TCX

Theory of Change

Championing sustainable and innovative finance for development

November 2018

ODI

Acknowledgements

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Table of contents

TCX

List of acronyms

ALCB	African Local Currency Bond (Fund)
DFI	Development financial institution
DFID	Department for International Development
EDCSP	European Development Cooperation Strengthening Programme
FESSUD	Financialization, Economy, Society and Sustainable Development Programme
FPAS	Forecasting and Policy Analysis System
FX	Foreign exchange
GDP	Gross domestic product
ICE	Instituto Costarricense de Electricidad
IDA	International Development Association
IFAWG	International Financial Architecture Working Group
IFC	International Finance Corporation
IFI	International financial institution
IMF	International Monetary Fund
LIC	Low-income country
LIFT	Livelihoods and Food Security Multi-Donor Trust Fund
MDG	Millennium Development Goal
MFI	Microfinance institution
MIC	Middle-income country
MIGA	Multilateral Investment Guarantee Agency
MIT	Massachusetts Institute of Technology
MIV	Microfinance investment vehicles
MSME	Micro-, small and medium-sized enterprises
NBER	National Bureau of Economic Research
ODI	Overseas Development Institute
SDG	Sustainable Development Goal
SME	Small and medium-sized enterprises
SRI	Socially responsible investor
TCX	The Currency Exchange Fund
UNCDF	United Nations Capital Development Fund
UNECA	United Nations Economic Commission for Africa
US	United States
USD	US dollar
WEF	World Economic Forum

Introduction

Finance is a significant obstacle to inclusive economic development and achieving the Sustainable Development Goals (SDGs).[1] A 2015 report by the World Bank and other international financial institutions stated that to meet the SDGs, the money spent on developing countries needed to change from 'billions' of development aid to 'trillions' of investment. Moreover, much of that finance would have to be raised from international private investors because of the limited domestic resources of developing countries and the constrained fiscal capacity of donors (World Bank, 2015).

International investments in developing countries, however, are typically denominated in 'hard' currencies, such as the US dollar (USD), because the foreign-exchange (FX) risks associated with funding projects in local currencies deter investors, especially in sectors that are crucial to inclusive and sustainable economic growth and development. However, this transfers the FX risk to the developing countries, and because they have underdeveloped financial markets, they have little to no possibility of mitigating or 'hedging' currency risk. This exposes them to the risks of damaging FX-related losses and financial and macroeconomic instability.

Because of this, reducing FX risk in developing economies is key in ensuring their financial-sector development and stability, inclusive economic growth and poverty alleviation.

This is where The Currency Exchange Fund, TCX, makes a considerable contribution.

Founded in 2007 by a group of development finance institutions (DFIs) and specialised microfinance investment vehicles (MIVs) and donors,[2] TCX provides FX risk-management tools in the form of hedging instruments, or products, for local currencies in more than 70 developing countries. It has hedged almost USD 6 billion worth of development finance in local currency since its inception. It has become a 'market maker'[3] through its expert pricing and willingness to take on developing-country currency risk, combined with innovative financial structuring and advice. It has thus become a trusted partner of development finance institutions, commercial banks, governments and investors.

TCX seeks to increase its development impact in the future. It plans to build on its success to date to make a greater contribution to sustainable and inclusive economic growth. It will boost investment, including in vital sectors, such as infrastructure and renewable energy, work with partners in high-impact sectors and contribute to financial development and stability in developing countries.

TCX also 'pools' or spreads currency risk, allowing it to benefit from diversification, which ensures that its business model is sustainable. If the fund continues to grow as expected, it will be in a position to expand its currency portfolio and enhance its diversification benefits. Such economies of scale will also enable the fund to use its capital more efficiently and provide currency hedges not only for a wider variety of currencies, but also for larger transactions and longer-duration instruments to support infrastructure and climate finance (Box 1).

This paper presents TCX's Theory of Change. It sets out the fund's achievements to date and how it plans to build on them in future. The paper discusses TCX's products, services and advisory role in more detail, then presents TCX's Theory of Change diagram and its five channels of contribution. These are explored in greater depth, with case studies for illustration. The academic evidence base, which links foreign-exchange risk mitigation to poverty alleviation and women's livelihoods via financial-sector development and stability and inclusive economic growth, is discussed in Appendix 1.

1 https://sustainabledevelopment.un.org/sdgs
2 The current investors in TCX are 22 multilateral and bilateral DFIs and MIVs, the Dutch and German governments.
3 Defined in this paper as a buyer and seller in financial markets, not the traditional regulated market-maker function.

Box 1

Sustainability is at the heart of TCX's business philosophy

Being a stable and reliable partner for investors is a key component of TCX's success as market maker and swap counterparty (Box 2). Because of the high replacement risk involved (the risk that a party will not meet its end of a contract), our partners rely on TCX's long-term viability. Its sustainable business model is based on accurate risk quantification and pricing, prudent diversification, a strong and patient capital base, and a core long-term goal to offset exposure (and thus develop capital markets). Reducing a country's dependency on unpredictable debt restructuring and capital injections ensures investor confidence, engenders trust and increases the use of the local-currency solutions that TCX provides. In weathering four major financial crises and achieving a moderate, positive result to date, despite significant emerging- and frontier-market depreciations, TCX has proved its robust business model to be self-sustaining.

End clients: Sharp currency depreciations directly affect households by increasing the cost of credit and can, ultimately, lead to loan defaults. TCX mitigates these effects. This makes households more resilient and their path to increased income, wealth and quality of life more sustainable.

SDG financing: Currency risk is one of the major impediments to mobilising the 'trillions' of dollars needed to achieve the SDGs. Large capital flows denominated in hard currency make developing countries more susceptible to currency crises, if their own currencies suddenly depreciate or devalue. In this context, TCX can play a crucial role in improving the allocation and management of currency risk, making SDG financing more sustainable.

Source: TCX

What does TCX do?

TCX provides products that protect its clients against long-term currency risk. These core products are cross-currency swaps and foreign-exchange forward contracts in emerging- and frontier-market currencies (Box 2).

The fund provides these products in more than 70 low- and middle-income countries where commercial financial institutions cannot meet clients' needs. This means that in FX markets with low levels of development, TCX is the sole provider of foreign-exchange products. In more developed FX markets, TCX adds to the range and duration of instruments available (Table 1).

Table 1 Markets in which TCX operates

Stage of market development	Low-income countries	Middle-income countries
No or negligible FX market	Afghanistan,* Angola, Bangladesh, Benin, Burkina Faso, Cambodia, Comoros,* the Democratic Republic of the Congo,* Ethiopia, Guinea, Haiti,* Laos, Madagascar, Malawi, Mali,* Mauritania, Mozambique,* Myanmar,* Namibia, Nepal, Niger, Rwanda, Senegal, Sierra Leone,* Tanzania, Togo,* Zambia	Albania, Algeria, Armenia, Azerbaijan, Belarus, Bolivia, Bosnia and Herzegovina, Cameroon, Colombia, Cote D'Ivoire,* Gabon, Georgia, Guatemala, Honduras, Jamaica, Jordan, Kyrgyzstan, Macedonia, Moldova, Mongolia, Namibia, Nicaragua, Pakistan, Papua New Guinea,* Serbia, Sri Lanka, Swaziland, Suriname, Tajikistan, Tunisia, Uzbekistan, Viet Nam
Growing FX market	Uganda	Botswana, Costa Rica, the Dominican Republic, Egypt, Ghana, Kenya, Lebanon, Morocco, Nigeria, Paraguay, Ukraine
More developed FX market		Argentina, Brazil, China, India, Indonesia, Kazakhstan, Mexico, Peru, the Philippines, South Africa, Thailand

*Fragile and conflict-affected states
Source: TCX

TCX complements its products with services, such as tailored solutions and advice, to support clients and other key players and ensure their sustainability.

TCX's business model means that the fund holds 'positions' in currencies (it owns a certain amount of a given currency and takes on the FX risk associated with it) and regularly provides price quotes to aid market pricing transparency, as well as key information on the economies and currency risk of developing countries.[4]

TCX manages its positions by diversifying them. It does this by holding a pool of currencies, spread across the 70 countries in which it operates. This means gains in one currency are offset by losses in others, balancing the pluses and minuses across its entire portfolio.

For most transactions, TCX receives local currency and pays out hard currency, usually USD dollars. This means that it accumulates local-currency risk as a result of its normal operations. This is in line with the fund's core business model, however, which, as mentioned, is to take on the local-currency risk of its clients and offset this through diversification.

However, since 2013, TCX has been able to offset an increasing amount of its accumulated currency risk, by working with its shareholders to hedge the obligations of their local-currency bond issuance, thus paying out in local currency and receiving hard currency. This has reduced TCX's local-currency exposure in some markets, allowing it to use its capital base more efficiently.

Box 2

What are FX forward contracts and cross-currency swaps?

FX forward contracts are agreements to buy or sell a set amount of a foreign currency at a specified price at a predetermined time in the future.

Cross-currency swaps are contracts in which two parties agree to exchange multiple fixed amounts (normally loan principal and interest payments) in two different currencies.

For example, if a party has a foreign currency-denominated loan, they will have a set schedule for making interest and principal repayments in hard currency. They can use forward contracts, or cross-currency swaps (basically a series of FX forward contracts bundled together to mirror the cashflows needed to repay the loan interest and principal) to fix a foreign-exchange rate on these payments. This gives them certainty on the value of their payments in their local currency, reducing risk and making investment more attractive.

TCX normally offers non-deliverable products, where all cashflows, despite being denominated in local currency, are settled in USD. It thus creates a 'synthetic' local-currency loan.

Deliverable contracts, where all cash flows are in local currency, are available upon request, but only for specific currencies.

Source: TCX

4 These include quotes for development assistance countries, except Yemen, South Sudan and Syria.

TCX's Theory of Change

TCX's Theory of Change shows, step by step, how the fund takes the currency risk out of development finance by providing FX hedging instruments combined with tailored solutions and advice. This ensures the sustainable provision of services to its clients. Its contribution is underpinned by a body of academic evidence that strongly supports the positive role of finance and FX risk mitigation in fostering inclusive economic growth.

TCX makes its most marked contribution in countries where there is significant financial underdevelopment or no foreign-exchange market at all. In such markets, TCX quantifies and prices risk using innovative approaches and models and is the sole provider of foreign-exchange instruments. This helps investors overcome the significant challenges arising from a lack of financial products and data. The fund also covers low-income and fragile or conflict-affected states, such as Burundi, Sierra Leone and Haiti, which have some of the lowest United Nations Human Development Index[5] scores globally.

In markets where there is a greater degree of financial development, TCX contributes by extending the range of products available – for example, by introducing long-term cross-currency swaps that are not covered by commercial financial markets and by providing pricing information to facilitate transactions by other market participants.

The specific Theory of Change channels through which TCX contributes to inclusive economic growth and poverty alleviation can be summarised as follows (see Figure 1 and subsequent sections for more detail):

1 Boosting investment through foreign-exchange products

By hedging the currency risk of investments and by providing structuring and advice, TCX reduces investment risk in and unlocks financing for low- and middle-income countries.

TCX has played a particularly important role in financing for developing-country infrastructure, a sector where investment is vital for boosting economic growth. In addition to its work with innovators in the sector, its introduction of longer-dated instruments has met a need for long-term finance.

2 Partnering with clients in high-impact sectors

Historically, TCX has focused on microfinance and small and medium-sized enterprise (SME) financing. More recently, it has also built a strong client base in renewable energy and climate finance and become a natural partner for DFIs and socially responsible investors (SRIs) active in these sectors.

By targeting these high-impact sectors, TCX contributes to achieving the SDGs, in particular, those on climate action, ending poverty and supporting job creation and economic growth.

These partnerships have also directly tackled poverty and improved women's income and wellbeing. They have bolstered household resilience and the economic livelihoods of marginalised and underbanked populations, including women, by making finance and specialist insurance more accessible.

