innovation allow for improvements in electronification of payment processes that create opportunities for improved transparency and financial control.

When it comes to payments, central banks are increasingly acting as the payment service provider for government agencies to streamline and aggregate payments originating across multiple government departments – particularly international and multi-currency payments originating from ministries such as foreign affairs, finance and education. This centralized model is enabling governments to achieve their efficiency objectives by rationalizing resources and leveraging economies of scale.

Furthermore, as central banks continue to seek ways to reduce operational costs and risks in their payment flows, they are turning their attention to streamlining multi-currency payments – in particular the ability to deploy solutions that offer predictable and transparent FX rates, leverage lowest cost instruments and improve financial control through automation. Additionally, solutions that offer integrated short-term investments with operational payment flows are sparking interest – for example, the Earnings Credit Rate solution offers competitive implied yield on operating cash in a low interest rate environment, by leveraging excess liquidity to reduce transactional banking fees.

The future is now

In a return-constrained world filled with geopolitical and market uncertainty, central banks have to think beyond their traditional fixed income and currency portfolio strategies. Investment risk-adjusted returns and the success of risk management will, in the future, likely depend more on economic and corporate fundamentals than extraordinary liquidity injections.

With commodity and oil price volatility and diverging monetary policies, central banks’ strategic asset allocation is increasingly challenging. With the exception of the RMB as a reserve currency, there are many non-traditional ways of achieving returns in a low/negative rate environment. Central banks’ focus on incremental yield is causing them to shift towards equities, gold and securities lending. Furthermore, central banks are now focusing on cost optimization, with competitive tenders for solutions driving down costs and an increasing number of central banks outsourcing payments.

With the need to think creatively in order to achieve incremental yield, central banks will need to increase their engagement in asset classes outside their traditional areas of fixed income and currencies.

With the need to think creatively in order to achieve incremental yield, central banks will need to increase their engagement in asset classes outside their traditional areas of fixed income and currencies.
Innovation is needed across the spectrum of migrant needs, from aid delivery to assisting sophisticated economies to adapt and offer mechanisms that integrate new community members into society with dignity and position them for success.
From Migration to Integration – Innovating for Inclusion and Prosperity

Ahead of the 2016 United Nations (UN) Summit on Refugees and Migrants, President Enrique Peña Nieto of Mexico reflected that “Migrants symbolize the force that moves humanity forward. Their culture, their traditions and their knowledge enrich the cultural heritage of the societies where they decide to settle, contributing to a merging of cultures and to building new vibrant and prosperous nations. Migrants also embody our resilience to overcome adversity since time immemorial.”

This recognition of migration as a driver for global development and prosperity was echoed by the Mayors of three global cities – New York (Bill de Blasio), Paris (Anne Hidalgo) and London (Sadiq Khan) – who highlighted the need “to stand for inclusivity” and to recognise migration brings “needed skills and enhance[s] the vitality and growth of local economies.”

The scale of global migration is significant. According to the United Nations Department of Economic and Social Affairs, there were 244 million international migrants in 2015, comprising roughly 3.3% of the world’s population – a 41% increase since 2000. Some of this growth in migration is driven by conflict, poverty or the effects of climate change; worldwide, one in every 122 humans is either a refugee, internally displaced or seeking asylum. Statistics aside, it is vital to remember migrants are human and the majority are individuals and families seeking to reunite with loved ones, pursue opportunity or seek a new place to call home.

Migration is a catalyst for global development, shared community and cultural enrichment, and economic prosperity. Humans, whether rich or poor, stable or displaced, have the same fundamental education, health care, housing, employment and financial needs. Innovation is needed across the spectrum of migrant needs, from aid delivery to assisting sophisticated economies to adapt and offer mechanisms that integrate new community members into society with dignity and position them for success. To enable effective inclusion, host countries need to consider the infrastructure and investment required to successfully integrate migrants into their economies, and develop effective migration and urban policies.

1 http://www.huffingtonpost.com/president-enrique- pena-nieto/migration-a-crucial-force_b_12102380.html
2 http://www.nytimes.com/2016/09/20/opinion/our-immigrants-our-strength.html?_r=1
Fundamental to forming effective policies is the recognition that migration and development are inextricably and positively linked. Migration is a global occurrence; migrants are the common agents driving collaboration between cities and countries, and private and public sectors. For example, migration offers positive benefits such as the flow of funds derived from new income sources accessed in the migrant's economy to family or organizations in their home or other economies, labor mobility and labor market resilience against shocks, aging populations and shrinking workforces. Other benefits include job creation and economic contribution from migrant investments, trade generation and entrepreneurship, and small business creation.3

Recognition must be given to the fact that alongside these potential benefits there exist complex challenges to achieving social, cultural and financial integration; barriers that can only be overcome through collaboration. Here we explore two ways in which the public and private sectors can collaborate, utilizing and leveraging the link between financial services and the real economy: financial inclusion and urban transition.

Financial inclusion
Access to mainstream financial services is a crucial element of modern life, and a necessary ingredient of an inclusive economy. Financial inclusion requires that everyone has access to safe, affordable and appropriate financial products and services, as well as the knowledge and ability to utilize them to build a secure financial future.

According to the World Bank Global Findex Database4 there are 2 billion adults globally that are unbanked. Moreover, a report commissioned by the Better Than Cash Alliance,5 and released by specialist consultancy Bankable Frontier Associates, shows that roughly 2.6 billion of the banked population live on less than $2 per day; 90% of them lack access to formal financial services and mainly operate in a cash-only economy that is vulnerable to theft, loss, lack of transparency, and inefficiencies.

Cash remains a problem for financial inclusion globally, but especially so for migrants. A shift to electronic payments and mobile money provides a low-cost mechanism for the public and the private sectors to integrate migrants into society. It enables accounts to be rapidly opened, providing scalable access for the migrant population and a more efficient distribution of aid. It also offers migrants a crucial first step to financial inclusion through access to secure payment services and insurance, an ability to better manage risks, start saving without needing to access a physical branch, and build credit and assets. World Bank data6 demonstrates these benefits. In Kenya during difficult times, users of M-Pesa mobile money services had increased household resilience while non-M-Pesa users saw their household consumption fall by 7-10%. In Mexico, when banks expanded access to their services by opening outlets in retail stores, the average income in those areas rose by 7% while employment grew by 1.4%. This resilience is crucial to migrants building livelihoods in their new communities.

