

# The FinTech Dividend: How Much Money Is FinTech Likely to Mobilize for Sustainable Development?

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## Abstract

FinTech offers a new way to mobilize resources for all kinds of uses – including for funding sustainable development. Roughly 3%-13% of funding required for the UN’s Sustainable Development Goals (SDGs)– or around \$50 billion to \$125 billion -- could come from a ‘FinTech Dividend.’ Such a dividend derives from the use of FinTech platforms to increase savings and investment (overall), channel resources into publicly-funded as well as privately-funded SDG-related activities and policies, and encourage the use of internet platforms, which deliver novel goods and services that relate to the seventeen SDGs. Less than half of UN members have FinTech laws and policies – making FinTech a ripe area for right-regulating. Unfortunately, in areas like institutional reform – no amount of money can guarantee achieving the SDGs, without wider legal and administrative reforms. And no clear data about the exact policies needed to help grow an economy (or pay for SDG spending) serve as any guide. With total investment in FinTech stuck at around \$150 billion to \$200 billion – the hoped for deluge of FinTech dollars on SDG activities may remain a trickle for years to come.

**JEL Codes:** G23, O16, K24, F63

**Keywords:** FinTech Dividend, SDG funding, FinTech law, inclusive finance, #FinTech4SDGs

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\* other co-authors awaiting institutional confirmation.

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## **Cheat Sheet: From FinTech to the Sustainable Development Goals**

### *Channels from FinTech to Development Finance*

1. Increased savings and investment from excluded households and black market businesses will form part of FinTech capital,
2. FinTechs will both divert resources away from traditional financial intermediaries as well as raise their own money (through savers and through returns on investments),
3. FinTechs will reduce the transactions costs which keep resources tied-up in the financial sector – instead of working in productive parts of the economy.

### *From SDG Finance into the Sustainable Development Goals*

1. FinTechs will pay the taxes that help governments finance SDG-related spending,
2. FinTechs will fund SDG-related ventures – from raising money to clean up the environment to securitizing assets or liabilities used in various SDG-related start-ups and ventures,
3. support traditional funding – and indeed traditional banks, governments and even international organizations may use them to raise money for particular public-private partnerships,
4. Most marginally, FinTechs may help produce innovations and business models which will benefit some SDG-focused businesses.

### *Lawmaking to Make FinTech Funding A Force for Sustainable Development*

1. FinTech regulation may encourage reforming bad laws already on the books,
2. Good lawmaking may provide incentives to FinTech ventures which fund or engage in SDG-related activities,
3. FinTech4SDG rules can help avoid many of the restrictions on raising money from the public which have choked past investable opportunities.

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### Introduction

Could financial technology (or FinTech) mobilize the resources needed to make a world with no hunger to vibrant life on land a reality?<sup>1</sup> Indeed, many view achieving the UN's Sustainable Development Goals (or SDGs) as a problem of resource mobilization.<sup>2</sup> Many countries have come up with a myriad of projects and schemes to promote the 2015 Addis Ababa Action Agenda – a supposed action plan aimed at funding the SDGs.<sup>3</sup> Yet, innovative finance (like FinTech) seems like the best way to mobilize large amounts of resources quickly. The only catch? Governments can not do it alone. Private sector financial institutions – and technology firms working with them – will need to find ways of developing the apps, services, and sticky platforms needed to draw funding toward profitable investments which also help encourage sustainable development. These new, online platforms and services, will need to draw resources from previously untapped savers – making inclusive finance an important part of any FinTech for development story. Given the size of the potential lucre, FinTech seems like a viable option for funding the SDGs – if governments can right-regulate FinTech incentives. But just how many resources can FinTech draw into funding the SDGs – from both public and private sources, and funding both public and private activities? What rules to regulators need to adopt to help draw in these funds?

We find that FinTech could raise roughly \$50 billion (or about 3% of the amount required to fund SDG goals) without SDG-friendly FinTech policy targeting.<sup>4</sup> Yet, with directed FinTech/SDG policies, we argue that such a 'Fintech Dividend' could come to as high as \$90-\$125 billion – or about 7%-13% of the likely resources required to fund the Sustainable Development Goals (SDGs).<sup>5</sup> Given that global FinTech funding only hovers at around \$200 billion, such a dividend may be a long way away. Yet, for FinTechs

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\* Other authors awaiting institutional confirmation to appear.

<sup>1</sup> The reference to hunger and life on land refer to two of the 17 Sustainable Development Goals – or SDGs. These overlapping and all-inclusive goals represent such a hodge-podge of activities, that UN staff have taken to network analysis to try and make sense of them all. See David Le Blanc, *Towards Integration at Last? The Sustainable Development Goals as a Network of Targets*, DESA WORKING PAPER NO. 141ST/ESA/2015/DWP/141, 2015, available [online](#).

<sup>2</sup> Extending on the Millennium Development Goals, the 17 Sustainable Development Goals and 169 targets form part of the broader 2030 Agenda for Sustainable Development. See UN, *Transforming Our World: The 2030 Agenda for Sustainable Development*, MAIN COMMITTEE RESOLUTION A/70/L.1, adopted by the General Assembly on 25 September 2015, available [online](#).

<sup>3</sup> The Swedish government provides one maladroit example, with thinly veiled industrial policies (promoting the Swedish steel sector to take one example). See Government of Sweden, *Implementing the Addis Ababa Action Agenda to achieve the 2030 Agenda for Sustainable Development – A Selection of Innovative Examples*, 2018, available [online](#).

<sup>4</sup> Unless otherwise stated, we express all amounts in current US dollars.

<sup>5</sup> Such a 7% to 13% represents very crude estimates. As we will discuss subsequently, the unreliability of SDG funding requirements makes any percentages we cite here tentative.

involved in specialized activities like remittances, much smaller gains could come much more quickly. Yet, such figures assume pro-active and supportive FinTech regulation. Given that less than half of all regulators have any position to take on FinTech – such a dearth of lawmaking represents an obstacle, and opportunity. Yet, only richer countries with more savings and better regulatory quality, will likely take advantage of such a FinTech Dividend.

We organize our argument as follows. In the first section, we look at the ‘market size’ for SDG funding – showing that FinTech and other sources will need to raise about \$1 trillion per year. Second, we use simple methods to estimate how many resources will need to go into funding these SDGs. We show the potential gains in each of the major areas of FinTech disruption – in savings, investment, and transactions facilitation. In the third part, we look at the sorry state of FinTech regulation. We argue that lawmaking, based on econometric analysis of the provisions that best grow FinTech lending/investing sizes – and investment in SDG-related activities – can help channel billions toward the SDGs. Indeed, only evidence-based legal drafting can hope to deliver anywhere near the \$150 billion FinTech could potentially bring to SDG projects.<sup>6</sup> The fourth section describes future work which can help produce better estimates – and hopefully form the empirical basis for better SDG-focused FinTech law. Auditing existing donor projects, guesstimating from donor databases, and using machine learning and econometric methods on FinTech as well as macroeconomic and other data provide several options for such future work. The final section concludes.

### **The SDGs’ Trillion Dollar Funding Gap**

Several scholars have already estimated the amount of resources needed to fund the SDGs. On the (very high and self-serving) end, authors like Zhan have argued for \$5-\$7 trillion per year.<sup>7</sup> Focusing mainly on tangible social spending and infrastructure, Gaspar and colleagues present an annual bill closer to \$2.6 trillion.<sup>8</sup> By contrast, Sachs and his co-authors place the SDG financing gap for low income countries at around \$300-400 billion per year.<sup>9</sup> However, Sachs’ methodology looks mainly at low income countries – a problem if you care about people, no matter where they live. Kharas and McArthur – after surveying the literature and others’ estimates - have arrived at a middle-of-the-range

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<sup>6</sup> Evidence-based – or empirical – lawmaking involves using data to shape law, rather than simply react to it. See Peter van Lochem and Rob van Gestel, *Evidence-Based Regulation and the Translation from Empirical Data to Normative Choices: A Proportionality Test*, ERASMUS LAW REVIEW 2(1), 2018, available [online](#).

<sup>7</sup> Self-serving because they conducted their study for the UNCTAD, an organization who would not mind seeing its budget increase (and the UN’s budget to address the SDGs also increase). See James Zhan and others, *World Investment Report 2014: Investing in the SDGs: An Action Plan*, 2014, available [online](#).

<sup>8</sup> See Vitor Gaspar, David Amaglobeli, Mercedes Garcia-Escribano, Delphine Prady, and Mauricio Soto, *Fiscal Policy and Development: Human, Social, and Physical Investment for the SDGs*, IMF STAFF DISCUSSION NOTES NO. 19/03, 2019, available [online](#).

<sup>9</sup> See Jeffrey Sachs, Gordon McCord, Nicolas Maennling, Taylor Smith, Vanessa Fajans-Turner, and Siamak Sam Loni, *SDG Costing & Financing For Low-Income Developing Countries*, UN SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK (SDSN) WORKING PAPER, 2019, available [online](#).

estimate of about \$1 trillion.<sup>10</sup> Namely, international organizations, governments of all levels, companies, and NGOs/civil society (broadly defined) need to come up with an extra \$1 trillion in extra funding each year to finance activities needed to achieve the SDGs.<sup>11</sup>

What if we could use FinTech to raise this money? Before answering this question in more detail later, we already see that the SDG funding bill goes not come due in places likely to experience a FinTech boom. Figure 1 shows the likely geographical distribution of the funding needed to pay for the SDG targets to be achieved in each country. In other words, which countries will need the most extra money to fund SDG-related policies and projects? At the head of the list lies Bulgaria (BGR), with Belarus (BLR), Montenegro (MNE) and Serbia (SRB) trailing close behind. Russia (RUS) has already seen an exposition in FinTech activities.<sup>12</sup> Yet, the other countries look far less likely to lead a FinTech revolution capable of funding domestic investment.<sup>13</sup> At the other end of the spectrum lies places like South Sudan (SSD), Burundi (BDI) and Niger (NER) – where both FinTech and sustainable development seem like distant dreams.<sup>14</sup> FinTech applications raising billions of dollars will not pop up in the South Sudan overnight.<sup>15</sup> Obviously, simply relying on a *deus ex machina* like FinTech to solve the SDG shortfall will not work in many jurisdictions.

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<sup>10</sup> See Homi Kharas and John McArthur, *Building the SDG economy, Needs, spending, and financing for universal achievement of the Sustainable Development Goals*, GLOBAL ECONOMY & DEVELOPMENT WORKING PAPER 131, 2019, available [online](#). Authors like Schmidt-Traub echo this amount (at \$1.4 billion). See also Guido Schmidt-Traub, *Investment Needs to Achieve the Sustainable Development Goals: Understanding the Billions and Trillions*, SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK WORKING PAPER, 2015, available [online](#).