3 Accelerating financial development

TCX promotes the deepening of local capital markets (markets for stocks and bonds) by supporting offshore and onshore local-currency bond issuance and by pricing products that extend local yield curves[6] – an essential pricing tool in bond markets. In particular, TCX has become increasingly active in the last two years in co-structuring local-currency bonds in partnership with its shareholders and in working with innovative bond funds.

5 http://hdr.undp.org/en/content/human-development-index-hdi

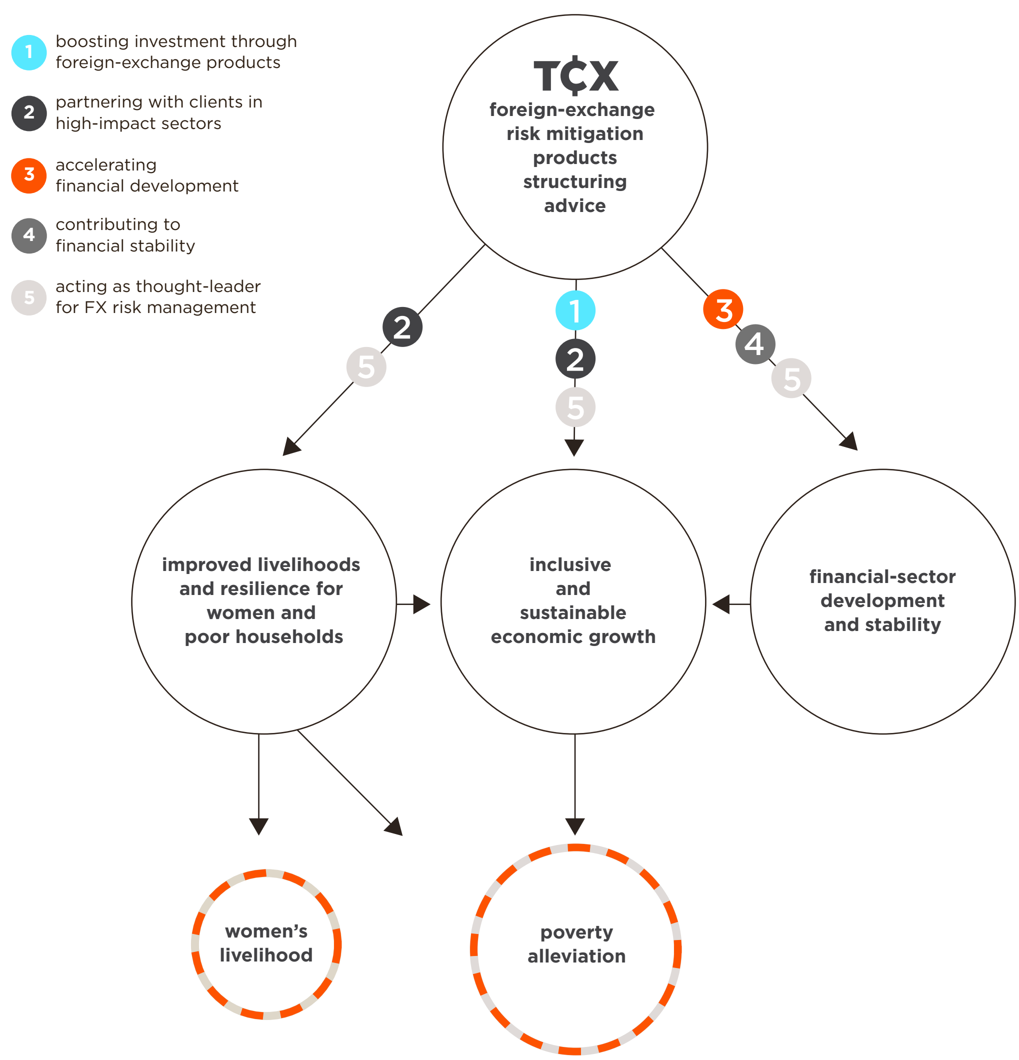
4 Contributing to financial stability

TCX supports financial stability by providing price certainty, and reducing FX risk at institutional levels. This enables financial institutions, such as banks and MFIs, and companies to reduce foreign-currency mismatches, maintain debt sustainability and ensure stable investment. Collectively, this contributes to reducing the risks of financial instability.

5 Acting as thought leader for FX risk management

TCX promotes risk awareness and advocates globally for the elimination of currency mismatches in foreign lending by promoting local-currency financing and the use of hedging. It frequently engages in dialogue with DFIs, as well as governments, ministries and central banks, and provides advice to stakeholders. It also shares its expert knowledge in risk management. All of these activities contribute to the broader knowledge and mitigation of FX risks by governments, DFIs and investors.

Figure 1 | TCX's Theory of Change



6 A yield curve is a graph showing the yields, or rates of return, on bonds of various maturities. Long-term bonds generally have higher yields than short-term bonds because of the greater risk involved over time.

1 | Boosting investment through FX products

The majority of development finance today is provided in hard currency, while most development projects are carried out in local currency. This means that investors in development projects face the additional challenge of currency risk, which makes such investments less attractive. Indeed, FX risks are consistently cited as one of the greatest deterrents to investment in developing countries (WEF, 2016; Tyson, 2018; UNCDF, 2018).

By providing FX products that protect its clients against currency risk, TCX helps overcome these challenges, boosting investment – an essential driver of economic growth.

This has been particularly important for developing-country infrastructure, where there is a need to scale up financing from private investors to support 'green' economic growth, but where financing is predominantly in hard currency. FX hedging is essential if large pools of investors, especially institutional investors, are to get involved in financing major infrastructure development projects (Box 3).

Tackling currency risk is also important when it comes to supporting innovation in the infrastructure sector. For example, the fast-emerging solar-based off-grid sector is often financed in hard currency, but earns revenues in local currency, leaving companies exposed to currency risk.

TCX has been active in backing such infrastructure investments. Its products and structuring service have facilitated financing for large-scale projects (a number of which are highlighted in case study 1) and highly innovative smaller projects (some of which are discussed and in case study 3).

TCX also combines products with innovative advice and financial structuring to solve complex policy issues. In Myanmar, for example, TCX worked with a donor fund to come up with an innovative solution that facilitated investment for the expansion of financial access, while complying with an interest-rate cap imposed by the local authorities (case study 2).

Box 3 | Infrastructure development, currency risk and IFIs

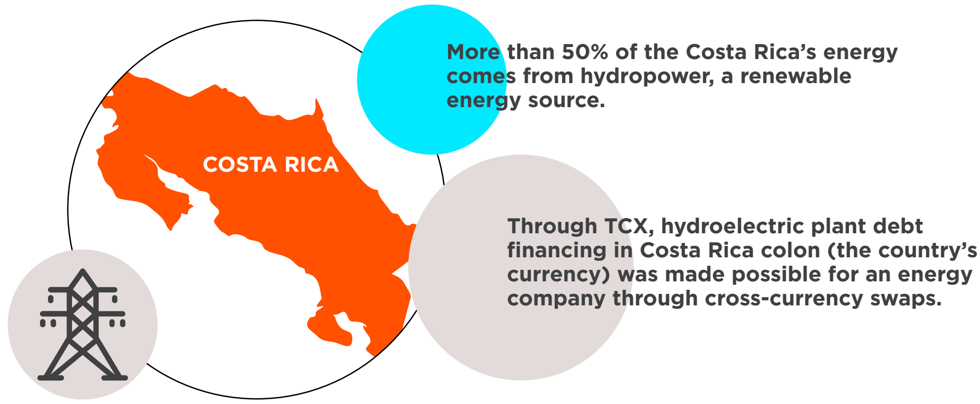
Improving infrastructure in developing countries – including energy, water, waste treatment and transportation – is essential to economic growth. Financing such development is the focus of the G20 group of nations in 2018. For decades, these projects have been financed mostly in hard currency, with the local-currency risk borne by the public-sector borrowers of the developing countries, themselves. This has often threatened the sustainability of public debt or added to the burden on poor households, as increased costs have led to price hikes for consumers.

TCX is challenging that status quo in a number of ways. As well as providing products to hedge risk, the fund is a leading voice in advocacy efforts to highlight the risks associated with hard-currency finance and the need to develop alternatives. Where local currency for infrastructure was a topic barely taken seriously 10 years ago, awareness among all sector players has grown and the issue is now firmly on the development agenda. This, in turn, is promoting a culture of change.

TCX has also undertaken specific efforts to reduce risk in the energy sector. The fund has engaged with developers, lenders and energy buyers, such as utilities, to demonstrate the viability of local-currency funding and local-currency 'off-take' purchase agreements. In several countries, this has led to utility companies considering local-currency purchase agreements. Where hard-currency off-take agreements persist, TCX is engaging with utilities to assist them in hedging their exposure.

TCX's combination of consistent advocacy work and product development over the past decade has had a considerable influence on thinking in relation to infrastructure finance and the willingness to develop alternatives to tackle currency risk. This has helped to improve the sustainability and expansion of the sector, including the transition to local-currency finance for the infrastructure sector in developing countries.

Source: TCX

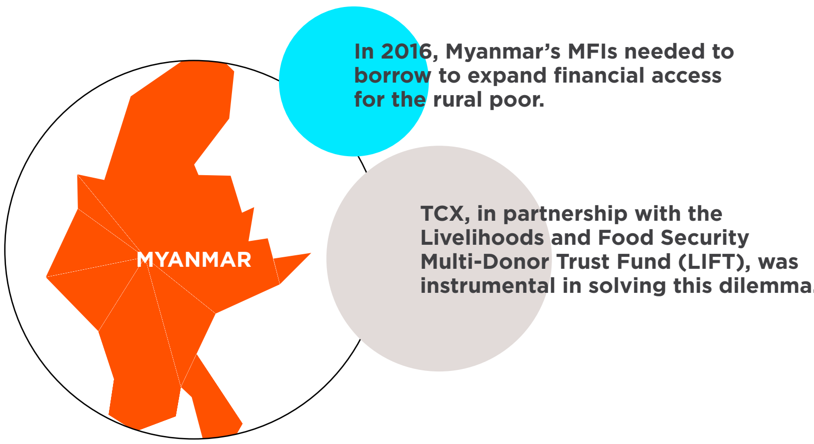


Case study 1 | Boosting investment in infrastructure

Costa Rica is a global green energy leader serving as an example to the world. More than 50% of the country's energy comes from hydropower, a renewable energy source. As the amount of electricity used by Costa Ricans has increased, energy generation needs have also risen. Sustainably expanding generation capacity through clean energy sources like hydropower is key to ensuring both the continuation of green energy dominance and the maintenance of the country's biodiversity. Through TCX, hydroelectric plant debt financing in Costa Rica colon (the country's currency) was made possible for an energy company through cross-currency swaps. The fixing of interest payments until 2043, from 2016, was an unusually long dated hedge in the sector. This benefits the energy company by improving its forecasting and budgeting abilities and making its debt less vulnerable to exchange rate depreciation. Additionally, it contributes to sustainable green energy continuing to be the norm in Costa Rica.

TCX has worked to support the local-currency financing of infrastructure development in other countries, too. In Georgia, a TCX hedge agreed in 2017 allowed Georgian Water and Power, which serves more than 500,000 customers in Tbilisi to receive significant local currency funding. This funding went towards modernizing and rehabilitation of water and power distribution and generation facilities. In Serbia in the same year, a TCX hedge converted nearly 25% of an existing euro denominated DFI loan to the Belgrade Transport Company into Serbian dinars. The initial loan went towards modernizing the municipality's buses. The conversion was aimed at reducing the company's currency risk and thus improving the long term financial health of the company. Finally, in Argentina a long term local currency hedge, for nine years, allowed the city of Buenos Aires to receive funding from a multilateral DFI to improve the city's bus and bike systems thus improving mobility and reducing emissions.