One barrier to providing these services and opening accounts is identity fraud. However, existing and ground-breaking programs can be drawn on, demonstrating practical solutions exist. In India,7 personal identification is a necessity for life for the country’s population of 1.2 billion people spread across over 640,000 villages; public and private entities require proof of identity for access to social programs, welfare benefits and subsidies, such as food coupons and cooking gas deliveries. Identity verification is one of the biggest challenges facing India’s poor. But it has been largely overcome.

The Unique Identification (Aadhaar) project created by the Unique Identification Authority of India was launched in 2010. It uses biometric-based identification, such as iris patterns or fingerprints, to enable individuals to prove their identity. When new individuals are enrolled they are automatically biometrically compared to those already on the system, eliminating

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5 http://www.citigroup.com/citi/citiforcities/urban_exchange/n_citi_helps_launch_better_than_cash_alliance.htm
6 https://letstalkpayments.com/2-billion-people-dont-have-an-access-to-formal-financial-services/
7 https://www.mapr.com/blog/architecting-worlds-largest-biometric-identity-system-aadhaar-experience
duplicate identities and fraudulent access to multiple benefits. This biometric ID is linked to bank accounts, and in rural areas with no banks ‘micro-ATMs’ have been created, utilizing shopkeepers and local stores to dispense cash to those with IDs via online inter-bank counter-transfers to the shopkeeper's account. This solution addresses not only identity theft but also tackles the issue of lack of ease of access to financial services and vendors. By the end of 2015, 1 billion Indians were enrolled in the Aadhaar project.

Apart from identity verification or lack of required local documents, migrants can face other obstacles to financial inclusion, such as the perceived cost of services, lack of familiarity with the host country’s financial services marketplace, lack of trust, non-traditional and perhaps irregular modes of communication, as well as other linguistic and cultural barriers.

For example, a study conducted by the New York City Department of Consumer Affairs Office of Financial Empowerment (DCA OFE) with support from Citi Community Development found that more than half of Mexican immigrants in New York City were unbanked because of real or perceived barriers to access – a rate nearly twice as high as other immigrant groups studied in the report. The report highlighted how immigrants' worries or misperceptions about the financial system of their new country prohibited them from engaging with the formal system. Concerns included hidden fees, the security of their deposits and fear that authorities might take away their money. This was compounded by immigrants' unfamiliarity with the availability of tax credits and skepticism of programs that offer help.

Free, high-quality financial counselling and coaching programs are vital for empowering individuals to build a strong financial identity. Helping migrants understand and enroll in safe, affordable financial services not only enables easier integration into the local socio-economic fabric - it is an integral part of bringing migrants into a shared prosperity.

Led by the Consulate General of Mexico in New York, Citi works with trusted local community organizations and municipal leaders on expanding financial inclusion by financing the start-up initiative Ventanilla de Asesoría Financiera (Financial Counselling Window), which provides financial counselling, alongside the New York City Department of Consumer Affairs Office of Financial Empowerment. As former Ambassador Sandra Fuentes-Berain of the Consulate General of Mexico in New York emphasized, this program empowers individuals by helping them to “understand and enroll in banking and financial services available to them, which allows them to better integrate in the local socio-economic fabric.”

Financial technology (“fintech”) solutions are also revolutionizing aid delivery. Digital payments enable migrants to receive aid funds and in turn, support the local economy through buying and trading goods. Digitization also enables aid agencies to improve communication with migrants and collect valuable data, facilitating waste reduction through correct resource apportionment, and tackling fraud and theft.

Recently aid delivery has seen a startling amount of innovation. The World Food Programme (WFP) for Syrian Refugees has partnered with MasterCard to provide an innovative electronic payments programme in Lebanon that will allow hundreds of thousands of Syrian refugees to meet their food needs. With MasterCard’s technological support, more than a million refugees can now use WFP’s smartcard to buy goods at participating retailers, or use UNHCR-backed ATM cards to withdraw money instead of receiving physical goods.

Financial education and language courses are also provided through fintech touchpoints, and financial inclusion extends to small and medium enterprises. For example, HP has funded and provided technology to 57 Community Technology Access (CTA) Centers in refugee camps across 26 countries to complement UNHCR’s CTA program to provide migrants with

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access to computers, computer literacy and connectivity. This example demonstrates how technology and fintech firms can engage with migrants – expanding traditional communication and resource delivery mechanisms by utilizing new collaborative, on-demand economy and digitization platforms.

Financial services incumbents such as Citi can leverage existing programs to support the development of innovative fintech solutions and enable migrant integration into society. The work of its network of innovation labs around the world, or the Citi Mobile Challenge, a digital acceleration program designed to inspire and encourage developers to reimagine mobile banking, could offer tech-savvy and aspirational migrants a chance to develop and scale solutions that serve the needs of not only migrants, but of local communities and businesses as well.

This kind of flexibility can be difficult for well-established institutions and public sector entities. Financial services providers can aid increased public sector responsiveness through closer partnerships with governments, UN agencies and providers of humanitarian services. By working alongside public sector and humanitarian aid agencies, providers can co-design new ways of utilizing mobile technologies to assess the creditworthiness of applicants, better understand how their product range can support migrants, and understand their financial management needs.

Urban transition

The 2015 World Migration Report suggests migrants can be “builders of resilience,” “agents of local development” and “city makers.” Migration is intertwined with urban processes. It offers opportunities for cities to develop and grow into diverse, vital centers.

Cities of origin and destination are starting to collaborate. The City of Rotterdam maintains strong relations with the countries its migrants come from, such as Turkey, Morocco and Cape Verde, working with them to tackle issues of water and climate change. This progressive thinking demonstrates a trend across the Netherlands where integration is no longer considered as a stand-alone issue, and policies are designed for “all Rotterdammers” where possible.11

A further example is Kavarna, a coastal town in Bulgaria, which formed innovative bilateral agreements with the four Polish cities that employ the majority of Roma from Kavarna. These progressive arrangements provide the Roma the right to work, enabling them to register and start businesses, and facilitate tax collection. In addition to the individual empowerment provided, the agreements have had numerous positive effects: the Roma’s use of savings for improving living conditions has positively impacted housing in Kavarna, and their economic success has significantly improved local Poles’ perceptions, facilitating better inter-ethnic relationships.