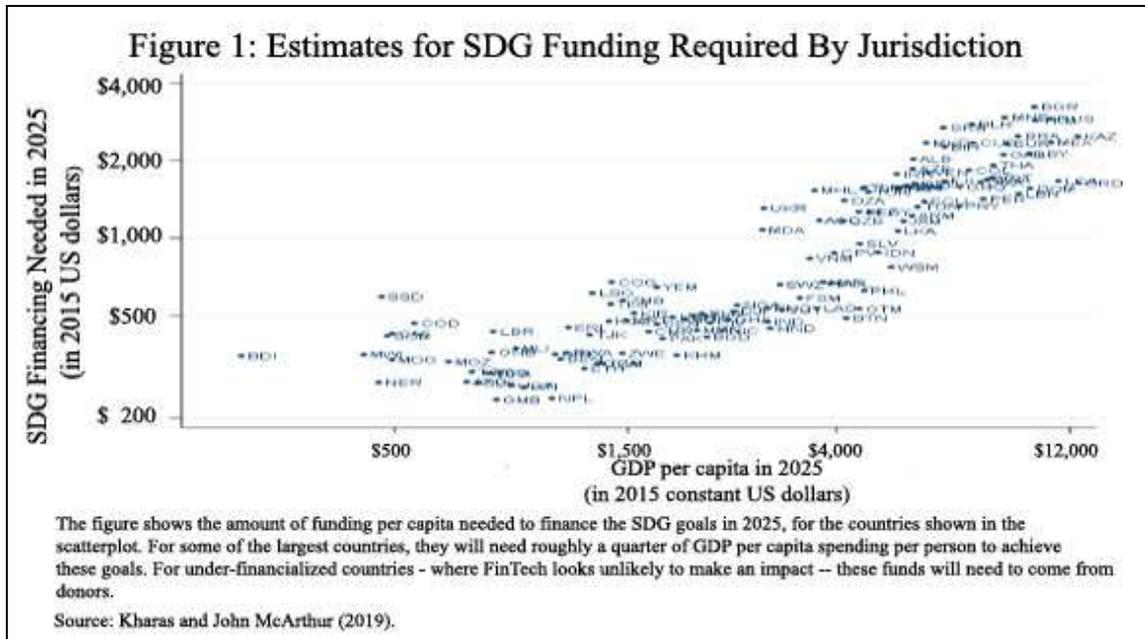
<sup>11</sup> No restrictions apply to the type of organizations which can/should work on SDG-related activities (except for those with exclusive competencies, like local governments and their unique mandate to collect or oversee the collection of refuse). As we point out later, legal competencies and other governance issues represent one of the largest barriers to using FinTech (or any scheme) to fund the SDGs. For more on these problems, see Joachim Monkelbaan, *GOVERNANCE FOR THE SUSTAINABLE DEVELOPMENT GOALS: EXPLORING AN INTEGRATIVE FRAMEWORK OF THEORIES, TOOLS, AND COMPETENCIES*, Springer, 2019.

<sup>12</sup> For a description of this lead, see Kevin Chen and Bruno Sergi, *How Can FinTech Impact Russia's Development?* In *EXPLORING THE FUTURE OF RUSSIA'S ECONOMY AND MARKETS*, Emerald, 2018, available [online](#).

<sup>13</sup> Even the title of articles dealing with FinTech in the region seem far more glum, see Svetlana Saksonova and Irina Kuzmina-Merlino, *Fintech as Financial Innovation –The Possibilities and Problems of Implementation*, EUROPEAN RESEARCH STUDIES JOURNAL XX(3A), 2017, available [online](#).

<sup>14</sup> See David Yermack, *FinTech in Sub-Saharan Africa: What Has Worked Well, and What Hasn't*, NBER WORKING PAPER NO. 25007, 2018, available [online](#).

<sup>15</sup> Indeed, even in the US and other places, FinTech, crowdfunding and other online means of raising money to alleviate social problems and the distortions caused by under-development remain sluggish. See Simplice Asongu and Lieven De Moor, *Recent Advances in Finance for Inclusive Development: A Survey*, AGDI WORKING PAPER NO. WP/15/005, available [online](#).



Clearly, some SDGs (and thus policy areas) can benefit more from FinTech-related finance than others. Figure 2 shows these SDG gaps by SDG/policy area.<sup>16</sup> Unsurprisingly, social policies and services represent bulk of the funding gap – at around \$1 trillion per year, if you include richer jurisdictions.<sup>17</sup> Over 190 FinTech organizations aim to fund projects in many of these areas.<sup>18</sup> From Ant Financial to Grab, these FinTech ventures mainly seek to fund profit-making organizations – instead of organizations that target sustainable development specifically.<sup>19</sup> Moreover, with investment in FinTech companies probably hovering at around \$100 billion (not to mention the lesser amount that passes through into FinTech investments into hospitals, agro-industrial enterprises and so forth) – not enough money yet exists in the sector to fund many of the activities

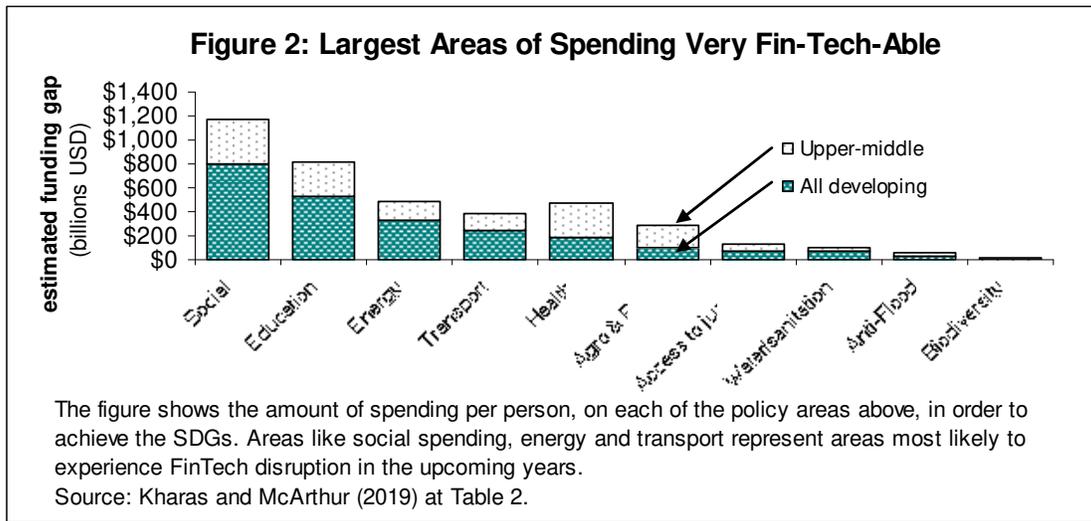
<sup>16</sup> Childs and his colleagues take a similar approach – analyzing many of the same sectors. Yet, their estimates vastly overshoot those predicted by Kharas and McArthur. For example, Kharas and McArthur’s funding gap for energy comes in at about \$500 billion. Yet, Childs and co-authors’ estimate for the power funding gap comes in at around \$630 to \$950 billion each year until 2030. Given the later study comes from UNEP related research, one might suspect some over-estimating of these funding needs. *See* Childs *et al*, *infra* note 21, at Table 1 for the sector-level estimates.

<sup>17</sup> The seemingly disparity between the \$1 trillion average funding gap and the sectoral funding gaps (which comes to about \$1 trillion alone in social services) stems from which countries one includes in the gap estimate. As we want to keep this brief...brief (and focus on the big picture) we will not go into details here. We provide links to all the source materials for individuals interested in trying to make this exercise something more than the broad guessimate exercise which it is.

<sup>18</sup> For an excellent overview of these organizations, *see* Deep Knowledge Analytics, *FinTech for Social Good: Opportunities, Goals, Obstacles, Initiatives, Trends*, 2019, available [online](#).

<sup>19</sup> H2 Ventures and KPMG, *2018 FinTech 100: Leading Global Fintech Innovators*, 2019, available [online](#). The number of new FinTech companies per year has collapsed from around 700 in 2014 to 40 in 2017. Data on the sectors in which FinTech ventures raised money or lend/invested/gave money remains a mystery. For company formation data, *see* Jim Eckenrode and Sam Friedman, *Fintech by the Numbers: Incumbents, Startups, Investors Adapt to Maturing Ecosystem*, Deloitte, 2019, available [online](#).

listed in Figure 2.<sup>20</sup> When lawmakers start to clarify FinTech law, money might fill in many of these gaps. Which funding institutions will likely receive much of this largesse?

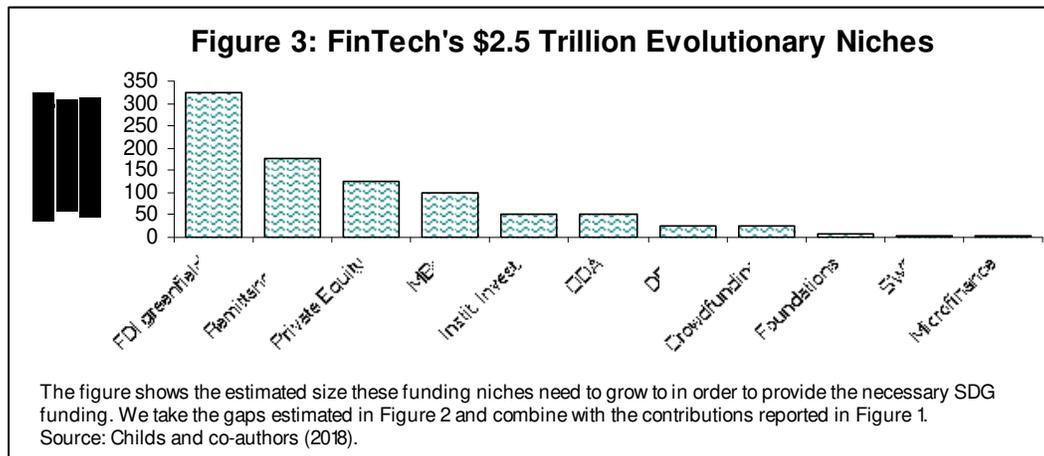


If microfinance has failed to fund much SDG activity in the past, one could hope FinTech could give such funding (and other funding like crowdfunding) a new lease on life. Figure 3 shows the evolutionary niche sizes these methods of finance might yet fill.<sup>21</sup> ‘Evolutionary’ in this context means the potential size of funding available, if all these financing types somehow miraculously grow to fill the SDG funding gap. So micro-finance (at less than \$10 billion) may never represent a huge source of FinTech SDG funding – even if the sector scales up to meet them funding challenge, in relative terms. Yet, surprisingly, even crowd funding and development finance institutions won’t – if current patterns persist – play a large role in the SDG FinTech funding boom. Instead, FDI and remittances (interestingly enough) seem poised to provide the most funds. Indeed, if FinTech has had any impact on SDG funding, remittances will probably represent the true success story.<sup>22</sup>

<sup>20</sup> Indeed, in contrast with the enormous needs highlighted by the SDGs, FinTechs seem to mobilize a tiny fraction of these resources. For the \$100 billion investment size estimate and other data, see Ian Pollari and Anton Ruddenklau, *The Pulse of Fintech2018: Biannual Global Analysis of Investment in FinTech*, KPMG WORKING PAPER, 2019, available [online](#).

<sup>21</sup> Specifically, the figure shows the potential size such funding might grow to under FinTech-friendly rules, assuming that these funding sources scale-up in relative proportion to their current sizes/proportions in funding SDGs. We calculated these numbers by taking the proportions of each type of financing and multiplying them by the SDG financing gap. See Denis Childs, Sonia Essobmadje, and Careen Abb, *Rethinking Impact to Finance the SDGs*, RETHINKING IMPACT POSITION PAPER, 2018, available [online](#).

<sup>22</sup> Remittances equalled roughly \$700 billion in 2019, meeting much of the SDG target, if channeled to the right uses. Remittance companies like *TransferWise* have helped reshape this sector – making it cheaper and raising the potential supply of remittances. Indeed, Halm and co-authors, writing for the UN, see FinTech participation in remittances as the path to sustainable development. For the size of FinTechs in this space, see Richtopia, *10 Things FinTech Has Done for International Remittance*, 2020, available [online](#). See also Hongjoo Halm, Tientip Subhanji and Rui Almedida, *FinTeching Remittances in Paradise: A Path to Sustainable Development*, UN ESCAP WORKING PAPER WP/19/08, available [online](#).