7 According to ICE's 2017 year-end financial statements.



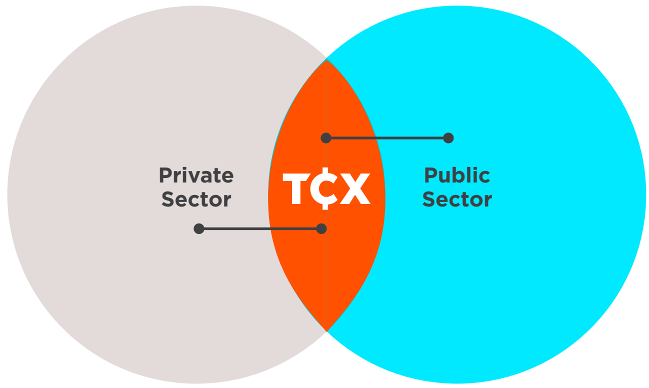
Case study 2 | Multi-dimensional solutions to boost investment in Myanmar

More than 50% of Myanmar's rural population lives either below or close to the poverty line, and people's reliance on subsistence agriculture and informal employment makes them vulnerable to weather, health and other shocks (World Bank, 2017a). Such shocks can prompt households to adopt counter-productive financial coping strategies, such as cutting business investment, selling core productive assets, withdrawing children from school, or high-interest borrowing. The expansion of financial access is key to improving the resilience of such poor households in rural areas (World Bank, 2017b).

In 2016, Myanmar's MFIs needed to borrow to expand financial access for the rural poor, but this proved difficult, as finance was only available in hard currency, which, due to the volatility of the Myanmar kyat, entailed considerable risk. Furthermore, the country's regulatory interest-rate ceiling of 13% made lending unattractive to foreign investors.

TCX, in partnership with the Livelihoods and Food Security Multi-Donor Trust Fund (LIFT), was instrumental in solving this dilemma. LIFT subsidised interest rates to bridge the gap between the return required by foreign investors and the regulatory interest-rate cap. This was combined with FX hedging for MFIs, so that neither they, nor their vulnerable clients, were exposed to currency risk.

TCX's ability to combine FX products, advice and financial structuring and to partner with donor agencies to deliver a multi-faceted solution in Myanmar has facilitated more than USD 200 million in lending to more than 337,000 clients and created in excess of 1,000 new formal-sector jobs in the MFIs alone (UNCDF, 2018).



2 Partnering with clients in high-impact sectors

SDG 17 aims to establish global partnerships for sustainable development. It emphasizes successful partnerships between the private and public sectors, governed by a shared goal and vision for a better world.

TCX has developed a strong client base in sectors with a high development impact, thus making a contribution to global efforts to meet the SDGs, particularly in relation to climate action, ending poverty and supporting job creation and economic growth.

TCX has facilitated investment by international investors in the green energy sector. For example, when the first off-grid companies in East Africa raised finance, TCX engaged with lenders and borrowers to assess and hedge the risk of hard-currency finance. The fund has subsequently facilitated local-currency financing to the sector for DFIs and socially responsible investors.

Case study 1 illustrated TCX's innovative approach to financing large-scale green infrastructure. However, the fund has also contributed to micro-projects, partnering with socially responsible investors and DFI-seeded specialist finance institutions. Since 2015, it has hedged more than USD 180 million of financing in the sector. Examples of its work in this regard can be found in case study 3.

TCX also has strong partnerships with MFIs (many of whose clients are women) , to which it provides FX hedging and advice. This means that the MFIs can expand financial access without passing on currency risk to low-income households or risking institutional soundness. However, although TCX's assistance to these clients has been substantial, the academic evidence linking microfinance to poverty alleviation is mixed (see appendix for more detail). Thus, TCX makes a smaller contribution here than it does via other channels. Examples of TCX's work with microfinance clients are discussed in case study 4 on Sierra Leone and Kenya.

TCX has further tailored products to specific sectors that improve the resilience of vulnerable households. Its aforementioned work with MFIs improves household resilience by facilitating savings products. TCX delivers similar results through its work with specialist insurers (an example of its work with weather insurance for vulnerable households can be found in case study 5).

Solar panels have been successful in delivering cheap and reliable electricity to households and micro-businesses, especially in rural areas.

Case study 3 | Innovation in climate finance

Green, cheap and reliable electricity is essential to inclusive economic growth and household welfare. However, in low-income countries, electrification levels are only 38.8%, compared with 90.9% in middle-income countries. In rural areas, where there is no connection to the national grid, electrification levels are even lower, leaving households dependent on expensive generators or wood and other burners often associated with respiratory damage.

One answer to this is the 'micro-solution' of solar panels. They have been successful in delivering cheap and reliable electricity to households and micro-businesses, especially in rural areas, where such panels can be rapidly installed without the need for connection to the grid.

In partnership with two clients, BBOXX and M-KOPA, TCX has been instrumental in mobilising sustainable finance for the sector.

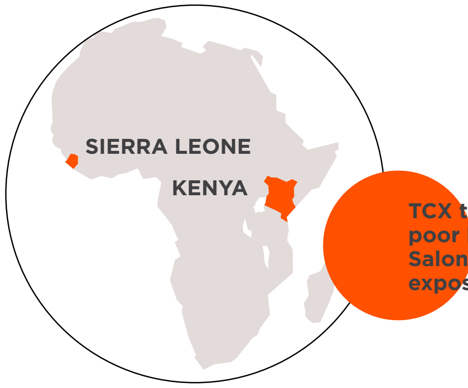
BBOXX is a provider of solar panels. Founded in 2010, it designs, makes and distributes 'plug-and-play' solar systems for poor households and micro-companies. An important part of its business model is providing finance for customers to purchase the solar panels on a three-year payment plan, using finance from socially responsible investors and commercial banks. However, this finance is provided exclusively in US dollars. Until TCX stepped in, this left BBOXX exposed to currency risk that it either had to absorb or pass on to customers. TCX resolved the dilemma by providing cross-currency swaps to change the company's USD exposure on borrowings to local currency. This has allowed BBOXX to expand its business through sustainable financing, delivering more than 100,000 systems in low-income countries, such as the Democratic Republic of the Congo, Rwanda, Sierra Leone, Haiti, Ethiopia and Côte d'Ivoire, with plans to electrify 20 million households by 2020.

TCX resolved the dilemma by providing cross-currency swaps to change the company's USD exposure on borrowings to local currency.

TCX also partners with M-KOPA, which has provided solar home systems to more than 500,000 low-income households in Kenya, Tanzania and Uganda. It operates a similar financing model to BBOXX. A socially responsible investor, responsAbility Investments AG, has provided M-KOPA with financing in Ugandan and Kenyan shillings to match its revenue flows from local households. TCX has hedged these transactions for responsAbility Investments, assuming the currency risk of the financing structure and ensuring the sustainability of both the financing and the organisations.

Both the BBOXX and M-KOPA transactions were conducted via MFX Currency Solutions, a TCX partner organisation, which works with social-impact investors to facilitate financing. MFX covers the collateral requirements of financing transactions, which are then backed by the United States of America's Overseas Private Investment Corporation and the Netherlands Development Finance Company, to provide them with a triple-A credit rating. When transactions are in illiquid developing-country currencies, MFX conducts a 'back-to-back' transaction with TCX, passing on the currency risk for TCX to manage.

Such initiatives promise to be instrumental in expanding the availability of solar panels for poor households in low-income countries. They illustrate how TCX's innovation, partnerships and product offerings can remove major hurdles to inclusive economic growth and accelerate poverty alleviation.



TCX thus ensured that more than 8,000 poor households obtained credit through Salone Microfinance Trust without exposure to currency risk,

Case study 4 | Expanding financial access in Sierra Leone and Kenya

Financial access is essential to eradicating poverty and improving the economic livelihoods of poor households. However, funding to expand financial access to poor families is predominantly in hard currency in countries that have no or limited FX markets, leaving institutions and/or poor households exposed to currency risk. This is where TCX makes its contribution, by taking on this risk through its hedging instruments.

Sierra Leone, for example, ranks 184th out of 189 countries in the Human Development Index and is considered a fragile state.[12] Financial access is core to Sierra Leone's poverty-reduction strategy, but it lacks an effective FX market. In 2017, to ensure that financial access could be expanded in an appropriate way, the Regional MSME Investment Fund for Sub-Saharan Africa provided local currency-denominated loans to Salone Microfinance Trust, a Tier 3 MFI[13] with a largely female customer base in rural areas. TCX hedged these transactions, facilitating currency risk-free borrowing, so that the MFI could expand its operations. TCX thus ensured that more than 8,000 poor households obtained credit through Salone Microfinance Trust without exposure to currency risk, while maintaining the trust's institutional soundness.

Kenya, too, has been leading the charge in making finance more available. It increased official financial access to 43% of the population in 2016 from 15% in 2007 by formalising and expanding microfinance-orientated institutions (Central Bank of Kenya, 2016). However, the MFIs were slow to attract deposits, so had to rely on hard-currency loans from international investors, exposing them to foreign-exchange risk. While the MFIs were aware of the FX risk, they were unable to mitigate it, because Kenya lacked a liquid foreign-exchange market (Tyson, 2015).

Thus, TCX became a key provider of FX hedging instruments to MFIs in Kenya. Between 2005 and 2015, the fund essentially protected individual and micro-business borrowers by absorbing the losses caused by local-currency depreciation. MFIs have cited TCX's FX hedging as being critical to their ability to expand their balance sheets while keeping FX risk within regulatory limits and avoid passing on such risk to their customers (Tyson, 2015; Carnegie Consult, 2017).

Case study 5 | Providing weather insurance for vulnerable households

In many developing countries, poverty is highest in rural areas, where households are reliant on subsistence agriculture. Over the past 10 years, these poor households have been affected by increasingly frequent and severe weather-related events due to climate change. Traditional coping mechanisms have not been able to protect them because of the harshness and speed of these changes.

Insurance schemes reduce the vulnerability of poor households to such challenges (Weingärtner et al., 2018). Established in 2015 and led by Germany's KfW development agency, the InsuResilience Investment Fund provides weather event-related insurance to small businesses and low-income households via reinsurance companies.

In 2018, TCX played a central role in facilitating the expansion of the InsuResilience Investment Fund into Georgia. The fund grew its operation through a wholesale agreement with Credo Bank, a Georgian microfinance organisation, to provide insurance products for small and micro-businesses.

12 As of 2017, according to the World Bank (World Bank, 2018a)

13 Tier 3 MFIs are start-up MFIs or small non-governmental organisations that are immature and unsustainable, according to MicroRate's globally accepted classification system (MicroRate, 2013)

3 | Accelerating financial development

Financial development is essential to inclusive economic growth in developing economies. Functioning domestic capital markets (for stocks and bonds) are crucial to managing public finances and to private-sector investment.

A key step in this process includes establishing a bond market. This reduces a country's reliance on expensive bank lending, gives financial institutions and individuals somewhere to invest domestic savings and offers long-term financing for key sectors, such as infrastructure (IMF, 2013; Gagnon, 2014; Mitra and Ng, 2014; IMF, 2018).

Ideally, these markets would be for bonds in local currency, as this would avoid the transfer of FX risk to borrowers in developing countries. The reality, however, is that in many developing countries, bond markets are often lacking or underdeveloped. Moreover, they are frequently not denominated in local currency. This makes it difficult for countries to issue bonds and raise money for economic development in a sustainable and stable way.

One solution to these challenges is to issue bonds elsewhere in a different currency. These are known as 'offshore' bonds, or 'eurobonds', and are bonds denominated in a currency that is not the currency of the home country or market of the issuer.

Offshore bond markets encourage the development of capital markets, as they offer a larger pool of potential investors – and thus capital.

Offshore bond markets encourage the development of capital markets, as they offer a larger pool of potential investors – and thus capital – and increase pricing transparency by providing data to build a yield curve (as previously mentioned, a key component of bond pricing) (IMF, 2013; IMF, 2018).

Offshore local-currency bonds are an attractive new asset class for international investors, as they offer a higher rate of interest (derived from the local-currency interest rate) coupled with the low credit risk of an international financial institution,[14] in addition to a well-regulated offshore jurisdiction (Black and Munro, 2010).