Rapid growth of urban populations can strain existing infrastructure, employment opportunities and public services. Informal settlements and slums are often segregated from established public services and can lack access to water, adequate sanitation and durable housing, highlighting a lack of proactive urban planning.

To successfully adapt, public sector entities will need to be innovative, efficient and competitive to take advantage of how commercial developments can optimize costs, aid the development of modern infrastructure and facilitate citizen engagement. The private sector also has a role to play through financing, job creation, economic development and supporting the State to enable equal opportunities.

States need to consider implementing large-scale transformational initiatives, raising capital through municipal or project bond issuance. Creating an enabling environment to support migration requires increasing strengthening infrastructure and concerted, cohesive action across the private sector, Development

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Financial Institutions and government agencies to implement new and innovative approaches to financing such as leveraging theme bonds and Blended Finance structures.

Capital markets are one of the most powerful mechanisms for the provision of effective and substantial developmental funding. Citi has been a leader in the development of “theme” bonds to meet bespoke development financing needs. In addition to Citi’s innovations in the green bond space, Citi issued the first ever large-scale social US Dollar “Theme Bond” to the public bond market, focusing on Education, Youth, and Employment with the Inter-American Development Bank (IDB). This innovative bond raised $500 million in funding for IDB’s projects to improve early childhood care, primary and secondary education, and employment projects to transition young adults from school to work in Latin America. Similar theme bonds could be developed to unlock funding for services that support sovereigns and the international development community responding to the needs of migrants.

Innovative digital technology can enable sustainable resource and waste management through integrated metering and billing, while leveraging mobile technology will deliver information and payment services for a host of transport services. Supplier payment mechanisms, such as supply chain finance and commercial cards, not only improve migrant integration into the labor force as individuals but also as business owners and entrepreneurs – another key component.

Support for naturalization is another way to economically empower states, cities and migrants. In January 2016, the New York City Mayor’s Office of Immigrant Affairs and Citi Community Development unveiled research, The Economic Impact of Naturalization on Immigrants and Cities, conducted by the Urban Institute which showed that naturalization (for those who are eligible) may lead to an average increase in individual earnings of 8.9%, or $3,200, in the first year after becoming a US citizen. If all of the eligible immigrants across the twenty-one US cities studied were to become citizens, their increased employment rate and earnings would generate millions in new tax revenues: $2 million a year in cities with smaller immigrant populations, such as Reading in Pennsylvania, and up to $152 million a year in Chicago, $364 million in Los Angeles, and $789 million in New York City.

Extending the example of New York City, it is estimated that the net costs of providing public benefits would decrease by $34 million per year if all eligible immigrants became citizens. Naturalized citizens typically have higher educational attainment, annual earnings, and homeownership rates than their noncitizen counterparts; they are also less likely to be living in poverty and experience increased access to higher-skilled and higher-paid jobs.

These findings highlight the strong economic case for public-private partnerships like Cities for Citizenship (C4C), a national initiative to promote naturalization and integration of nearly 9 million eligible, legal permanent residents in the US. C4C was launched in 2014 by the mayors of New York City, Chicago and Los Angeles, with Citi as the Founding Corporate Partner; the program has since expanded to include more than 20 cities. The initiative has linked local government agencies with non-profit partners such as the International Rescue Committee (IRC) to develop programs that provide naturalization assistance alongside financial education and counseling – enabling more eligible residents to attain the powerful economic asset of citizenship and unlock greater economic opportunity.

This is highlighted by the opening of Citizenship Corners by the City of San José, with support from Citi Community Development, at ten of its branch libraries in September 2016. These Citizenship Corners offer areas where local immigrants can find a wide array of resources to help them integrate and thrive in the San José community by hosting a number of resources to help these residents navigate the naturalization process, including citizenship test preparation materials and information on

12 http://www.huffingtonpost.com/bob-annibale/why-cities-should-invest-_b_8955358.html
13 http://www.citiesforcitizenship.org/
obtaining legal assistance, as well as online education, ESL and skills training programs. They will also serve as hubs for multi-lingual classes and workshops hosted in partnership with community partners on a variety of topics, including financial capability. Citi is also supporting the development and launch of a suite of financial empowerment and capability programs in the community, including upcoming workshops that will launch in a number of San José public libraries later this fall.

Conclusion
Financial inclusion and urban transition are just two pieces in a complex puzzle of political, social, economic and humanitarian needs that must be carefully and thoughtfully approached. Migration bridges the aspirations of the individual to the aspirations of a state or region, and the desire to be an inclusive society.

The IRC is seeking to encourage financial institutions to help generate ideas on new employment opportunities for refugees, engaging the private sector in inventive schemes such as technology-based employment platforms, novel investment vehicles and innovative insurance products to de-risk investment in challenging areas.

On June 30, 2016 the White House launched a call to action for the US private sector to make “new, measurable and significant commitments that will have a durable impact,” and Mexico has offered to host an International Preparatory Meeting in 2017 to facilitate the implementation of the Global Compact for Safe, Regular and Orderly Migration and the Global Compact on Refugees, which will be adopted in 2018.

Citi believes the private sector has a role to play whether through expanding financial capability, raising capital, enabling innovative infrastructure financing mechanisms such as project bonds or providing solutions to aid efficiency and resource optimization.
An effective response to the considerable scale of modern migration requires collaboration, honesty and a willingness to innovate from both the public and private sectors. Citi, with its presence in over 100 countries, is committed to supporting humanitarian efforts and utilizing its markets access and expertise.

The world needs to innovate for integration, innovate for inclusivity and innovate for integrity. Collaboration between the public and financial services sectors to support migration can drive global development, catalyze economic opportunity and enhance financial capabilities for all.

An effective response to the considerable scale of modern migration requires collaboration, honesty and a willingness to innovate from both the public and private sectors. Citi, with its presence in over 100 countries, is committed to supporting humanitarian efforts and utilizing its markets access and expertise.
The list of climate-related challenges also extends to an increased propensity of flooding, rising sea levels, deforestation, soil acidification, weather-related crop failure and poor air quality.
Climate Change and Green Agenda – Public Sector Opportunities and Challenges post-COP21

At the COP21 Climate Summit in Paris in 2015, world leaders accepted the necessity of urgent action to control and ultimately cap rising global temperatures. The public sector will play a critical leadership role in creating an enabling environment and supporting higher levels of investment to achieve these goals. It can catalyze a change in private sector behavior and drive a fundamental shift in global investment patterns towards energy and climate sustainability.