Remittances shows the way that FinTechs could help both achieve SDGs in their own right, as well as provide the funding for achieving other SDGs. Figure 4 shows the costs of sending remittances world-wide, in the lesser development countries (LDCs) and in Tonga – as the report we took this figure from studies the Pacific region.<sup>23</sup> At first glance, simply substituting all traditional remittance providers for FinTech ones would allow remittance receivers to get an extra \$30 billion each year.<sup>24</sup> Remittances raise disposable income, usually for the poorest, encouraging reductions in poverty (needed for SDG 1 and 2) as well as for more health and education spending (for SDGs 3 and 4).<sup>25</sup> These can encourage woman-led enterprise (SDG 5), pay for clean water and energy (SDG 6 and 7 respective) – and so forth.<sup>26</sup> Indirect taxes on the things remittances buy can help pay for governments to tackle the SDGs.<sup>27</sup> As we will see later, the actual effect remittances have on any of these goals depends on regulation. Good regulation can encourage the far more useful migration, which brings human capital, trade and all the other powerful economic forces certain to promote sustainable development.<sup>28</sup>

<sup>23</sup> *Id.*, at Figure 7.

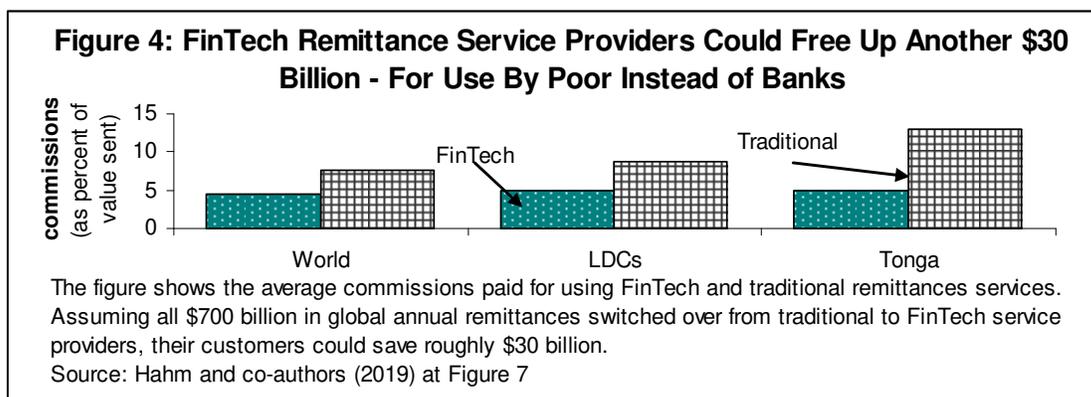
<sup>24</sup> Such an example serves only to illustrate the general point. Naturally, prices would rise if FinTechs displaced and reduced competition in the sector. Some of these gains likely come from bypassing regulation (like money laundering and customer verification procedures).

<sup>25</sup> Yet, like everything else in life, richer deciles benefit more from these remittances than the poorest deciles – suggesting a role for regulation in helping to distribute these gains more evenly. See Luis San Vincent Portes, *Remittances, Poverty and Inequality*, JOURNAL OF ECONOMIC DEVELOPMENT 34(1) 2009, available [online](#).

<sup>26</sup> We won't go through all 17 of the goals – to keep from boring our readers. For example, in furtherance of SDG 5 about female empowerment, Chinese females use remittances to migrate in search higher paying work. See Sylvie Demurger and Shi Li, *Migration, Remittances and Rural Employment Patterns: Evidence from China*, LABOR MARKET ISSUES IN CHINA WORKING PAPER 1230, 2012, available [online](#). We should note that not everyone agrees that such a miraculous 'remittance effect' exists. See Sabrina Singh, *The Remittance Effect: Do Remittances Help Development?* DISCUSSIONS 11(1), 2015, available [online](#).

<sup>27</sup> No one argues that government should not tax remittances directly. Yet, more money undeniably attracts more tax revenue. See Christian Hubert Ebeke, *Remittances, Value Added Tax And Tax Revenue In Developing Countries*, CERDI WORKING PAPER E2010.30, 2010, available [online](#).

<sup>28</sup> Behind every financial flow lies relationships between people. FinTech's contribution to the SDGs by enabling commerce, migration and trade will eclipse any gains simply from moving money around. For a detailed analysis, see Mina Mashayekhi (Ed.), *MAXIMIZING THE DEVELOPMENT IMPACT OF REMITTANCES*, 2013, available [online](#).



Yet, achieving the SDGs requires more than just throwing more money at the problem. Some argue that by rationalizing spending and eliminating waste, we could cut that amount by over one-third – to \$500 billion.<sup>29</sup> Any SDG funding gap thus represents a moving target – one which depends on the method of funding (and the quality of lawmaking more generally).<sup>30</sup> Even if FinTech could provide enough resources to fund the SDGs, the effect of using such FinTech – rather than grants or other conventional financing modalities – would likely effect the size and nature of the development financing needs themselves.<sup>31</sup>

### How Do We Know If FinTech Will Mobilize Development Resources?

Everyone seems to claim that FinTechs can scoop up billions of dollars...in the service of sustainable development. Yet, few have put hard thought into these claims Wild claims about broad “digitalization” will supposed “recast” **\$300 trillion** in potential funding for sustainable development.<sup>32</sup> No way. Similarly, self-serving cheerleading by McKinsey

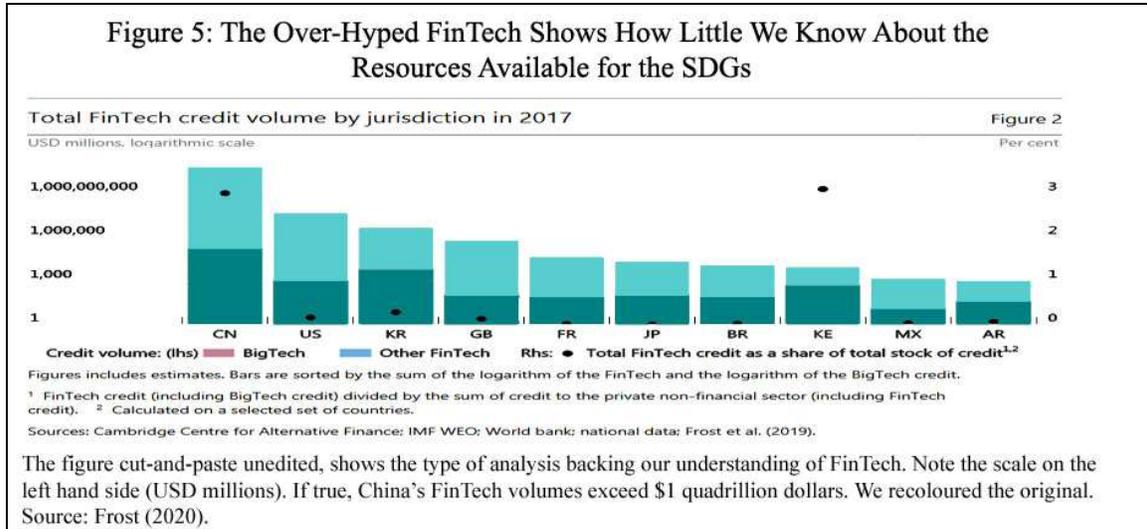
<sup>29</sup> Even more impressively, they had already argued for such economies in 2015 – long before we had already wasted the trillions in inefficient government spending which could have gone to the SDG goals in the meantime. See Matthew Martin and Jo Walker, *Financing The Sustainable Development Goals: Lessons from Government Spending on the MDG*, DEVELOPMENT FINANCE INTERNATIONAL AND OXFAM RESEARCH REPORT, 2015, available [online](#). The Martin and Walker report goes further in describing funding in several SDG indicators.

<sup>30</sup> Just like corporate governance has its models of optimal finance, the aid literature has also developed its view of the optimal modalities (financing methods). See Bazoumana Ouattara and Eric Strobl, *Aid, Policy and Growth: Does Aid Modality Matter?* REVIEW OF WORLD ECONOMICS 144(2), 2008, available [online](#).

<sup>31</sup> The effect of the FinTech ownership model will affect the incentives behind such financing (just like in the classic debt versus equity debate). The regulation of such funding will also change the costs and benefits of using FinTech – rather than other financing forms. For a discussion of this second point, see Deirdre Ahern, *Regulatory Arbitrage in a FinTech World: Devising an Optimal EU Regulatory Response to Crowdfunding*, EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES NO. 24, 2018, available [online](#).

<sup>32</sup> In the intellectual equivalent of money laundering, these estimates are “laundered” from an institutional report (published by the UNEP), cited by Project Syndicate and finally landing in their purest form in a Brookings Institute blog. For the Brookings claim, see Simon Zadek, *Financing Sustainable Development: Is FinTech the Solution, Problem, or Irrelevant?* BROOKINGS FUTURE DEVELOPMENT BLOG, 11 Feb. 2019, available [online](#). For the Project Syndicate piece, see Simon Zadek, *Greening Digital Finance*, PROJECT SYNDICATE, Feb 6, 2017, available [online](#). For the UNEP report, see Juan Carlos Castilla-Rubio, Simon

similarly has FinTech increasing lending by **\$2.1 trillion** and **\$3.7 trillion**.<sup>33</sup> Impossible. Such a bump would represent 5% of global GDP – a far higher contribution than even conventional banking could achieve in the heyday of industrialization.<sup>34</sup> In China alone, FinTech funds supposedly come to either **\$1 billion** or **\$1 quadrillion** – depending how you read the analysis – reprinted in Figure 5.<sup>35</sup> The UN – with not a hint of irony – claims that the private sector could invest over \$240 billion in the SDGs, up from the supposed \$40 billion claimed by previous estimates.<sup>36</sup> In other work done by/for the ESCAP (UN Commission for Asia and the Pacific), investing in SDG-related projects will supposedly encourage GDP in the region to rise by 22%!<sup>37</sup> No it will not.<sup>38</sup>



Zadek and Nick Robins, *FinTech and Sustainable Development: Assessing the Implications*, UNEP INQUIRY, 2016, available [online](#).

<sup>33</sup> James Manyika, Susan Lund, Marc Singer, Olivia White, and Chris Berry. *Digital Finance For All: Powering Inclusive Growth In Emerging Economies*, MCKINSEY GLOBAL INSTITUTE WORKING PAPER, 2016, available [online](#).

<sup>34</sup> Such growth looks particularly when considering the financial crises that came with such financialization. See Oscar Jordia Moritz Schularick, Alan Taylor, *Macrofinancial History and the New Business Cycle Facts*, PAPER PRESENTED AT THE NBER MACROECONOMICS ANNUAL CONFERENCE, 2016, available [online](#).

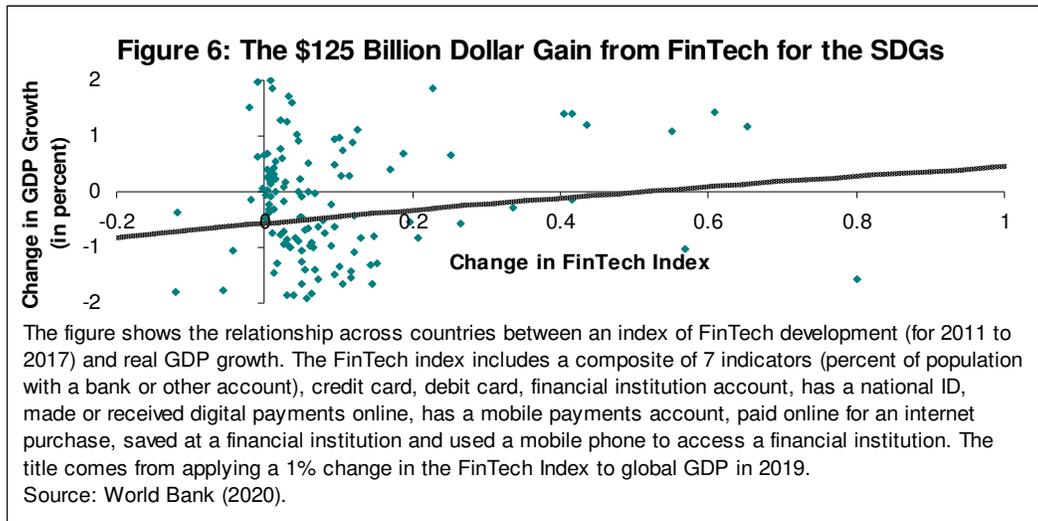
<sup>35</sup> Jon Frost, *The Economic Forces Driving FinTech Adoption across Countries*, DNB WORKING PAPER 663, 2020, available [online](#).