TCX has contributed to the deepening of local bond markets both offshore and onshore in the following ways.

First, it has teamed up with its shareholders, international financial institutions, to issue local-currency bonds in offshore markets. While TCX does not issue the bonds itself, it plays a central role by hedging the IFIs' local-currency payment obligations (coupon and principal payments) (case study 6).

Second, TCX partners with specialist funds that help local companies to issue bonds in their onshore, domestic markets. One example is the African Local Currency Bond (ALCB) Fund,[15] for which TCX has hedged a significant amount of currency risk (case study 7).

Third, the pricing transparency that TCX provides has a secondary effect of 'market deepening', or increasing the range of financial services available on that market, as its pricing information allows the creation of long-term yield curves, which act as market benchmarks (Box 4).

14 A local-currency bond carries credit risk (arising from the possibility that the issuing institution will default) and currency risk (stemming from fluctuations in the exchange rate between the bond's denomination currency and the investor's 'base' currency). If an IFI issues the bond, however, the credit risk of that bond is reduced to that of the IFI and it receives an AAA-rating. This means the bond effectively carries only currency risk. If an investor wants to invest in frontier currency risk, but not credit risk, offshore local-currency bonds are an ideal instrument.

15 http://www.alcbfund.com

TCX was able to smoothe international investment in local-currency bonds by co-structuring a Tanzanian shilling-denominated bond offshore at a lower rate than on the domestic market.

Case study 6 | TCX's support for offshore local-currency bonds

Since 2013, TCX has supported more than 50 new bond issues, with a combined value of almost USD 500 million. These have taken the form of offshore local-currency bonds in currencies as diverse as the Armenian dram, Costa Rican colón, Dominican peso, Georgian lari, Honduran lempira, Kyrgyzstani som, Myanmar kyat, Pakistani rupee, Sri Lankan rupee, Tajikistani somoni, Tanzanian shilling, Ukrainian hryvnia and West African CFA franc.

A good example of a bond issue supported by TCX can be found in Tanzania. The Tanzanian Central Bank imposes capital controls and restrictions on investment by non-residents. TCX was able to smoothe international investment in local-currency bonds by co-structuring a Tanzanian shilling-denominated bond offshore at a lower rate than on the domestic market. It thereby removed the illiquidity premium,[16] in addition to regulatory hurdles for international investors, and set an important benchmark for the Tanzanian shilling market.

Case study 7 | Partnering with local-currency bond funds

As mentioned, TCX contributes to the deepening of local capital markets by partnering with the ALCB Fund, which works closely with issuers, investors and intermediaries to overcome the numerous barriers to local-currency bond markets. ALCB also acts as an 'anchor' investor, to boost the popularity of bonds issued by local companies and give confidence to other potential investors. TCX supports the ALCB Fund by hedging its local-currency positions, thus assuming the currency risk it would otherwise carry.

As of June 2018, the ALCB Fund had invested USD 81 million in 38 bond issues, including local-currency bonds for Botswana, Ghana, Kenya, Côte D'Ivoire, Zambia, Lesotho and Swaziland and bonds in sectors of importance to inclusive economic growth, including agriculture and SMEs.

TCX was engaged at an early stage to absorb the currency risk associated with ALCB's portfolio aiding its financial sustainability.

Box 4 'Virtuous circles' in financial-market deepening

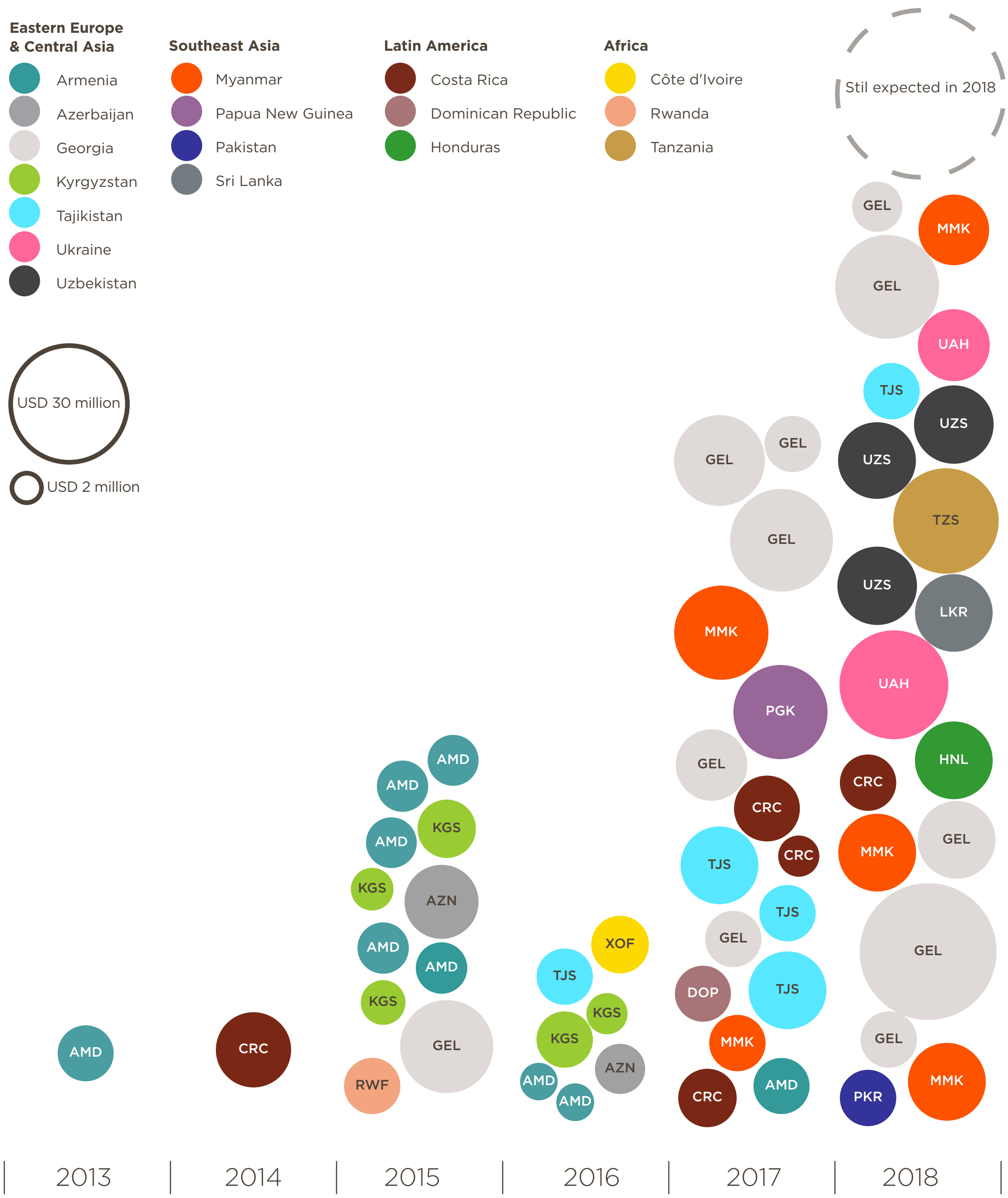
The development of financial markets requires the establishment of financial instruments, regulatory and legal frameworks, market infrastructure, including price transparency, and a critical mass of trusted market participants. When all these elements come together, they can create a 'virtuous circle', whereby investment fuels investment and success fuels success. (Of course, the opposite is also true.)

TCX's participation in under-developed FX and bond markets contributes to the development of such virtuous circles by providing price transparency, innovative pricing models and demonstration effects, by increasing (primary) market liquidity and by deepening the investor base.

Source: Beck et al. (2007); Gagnon (2014); WEF (2015); IMF (2013 and 2018)

16 The extra return investors demand for putting their money into a bond that cannot be quickly and easily converted into cash at its fair market value.

Local-currency bond issues (million USD)



By reducing currency risk for clients, TCX helps to reduce their financial fragility. Cumulatively, such deals reduce macroprudential risks across the financial system by reducing contagion and other foreign-exchange related risks.

4 | TCX's contribution to financial stability

Developing economies have repeatedly been damaged by financial instability. The risk of recurrence is not small: 40% of low-income countries are now considered to be in or at high risk of debt distress, compared with only 21% in 2013. Moreover, as international finance for development is scaled up from 'billions to trillions', these risks are only likely to increase (World Bank, 2015; IMF, 2018).

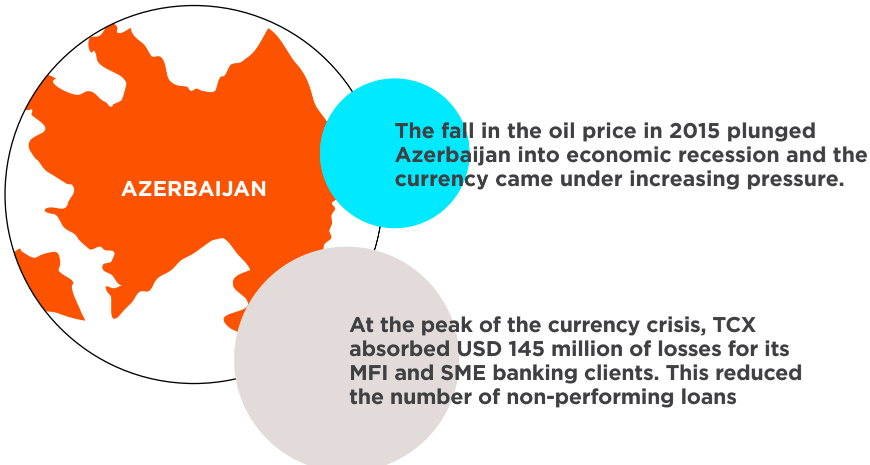
Financial instability and crises are closely related to increases in capital inflows and a resulting rise in foreign-exchange risk. In the event of significant domestic currency depreciation or a devaluation, cross-border capital flows can reverse and the nominal value of hard-currency debt can inflate, triggering a financial crisis. FX mismatches at banks and firms cause fragility and contagion. These problems are greatest for low- and middle-income countries (Minsky, 2008; Ocampo et al., 2010; Rancière et al., 2010; Musacchio, 2012; Toporowski et al., 2013; McKinley and Tyson, 2014; Tyson, 2015; Ocampo and Griffith-Jones, 2018).

By reducing currency risk for clients, TCX helps to reduce their financial fragility. Cumulatively, such deals reduce macroprudential risks across the financial system by reducing contagion and other foreign-exchange related risks (for example, Adrian and Shin, 2009; Ocampo et al., 2010; Musacchio, 2012; Bock and Demyanets, 2012; Laeven and Valencia, 2012; Toporowski et al., 2013).

By way of example, case study 8 illustrates the importance of TCX's role in Azerbaijan during its 2016 financial crisis. Institutions that had hedged their FX exposure with TCX – which absorbed USD 145 million of institutional losses – saw lower levels of non-performing loans and more rapid recovery.

TCX's FX hedges are also of particular importance in trying to assess future risks of financial instability. Any increase in private finance for development and climate action to meet the SDGS is likely to be predominantly in hard currency, and TCX offers the potential to mobilise such finance without increasing the risk of financial instability (Watson et al., 2018; Tyson, 2018).[17]

17 See appendix 1.3 for more on these issues



Case study 8 | Containing the financial crisis in Azerbaijan

Azerbaijan's economy is heavily dependent on oil, which accounts for about 50% of the total value of goods and services the country produces every year (its gross domestic product, or GDP). During the commodity 'super-cycle', when oil prices were high, the amount of USD-denominated lending to the country's non-oil sector, including households and small firms, tripled to around 70% of GDP. At the time, this seemed fairly low risk, as the manat, the local currency, was pegged to the dollar at a fixed exchange rate (IMF, 2016).

However, the fall in the oil price in 2015 plunged Azerbaijan into economic recession and the currency came under increasing pressure. The country eventually had to abandon its currency peg to the dollar and allow the manat to float freely on the market, which caused it to drop 50% in value against the USD. Although this relieved pressure on the currency, it caused a surge in non-performing domestic loans, as the local-currency cost of paying back the dollar loans rocketed, leaving many people unable to afford them. By 2016, these problems had become a full-blown banking crisis. Measures to re-establish financial stability then deepened the recession, leading to further currency devaluation (IMF, 2016).