Given constrained public sector budgets and the regulatory limitations placed on traditional bank financing for long-dated infrastructure projects, the key to unlocking the billions of dollars of investments required for the global climate change agenda will be the effectiveness of “crowding in” private sector capital through innovative financing structures.

The world has already emitted more than 60% of the total carbon that is likely to result in an increase in global temperatures of 2°C (3.6°F) above pre-industrial levels. At the current rate of fossil fuel consumption and carbon emissions, the world will have expended its so-called carbon budget by 2030.1 Meanwhile, more than 1 billion people around the world still have no access to energy and almost 3 billion have no access to clean cooking.2 The global challenge is to end energy poverty while driving climate-resilient development. The list of climate-related challenges, which often have a disproportionate impact on impoverished people, also extends to an increased propensity of flooding, rising sea levels, deforestation, soil acidification, weather-related crop failure and poor air quality.

The public sector – from central governments to Development Finance Institutions and aid agencies – remains the driving force behind financing climate actions, initiating an essential change in mindset and leading the way in enabling the crowding-in of private sector capital.

1 Greenhouse gas emission targets for limiting global warming to 2°C, Malte Meinshausen (Potsdam Institute for Climate Impact Research), June 2009
2 Sustainable Energy for All (http://www.se4all.org/)
COP21: What’s next?
COP21, held in Paris in December 2015, united 195 nations in a common goal of limiting carbon emission to cap global warming to well below 2°C. To date, 189 countries have submitted Intended Nationally Determined Contributions (INDCs), outlining post-2020 climate change actions that they will take to achieve a climate-resilient future. Developed countries also committed to jointly mobilize $100 billion of assets each year from 2020 to help developing countries cope with climate change.

Specific strategies and market-based solutions need to be developed and deployed to achieve the INDC targets set out by countries. Citi supports a two-pronged approach to address these challenges:

(i) **Adaptation tactics**, in order to alleviate the consequences of climate change, through risk management solutions and emergency funding;

(ii) **Mitigation tactics**, sustainable strategies to decrease dependency on carbon-intensive industries and increase focus on green and socially responsible investments, through capital market solutions that can be combined with risk sharing mechanisms.

Achieving these objectives is challenging in a world of heightened risks where the global economy is undergoing a significant upheaval in the commodity cycle while suffering from low growth, considerable divergence in monetary policies (with ultra-low or negative rates in many countries) and increasing geopolitical risks. The public sector, being counter-cyclical by nature, will need to provide further funding in challenging market conditions as it faces competing priorities: urgent short-term fiscal targets versus long-term investment in climate-resilient development.

At the same time, tougher banking regulations have limited commercial banks’ appetite for financing renewable projects, which are often greenfield and long-dated in nature. Public sector budget constraints and banking sector regulations, coupled with competitive fossil fuel prices compared to renewable energy, put further pressure on financing for the climate agenda. More than ever, private sector capital will have to play a vital role in filling the significant financing gap.

Leadership is needed from the public sector
The public sector, being an investor, regulator and project owner of climate change actions, should leverage its unique position to facilitate other participants to take action to create a climate-resilient future. COP21 was a great achievement for the public sector but the next step may be even more challenging - to enable and incentivize investors to commit capital to commercially viable initiatives in order to turn this vision into a reality.

Given the current low oil price environment, the opportunity cost of climate action has become significantly higher and governments will need to increase the support they offer investors. This can be employed by implementing incentive and penalty systems in order to encourage low carbon behavior and create a level playing field for renewable energy.

Acting as policymaker, the public sector can also create a regulatory environment that is supportive of green and sustainable investments. Such a framework can be seen in South Africa where the government developed a **Renewable Energy Feed-in Tariff (REFIT)** to regulate electricity tariffs. The feed-in tariff requires Eskom, the South African electricity public utility, to purchase energy at pre-determined prices from qualifying generators. Pre-determined pricing incentivizes investors to engage as it avoids market uncertainty and limits financial risk.

The People’s Bank of China has initiated a **framework for green bond issues**, requiring the issue to be invested in green projects within a prescribed timeframe. Any unallocated proceeds can be invested in other green bonds issued by non-financial businesses and high quality, liquid money market instruments.

Another example is the **disclosure framework** provided by the **Green Bond Principles** established by the International Capital Market

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3 National Energy Regulator of South Africa (NERSA), Reason for Decision – Eskom Retail Tariff and Structural Adjustment Methodology

4 Global Public Investor 2016 – China’s green bond market
Association (ICMA). Templates are now available for green bond issuers and are bolstered by external reviews that demonstrate to investors that issues are aligned with the Green Bond Principles. The Principles are designed to enhance transparency, boosting investors’ confidence and driving demand for green bonds.

From a policy perspective, one of the tools lauded by many economists as the best way to help direct investments towards sustainable energy is carbon pricing. Carbon pricing can come in various forms, such as carbon taxes and cap-and-trade policies. Sweden has implemented an excise tax applied to carbon-intense fuels like oil and natural gas, which penalizes high-level emitters. Cap-and-trade mechanisms effectively cap the amount of total emissions and allocate a limited number of permits to expel a controlled quantity of greenhouse gases. These permits can then be traded, letting companies buy and sell allowances: Japan is one example of a country that has introduced a mandatory emissions trading scheme.

In addition, fossil fuel subsidies should be carefully evaluated. In 2012, the OECD estimated that its members spend $55-$90 billion a year to support fossil fuel and the Overseas Development Institute estimates that these subsidies outweigh the support provided to climate finance by a ratio of 7:1.5 Eliminating fossil fuel subsidies could help to free up capital that can be put to use to achieve a transition to a low carbon environment.

These examples of enabling environments aim to pivot investors, companies and sovereigns away from emission-heavy industries either by regulating and taxing their emissions or easing the transition to renewable, responsible energy and investments.

Innovative financing structures

Adaptation – Addressing the immediate challenges

The threat of climate change is clear: its impact has already been felt across the developed and developing world. The rise in extreme weather conditions has brought a higher frequency of large-scale natural disasters, leaving behind devastating human and economic losses.

In order to address the immediate threats posed by climate change, Citi has identified catastrophe bonds (or cat bonds) as a disaster risk management solution that could ensure a government’s ability to manage the damages incurred from large loss events.