<sup>36</sup> Even the \$40 billion likely counts a lot of private investment which would have occurred without the UN cheerleading the SDGs. See James Zhan and co-authors, *Chapter IV Investing in the SDGs: An Action Plan for Promoting Private Sector Contributions*, WORLD INVESTMENT REPORT 2014, 2014, at Figure IV.5, available [online](#).

<sup>37</sup> Nagesh Kumar, Matthew Hammill, Selim Raihanand and Swayamsiddha Panda, *Strategies for Achieving the Sustainable Development Goals (SDGs) in South Asia: Lessons from Policy Simulations*, ESCAP SOUTH AND SOUTH-WEST ASIA DEVELOPMENT PAPERS 160, 2016, available [online](#).

<sup>38</sup> The paper reflects everything wrong with policy modelling. Besides making their model inaccessible to other researchers, the projection fails the common sense test. Using Social Accounting Matrices (or SAMs), researchers and third-party verifiers can access no part of the computable general equilibrium (CGE) model, its equations or base data (except publicly available SAMs).

Even the most retarded regressions looking at finance and GDP show a **much** lower limit on FinTech’s potential impact. Figure 6 provides that look – correlating GDP growth with growth in a composite which probably correlates with FinTech growth. Simply by shoving a line through this dot-cloud **gives a \$125 billion gain** for a one standard deviation change in the indicators likely associated with rapid FinTech adoption. Such a gain does not include the effects from taking business away from conventional banks, from failing FinTechs and so forth – which probably won’t be as large as many predict.<sup>39</sup> Yet, as we will show, even this estimate provides a pretty good estimate – and a closer guess than those made by more august bodies.



So what about FinTech’s broader effect on sustainable development? The existing studies tell us almost nothing. Figure 6 shows the results of regressions looking at composites of sustainable development and the number of FinTechs in China.<sup>40</sup> In their study, they have done the same thing we would do – for a composite for development (although we might use the SDGs themselves).<sup>41</sup> Their FinTech industry variable looks at the number of Fintechs in China – hardly a definitive measure. Yet, still better than other composites one might use, like Findexable’s or E&Y’s.<sup>42</sup>

<sup>39</sup> The substitution/creative-destruction effect of FinTech on traditional banking remains very much a contested issue. If we believe the latest numbers, incumbent banks are far more likely to adapt FinTech methods than have start-ups replace them. See Flore-Anne Messy, *FinTech Developments & Their Consequences for the Financial Industry & Regulators in Asia & Beyond*, JAPAN SPOTLIGHT, 2017, available [online](#).

<sup>40</sup> Xiang Deng, Zhi Huang and Xiang Cheng, *FinTech and Sustainable Development: Evidence from China Based on P2P Data*, SUSTAINABILITY 11(6434), 2019, available [online](#).

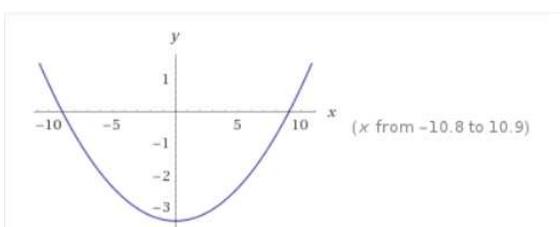
<sup>41</sup> The UN maintains a database looking at changes in the agreed SDG Indicators. However, the 2019 Report – far more infographic than report – shows the limits of using the SDG data in data projects (and also illustrates nicely the bluster in the industry). For the “report”, see UN, *The Sustainable Development Goals Report*, 2019, available [online](#).

<sup>42</sup> See Findexable, *The Global Fintech Index City Rankings Report*, 2020 available [online](#). See also E&Y, *Global FinTech Adoption Index 2019, 2020*, available [online](#).

## Figure 6: FinTech Development Helps and Hurts Sustainable Development?

The classic approach to answering the FinTech question consists of creating an aggregate index of 'sustainable development' using a procedure known as 'principal components.' Then just regress that against some measure of FinTech. Yet, the results produce comical results – like those shown. If believed, China can develop faster by destroying its FinTechs. In the status quo, the world is better off with negative FinTech – an artifice of such analysis.

$$y = -3.414 - 0.003x + 0.042x^2$$



The figure, a graph of regression results, shows the supposed non-linear relationship between FinTech development and an ESG composite in/from China. As both the x and y variables represent rescaled composites, we do not label these in the figure. Source: Deng *et al.* (2019).

Yet, few can deny that FinTech **could** affect the SDGs – with the right regulation. How? Many point to the efficiencies from the wide-spread use of blockchains - blockchain applications such as for decentralized electricity provision, as well as increased reliance on green credits and bonds.<sup>43</sup> Yet, again the exaggerations strain at credulity. As one leading World Economic Forum headline exclaimed, “a 3% boost to GDP from blockchain? It’s a real possibility.”<sup>44</sup> No it’s not. The article cited a paper, whose authors calibrated their model to produce this kind of result.<sup>45</sup> Many experts have cited case studies – but few have any ideas (much less practical examples) of blockchain applications that can scale up to SDG-funding levels.<sup>46</sup> Yet, their ability to mobilize savings remains undisputed.

FinTech can – without a doubt – mobilize at least 0.4% of GDP world-wide for investment in SDG-related activities....in an ideal world. Figure 7 shows the potential correlation. Even though the figure repeats the moronic type regression shown earlier, even after taking away all the covariates and other noise – this relationship looks surprisingly robust.<sup>47</sup> More inclusion means more savings and thus more growth.<sup>48</sup> The smaller figure owes to the fact that savings (resource mobilization) accounts for one,

<sup>43</sup> Darius Nassiry, *The Role of Fintech in Unlocking Green Finance: Policy Insights for Developing Countries*, ADBI WORKING PAPER, NO. 883, available [online](#).

<sup>44</sup> Alex Gray, *A 3% boost to GDP from blockchain? It’s a real possibility*, WORLD ECONOMIC FORUM BLOG, 2016, available [online](#).

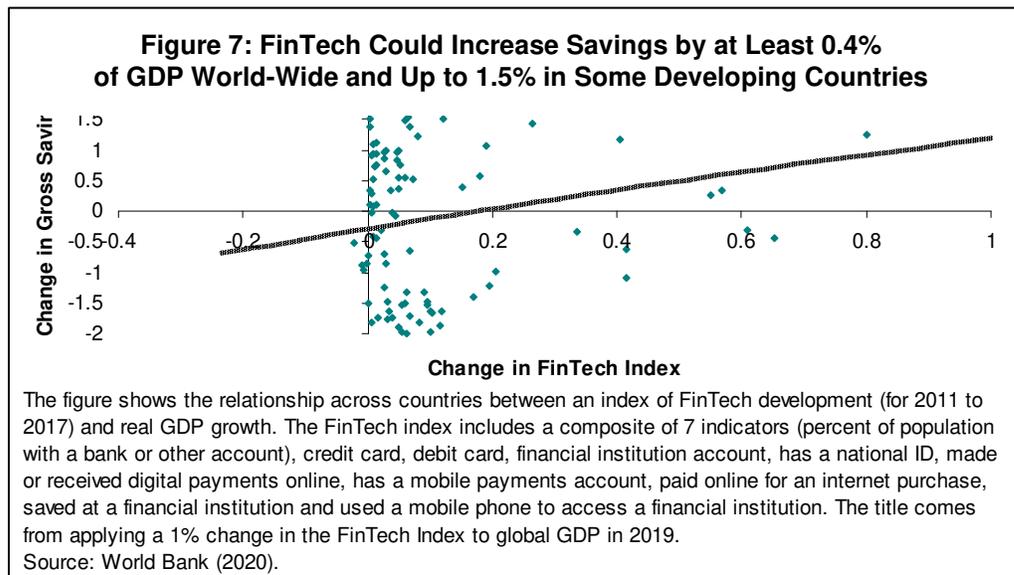
<sup>45</sup> Indeed, if something strains at common sense – it is probably not true. For the paper, see John Barrdear and Michael Kumhof, *The Macroeconomics of Central Bank Issued Digital Currencies*, STAFF WORKING PAPER NO. 605, available [online](#).

<sup>46</sup> For one example, see Andrej Zwitter and Joos Herman, *Blockchain for Sustainable Development Goals*, UNIVERSITY OF GRONINGEN WORKING PAPER, 2018, available [online](#).

<sup>47</sup> Such a boost would amount to only about \$35-ish billion – far more reasonable than the other numbers bandied about. For corroboration, see Shem Ouma, Teresa Odongo and Maureen Were, *Mobile financial services and financial inclusion: Is it a boon for savings mobilization?* REVIEW OF DEVELOPMENT FINANCE 7(1), 2017, available [online](#).

<sup>48</sup> Dipasha Sharma, *The Nexus between Financial Inclusion and Economic Growth: Evidence from the Emerging Indian Economy*, JOURNAL OF FINANCIAL ECONOMIC POLICY 8(1), 2016, available [online](#).

small, part of GDP and thus sustainable development. Yet, even a 1% increase in disposable income can make a large difference to a poor economy.<sup>49</sup>



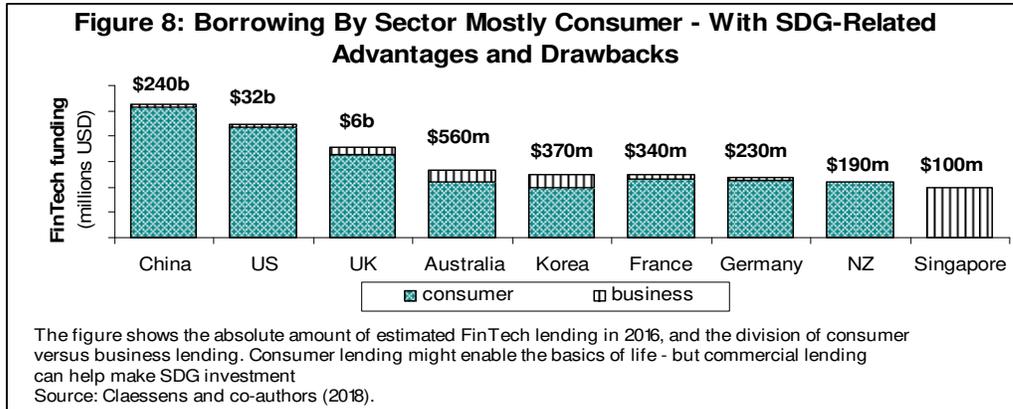
The data suggest a division of labour across jurisdictions according to whether these FinTechs fund consumption or potential investments in FinTech start-ups. Figure 8 shows FinTech credit in a range of leading FinTech-leading jurisdictions – by sector.<sup>50</sup> If New Zealand’s FinTechs focused on consumer lending/credit, Singapore’s focused on commercial/business. Yet, given that many businesses, particularly in developing countries which need a ‘FinTech4SDGs’ the most, do not know about the types of services and credit offered by FinTechs, their use to jump start a SDG-funding revolution seems slight for years to come.<sup>51</sup> More importantly, FinTechs can help develop the technologies needed to set up a wide range of other companies – making FinTechs potentially ‘self-replicating.’<sup>52</sup>

<sup>49</sup> A point that Hariharan and Marktanner drive home, by showing the large potential gains from financial inclusion. See Govind Hariharan and Marcus Marktanner, *The Growth Potential from Financial Inclusion*, PAPER PRESENTED AT THE ATLANTA FED/GSU INTERNATIONAL DEVELOPMENT ECONOMICS WORKSHOP, 2012, available [online](#). See also Dinabandhu Sethi and Debashis Acharya, *Financial Inclusion and Economic Growth Linkage: Some Cross Country Evidence*, JOURNAL OF FINANCIAL ECONOMIC POLICY 10(3), 2018, available [online](#).