Against this backdrop, TCX transacted over USD 360 million worth of hedges for MFIs and SME banks to convert USD-denominated loans into local-currency debt. At the peak of the currency crisis, TCX absorbed USD 145 million of losses for its MFI and SME banking clients. This reduced the number of non-performing loans,[18] because these clients had lent in manat, not USD. This protected the institutions from the worst effects of the currency crisis and enabled them to start lending again more quickly than their peers (Carnegie Consult, 2017).

This ensured the institutional soundness of TCX's clients in Azerbaijan and eased the credit crunch that had resulted from the currency crisis.

18 Loan default rates at clients that had reduced their US dollar mismatches using TCX's products were between 10% and 15%, compared with 80% to 100% at institutions that had not hedged their US dollar exposures (Carnegie Consult, 2017).

5 | TCX as thought leader in FX risk management

Effective FX hedging requires not only instruments and markets, but also expert knowledge and an appreciation of the risks involved in hard-currency financing in developing countries. TCX has been a forerunner in developing understanding of these issues, including how risks are quantified, how hedging instruments work and how they are priced.

For development institutions, hard-currency lending is still the established norm, unfortunately, and this means that the currency risk is transferred to borrowers. Such practices fail to recognise the burden being passed to less informed borrowers and how this can have negative development effects. To make things worse, hard-currency financing hides currency risks and may play a role in bad investment decisions, especially when borrowers focus only on the short-term benefits of lower DFI interest rates and ignore the longer-term risks of 'back-loaded', higher repayments (including principal repayments) due to currency depreciation over the full term of the loan.

By developing its client base and business, TCX has helped to address and increase awareness of these issues. New perspectives, innovative financing and regulatory approaches have been developed, proposed or implemented to build knowledge and institutional capacity.

TCX has led various initiatives to speed up progress in this regard. It meets regularly with clients to advise them and hold workshops, and has been using webinars to reach a wider audience. Participants have included DFIs, socially responsible investors, private investors, central banks and ministries of finance (case studies 9 and 10). In addition, TCX has commissioned and shared innovative FX-related risk models tailored to developing markets, helping to spread institutional expertise at the national level (case study 11). These activities are unique to TCX and play a significant role in the development of local-currency finance and markets.

TCX's 2017 Local Currency Lab saw a discussion on local-currency liabilities and the cost of local-currency lending.

Case study 9 | Partnering with DFIs and investors

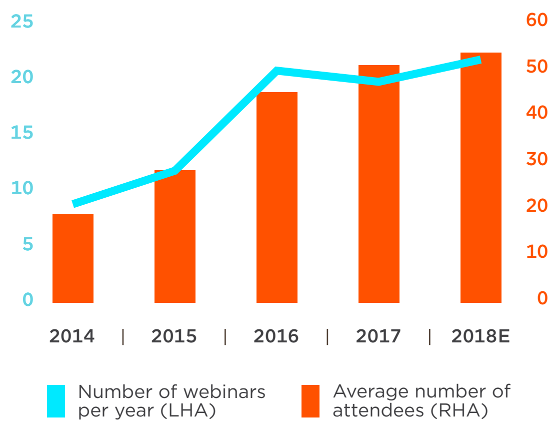
The practicalities and mechanics of local-currency finance can still be challenging for DFIs and investors. Ensuring these issues are well understood is critical to the increased use of local-currency financing solutions.

TCX organizes annual visits for the employees of DFIs, investors and fund managers that use its services. During these visits, TCX communicates its pricing methods and answers practical questions. These visits increase understanding of the products and services TCX provides and strengthen the fund's client relationships, furthering the use of local-currency finance.

TCX also visits clients and, importantly, prospective clients to deepen their understanding of the mechanics of setting up or maintaining local-currency finance operations with the fund. These visits support clients starting local-currency financing programmes and increase the use of currency hedging.

TCX also leads workshops, bringing multiple clients together so that common issues can be raised and addressed and clients can be informed of the latest developments in the field. For example, TCX's 2017 Local Currency Lab saw a discussion on local-currency liabilities and the cost of local-currency lending. It was attended by a range of stakeholders, including senior officials from DFIs and a vice-governor of the National Bank of Georgia, who spoke on his country's continued experience with de-dollarisation (abolishing the use of the USD as a parallel currency alongside the local currency).

TCX webinars over the years



Case study 10 | Webinars to inform and educate

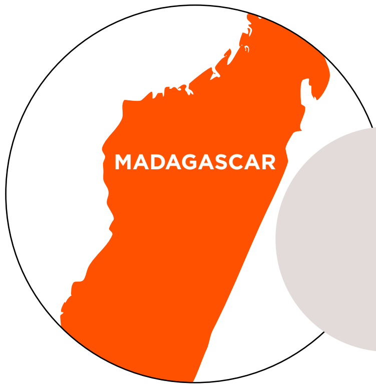
TCX's clients and investors are responsible for billions of dollars of investment in developing countries. Consequently, their knowledge of macroeconomic and financial development is critical to investment flows.

TCX webinars provide information on general and specific developments directly affecting local-currency financing. The sessions give investors and clients easy access to pertinent investment information, such as developments in the local financial sector, prevailing interest rates and TCX pricing.

What's more, the webinar format allows remote viewers to actively engage in discussion and debate with TCX, giving clients a unique opportunity to get information on currency financing they might otherwise not have had.

TCX holds up to 25 such webinars a year. The topics in 2017 and 2018 have included 27 country profiles, from Haiti, Mongolia and Nigeria to Pakistan and Tajikistan, and more in-depth presentations on topics such as solar financing, credit enhancement and currency convertibility.

The webinar format allows remote viewers to actively engage in discussion and debate with TCX, giving clients a unique opportunity to get information on currency financing they might otherwise not have had.



TCX used an FPAS model to price the country's first loan hedge, which has improved market transparency considerably.

Case study 11 | Knowledge sharing for risk management

Being the recognised authority in FX risk management comes with a responsibility to improve information on the nature of FX risk in markets.

To this end, TCX commissioned OGResearch to develop Forecasting and Policy Analysis System (FPAS) models specifically for developing countries. FPAS creates medium-term macroeconomic models from which interest rates, exchange rates and other macroeconomic indicators can be forecast. This is important in countries where underdeveloped financial markets mean yield curves do not exist, or there is insufficient market information to act as an accurate foundation for pricing. Here, FPAS calculates yield curves, interest-rate and exchange-rate forecasts, allowing users to quantify currency risks.

The models have given TCX access to valuable information, which acts as a major input into its pricing models. This means TCX's pricing can reflect risk, even in countries where market data are sporadic or lacking. As TCX quotes prices to more people, companies and institutions than it transacts with, the FPAS information contained in forward and swap prices ends up being shared with a wide range of prospective investors. This makes TCX a key source of influential investment information on frontier currencies and countries, underpinning its pivotal role in development financing.

TCX has used FPAS as its main pricing methodology in several markets, including Azerbaijan, Madagascar, Mongolia, Sierra Leone and Uzbekistan. In these countries, it has supported transactions totalling more than USD 625 million.

Madagascar suffers from a poverty rate in excess of 76% and its financial development and inclusion are low (World Bank, 2018b). The absence of a widely accepted and accessible Madagascan yield curve has been hindering foreign investment and hampering the efficiency of local financial markets. TCX used an FPAS model to price the country's first loan hedge, which has improved market transparency considerably.

TCX also visited Madagascar in 2017, meeting with commercial banks, DFIs, MFIs and officials from the Ministry of Finance, central bank and national statistics office. The trip was followed up with a webinar on macroeconomic, political and fiscal issues, as well as financial-sector topics, including lending and deposit interest-rate structures, liquidity concerns and potential investment opportunities. The 33-strong audience included employees of microfinance investment funds and DFIs, which have invested more than USD 500 million in Madagascar. Since these market-building activities in 2017, TCX has undertaken more than USD 8.6 million in FX hedges in Madagascar, in a market that was previously non-existent.

FPAS creates medium-term macroeconomic models from which interest rates, exchange rates and other macroeconomic indicators can be forecast.

Appendix 1 | The academic evidence base

1 Financial-sector development and inclusive economic growth

Inclusive economic growth – also known as structural economic transformation – is economic growth that has a differentiating and positive effect on poverty alleviation. At its heart are productivity increases in the real economy, both between and within sectors, accompanied by the creation of higher-wage employment. This process can take different forms, but its essential characteristic is a shift in resources from low-productivity, labour-intensive sectors to high-productivity, capital-intensive sectors, combined with shifts in employment from low- to higher-productivity sectors (Rodrik, 2007; McMillan et al., 2017).

This typically includes productivity increases in the agricultural sector to take agricultural production from subsistence to 'commercial' farming, or the development of higher-productivity sectors in the manufacturing or service sectors to create mass employment. Facilitating factors in this process include the provision of infrastructure, typically by the public sector, and increases in human capital, including through public education and healthcare. Such inclusive economic growth is defined not only by growth in GDP, but by poverty alleviation through mass employment creation and improvements in living standards (Rodrik, 2007; McMillan et al., 2017).

Inclusive economic growth also depends on the financial system to mobilise investment resources. Such investment is key to increasing productivity, particularly in the private sector, and indirectly through improvements in, for example, infrastructure and human-capital development (such as better education and healthcare) (for example, Levine, 2005).

There is broad academic evidence that illustrates the close relationship between financial-sector development[19] and economic growth. Cross-country and time-series regression analyses have examined the relationship between financial development and long-run economic growth and found a positive relationship (for example, Gelb, 1989; World Bank, 1989; Roubini and Sala-i-Martin, 1991; King and Levine, 1993; Levine et al., 2000; Levine, 2005).

The transmission channel underlying this relationship between financial development and economic growth is greater financial intermediation through more efficient resource allocation, which increases productivity (for more, please see Roubini & Sala-I Martin, 1991; King and Levine,1993; Stiglitz and Weiss, 1981).

Furthermore, the effects of finance on growth are particularly strong for low- and middle-income countries that are experiencing rapid productivity improvements (undergoing rapid inclusive economic growth), spurring the quickest increase in the incomes of the lowest-income quintile, leading to accelerated poverty alleviation and reductions in income inequality (Rioja and Valev, 2004a and 2004b; Aghion et al., 2005; Beck et al., 2007).

This is associated with country-specific processes. For example, evidence from Thailand shows that financial deepening in the last quarter of the 20th century helped reduce poverty by facilitating the migration of large parts of the population from subsistence agriculture to salaried jobs in manufacturing. In India, financial deepening helped reduce poverty in rural areas by facilitating migration into urban areas (Gine and Townsend, 2004; Ayyagari et al., 2013).

19 Financial development is defined as a combination of depth (measured by the size and liquidity of markets), access (the ability of individuals and companies to access financial services) and efficiency (the ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets). It can be observed in the increasing number, scale and diversity of financial institutions, including banks, insurance companies, mutual funds and pension funds, and in financial markets, such as FX, stock and bond markets, increasing liquidity and turnover, and number of 'market makers' (Sahay et al., 2015; Svirydzenka, 2016).

It should be noted, however, that there are intermediating factors in this relationship. The most important of these are well-functioning institutions – including financial intermediaries, markets and regulators – and transparent credit and other market information (for example, Stiglitz and Weiss, 1981; Arestis and Demetriades,1997; Acemoglu et al., 2005; Rodrik, 2007; Honohan and Beck, 2007; Lin and Xu, 2012; Andrianova et al., 2015).

Moreover, recent evidence also suggests that there is an optimal level of finance for an economy at a given stage of its development – in other words, there can be too much finance as well as too little – and that the positive effects of financial development on growth start to decline and turn negative at higher levels of financial development. However, as most developing countries' financial development remains well below the relevant turning point, this is not particularly pertinent to this discussion (Arcand et al., 2015).