Catastrophe bonds, first created in the 1990s following the costly Hurricane Andrew in the U.S., are high yield securities that are linked to major natural catastrophe risks. The occurrence of a catastrophe within the predefined parameters and maturity of the bond will trigger investors to lose part, or all, of the principal – which will be passed on to cover the issuer’s indemnities related to the disaster. Issuers are primarily reinsurers, but can also be insurers, government entities, pension funds or corporations.

As most public sector entities are either under-insured or self-insured, government budgets and citizens ultimately bear the risk. Cat bonds help transfer this risk to investors while not putting strains on the sovereign’s balance sheet, given the principal amount does not need to be returned. In addition, this instrument addresses the urgent need for funding through timely disbursements in the event of catastrophe and alleviates economic losses to critical infrastructure which might not be covered under traditional insurance.

For investors, especially those seeking diversification away from traditional asset classes, cat bonds are attractive instruments that are largely uncorrelated with macroeconomic factors and international markets. While investors face the possibility of losing some or all of the principal investment in the event of a catastrophe, the likelihood of incurring extreme losses is far lower than that of benefiting from extreme returns. According to a study done by Schroders, at 3% the probability of losses greater than 10% is far below that of achieving a return of 14.5% and there is an 87% chance of positive returns.6

The threat of climate change is clear: its impact has already been felt across the developed and developing world.

5 Overseas Development Institute, Time to change the game – Fossil fuel subsidies and climate, 2013
6 Schroders, Focus on alternatives: Catastrophe bonds explained, June 2011 (http://www.schroders.co.uk/globalassets/schroders/sites/pensions/pdfs/catastrophe-bonds-explained.pdf)
The cat bond market is robust and backed by strong demand, with $7.9 billion issued in 2015 and $25.2 billion outstanding at the end of the second quarter of 2016. Sovereigns can apply the product to a variety of catastrophes as a way to adapt and prevent the often sizable economic fallout.

**Mitigation – Investing in a sustainable future**

A low carbon future involves investing in low emissions and/or sustainable infrastructure, including power assets, transport and protective measures. It also includes investing in energy efficiency to reduce energy usage in brownfield assets. Renewable energy projects often cost more upfront than traditional energy projects, yet once built, their operating costs are more modest and there are no associated fuel costs.

Various capital markets solutions can be tailored and applied across a broad scope of climate finance initiatives: green bonds, project bonds, covered bonds and yieldcos.

**Green bonds** constitute any type of bond instrument where the proceeds will be exclusively applied to finance or refinance, in part or in full, new and/or existing eligible green projects. The instrument allows issuers to diversify their investor base and promote their environmental credentials. Multilateral Development Banks were the first to issue green bonds; however the instrument can be utilized by a broad spectrum of issuers across the public sector, from development agencies to governments, municipal and state-owned entities. Green bonds are a sub-set of Socially Responsible Investing bonds, which are becoming an increasingly established asset class in the global fixed income market. The green bond market continues to grow and currently has over $118 billion outstanding. The public sector should leverage rising demand for these instruments and take advantage of their benefits as an effective tool to attract private sector capital.

**Project bonds and covered bonds** are established instruments but have not traditionally been used for green or sustainable financing. Project bonds finance specific projects where debt is repaid from the cash flow generated by the underlying projects rather than from the issuer’s balance sheet. This funding mechanism helps issuers achieve long tenors (e.g. 30 years), which minimizes or eliminates refinancing risk. Furthermore, project bonds tend to have fewer overall covenants than commercial loans while bond investors are less demanding than bank lenders, allowing much needed flexibility for renewable projects. This type of instrument is suitable for investors who seek yield and have an appetite for inherently higher risk in the infrastructure space.

In contrast, **covered bonds** are seen by investors and regulators as among the safest investments, with the investor base mainly comprised of institutional investors seeking a low risk, yield-bearing product with a long maturity. Covered bonds are highly regulated, and enjoy superior credit ratings and lower funding costs compared to unsecured debt. This is achieved through a dual recourse structure where bond investors have a claim over a dedicated cover pool of assets, as well as a general claim against the issuer itself or another body such as a government or supranational organization. These characteristics differentiate covered bonds from pure asset-backed finance and could help bridge the gap between existing triple-A rated supranational guaranteed climate bonds and the highly specialized asset-backed securities sector. The embedded guarantee would help reduce construction risk significantly, reducing the cost of finance and the overall project cost. The cover pool consists of high quality assets, which are traditionally residential mortgages, public debt or ship loans. To enable the use of covered bonds for green financing, policymakers could consider revising covered bond legislation to allow issuance based on sustainable energy loans.

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7 Artemis, Q2 2016 Catastrophe Bond & ILS Market Report
Lastly, **yieldcos** are one of the more innovative financing structures in the power markets, serving to finance project equity. A yieldco is an investment vehicle that invests in multiple projects, which reduces overall portfolio risk via diversification. Yieldcos can be utilized to bundle stable, revenue-generating renewable energy assets, attracting investors by allocating cash available for distribution to shareholders in the form of dividends. This structure helps significantly to reduce the cost of capital for renewables projects, while also attracting investors that may previously have not had access to the appropriate channels to invest in renewables. Yieldcos remain a nascent structure and there may be limited application depending upon the availability of stable revenue-generating assets.

While the different financing structures mentioned above cater to different investors’ risk appetites, yield expectations and investment horizons, all share the common feature of giving private sector investors the opportunity to diversify their portfolios with climate-friendly and socially responsible investments.

**Mobilizing private sector capital: blended finance**

Despite the wealth of financing solutions that can support the global climate change agenda, there remain obstacles in mobilizing private capital.

Significant challenges include investors’ perception that returns do not match risks and that local markets remain inefficient; there are also knowledge gaps that continue to impede investors’ understanding of opportunities in often unfamiliar locations.

Consequently, one necessary component in any solution aimed at achieving the climate finance goals is risk sharing mechanisms, such as blended finance. Such mechanisms serve to attract institutional investors and increase the feasibility of green and sustainable projects. Blended finance uses public resources to mobilize private capital from banks, pension funds, insurers, foundations, endowments and multinational corporations, by creating bankable structures through the allocation of risks and the blending of returns. The reduction in risk helps to restore the balance and quality of returns.

In unfamiliar markets, donor agencies and regional development banks can help supplement investor knowledge and alleviate local market inefficiency thanks to their long track records and deep local knowledge. Blended finance can offer support across all stages of a deal, from preparing and pioneering, through to construction and operation of an asset, offering technical assistance, risk underwriting, market incentives and direct funding to help make a project viable.