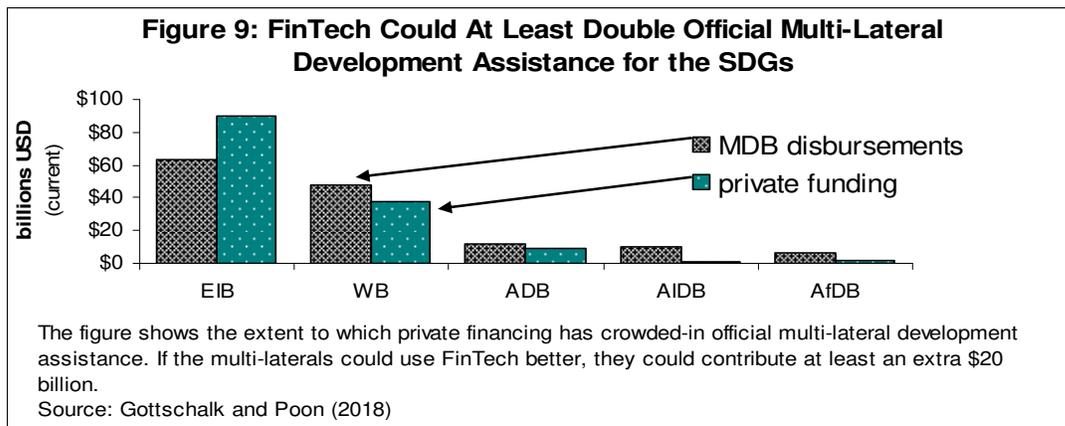
<sup>50</sup> Stijn Claessens, Jon Frost, Grant Turner and Feng Zhu, *Fintech Credit Markets around the World: Size, Drivers and Policy Issues*, BIS QUARTERLY REVIEW, 2018, available [online](#).

<sup>51</sup> Nasrul Ghazali and Takashi Yasuoka, *Awareness and Perception Analysis of Small Medium Enterprise and Start-up Towards FinTech Instruments - Crowdfunding and Peer-to-Peer Lending in Malaysia*, INTERNATIONAL JOURNAL OF FINANCE AND BANKING RESEARCH 4(1), 2018, available [online](#).

<sup>52</sup> Indeed, in one of the only direct answers to our question – Chen and his colleagues quantify the value of FinTech innovations. See Mark Chen, Qin-xi Wu, and Bao-zhong Yang, *How Valuable Is FinTech Innovation?*, THE REVIEW OF FINANCIAL STUDIES 32(5), 2019, available [online](#).



Another part of these benefits can come from multilateral banks' designing projects which encourage FinTech-related crowding-in. Figure 9 shows the extent to which such crowding-in might grow.<sup>53</sup> If the European Investment Bank gets roughly \$1.20 in private contributions/investments for every dollar it 'invests' – multilateral development banks in the Americas and Africa region get almost nothing. If the multilateral development banks had to attract money from online securitizations via FinTech platforms, rather than through bonds guaranteed by sovereign member-states, they could raise hundreds of billions.<sup>54</sup> Indeed, in Africa alone, such securitization could easily raise \$60 billion.<sup>55</sup>



Unsurprisingly, these relationships depend on **complementary policies**. For example, in a study from the European Union, FinTech increases savings, but only for the financially literate.<sup>56</sup> These data suggest FinTech would translate into saving plans increasing (on

<sup>53</sup> Ricardo Gottschalk and Daniel Poon. *Scaling Up Finance For The Sustainable Development Goals: Experimenting with Models of Multilateral Development Banking*, UNCTAD NOTE UNCTAD/GDS/ECIDC/2017/4, available [online](#).

<sup>54</sup> Daniela Gabor, *Securitization for Sustainability: Does it help achieve the Sustainable Development Goals?* HEINRICH BOELL FOUNDATION WORKING PAPER, 2019.

<sup>55</sup> Bryane Michael, *The Prospects and Problems of an IGAD Regional Development Bank*, JOURNAL OF DEVELOPMENT POLICY AND PRACTICE 4(1), 2019, available [online](#).

<sup>56</sup> Gregor Becker, *Does FinTech Affect Household Saving Behavior? Findings from a Natural Field Experiment*, GOETHE UNIVERSITY WORKING PAPER, 2017 available [online](#).

average) by \$30, and \$285 for securities investments – with current account balances increasing by \$195 and total deposits held at the bank increasing on average by \$455 in the post-activation period. Taking \$50 per month as a conservative estimate, and scaling average savings down from average EU levels to levels in developing countries – one **could still see increases in resources mobilized of \$125 billion.**<sup>57</sup>

A study from the EU shows that FinTech could completely leapfrog the inconsistent technologies and policies which hindered hitherto financial union.<sup>58</sup> If Kenya serves as any measure, better payment systems can contribute up to 0.5% in GDP growth in ‘total factor productivity’ (or productivity which more capital and labour alone can not explain).<sup>59</sup> If such finding scale, such extra growth could contribute \$100 billion (or roughly half) of the value of the SDG financing gap alone – by only dealing with payments systems!<sup>60</sup> For authors uses more transparent measures, such an increase could amount of as much as 1.5% of GDP per capita.<sup>61</sup> If true, FinTech could contribute up to **\$300 billion** – a sum far closer to the SDG goal-post.

Other evidence points to up to roughly \$100 billion in gains wrung out of financial service firms’ efficiencies alone. Methods of financial intermediation has experienced seismic change over the decades – with households recently avoiding traditional banks for both saving and borrowing – with new financing methods creating at least \$400 billion in value.<sup>62</sup> Yet, as modelling work by Philippon shows – maybe only several billions will filter into anything capable of funding SDG-related activities.<sup>63</sup> Again, the figures seem to converge toward something much lower than \$100 billion dollar mark, but not much higher than around \$150 billion.

Yet, the Matthew Effect will likely apply for FinTech-assisted sustainable development (namely SDG funding) as for everything else.<sup>64</sup> Namely, FinTech-derived SDG funding will likely occur in jurisdictions already possessing the legal institutions and economic heft to fund these goals already. Figure 10 shows the results of regressions looking at FinTech development.<sup>65</sup> Attributes of the FinTech’s home country (like labour quality)

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<sup>57</sup> Such a calculation considers the 250 million savers in developing countries, which would save an estimated \$500 per year (we have converted all figures from euro into US dollars).

<sup>58</sup> Maria Demertzis, Silvia Merler, Guntram B Wolff, Capital Markets Union and the FinTech Opportunity, *Journal of Financial Regulation* 4(1), 2018, available [online](#).

<sup>59</sup> Thorsten Beck, Haki Pamuk, Ravindra Ramrattan, Burak Uras, Mobile money, trade credit, and economic development, *Vox* 12 September 2015, available [online](#).

<sup>60</sup> This alone would be enough to close the SDG funding gap. With \$20 trillion in GDP in the developing world, a half-a-percent increase in GDP growth would earn \$100 billion.

<sup>61</sup> Desire Kanga, Christine Oughton, Laurence Harris and Victor Murinde, The Diffusion of Fintech, Financial Inclusion and Income Per Capita, FinTech, Financial Inclusion and Sustainable Growth Conference at SOAS, 2019, available [online](#).

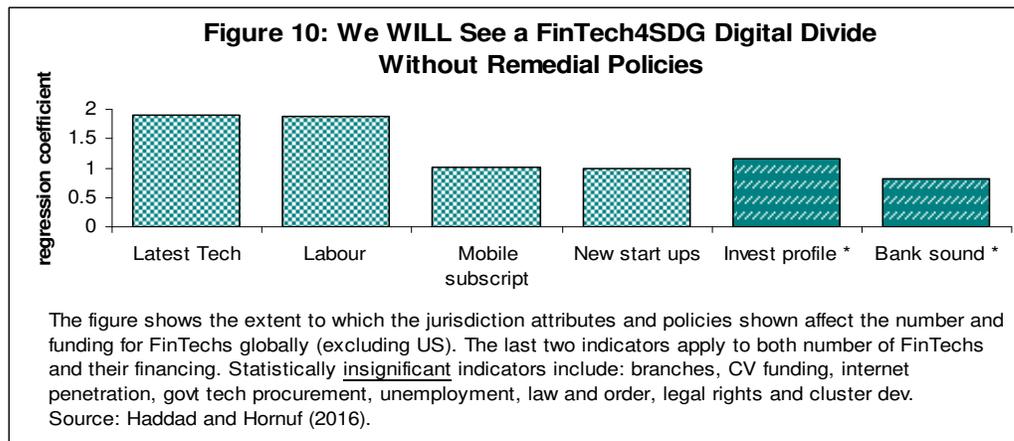
<sup>62</sup> Aaron Fine and Rick Chavez, *The Customer Value Gap: Re-Calculating Route: The State of the Financial Services Industry 2018*, OLIVER WYMAN WORKING PAPER, 2018, at p. 18, available [online](#).

<sup>63</sup> Thomas Philippon, *The FinTech Opportunity*, BIS WORKING PAPERS NO 655, 2017, available [online](#).

<sup>64</sup> From Matthew 13:12, “whoever has will be given more, and he will have an abundance. Whoever does not have, even what he has will be taken away from him.”

<sup>65</sup> Christian Haddad and Lars Hornuf, *The Emergence of the Global Fintech Market: Economic and Technological Determinants*, CESIFO WORKING PAPER SERIES NO. 6131, 2016, available [online](#).

affect these Fintechs' development far more than many policy attributes. Worse still, this assumes that governments can just develop FinTechs based on purely technical/developmental considerations. FinTech-based financing, like all methods of funding the SDGs, will follow political considerations far more than any considerations of the economic or technical costs involved in supplying SDG-related goods and services.<sup>66</sup>



## Making FinTech Law Work for the SDGs

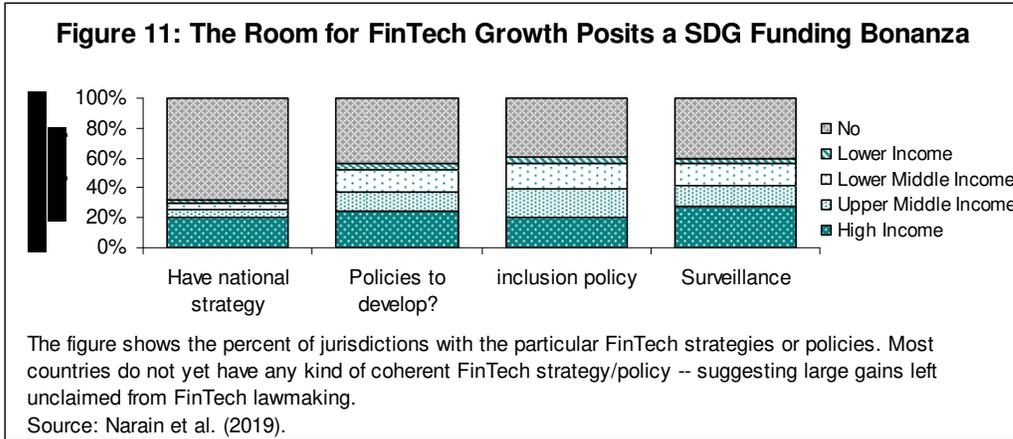
Plenty of countries still have the opportunity to make FinTech work for the SDGs and other social policies – by encouraging FinTech law to support sustainable development.<sup>67</sup> After all, we have a wide range of regulations support social objectives – including regulations covering public procurement, company law, environment, education, labour and trade law.<sup>68</sup> As Figure 11 shows, given the number of countries that have yet to adopt FinTech laws and policies, these jurisdictions still have time to adopt pro-SDG FinTech rules.<sup>69</sup> Roughly only 35% of countries have some kind of national FinTech strategy. Roughly 45% of jurisdictions do not even know what is happening with FinTech in their borders – not actively monitoring FinTech developments.