Because of its importance to inclusive economic growth, finance is often the 'binding constraint' on economic transformation in developing countries. Problems include the quantity of finance – especially for low-income countries – but also cost, maturity and liquidity (Hausmann et al., 2005; Rodrik, 2007; Beck et al., 2011).

At the microeconomic level, investment decisions are affected by the risk, or cost-reward ratio. This is adversely affected by a higher cost of finance (which reduces the return) and by shorter maturities or poor liquidity of financing, which increase the risk of the investment. Both result in lower levels of investment, which constrain growth (Hausmann et al., 2005; ERD, 2015).

These effects can be greatest in sectors of importance to inclusive economic growth. For example, it discourages investment in sectors where the expected risk is higher and returns are lower, such as manufacturing and agriculture (Tyson, 2018; Batiano et al., 2018)

These microeconomic effects are pertinent to our discussion in relation to TCX, as investors perceive FX risk to be material in the wake of repeated bouts of currency volatility in developing economies. The most common responses are simply not to invest – as reflected in the scarcity of finance in many developing economies – or to seek investments where currency risk can be managed.

One way to do this is to denominate investments in hard currency. Public development agencies and the private sector, for example, may denominate loans in hard currency, passing the currency risk to the borrower.

Alternatively, investors may only invest in sectors that have 'natural hedges', such as the extractive sector, where revenues are denominated in hard currency on international markets. However, both have negative consequences for inclusive economic growth, because they either pass on the currency risk to domestic borrowers, or limit investment to sectors with little influence on inclusive economic growth (Tyson, 2018).

Furthermore, 'binding constraints' on finance are made worse by the under-development of local capital markets in emerging markets. Such markets are important, because they complement external issuance and bank financing, providing an important course of financing for governments and corporates and a vehicle for mobilising domestic savings (World Bank, 2001; IMF, 2013).

This source of financing is particularly important, because it is in local currency (and, hence, avoids the 'original sin' of FX risks) and is cheaper and longer term than other sources. For governments, capital markets are a key source of finance and essential to effective fiscal management, counter-cyclical monetary policy and public debt management at a time when debt sustainability is a key concern in many developing countries (World Bank, 2001; IMF, 2013 and 2018).

The deepening of capital markets also has important secondary effects for financial development, because they contribute to price discovery, liquidity and risk management in both primary and secondary markets. This includes providing a benchmark for the development of corporate bond markets, with benefits for private-sector development (World Bank, 2001; IMF, 2013)

Because of these advantages, the development of local-currency bond markets has become an important policy goal, including for the World Bank, the IFC and the International Monetary Fund (IMF) (for more, please see IFC, 2015).

Investors are reluctant to invest in local-currency instruments because of their inability to manage the related foreign-exchange risk. The participation of banks is also limited, as the constraints lead to higher costs in terms of margins and capital requirements (Beck and Tyson, 2018).

As we discuss, these constraints in relation to foreign-exchange risk can be alleviated by the provision of products that allow the risks to be managed and mitigated. However, this mitigation is impaired by the underdeveloped foreign-exchange markets in many developing economies.

2 Financial development, poverty alleviation and gender equality

Poor households suffer from risk and uncertainty because their incomes are both low and volatile due to their reliance on informal employment and subsistence agriculture. Studies indicate that improved financial access – including those as part of financial development – add to positive coping mechanisms and household resilience and, hence, to poverty alleviation.

The effects of financial access are also differentially positive for women, who suffer from higher levels of financial exclusion. Financial access provides them with economic opportunities, especially when accompanied by financial literacy and business training (Demirgüç-Kunt et al., 2017).

However, these relationships vary by product. Savings products have the strongest link to poverty alleviation, as they can be used to smooth consumption and manage shocks, such as the loss of employment or a breadwinner, thus increasing household resilience. Payment services also have a positive relationship to poverty alleviation, as they lower costs and increase the speed and security of payments (Collins et al., 2009; Armendáriz and Morduch, 2010; Demirgüç-Kunt et al., 2017).

Both savings and payment services are also of higher value to women, as they add to their financial independence (Collins et al., 2009]; Demirgüç-Kunt et al., 2017).

Still, the effects of credit on poverty are, at best, mixed. The majority of studies have found that credit has little or no significant impact on income (including from business creation) or on other positive outcomes, such as education, health or women's empowerment. Moreover, it can be associated with unsustainable indebtedness in poor households (Collins et al., 2009; Demirgüç-Kunt et al., 2017).

In addition, the relationship of poverty and the use of insurance products has not been fully researched. Findings to date suggest that agricultural and weather insurance can boost the adoption of higher-productivity farming methods, but there is significant variation when it comes welfare gains in this regard (Demirgüç-Kunt et al, 2017).

Furthermore, over the long term, access to financial services of all types has limited effects on asset accumulation. Outcomes by country show considerable heterogeneity, while links to macroeconomic growth remain under-researched (Collins et al., 2009; Demirgüç-Kunt et al., 2017).

Financial instability of international origin has arisen from the increased integration of developing countries into the global financial system, accompanied by financial liberalisation.

3 Financial-sector stability and inclusive economic growth

Developing countries have experienced repeated financial instability of both domestic and international origin, with damaging consequences for inclusive economic growth.

Financial instability of international origin has arisen from the increased integration of developing countries into the global financial system, accompanied by financial liberalisation. This has resulted in higher levels of pro-cyclical cross-border capital flows to developing economies, and while they can boost investment, volatile and pro-cyclical outflows have caused macroeconomic instability. This is particularly the case for middle-income countries, which are typically more integrated into the global financial system than low-income countries (Rogoff and Reinhart, 2009; Kinderberger, 2005; Ocampo et al., 2010; Boissay et al., 2013; McKinley and Tyson, 2014; Tyson et al., 2014a and 2014b; Ocampo and Griffith-Jones, 2018).

These pro-cyclical cycles in international capital flows are difficult for developing economies to manage: recent financial liberalisation has diminished capital-management tools, they often lack access to foreign-currency swap arrangements and the use of countercyclical monetary policy can be counterproductive.[20] Such issues have prompted developing countries to generate significant levels of 'self-insurance' in the form of accumulated FX reserves, which have proved effective in managing pro-cyclical flows, but which carry a significant opportunity cost when official reserves have to be tapped (Ocampo and Griffith-Jones, 2018; IMF, 2015).

Financial instability of this kind is closely related to foreign-exchange risk. Cross-border capital flows can cause domestic currency depreciation. This can be compounded by hard-currency debt in either the public or private sector, as the decline in value of the domestic currency increases the relative value of that debt for the borrower. The resulting decline in the creditworthiness of borrowers can feed back into a financial crisis, creating a 'vicious circle' that deepens the severity of the crisis significantly. This was a major factor, for example, in the 'Third World' debt crisis of the 1980s, the Asian financial crisis of 1997 and the various Latin American crises of the 1990s (where private-sector hard-currency debt had similar effects), as well as in the recent deterioration in debt sustainability in sub-Saharan Africa (where there was excessive sovereign hard-currency debt) (Ocampo et al, 2010; Rancière et al., 2010; Musacchio, 2012; McKinley and Tyson, 2014; Tyson, 2015; Ocampo and Griffith-Jones, 2018).

Financial instability in developing countries also commonly stems from domestic problems. For example, in sub-Saharan Africa, between 1990 and 2009, 57% of countries experienced domestic institutional failures. Such financial fragility is typically caused by surges in non-performing loans related to macroeconomic weaknesses and governance problems (Lunogelo et al., 2009; Mezui et al., 2012; Central Bank of Kenya, 2013; Tyson, 2015; Beck and Tyson, 2018).

Financial instability in developing countries also commonly stems from domestic problems.

20 In boom times, it may be difficult to increase interest rates, as these will attract additional capital. In times of crisis, countries will find it difficult to reduce interest rates to avoid capital flight. Furthermore, large external financing in boom times will be reflected in rising current-account deficits and real exchange-rate appreciation, leading to a sharp adjustment of the external accounts and exchange-rate depreciation in times of crisis (Ocampo and Griffith-Jones, 2018).

However, banks' susceptibility to institutional failure is dependent on their balance-sheet structures (Minsky, 2008; Bock and Demyanets, 2012).

The balance sheets of low-income-country banks typically have characteristics that make them less susceptible to institutional failure: their funding is primarily from deposits, they hold high levels of low-risk assets (such as government securities and foreign assets) and their lending to the private sector is concentrated in lower-risk trade, commerce and construction, with an under-representation of lending to higher-risk agriculture and infrastructure. However, although these characteristics reduce the institutional risk, they also result in the binding constraints of finance on economic growth, discussed earlier (Beck et al., 2011; Batiano et al., 2018).

As the financial systems of middle-income countries develop, banks' balance-sheet structures start to evolve. Lending portfolios expand and become more sectorally diverse, with maturities being extended. As noted, this is positive for inclusive economic growth. However, developing countries can also suffer from low levels of savings mobilisation[21] (ERD, 2015). This means that banks may find it difficult to fund expansion through deposits and, instead, turn to borrowings. Such an increase in leverage makes banks more vulnerable to economic shocks (Adrian and Shin, 2009; Laeven and Valencia, 2012; Toporowski et al., 2013)

This is particularly true for developing-country banks, which often borrow in hard currency from international investors due to a lack of domestic alternatives. This exposes them to currency mismatches on their balance sheets, which, in the absence of liquid foreign-exchange markets, they are unable to hedge. Some banks have reduced this currency mismatch by lending to end-users in hard currency. However, although this reduces the currency risk within individual banking institutions, it does not reduce systemic risk and FX exposure; it simply passes it to the corporate or household sector, and exposes the bank to the creditworthiness of its customers in hard-currency terms, which, if there is currency depreciation, can result in a surge in non-performing loans (Adrian and Shin, 2009; Tyson, 2015; Carnegie Consult, 2017).

Overall, both the increase in pro-cyclical cross-border capital flows and the increase in exposure to currency mismatches on the balance sheets of financial institutions, firms and households are a significant source of financial fragility for many developing economies.

Because of this, managing foreign-exchange risk is an important focus of both micro- and macroprudential regulation for developing countries, especially since the global financial crisis. Central banks have sought to assess and manage systemic foreign-exchange risk at regulated institutions and in the financial system – most often through limits on gross exposure. However, this has led to macroprudential policies being associated with lower credit growth, lower financial leverage and muted economic growth (Cerutti et al., 2015; Claessens et al., 2013; Lim et al., 2011; Agenor, 2018).

21 See ERD (2015) for a fuller discussion of savings mobilisation

4 Financial-sector stability and poverty alleviation

Financial instability is associated with increased poverty. This is partly because of its negative impact on economic growth and partly because most countries, when returning to growth after financial instability, do so at a permanently lower level of GDP per capita (Laeven and Valencia, 2012; Beck and Tyson, 2018).

However, financial instability also has distributional effects. Economic instability affects the incomes of poor households more than wealthier households, because of the greater uncertainty surrounding net income and their lower levels of resilience (Guillaumont Jeanneney and Kpodar, 2011; Demetriades et al., 2017).

Moreover – and of particular interest here – the strongest negative effect of financial crises on the incomes of the poor is associated with currency crises. This highlights the importance of this discussion on how to manage and mitigate foreign-exchange risks for the poorest households in developing economies (Rewilak, 2017 and 2018).

The strongest negative effect of financial crises on the incomes of the poor is associated with currency crises.