As a founding member of a key blended finance initiative – Sustainable Development Investment Partnership, which aims to ultimately mobilize $100 billion in financing over five years to infrastructure projects in developing countries – Citi is perfectly placed to help mobilize institutional resources behind blended finance.

**Building a climate-resilient future**

COP21 and the declarations made in Paris brought the public sector together and affirmed to the world that climate change is a threat to financial performance, long-term growth, and the global community as a whole. More than ever, public and private sector actors need to address these challenges and leverage their strengths to develop innovative financing solutions that will facilitate long-term sustainable investments and projects that secure the future of the global economy.
China is transforming from a high-growth economy that relies on production and export, to a sustainable economy driven by domestic consumption and the service sector.
The Chinese Renminbi Joins the IMF SDR Basket. Why It's Important and What’s Next?

In late 2015, the International Monetary Fund (IMF) announced that China’s currency, the renminbi (RMB), will be added to the Special Drawing Rights (SDR) basket of currencies. The RMB will join the U.S. dollar, British pound sterling, euro and Japanese yen to become the fifth currency to make up the SDR.

The SDR is an international reserve asset, created by the IMF in 1969 to supplement its member countries’ official reserves. As of March 2016, 204.1 billion SDRs (equivalent to about $285 billion) had been created and allocated to the IMF’s members. SDRs can be exchanged for freely usable currencies.

Here we reproduce a conversation between Citi’s Dustin Ling, corporate banker for global public sector and Harry Peng, head of securities and fund services for Citi in China, on the impact of the RMB’s inclusion in the SDR, which is effective from October 1, 2016, and the growth of long-term capital flows into RMB assets.
While this is definitely exciting, we expect that global asset allocations and diversification into RMB assets will happen on a gradual basis. Global FX reserves excluding China are an estimated $7.8 trillion and the U.S. dollar accounts for 63.8% of the world’s allocated FX reserves outstanding. The direct SDR-related flows would be FX conversions by IMF members ($285 billion) to maintain their quotas in the appropriate proportion.

As China opens up channels for investment, private and public sector allocation to RMB assets is expected to rise continuously. The People's Bank of China (PBoC), China’s central bank, is keen to achieve full convertibility by 2020, at which time the RMB is expected to represent a 5% share of total global reserves.

Dustin Ling: What should the market anticipate and why?

Harry Peng: Following the mega-trend of RMB internationalization and opening of capital markets, we anticipate a gradual but significant inflow into the China interbank bond market (CIBM). The CIBM is currently the third largest bond market worldwide by issuance and outstanding amount. It has grown more than six times since 2005, with an estimated total trading turnover of RMB734 trillion in 2015. China’s sovereign credit quality is strong (AA-) and the government debt to GDP ratio stands at 47%, which is lower than the other developed or emerging countries. China’s government bond yields are also significantly above most of its A-rated peers. From a mid- to long-term perspective, China is an attractive market from both an allocation and investment perspective.

Dustin Ling: What are the impacts of the RMB being included in the SDR basket and as a reserve currency?

Harry Peng: The inclusion of the RMB into the SDR basket at a weighting of 10.92% is significant and positive for long-term capital flows into RMB holdings. It will encourage an increase in global asset diversification into RMB-denominated assets and further promote RMB internationalization.
China’s State Administration of Foreign Exchange (SAFE) has also announced an exciting change to Qualified Foreign Institutional Investor (QFII) regulation in February 2016, followed by a recent proposal for RMB Qualified Foreign Institutional Investor (RQFII) rules on the same basis. This will improve market entrance requirements and liquidity for both foreign institutional investor schemes, while taking China a step closer to a possible MSCI inclusion in the coming year.

In addition, the China State Council recently announced the approval of the Shenzhen-Hong Kong Stock Connect program, which will go live later this year. The scheme will give investors access to Shenzhen and Hong Kong listed stocks, which will refocus attention on China A-shares and further accelerate RMB interest and internationalization.

Dustin Ling: What key insights can you offer as we approach these important milestones?

Harry Peng: For investors, the following top three factors are important to consider given recent decisions and developments in China and globally.

1. Take a long-term horizon

There have been near-term concerns over investing in China for various reasons, such as currency depreciation and the economic slowdown - these factors are very much a consequence of the transitioning economy. Historical data from the past 20 years shows China performs much better in the long run than the U.S. and emerging markets. Thus, long-term investors can be more accommodative of near-term volatility. Policymakers also favor long-term investors that participate in the financial markets via the existing channels.

2. The supportive role of the government

There are arguments about the appropriate level of government intervention, but the Chinese government’s desire and determination to foster a stable and liberalized financial market has been unequivocally positive. For instance, wholly foreign-owned entities (WFOE) are now allowed to expand into onshore investment management as well as other business sectors, such as insurance and commodities. The simplification of inbound investment schemes (RQFII/QFII, CIBM) lowers the market entrance barriers and encourages more inflows of capital interest. Other incentives such as Stock Connect and Mutual Fund Recognition allow more routes for cross-border financial interaction. Over time, we expect that Chinese authorities will further open markets to make China a free market economy with minimal intervention from the government.

3. Finding the right strategic partners

Given the complex regulatory framework and market convention, it is crucial for overseas investors to identify and engage with the right strategic partners in China in order to facilitate investment, safeguard assets, and assist with the various local compliance and tax requirements. Generally, service providers or partners with a balanced understanding across both sides of the border are more in tune and adaptive towards the different onshore and offshore regulatory environments - especially from an effectiveness, control and efficiency perspective.

As China opens up channels for investment, private and public sector allocation to RMB assets is expected to rise continuously.
The total value of unfunded or underfunded government pension liabilities for twenty OECD countries is a staggering $78 trillion, or almost double the $44 trillion official national debt.
How Can Public Pension Funds Respond to an Ever Changing World?

Negative interest rates. Aging populations. Britain exiting the EU. Pension funds are facing an unprecedented amount of challenges against a volatile macroeconomic backdrop. How to cope? Where to even begin?

Improvements in health care are increasing life expectancies meaning retirement money needs to last much longer. At the same time demographic shifts – an increase in the retirement age population accompanied by a decrease in the working age population – are starting to put a strain on pay-as-you-go government pension schemes such as social security.