<sup>66</sup> Helen Tilley and Heidi Tavakoli, *Better Aid Modalities: Are We Risking Real Results? A Literature Review*, ODI POLICY BRIEF, 2012, available [online](#).

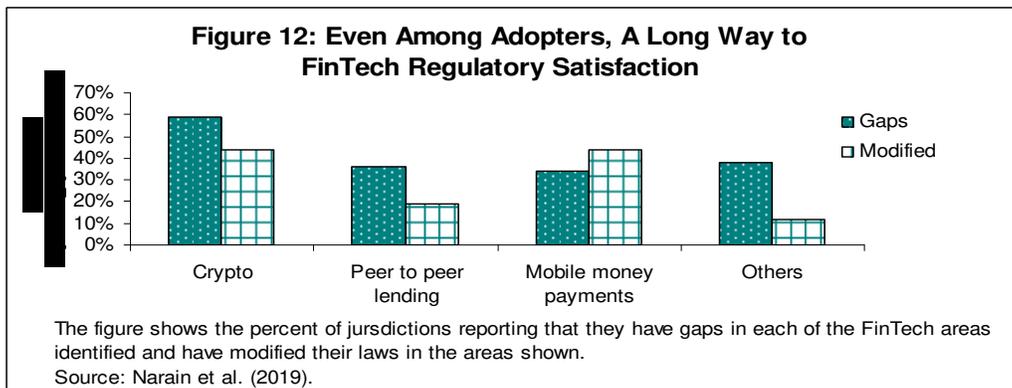
<sup>67</sup> As argued previously, FinTech ‘works’ by encouraging savings (resource mobilization), investing in, and generating technologies for more general use.

<sup>68</sup> For a review of all the legal requirements in the EFTA area which create social mandates, see EFTA, *Horizontal Policies*, 2020, available [online](#). In the specific case of public procurement (to take one area where SDG-like policies have permeated a seemingly unrelated area of policy), see Sue Arrowsmith, *The Purpose of the EU Procurement Directives: Ends, Means and the Implications for National Regulatory Space for Commercial and Horizontal Procurement Policies*, CAMBRIDGE YEARBOOK OF EUROPEAN LEGAL STUDIES 14, 2012, available [online](#).

<sup>69</sup> Aditya Narain, Ross Leckow, Vikram Haksar and Alfonso Garcia, *Fintech: The Experience So Far*, IMF WORKING PAPER, 2019, available [online](#).



Other evidence shows the extent to which enlightened FinTech regulation could help achieve these SDG goals. Figure 12 shows that at least 40% of countries’ regulators admit to gaps in their FinTech rules – with less than half of these countries having modified their rules to take FinTech developments into account. Indeed, work by organizations like the Alliance for Inclusive Finance illustrates the promise and existing limits of such rulemaking.<sup>70</sup> The Alliance’s advice for regulators contains the word ‘social’ only once – in passing.<sup>71</sup> With such scant attention paid to social objectives, SDG-related funding for ‘social FinTech’ will remain a trickle of its potential. Indeed, until regulators clarify the regulatory morass surrounding morass – using FinTech to finance the SDGs will likely cost more money than it raises.<sup>72</sup>



<sup>70</sup> The Alliance (or AfI) does not represent the only organization slowly coming to grips with the potential role FinTech law can play in promoting broader social goals. In Latin America, regulators still grapple with reacting to FinTech developments, rather than seek to shape them pro-developmentally. See Jorge Ponce, *Key Aspects Around Financial Technologies and Regulation Policy*, REPORT OF THE FINTECH REGULATORY ASPECTS WORKING GROUP, 2019, available [online](#).

<sup>71</sup> Tunyathon Koonprasert and Ali Ghiyazuddin Mohammad, *Creating Enabling Fintech Ecosystems: The Role of Regulators*, AFI SPECIAL REPORT, 2020, available [online](#), at footnote A.

<sup>72</sup> For the cost of this regulatory complexity and uncertainty, see Jonah Trout, Chris Copenhaver, Hilary Halpern, Shuang Hao and Vincent Tran, *The Complex Regulatory Landscape for FinTech: An Uncertain Future for Small and Medium-Sized Enterprise Lending*, WORLD ECONOMIC FORUM WHITE PAPER, 2016, available [online](#).

Unfortunately, no consensus yet exists on which types of FinTech regulations could promote, even economic growth, much less SDG financing. Figure 13a provides an example of some of the various types of FinTech-related regulations undertaken around the world.<sup>73</sup> [Appendix B](#) provides a much more comprehensive overview. Despite the lack of any empirical basis to propose rulemaking, pundits of all shapes and sizes foist their advice on unsuspecting regulators.<sup>74</sup> Worse still, many try to “cheerlead” FinTech – assuming rather than testing whether FinTech will actually benefit financial markets and/or economies.<sup>75</sup>

**Figure 13a: The Pro-Regulators and the Laissez Faire-ists**

	Reg-ulation	Licensing/auth'ions	Investor protect	Risk manage require		Reg-ulation	Licensing/auth'ions	Investor protect	Risk manage require
Australia					Korea				
Brazil	X	X	X		Mexico	X	X		X
Canada					Netherlands			X	
Chile					New Z'land	X	X		X
China	X	X	X	X	Singapore				
Estonia			X		Spain	X	X		X
Finland	X	X			Switzerland	X	X	X	X
France	X	X	X	X	UK	X	X	X	X
Germany					US				
Japan									

Source: Claessens and co-authors, 2018 at table 2.

The initial data fail to show that any one type of regulation seems to ‘work.’<sup>76</sup> Figure 13b shows the 95% confidence intervals of credit volumes for FinTechs working in various policy environments. **None** of these policies seem to have any effect on FinTech growth – and/or credit volumes for FinTechs. We see this because the bars overlap – something statistically significantly different groups do not usually do.<sup>77</sup> Yet, the scatterplot shown in the next figure offers even more visually attractive ‘proof.’ Figure 14 shows the relationship between FinTech per capita and some index of ‘regulatory stringency.’ Extremely stringent regimes seem to dampen the provision of FinTech credit per person. But anything might explain these data – as they do not control for other factors. Despite what the large consulting firms may say, we do not know what type of

<sup>73</sup> Stijn Claessens, Jon Frost, Grant Turner and Feng Zhu, *Fintech Credit Markets around the World: Size, Drivers and Policy Issues*, BIS QUARTERLY REVIEW, 2018, available [online](#).

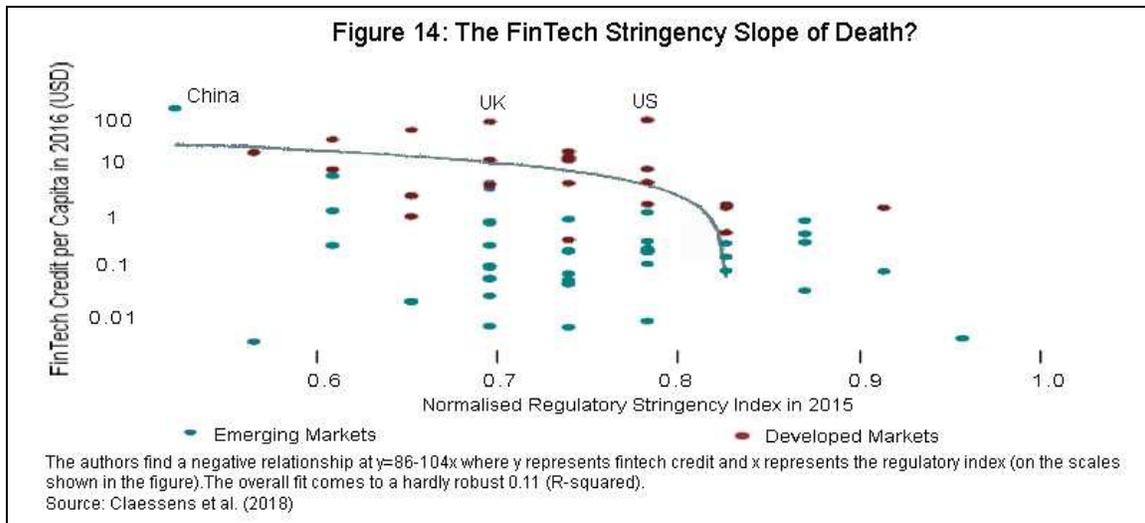
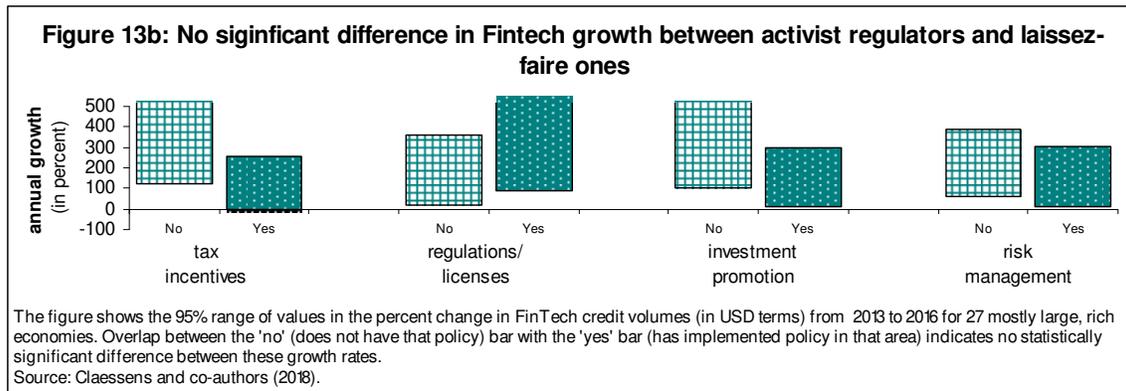
<sup>74</sup> Madi and the authors in her edited volume represent a welcome exception to this trend. By reporting on current developments and reporting on them dispassionately, such work can go a long way toward rethinking the role of pro-developmental FinTech regulation. See Jelena Madi, *FINTECH: LAW AND REGULATION*, Edward Elgar Publishing, 2019.

<sup>75</sup> Johannes Ehrentraud and his colleagues represent one of the worst offenders. See Johannes Ehrentraud, Denise Garcia Ocampo, Lorena Garzoni, Mateo Piccolo, *Policy Responses To Fintech: A Cross-Country Overview*, FSI INSIGHTS ON POLICY IMPLEMENTATION NO 23, 2020, available [online](#).

<sup>76</sup> Work in quotes as mobilizing FinTech funding represents an obvious goal (no FinTech for SDG can exist without FinTech resource mobilization). Yet, the final goal should always focus on output, sustainable development and welfare – not simply maximizing the resources managed by FinTechs, as opposed to conventional banks.

<sup>77</sup> With a 95% level of confidence, these may overlap only 5% of the time when the groups shown really differ.

regulation helps FinTechs deliver credit to the economy in general – much less to sectors and institutions which can help promote the SDGs.<sup>78</sup>



## Next Steps in Quantifying the FinTech Dividend

In order to recommend laws promoting the use of a FinTech4SDGs, we will need further study. Such study should ‘trace’ legal provisions to FinTech GDP and SDG outcomes. What kind of studies can help us accomplish this goal? And which kind of studies can help avoid the mistakes at activities will we need to more precisely measure the way FinTech can and will promote the SDGs?<sup>79</sup>

<sup>78</sup> Nevertheless, a range of organizations stand ready to offer/sell their advice about how to regulate FinTechs. At one extreme, the Bill and Melinda Gates Foundation offers very specific advice to regulators. At the other extreme, EY offers technical solutions with scant view of the underlying economics. See Jeremiah Grossman, *Inclusive Digital Financial Services: A Reference Guide For Regulators*, 2019, available [online](#). See also Philip Treleven, *Financial Regulation of FinTech*, JOURNAL OF FINANCIAL PERSPECTIVES 3(3), 2015, available [online](#).