References

Acemoglu, D. and Johnson, S. (2005) 'Unbundling Institutions'. *Journal of Political Economy,* 133(5): 949–994 (https://economics.mit.edu/files/4467)

Adrian, T. and Shin, H.S. (2009, revised) *Liquidity and Leverage.* Federal Reserve Bank of New York Staff Report No. 328. New York: Federal Reserve Bank of New York (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1139857)

Agenor, P.R. (2018) 'Growth and welfare effects of macroprudential regulation'. *Macroeconomic Dynamics*: 1–23

Aghion, P., Howitt, P. and Mayer-Foulkes, D. (2005) 'The Effect of Financial Development on Convergence: Theory and Evidence'. Quarterly Journal of Economics, 120 (1): 173–222 (https://dash.harvard.edu/handle/1/4481509)

Andrianova, S., Baltagi, B., Beck, T., Demetriades, P., Fielding, D., Hall, S.G., Koch, S., Lensink, R., Rewilak, J. and Rousseau, P. (2015) *A New International Database on Financial Fragility. Working Paper No. 15/18.* Leicester, UK: University of Leicester, Department of Economics (https://www.le.ac.uk/economics/research/RePEc/lec/leecon/dp15-18.pdf)

Arcand, J., Berkes, E. and Panizza, U. (2015) 'Too Much Finance?' *Journal of Economic Growth*, 20(2): 105-48

Armendáriz, B. and Morduch, J. (2010) *The Economics of Microfinance. Second Edition*. Cambridge, MA: MIT Press

Armendáriz, B. and Labie, M. (eds.) (2011) *Handbook of Microfinance. London*: World Scientific Publishing Company

Arestis, P. and Demetriades, P. (1997) 'Financial Development and Economic Growth: Assessing the Evidence'. *The Economic Journal,* 107(442): 783–799

Awoko (2018) 'Weak regulation, supervision affects Central Bank'. Sierra Leone News. *Awoko.org*, 15 May 2018 (https://awoko.org/2018/05/15/sierra-leone-news-weak-regulation-supervision-affects-central-bank/)

Ayyagari, M., Beck, T. and Hoseini, M. (2013) *Finance and Poverty: Evidence from India*. CEPR Discussion Paper No. DP9497. London: Centre for Economic Policy Research (https://assets.publishing.service.gov.uk/media/57a08a54e5274a27b200053f/61070_Finance_Poverty_India.pdf)

Batiano, A.B., Griffith-Jones, S., Murinde, V., Soumaré, I. and Tyson, J. (forthcoming). 'Capital flows and productivity in Africa: The angel is in the details'. *World Development*. Amsterdam: Elsevier

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2007) 'Finance, inequality and the poor'. *Journal of Economic Growth*, 12(1): 27–49

Beck, T, Munzele Maimbo, S., Faye, I. and Triki, T. (2011) *Financing Africa: through the crisis and beyond.* Washington, DC: World Bank Publications (https://pure.uvt.nl/portal/files/1334594/Financing_Africa_Beck.pdf)

Beck, T. and Tyson, J. (2018) *Capital flows and financial-sector development in low-income countries: A synthesis of evidence.* ODI Report. London: Overseas Development Institute (https://degrp.odi.org/wp-content/uploads/2018/10/DEGRP-Capital-flows-report-2018.pdf)

Black, S. and Munro, A. (2010) *Why issue bonds offshore?* BIS Paper No. 52. Basel: Bank for International Settlements (~~https://www.bis.org/publ/bppdf/bispap52e.pdf~~)

De Bock, R. and Demyanets, A. (2012) *Bank Asset Quality in Emerging Markets: Determinants and Spillovers.* IMF Working Paper 12/71. Washington, DC: International Monetary Fund (https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Bank-Asset-Quality-in-Emerging-Markets-Determinants-and-Spillovers-25766)

Boissay, F., Collard, F. and Smets, F. (2013) *Booms and Systemic Banking Crises.* Working Paper Series 1514, Macroprudential Research Network. Frankfurt, Germany: European Central Bank (https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1514.pdf?f9c12512c782b4f906e396faa77fc124)

Business Wire (2016) 'Fitch Affirms Instituto Costarricense de Electricidad at 'BB+'; Outlook Negative'. *Business Wire,* 25 January 2016 (https://www.businesswire.com/news/home/20160125006188/en/Fitch-Affirms-Instituto-Costarricense-de-Electricidad-BB)

Carnegie Consult (2017) *The development impact of local currency solutions: An evaluation of 10 years TCX.* Maarsen, the Netherlands: Carnegie Consult (https://www.tcxfund.com/wp-content/uploads/2017/10/Impact-report-TCX-10Y.pdf)

Carter, P. and Tyson, J. (2015) *Post-Monterrey Financing Trends in Sub-Saharan Africa.* UNECA working paper. Addis Ababa: United Nations Economic Commission for Africa (UNECA)

Carter, P., Van de Sijpe, N. and Calel, R. (2018) T*he Elusive Quest for Additionality.* Center for Global Development Working Paper 495. Washington, DC: Center for Global Development (https://www.cgdev.org/sites/default/files/elusive-quest-additionality.pdf)

Central Bank of Kenya (2013) *Financial Stability Report 2012.* Nairobi: Central Bank of Kenya (https://www.centralbank.go.ke/images/docs/kfs/FinancialStabilityReport2012R.pdf)

Central Bank of Kenya (2016) 2016 *FinAccess Household Survey.* Nairobi: Central Bank of Kenya (https://www.centralbank.go.ke/uploads/financial_inclusion/736331048_FinAccess%20%20Household%202016%20Key%20Results%20Report.pdf)

Cerutti, E., Claessens, S. and Laeven, L. (2015) *The Use and Effectiveness of Macroprudential Policies: New Evidence.* IMF Working Paper 15/61. Washington, DC: International Monetary Fund (https://www.imf.org/en/Publications/WP/Issues/2016/12/31/The-Use-and-Effectiveness-of-Macroprudential-Policies-New-Evidence-42791)

Claessens, S., Ghosh, S. and Mihet, R. (2013) 'Macroprudential policies to mitigate financial system vulnerabilities'. *Journal of International Money and Finance,* 39: 153–185

Collins, D., Morduch, J., Rutherford, S. and Ruthven, O. (2009) *Portfolios of the Poor.* Princeton, NJ: Princeton University Press.

Demetriades, P., Rousseau, P. and Rewilak, J. (2017) *Finance, growth and fragility.* Working Paper 17/13. Leicester, UK: School of Business, Economics Division, University of Leicester (https://www.le.ac.uk/economics/research/RePEc/lec/leecon/dp17-13.pdf)

Demirgüç-Kunt, A., Klapper, L. and Singer, D. (2017) *Financial inclusion and inclusive growth: a review of recent empirical evidence.* Policy Research Working Paper 8040. Washington, DC: World Bank Group. (http://documents.worldbank.org/curated/en/403611493134249446/pdf/WPS8040.pdf)

EBRD (2017) EBRD *converts loan to Belgrade public transport company into local currency.* London: European Bank for Reconstruction and Development (https://www.ebrd.com/cs/Satellite?c=Content&cid=1395257076169&d=Mobile&pagename=EBRD%2FContent%2FContentLayout)

ERD – European Report on Development Research Team 2015 (Overseas Development Institute, in partnership with the European Centre for Development Policy Management, the German Development Institute (Deutsches Institut für Entwicklungspolitik), the University of Athens (Department of Economics, Division of International Economics and Development) and the Southern Voice Network) (2015) *European Report on Development: Combining finance and policies to implement a transformative post-2015 development agenda.* Brussels: Directorate-General for International Cooperation and Development, European Commission (https://ec.europa.eu/europeaid/sites/devco/files/erd5-full-report_en.pdf)

Gagnon, J. (2014) 'Currency and Maturity Mismatches in Asia' in Asian Development Bank and Korea Capital Market Institute (2014) *Asian Capital Market Development and Integration – Challenges and Opportunities.* Oxford, UK: Oxford University Press (https://www.adb.org/sites/default/files/publication/31180/asian-capital-market-development-integration.pdf)

Griffith-Jones, S. (2000) *Developing Countries and The Global Financial System.* Report of Conference Organised by Commonwealth Secretariat, World Bank and International Monetary Fund, 22 and 23 June 2000. London: Lancaster House (http://www.stephanygj.net/papers/DevelopingCountriesGlobalFinancialSystem2000.pdf)

Griffith-Jones, S. and Tyson, J. (2012) *Exogenous Shocks – Dealing With the Only Certainty: Uncertainty.* Paper prepared for the Commonwealth Secretariat for the Commonwealth Finance Ministers Meeting, Tokyo, 10 October 2012. London: Commonwealth Secretariat (http://policydialogue.org/files/publications/papers/FMM124_Exogenous_Shocks_-_Dealing_with_the_Only_Certainty_-_Uncertainty_Stephany_Griffith_Jones_and_Ricardo_Gottschalk.pdf)

Griffith-Jones, S. and te Velde, D. (2014) *Protecting Developing Country Growth from Global Shocks.* Paper prepared for the ODI European Development Cooperation Strengthening Programme (EDCSP), funded by the Department for International Development (DFID). London: Overseas Development Institute

Gelb, A.H. (1989) *Financial Policies, Growth and Efficiency.* Policy Planning and Research Working Paper 202. Washington, DC: World Bank (http://documents.worldbank.org/curated/en/878761468740137322/pdf/multi-page.pdf)

Giné, X. and Townsend, R.M. (2004) 'Evaluation of Financial Liberalization: A General Equilibrium Model with Constrained Occupation Choice'. *Journal of Development Economics,* 74(2): 26-307

Guillaumont Jeanneney, S. and Kpodar, K.R. (2011) Financial Development and Poverty Reduction: Can There Be a Benefit Without Cost? *Journal of Development Studies,* 47(1): 143–163

Hausmann, R., Rodrik, D. and Velasco, A. (2005) *Growth Diagnostics.* Cambridge, MA: John F. Kennedy School of Government, Harvard University (https://growthlab.cid.harvard.edu/files/growthlab/files/growth-diagnostics.pdf)

Honohan, P. and Beck, T. (2007) *Making Finance Work For Africa.* Washington, DC: The World Bank (https://www.mfw4a.org/fileadmin/data_storage/documents/other-internal-documents/Making_Finance_Work_for_Africa.pdf)

IFC (2015, revised) IFC: *A Global Leader in Local Capital Market Development.* IFC Issue Brief. Updated April 2015. Washington, DC: International Finance Corporation (https://www.ifc.org/wps/wcm/connect/25dfa6004f36e75e9c28de032730e94e/SM2015_IFCIssueBrief_Capital+Market+Development.pdf?MOD=AJPERES)

IMF (2013) *Local currency bond markets – a diagnostic framework.* IMF Policy Paper. Washington, DC: International Monetary Fund (https://www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Local-Currency-Bond-Markets-A-Diagnostic-Framework-PP4811)

IMF (2015) *Dollarization in Sub-Saharan Africa: Experience and Lessons.* IMF African Department Report. Washington, DC: International Monetary Fund (https://www.imf.org/external/pubs/ft/dp/2015/afr1504.pdf)

IMF (2016) *Republic of Azerbaijan: 2016 Article IV Consultation – Press Release; Staff Report; and Informational Annex.* IMF Country Report 16/296. Washington, DC: International Monetary Fund (http://www.imf.org/en/Publications/CR/Issues/2016/12/31/Republic-of-Azerbaijan-2016-Article-IV-Consultation-Press-Release-Staff-Report-and-44269)

IMF (2018) *Recent developments on local currency bond markets in emerging economies.* Staff note for the G20 International Financial Architecture Working Group (IFAWG), jointly prepared by the IMF and the World Bank. Seoul: International Monetary Fund (https://www.imf.org/external/np/g20/pdf/2018/061518.pdf)

Kinderberger, C. (2005) *Manias, Panics and Crashes.* Fifth Edition. New York: Palgrave Macmillan.

King, R. and Levine, R. (1993) 'Finance and Growth: Schumpeter might be right'. *Quarterly Journal of Economics,* 108(3): 717–737 (https://www.researchgate.net/publication/24091420_Finance_and_Growth_Schumpeter_Might_Be_Right/download)

Laeven, L. and Valencia, F. (2012) *Systemic banking crises: An update.* IMF Working Paper 12/163. Washington, DC: International Monetary Fund (https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Systemic-Banking-Crises-Database-An-Update-26015)

Levine, R., Loayza, N. and Beck, T. (2000) 'Financial Intermediation and Growth: Causality and Causes', *Journal Of Monetary Economics,* 46: 31–77 (https://siteresources.worldbank.org/DEC/Resources/FinancialDevelopmentnd-Growth.pdf)

Levine, R. (2005) 'Finance and Growth: Theory and Evidence' in Aaghion, P. and Durlauf, S.N. (eds.) *Handbook of Economic Growth:* 865-893. Amsterdam: Elsevier.