How much of a problem is it? According to our estimates, the total value of unfunded or underfunded government pension liabilities for twenty OECD countries is a staggering $78 trillion, or almost double the $44 trillion published national debt number. Corporations have also not consistently met their pension obligation and most U.S. and UK corporate pension plans remain underfunded with an aggregate fund status in the U.S. of just 82%.

Public pension funds face additional complexities and are constrained in ways private pension funds aren’t. Expenses are not linked to assets under management, government politics and policy regulations may get in the way of decision making, there can be pressure to support local government investments, and they have no legal ability to commute or close out a fund. Compounding the problems, public sector worker government pensions tend to be more generous than private sector schemes.

Without further and far more radical steps to address unfunded pension liabilities, the world could face a substantial increase in spending on pensions. We offer a set of recommendations to policymakers and public pension plan sponsors and managers to deal with the crisis. These include:

1. publishing the amount of underfunded government pension obligations so that everyone can see them – transparency is a great educator,
2. raising the retirement age,
3. creating a new system that utilizes Collective Defined Contribution plans which share both the risks and benefits of the plan between plan sponsors and individuals,
4. creating powerful ‘soft compulsion’ incentives to ensure that private pension savings increase, such as was done in the UK,
5. encouraging pension plan sponsors to make their full pension contributions when they are due, and
6. looking to amend existing pensions in as fair a way as possible to work to adjust plans that are unsustainable. No matter what the market conditions, public pensions are expected to pay out their promised benefits. Thus, while they are looking for on-going return, they also need to ensure adequate liquidity, particularly when benefit outflows start to be larger than contribution inflows.

1 Citi, Citi GPS: Global Perspectives & Solutions, “The Coming Pensions Crisis: Recommendations for Keeping the Global Pensions System Afloat” (Mar 2016)
There are a number of factors for policymakers and others to consider when crafting a strategy to meet liabilities. This section considers how pension funds have successfully created an investment strategy by building on the three pillars of investment philosophy, portfolio strategy, and participation strategy.

**Adoption of investment beliefs is crucial for focus and performance**

*What do I believe about how financial markets behave? What is my definition of a successful investment? What do I believe about risk? These are just some of the questions all institutional investors must answer, and – at the least – implicitly reflect in their investment practices.*

A trend amongst pension funds is to make these implicit beliefs explicit. By detailing their investment philosophy or beliefs in a statement, they create a bridge between high-level goals and practical decision-making. This in turn drives everything from portfolio strategy to whether to invest passively through index funds or actively through fund managers.

The largest U.S. Public Plan ($300 billion), the California Public Employees’ Retirement System (CalPERS) Board of Administration adopted a set of ten Investment Beliefs intended to provide a basis for strategic management of the investment portfolio, and to inform organizational priorities. The largest Canadian plan, the Ontario Teachers’ Pension Plan Board ($170 billion) published a set of 12 guiding principles. Set out below are examples from that statement:2

- **Taking risk is necessary to earn the returns required to meet our pension obligations.** In so doing, we accept we will experience periodic investment losses.

- **We engage in active management, with a global perspective, to earn higher returns because we believe markets can be inefficient.** Our approach to these inefficiencies is dynamic; we respond to market conditions. We pursue market inefficiencies that often exist in illiquid investments.

- **Our investment strategy considers our risk profile, our plan assets and our liabilities.** Our long investment time horizon supports our primary goal of generating the superior returns required to fund our members’ current and future pensions.

- **Total fund diversification, through effective portfolio construction, is fundamental to our success.** Diversification allows us to spread risk across key factors such as time periods, geography and economic outcomes, which reduces the adverse impact of any one investment loss on the fund overall.

- **Strong relationships support our success.** We identify and cultivate relationships with like-minded partners globally to broaden our investment reach. We build success together based on cooperation, trust and transparency.

- **The returns we can expect will not be constant over time.** Therefore, our investment strategy must adjust to reflect the potential reward relative to the investment risk. We must be flexible and disciplined as we adapt to business cycles and shifting investment environments.

- **Innovative strategies and our long-term horizon are powerful investment tools when used with sound risk and liquidity management.** Derivatives can be used to improve diversification, which in turn reduces our total fund risk.

- **Investing is a business. As such, our results are net of our costs.** Costs should be managed and linked to the investment value creation process.

- **Good governance is good business and contributes to sustainable values.** We continually consider all risks in our investment process, including those related to environmental, social and corporate governance factors. We expect management teams and boards of directors to be responsive to their shareholders. We lead by example.

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Risk premium drivers should be considered when crafting a portfolio strategy

Where do we invest? Which geographies and asset classes? How do we measure success? What benchmarks should we use?

Traditional asset allocation methods have failed to capture that assets previously thought of as safe may be riskier than in the past. In the last decade we have witnessed a significant pick-up in research and discussions around asset allocation, by both practitioners and academics, triggered by the importance of true diversification, the emergence of cheaper passive management in the form of ETFs, and the need to really understand the fundamental drivers of markets returns.

Part of what used to be considered alpha is now being reclassified as alternative beta or risk premia. The concept stems from the belief that returns on an asset can be broken down into distinct core building blocks that each contribute to the overall returns and risk characteristics of that asset.

For example, some of the underlying risk factors that drive the return of corporate bonds include inflation, foreign exchange, credit risk and duration. As with equities, the credit factor of a bond is linked to the earnings power of the company, and when that underperforms, corporate bonds and equities both underperform. Seemingly diverse asset classes may have high correlations as a result of overlapping risk factor exposures. Rather than mitigating volatility, the credit risk embedded in many fixed income portfolios pushed correlations higher with equities during the financial crisis. This is especially true in today’s low yield environment, where many portfolios are – consciously or unconsciously – full of credit risks.

There is growing recognition by public investment funds that a newer portfolio benchmark and allocation methodology is needed. It is widely believed that this benchmark should be based on diversifying risk factors instead of asset classes and identify sources of risk, both intended and unintended. An estimated 20% of public investment funds have already adopted risk factor-based portfolio benchmarking.3

The type of portfolio benchmark pension funds opt for will have a wide reaching impact on allocations. Institutions that adopt a risk factor-based portfolio benchmark, such as New Zealand Superannuation Fund, will have higher allocations to alternatives. This is because alternative assets are perceived as a way to achieve exposure to drivers such as liquidity premium (property) and inflation.