<sup>79</sup> Regulatory mistakes have already caused a backlash against rash regulation. See Philipp Paech and co-authors, *30 Recommendations on Regulation, Innovation and Finance*, EXPERT GROUP ON REGULATORY OBSTACLES TO FINANCIAL INNOVATION FINAL REPORT TO THE EUROPEAN COMMISSION, 2019,

## 1. FinTech ‘audit’ looking at how FinTechs’ financing SDG-type activities fare

We can not know how FinTech will change the financial and implementation of the SDGs, until we see such a change in practice. Conducting an internal audit of an existing project represents the first way of studying the way FinTech will affect SDG resource requirements.<sup>80</sup> Such an audit might differ from the reader’s traditional view of an audit – though such traditional audits of SDG-funded activities remain very sorely lacking.<sup>81</sup> Indeed, many bemoan the lack of these audits – making any estimate of SDG-funding requirements unreliable.<sup>82</sup> Indeed, even auditing an already existing FinTech project looking to raise money for an SDG project comes with almost insurmountable obstacles.<sup>83</sup>

Internal audit can help researchers and others estimate/predict the effect FinTech would have on any particular SDG project. Figure 15 shows an example – from our own work – of the way an internal audit can predict the effect FinTech *might have*. As shown, the auditors’ working papers lay out a process map (only partially reproduced in the figure).<sup>84</sup> By looking at each step in the value chain or process, researchers can predict how using FinTech-derived funds, or using FinTech-related technologies and partners, might affect the resources used – and thus outcomes produced.<sup>85</sup> Indeed, the internal audit methodology’s strength lies in its ability to estimate the effects of hypothetical solutions to risks which threaten the reliability and effectiveness of an organization or project.<sup>86</sup>

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available [online](#). For a journalist discussion of just one misstep, see Jemima Kelly, A “*Fintech Sandbox*” *Might Sound like a Harmless Idea. It’s Not*, FT DECEMBER 5, 2018, available [online](#).

<sup>80</sup> We refer to internal audit, as opposed to the more well-known external audit done by firms like KPMG and E&Y. Such internal audit focuses on project risks, rather than (exclusively) on assurance. As such, internal audit provides a unique method for understanding FinTechs and the SDGs.

<sup>81</sup> See European Court of Auditors, *Auditing the Sustainable Development Goals: Time to Act*, ECA JOURNAL 3, 2019, available [online](#).

<sup>82</sup> How can we know if an SDG project needs \$500 or \$5 million, if no audit determines what the true value-for-money consisted of? See Aranzazu Guillan Monteroa and David Le Blanc, *The Role of External Audits in Enhancing Transparency and Accountability for the Sustainable Development Goals*, DEPARTMENT OF ECONOMIC & SOCIAL AFFAIRS WORKING PAPER NO. 157ST/ESA/2019/DWP/157, 2019, available [online](#).

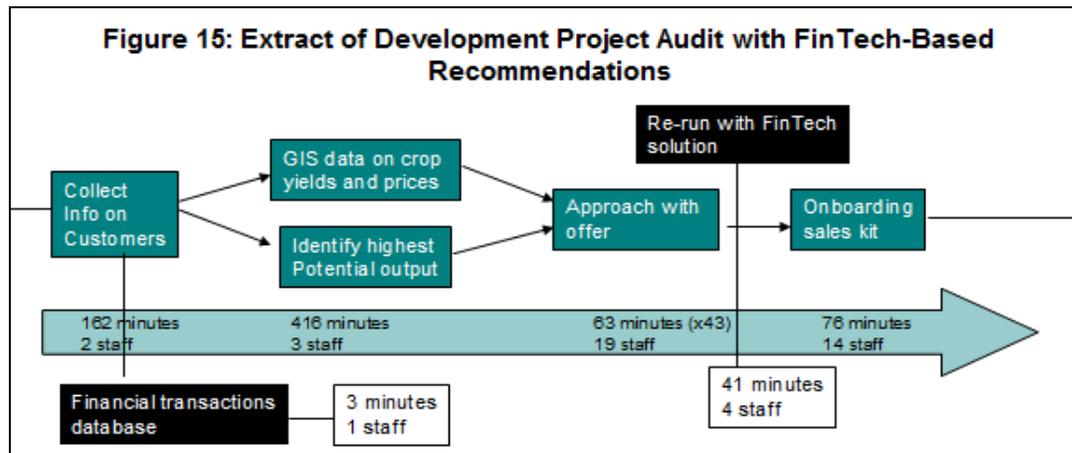
<sup>83</sup> As the large INTOSAI guidance booklet recently made clear. See INTOSAI, *Auditing and Implementing the United Nations Sustainable Development Goals Focusing on Environmental Auditing*, INTOSAI WGEA WORK PLAN 2017-2019 PROJECT 2.1 (H), 2019, available [online](#).

<sup>84</sup> Others have found the disintermediating effect of FinTech. See Wei-yi Cai, Disruption of financial intermediation by FinTech: a review on crowdfunding and blockchain, *Accounting & Finance* 58(4), 2018, available [online](#).

<sup>85</sup> As PWC makes clear, internal auditors in traditional financial services firms already must anticipate FinTech’s effect on their business – and make recommendations for something that has not yet happened. Internal auditors will likely need to anticipate doing this type of engagement far afield from banking and finance. See Dariush Yazdani and Gregory Weber, *Redrawing the lines: FinTech’s Growing Influence on Financial Services*, PWC GLOBAL FINTECH REPORT, 2017, available [online](#).

<sup>86</sup> Indeed, internal auditors have contributed to much theorizing about the future of FinTech. See Sanjiv Das, *The Future of Fintech*, *FINANCIAL MANAGEMENT* 48(4), 2019, available [online](#).

With one or two projects analysed, more general conclusions could apply to the entire development industry.<sup>87</sup>



## 2. Development projects ‘trace’

Another bottom-up approach to quantifying the effect of FinTech on the SDGs may consist of analysing existing SDG projects for their FinTechability. Just as Oxford researchers could estimate how AI would likely affect a range of industries, so might researchers analyse the development projects likely to benefit from FinTech.<sup>88</sup> Figure 16 shows an example of the OECD Creditor Reporting System (CRS) – a database from which these researchers might draw.<sup>89</sup> The System shows development projects in each country, classified by type of project, donor and so forth. Figure 17, for its part, estimates the value of projects likely to benefit from – or at least show signs of disintermediation by – FinTech. For example, FinTech funding might one day replace money provided for agricultural assistance that formerly came from international donors.<sup>90</sup> Indeed, one studies suggests 25 areas ripe for such disintermediation – including SME collateral management, community distributed electricity generation, and basin water rights management (among others).<sup>91</sup>

<sup>87</sup> Indeed, the results from these audits could inform a wider range of regulations. As Fryson and her colleagues show, right-regulating will help the SDGs as much or more than simply throwing more money at them. See Sara Fryson, Irene Hors, and Marcos Bonturi, *Governance as an SDG Accelerator Country Experiences and Tools: Country Experiences and Tools*, 2019, available [online](#).

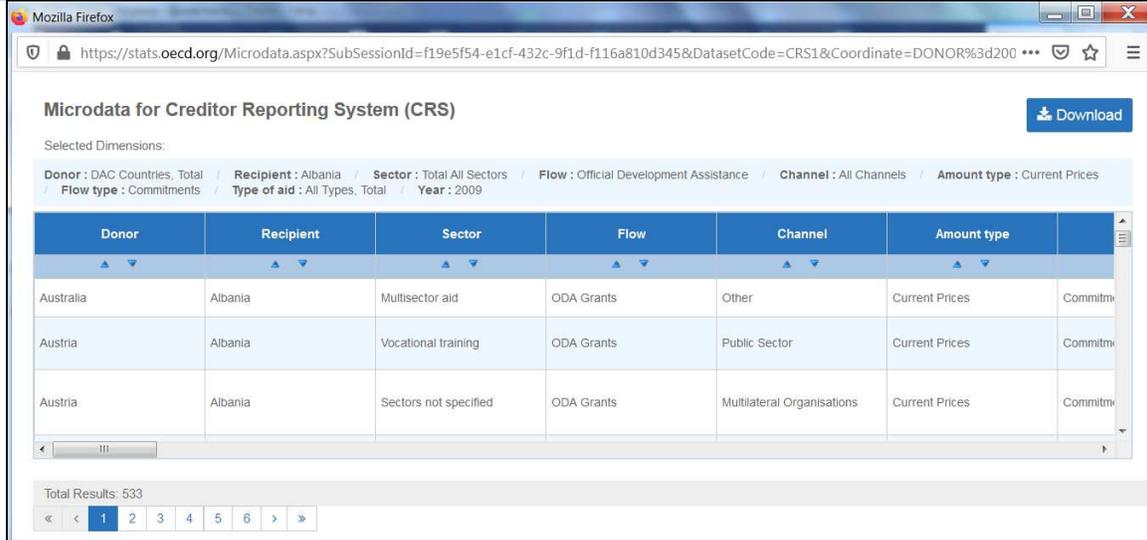
<sup>88</sup> See Carl Frey and Michael Osborne, *The Future of Employment: How Susceptible Are Jobs to Computerisation?* OXFORD MARTIN SCHOOL WORKING PAPER, 2013, Available [online](#).

<sup>89</sup> OECD, Creditor Reporting System, Main Screen 2020, available [online](#).

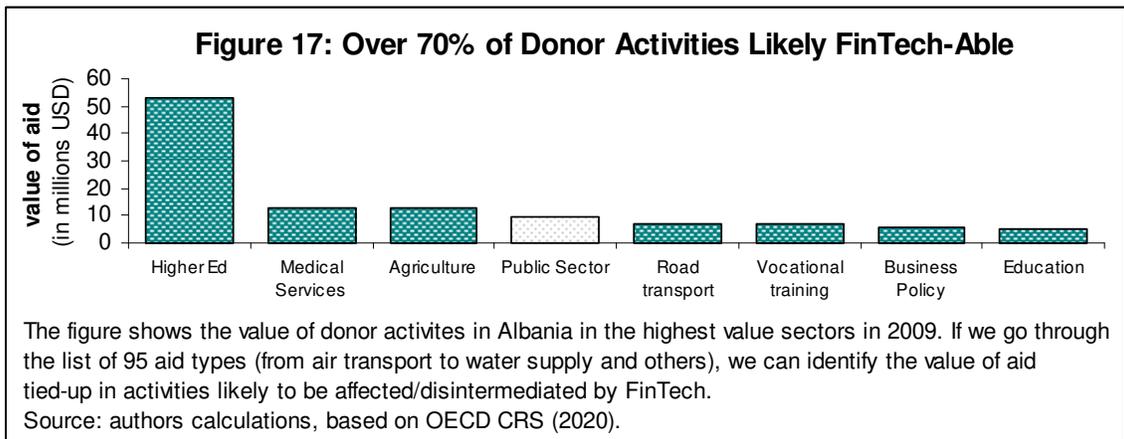
<sup>90</sup> Two recent studies provide (probably over-optimistic) reviews of FinTech’s ability to raise money for agriculture and its effectiveness. The combination of FinTech and blockchain and/or big data can clearly help financiers play a more active in monitoring risks and bringing in the specialist advice needed to save the investment. See Craig McIntosh and Caio Scuarcialupi Mansini, *The Use of Financial Technology in the Agriculture Sector*, ADB INSTITUTE WORKING PAPER NO. 872, 2018, available [online](#). See also Mischa Tripoli and Josef Schmidhuber, *Emerging Opportunities for the Application of Blockchain in the Agri-food Industry*, FAO ISSUE PAPER AUGUST, 2018, available [online](#).

<sup>91</sup> See Juan Carlos Castilla-Rubio, Simon Zadek and Nick Robins, *FinTech and Sustainable Development: Assessing the Implications*, UNEP INQUIRY, 2016, at Appendix 3, available [online](#).