Lim, C., Columba, F., Costa, A., Kongsamut, P., Otani, A., Saiyid, M., Wezel, T. and Wu, X. (2011) *Macroprudential Policy: What Instruments and How to Use them? Lessons from Country Experiences.* IMF Working Paper 11/238. Washington, DC: International Monetary Fund

Lin, J. and Xu, L.C. (2012) *'Financial Structure and Economic Development' in Lin, J. (ed.) New Structural Economics: A Framework for Rethinking Development and Policy.* Washington, DC: The World Bank (https://openknowledge.worldbank.org/bitstream/handle/10986/2232/663930PUB0EPI00nomics09780821389553.pdf?sequence=1&isAllowed=y)

Lunogelo, H., Mbilinyi, A. and Hangi, H. (2009) *Global Financial Crisis and Tanzania: Effects and Policy Responses.* Final Report. London and Dar es Salaam: The Overseas Development Institute and The Economic and Social Research Foundation (http://www.tzonline.org/pdf/odiesrfgfc.pdf)

Mezui, C., Nalletamby, S. and Kamewe, H. (2012) 'African Systemic Financial Crises'. Africa Economic Brief, 3(9). Abidjan: The African Development Bank (https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/African%20Systemic%20Financial%20Crises.pdf)

MicroRate (2013) *Microfinance Institution Tier Definitions.* White paper. Lima: MicroRate (http://www.microrate.com/media/downloads/2013/04/MicroRate-White-paper-Microfinance-Institution-Tier-Definitions.pdf)

Minsky, H. (2008) *Stablizing an Unstable Economy.* New York, NY: McGraw Hill

Mitra, S. and Ng, T.H. (2014) 'Managing Foreign Fund Flows into Asia's Domestic Bond Markets' in Asian Development Bank and Korea Capital Market Institute (2014) *Asian Capital Market Development and Integration – Challenges and Opportunities.* Oxford, UK: Oxford University Press (https://think-asia.org/bitstream/handle/11540/1431/asian-capital-market-development-integration.pdf?sequence=1)

Musacchio, A. (2012) *Mexico's Financial Crisis of 1994-1995.* Harvard Business School Working Paper 12–101. Cambridge, MA: Harvard Business School (https://dash.harvard.edu/bitstream/handle/1/9056792/12-101.pdf?sequence=1)

McMillan, M., Page, J., Booth, D. and te Velde, D. (2017) *Supporting economic transformation: An approach paper.* London: Overseas Development Institute (https://set.odi.org/wp-content/uploads/2017/03/SET-approach-paper-WEB_FINAL_MARCH.pdf)

McKinley, T. and Tyson, J. (2014) *Financialization in Developing Countries: Mapping the Issues.* Report for the European Commission's Financialization, Economy, Society and Sustainable Development Programme (FESSUD). Working Paper Series No. 38. Leeds, UK: FESSUD, Leeds University Business School (http://fessud.eu/wp-content/uploads/2015/01/Working-Paper-38-FESSUD-Financialization-in-the-developing-world-mapping-the-issues.pdf)

Moody's Investors Service (2017) *Rating Action: Moody's downgrades ICE and Reventazon ratings to Ba2; negative outlook.* New York: Moody's Investors Service (https://www.moodys.com/research/Moodys-downgrades-ICE-and-Reventazon-ratings-to-Ba2-negative-outlook--PR_361791)

Ocampo, J.A., Griffith-Jones, S., Noman A., Ortiz, A., Tyson, J. and Vallejo, J. (2010) *The Great Recession and The Developing World.* Paper by the Initiative for Policy Dialogue, Columbia University, for the Conference on Development Cooperation in Times of Crisis and on Achieving the MDGs, IFEMA Convention Centre, Madrid, 9-10 June 2010. Madrid: Spanish Presidency of the European Union (https://academiccommons.columbia.edu/doi/10.7916/D8KD265X)

Ocampo, J. A. and Griffith-Jones, S. (2018) *Lessons from Emerging Economies for African Low Income countries on Managing Capital Flows.* CGF Working Paper No. 10/2018. London: Centre for Global Finance, School of African and Oriental Studies, University of London (https://static1.squarespace.com/static/5aeb20ab297114b0c238a685/t/5ba39082b8a045210e13e6ea/1537446021857/WP+10_2018.pdf)

Rancière, R., Tornell, A. and Vamvakidis, A. (2010) 'Currency Mismatch, Systemic Risk and Growth in Emerging Europe'. *Economic Policy,* 25(64): 597–658.

Rewilak, J. (2017) 'The role of financial development in poverty reduction' *Review of Development Finance* 7(2): 169–176 (https://reader.elsevier.com/reader/sd/pii/S1879933717300891?token=BC86F9D26F7CB6EAA29B563316CF7B39D9D35D109CB744354F3D480D8470B7EE42244A142EDDF0D7B141469000B21156)

Rewilak, J. (2018) 'The Impact of Financial Crises on the Poor' *Journal of International Development* 30(1): 3–19 (https://onlinelibrary.wiley.com/doi/full/10.1002/jid.3334)

Rioja, F. and Valev, N.T. (2004a) 'Finance and the Sources of Growth at Various Stages of Economic Development', *Economic Inquiry* 42(1): 127–140 (http://www2.gsu.edu/~econtv/sources_of_growth.pdf)

Rioja, F. and Valev, N.T. (2004b) 'Does One Size Fit All? A Reexamination of the Finance and Growth Relationship'. *Journal of Development Economics* 74: 429–447 (http://www2.gsu.edu/~ecofkr/papers/pub2004.pdf)

Rodrik, D. (2007) *One Economics, Many Recipes.* Princeton NJ: Princeton University Press.

Rogoff, K. and. Reinhart, C. (2009). *This Time is Different.* Princeton, NJ and Oxford, UK: Princeton University Press.

Roubini, N. and Sala-i-Martin, X. (1991, revised) *Financial Repression and Economic Growth.* NBER Working Paper 3876. Cambridge, MA: National Bureau of Economic Research (http://www.nber.org/papers/w3876.pdf)

Sahay, R., Cihak, M., N'Diaye, P.M., Bajaras, A., Ayala Pena, D.B., Bi, R., Gao, Y., Kyobe, A.J., Nguyen, L., Saborowski, C., Svirydzenka, K. and Yousefi, R. (2015) *Rethinking Financial Deepening: Stability and Growth in Emerging Markets.* Staff Discussion Note 15/08. Washington, DC: International Monetary Fund (https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2016/12/31/Rethinking-Financial-Deepening-Stability-and-Growth-in-Emerging-Markets-42868)

Stiglitz, J.E. and Weiss, A. (1981) 'Credit Rationing in Markets with Imperfect Information'. The American Economic Review, 71(3): 393–410.

Svirydzenka, K. (2016) *Introducing a New Broad-based Index of Financial Development.* IMF Working Paper 16/5. Washington, DC: International Monetary Fund (https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Introducing-a-New-Broad-based-Index-of-Financial-Development-43621)

Toporowski, J., Tyson, J., McKinley, T. and Shabani, M. (2013) *The Financial System in the UK.* Studies in Financial Systems No. 14. Report for the European Commission's Financialization, Economy, Society and Sustainable Development (FESSUD) programme. London: School of African and Oriental Studies, University of London (http://fessud.eu/wp-content/uploads/2012/08/UK-Country-Report-revised-August-2014-final-study-14.pdf)

Tyson, J., Griffith-Jones, S. and te Velde, D. (2014a) *Maximising the Impact of International Finance for the Poorest and Most Vulnerable Countries.* ODI Report. London: Overseas Development Institute (https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9114.pdf)

Tyson, J., Griffith-Jones, S. and te Velde, D. (2014b) *Post-crisis trends in private capital flows to developing countries.* ODI Report. London: Overseas Development Institute (https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9110.pdf)

Tyson, J. (2015) *The expansion of financial access and financial development in Kenya.* Doctoral thesis. London: School of Oriental and African Studies, the University of London (http://eprints.soas.ac.uk/23755/1/Tyson_4202.pdf)

Tyson, J. (2018) *Private infrastructure financing in developing countries: Five challenges, five solutions.* ODI Report. London: Overseas Development Institute (https://www.odi.org/sites/odi.org.uk/files/resource-documents/12366.pdf)

UNCDF – United Nations Capital Development Fund (2018) *Blended Finance in the Least Developed Countries.* New York: United Nations Capital Development Fund (http://www.uncdf.org/bfldcs/home)

Watson, C., Bird, N. and Schalatek, L. (2018) *10 things to know about climate finance in 2017.* ODI Report. London: Overseas Development Institute (https://www.odi.org/sites/odi.org.uk/files/resource-documents/12097.pdf)

Weingärtner, L., Caravani A. and Suarez, P. (2018) *The role of multilateral climate funds in supporting resilience and adaptation through insurance initiatives*. ODI Report. London: Overseas Development Institute (https://www.odi.org/sites/odi.org.uk/files/resource-documents/12291.pdf)

World Bank (n.d.) 'Sustainable Energy for All' database. Washington, DC: The World Bank (https://datacatalog.worldbank.org/dataset/sustainable-energy-all)

World Bank (1989) *World Development Report: Financial Systems and Development.* Policy and Research Series No. 15. Washington, DC: The World Bank (http://documents.worldbank.org/curated/en/185101468740117500/pdf/multi-page.pdf)

World Bank (2001) *Developing government bond markets: A handbook (English).* Washington, DC: The World Bank (http://documents.worldbank.org/curated/en/334621468740683230/pdf/multi0page.pdf)

World Bank (2015) *From Billions to Trillions: Transforming Development Finance, Post-2015 – Financing for Development: Multilateral Development Finance.* Prepared jointly by the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the European Investment Bank, the Inter-American Development Bank, the International Monetary Fund and the World Bank Group for the 18 April 2015 Development Committee meeting. Washington, DC: The World Bank (http://siteresources.worldbank.org/DEVCOMMINT/Documentation/23659446/DC2015-0002(E)FinancingforDevelopment.pdf)

World Bank (2017a) *Myanmar Poverty Assessment 2017:* Part Two. Poverty Report by the Government of Myanmar and the World Bank. Washington, DC: The World Bank (http://documents.worldbank.org/curated/en/829581512375610375/pdf/121822-REVISED-PovertyReportPartEng.pdf)

World Bank (2017b) *Performance and Learning Review of the Country Partnership Framework for the Republic of the Union of Myanmar for the Period FY15–FY17.* Report of the International Development Association (IDA), International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA). Report No. 115306–MM. Washington, DC: The World Bank (http://documents.worldbank.org/curated/en/634171504721894056/pdf/Myamar-PLR-CPF-FY15-17-May-26-2017-Final-06022017.pdf)

World Bank (2018a) *Harmonized List of Fragile Situations FY18.* Washington, DC: World Bank Group (http://pubdocs.worldbank.org/en/189701503418416651/FY18FCSLIST-Final-July-2017.pdf)

World Bank (2018b) 'The World Bank in Madagascar'. Web page, last updated 19 April 2018. Washington, DC: World Bank Group (https://www.worldbank.org/en/country/madagascar/overview)

WEF – World Economic Forum (2015) *Accelerating Emerging Capital Markets Development: Corporate Bond Markets.* Report prepared in collaboration with Oliver Wyman. Geneva: World Economic Forum (http://www3.weforum.org/docs/WEF_Capital_Markets_Report_2015.pdf)

WEF (2016) *Accelerating Capital Markets Development in Emerging Economies: Country Case Studies.* White Paper. Geneva: World Economic Forum (http://www3.weforum.org/docs/WEF_accelerating-capital-markets-development-in-emerging-economies.pdf)

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