Diversifying away from home and looking at alternatives

Diversification into alternatives and away from home markets are key trends we are seeing across public institutional investors. This is driven by the need to increase returns to meet liabilities. Asset Allocation to alternatives has grown from 5% to 25% among the top global pension funds since 1995.1 When surveyed, the majority of Public Investment Funds indicated they were looking at investing or increasing their allocations outside their home markets, particularly those based in emerging markets. These approaches can close the gap to meet desired returns. The graph below3 illustrates interest in investing outside the home market based on the domicile of the fund.

Diversifying Away from Home Markets

Public Institutional investor change in demand (%) in geographical allocations

<table>
<thead>
<tr>
<th>Region</th>
<th>Net¹</th>
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<tbody>
<tr>
<td>Africa</td>
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<td>North America</td>
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</tr>
<tr>
<td>Home Market</td>
<td>0</td>
</tr>
</tbody>
</table>


¹ Net respondent view is the % increase citations less % decrease citations.

Sample size: Africa (12), Latin America (17), India (18), China (20), Emerging Asia (18), CEE/Russia (15), Middle East (9), ANZ (15), Developed Asia (32), Cont. Europe (32), UK (25), North America (31), Home-market (23).

Whether the challenges pensions are facing are strategic, or if they are looking for tactical solutions, Citi works with over 100 pension funds globally and has partnered with them to deliver solutions for these challenges.

Working with peers as part of a participation strategy

How do pension funds access investments? Where should I participate across the value chain? What should I outsource and what should I do internally? Responses to the above questions are necessarily constrained by organizational structure and level of expertise in certain areas, and are subject to change as the organization evolves. These questions are particularly acute when it comes to Real Estate and less liquid assets, as funds continue to evolve their investment model.

The long-term nature of pension investing is also encouraging market leaders to consider different types of arrangements including strategic partnerships that create alternate cash flows. More recently, some large plans have not only made direct investments to alternative asset managers, but have engaged in “strategic partnerships” with them as well. Under such an agreement, asset owners take an equity stake in the underlying business of an asset manager. The goal is to create a symbiotic relationship whereby the plan sponsor gets ownership of a profitable business, while the asset manager gets “sticky money.”

Real estate is an example of an asset class that requires specialized expertise and scale. To gain experience many funds begin by investing as limited partners into real estate funds. This simultaneously facilitates exposure to the asset class, while beginning to build in-house expertise. Another constraint is around size, as pension funds may not want to own a property in its entirety. We have seen that co-investing alongside other public investors or alternative fund managers is on the rise. One example is The Norwegian Government Pension Fund Global’s acquisition of a stake comprising two properties in Chicago through a joint venture with Prologis in 2015. Alternatively, some pension funds opt to go it alone, and invest directly — such as Malaysia’s Employees Provident Fund $117 million acquisition of five distribution facilities in the greater Tokyo area last year.

Making portfolio construction a disciplined, dynamic process

Each of these innovations in portfolio construction have resulted in the investment portfolio becoming more diverse and has made management more complicated. Modern institutional portfolios have become highly complex: they have long since evolved from a relatively simple collection of active long-only managers able to trade opportunistically to realize positive tracking error against broad market indices. This has forced CIOs to become increasingly dynamic in their monitoring and management of the portfolio. Consistent monitoring of the performance of portfolios should be available in order to allow effective decision-making regarding potential repositioning.

There are additional strategies pension funds can employ beyond adjusting their investment approach. These include:

Make the required necessary contributions - now

Failing to make the necessary contributions is the most significant component of underfunding – it should be a requirement that contributions are made when they are due. We believe having a generous funding plan that makes realistic assumptions for future investment returns, mortality and benefits will avoid bigger problems down the line when pension plans start having to pay out retirement income.

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One of the most significant components of global pension and retirement underfunding is the failure of governments to meet their contribution commitments. Unfortunately, while governments often impose genuine requirements for funding contributions on corporate sponsors, they rarely impose those standards on themselves.

For example, in the U.S., public plans frequently increase benefits but fail to make the appropriate contribution. The Government Accounting Standards Board puts out the annual required contribution (ARC) but unfortunately, the word ‘required’ is just a word. U.S. public plans have a median investment return of 8.3% over the last 25 years, according to the National Association of State Retirement Administrators. Investment returns are not their problem. The fact is that many public plan sponsors have simply not made the ARC. The Rockefeller Institute of Government estimated that the pension shortfall for U.S. public plans exceeded $1.7 trillion in 2015, while Moody’s estimated that 2015 shortfalls in investment income increased unfunded liabilities by an incremental 17%.1

Adopting a strategy for dealing with defined benefit fund deficits
Pension scheme managers dealing with defined benefit fund deficits need to make sure they have a clear, calculated strategy. It is no good hoping for strong markets to fix deficits and there are plenty of downside risks, including the potential for bond yields to rise slower than expected and longevity extension. Public pension funds, unlike their corporate counterparts, cannot easily commute, derisk or outsource their liabilities to an insurance provider.

If a plan is underfunded, appropriate levels of return-seeking assets should be in a portfolio. Many plan sponsors have adopted glidepaths to increase allocation to liability-driven investment (LDI) strategies as their funded status increases.

But those with severe underfunding should have appropriate allocations to return-seeking assets.¹

For severely underfunded schemes, a recovery strategy may simply not be feasible. Instead, plan sponsors or trustees need to bite the bullet and start planning for a possible inability to pay promised benefits and begin efforts to amend the plan and payouts. In countries where re-negotiation is permissible, this should begin now, and insurance de-risking solutions here could also be a relevant tool.

Increasing the independent governance of schemes and manager compensation
Public pensions are often governed by politicians. Independence, market nimbleness and investment savvy are required for excellent management of the enormous sums of assets in pension plans. Those are characteristics that do not often go hand-in-hand with political governance. Canada provides an excellent example of best practices and proven success, where a system of trustees and independent governance is in place to encourage sound and independent management schemes and to avoid conflicts of interest.¹

Moreover, if pensions are to have the human talent that is needed, managers must be compensated accordingly. The Canadian pension model has independent governance, professional money managers, market competition, and some of the best returns among global pensions.

Given the coalescence of macro factors impacting public sector pension funds, it is imperative that funds act now to avert a looming crisis. Whether the challenges pensions are facing are strategic, or if they are looking for tactical solutions, Citi works with over 100 pension funds globally and has partnered with them to deliver solutions for these challenges.
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