**Figure 16: Databases Like the CRS Can Help Estimate FinTech’s Influence on SDG Funding**



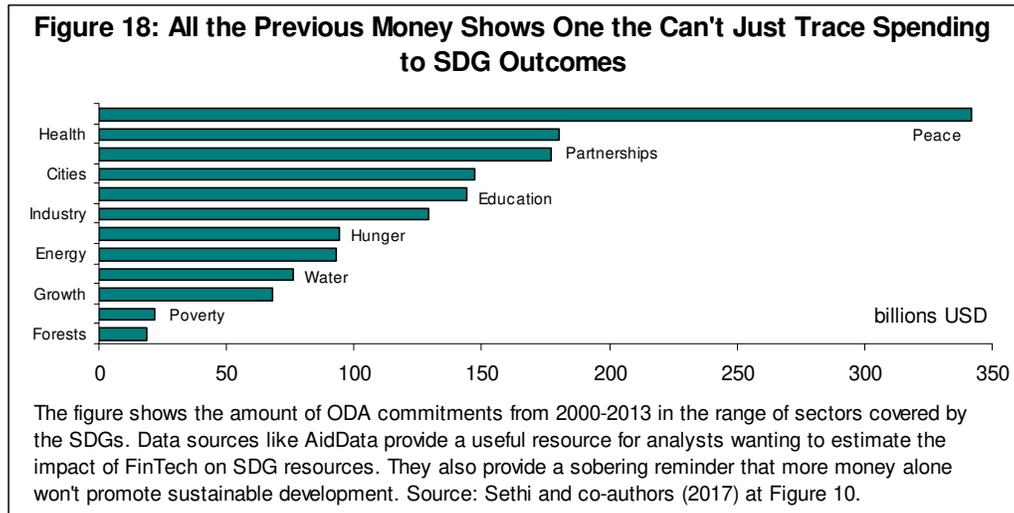
The figure shows several items listed in the OECD aid database. The OECD database, and others like it, allow researchers to guesstimate the effects of FinTech on the SDGs possibly more accurately than macro-level estimates.



Thanks to the data revolution, researchers have a wide range of resources from which to draw estimates of FinTech’s impact. *AidData* represents another resource from which FinTech enthusiasts and pessimists could explore the way FinTech could help/hurt the effectiveness of SDG spending.<sup>92</sup> Figure 18 shows the sectors that international donors have funded. Data sources like these help provide researchers, interested in FinTech’s likely effects on government spending, with unrivalled resources. With access to budgetary data world-wide, one could easily go country-by-country and ministry-by-

<sup>92</sup> See Tanya Sethi, Samantha Custer, Jennifer Turner, Jacob Sims, Matthew DiLorenzo, and Rebecca Latourell, *Realizing Agenda 2030: Will donor dollars and country priorities align with global goals?* AIDLAB RESEARCH LAB BASELINE REPORT, 2017, available [online](#).

ministry, assessing how FinTech might disrupt existing spending.<sup>93</sup> Such data can help us understand the trends we see in this figure. For example, despite large aggregate, cumulative investments in peace-related projects from 2000-2013, what do we have to show for it? Indeed, in areas like peace and partnerships, FinTech will likely play little to any role – hopefully encouraging donors to reduce funding other bodies’ employees and instead to focus on results.<sup>94</sup>



Some researchers have also tried to gather data from the private sector side – by looking at the extent to which SDGs might affect corporate risk and return. Figure 19 puts specific estimates on these risks and returns.<sup>95</sup> The authors show that companies which take SDG considerations into account supposedly have higher rates of return (as shown by the blue bars towering over the traditional gray bar growth rates in the figure).<sup>96</sup> They also show that the S&P 500 membership has a far higher average risk exposure to SDG 17 (at a normalized scale of 1) than SDG 1 (at a normalized score of 0.09). Researchers could also repeat this process – looking at how the use of FinTech by these and other companies could affect spending available on SDG-related activities.<sup>97</sup>

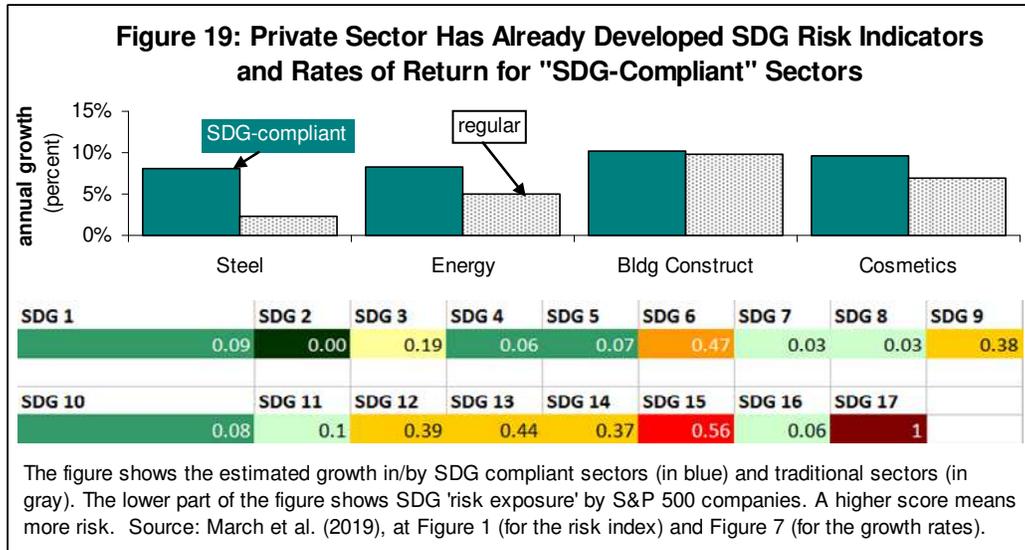
<sup>93</sup> The Open Budget Survey shows that most countries now provide information on planned expenditures (namely their budgets) online and some even provide disbursements and audited financial statements. For more on how researchers use these data, see Elisabeth Hege and Laura Brimont, *Integrating SDGs into National Budgetary Processes*, IDDRI STUDY NO. 5/18, 2018, available [online](#).

<sup>94</sup> In places like Russia and Commonwealth of Independent States, FinTech will not supplant conventional approaches – but start from a clean slate. If FinTech will boost aid effectiveness anywhere, it will be in these kinds of places. For more on these first results, see Deloitte CIS Research Center, *FinTech Market Trends: Private FinTech as a Tool for Sustainable Business Development in Russia and Kazakhstan*, DELOITTE WORKING PAPER, 2018, available [online](#).

<sup>95</sup> Rochelle March, Rick Lord, and Nikol Ioannou, *Sustainable Development Goals: A Misunderstood Market Opportunity? Emerging Trends and Analysis of the SDG Impact of Companies in the S&P 500*, TRUCOST ESG ANALYSIS WORKING PAPER, 2019, available [online](#).

<sup>96</sup> ‘Supposedly’ as the authors provide no way to independently verify their data.

<sup>97</sup> Or lazy ‘thought leadership’ may just assume that privatizing infrastructure could take the place of well-thought out profitable projects. See Djeneba Doumbia and Morten Lykke Laurids, *Closing the SDG Financing Gap—Trends and Data*, IFC EMERGING MARKETS COMPASS NOTE 73, 2019, available [online](#).

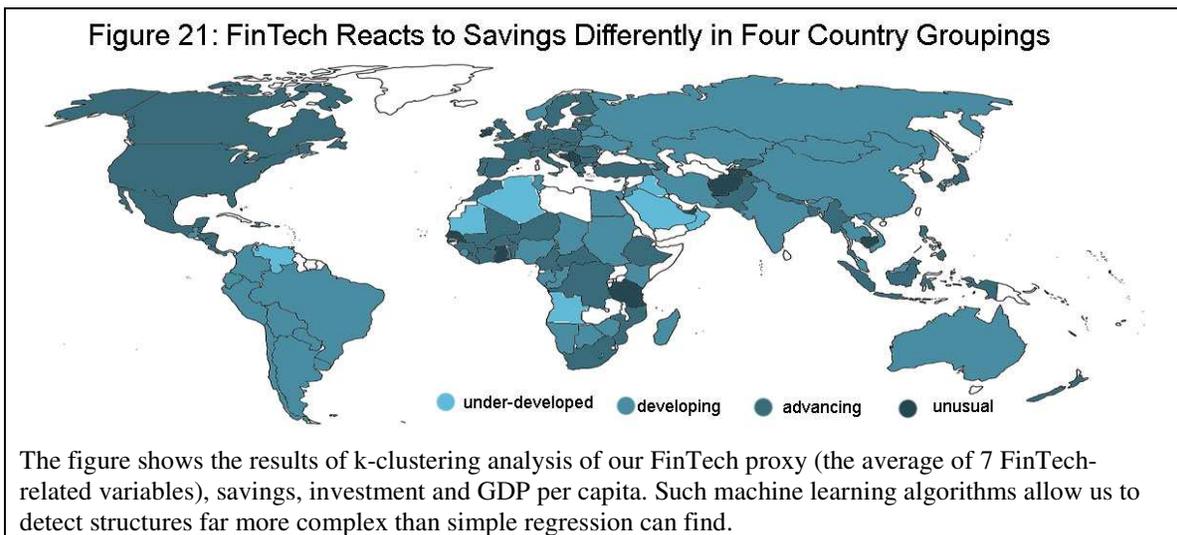
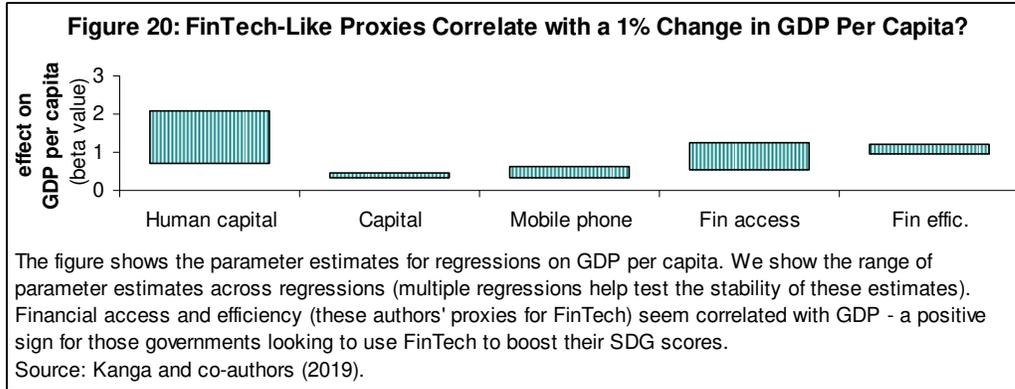


### 3. Top-down Macro/Machine Learning Studies

Black box studies probably represent the fastest and most powerful method of figuring out the effect FinTech will have on sustainable development. Regression analysis, such the one we presented earlier, can show how GDP – or a composite indicator reflecting all 17 SDGs – reacts to changes in FinTech policies and practices. Figure 20 shows one example – out of many – of scholars regressing GDP on some measure of FinTech.<sup>98</sup> Yet, other statistical methods, besides regression, can discover underlying patterns in our data. Figure 21 shows the way clustering analysis has divided countries into 4 groupings. Using GDP per capita, savings, investment and our own FinTech indicator, we let the algorithm divide countries according to the similarities and differences in their data's variance.<sup>99</sup>

<sup>98</sup> Kanga *et al.*'s measure uses relatively simple measures of FinTech. As FinTech measures improve, scholars will undoubtedly seek to use these in new econometric studies. See Desire Kanga, Christine Oughton, Laurence Harris and Victor Murinde, *The Diffusion of Fintech, Financial Inclusion and Income Per Capita, FinTech*, FINANCIAL INCLUSION AND SUSTAINABLE GROWTH CONFERENCE AT SOAS, 2019, available [online](#).

<sup>99</sup> We do not want to over-complicate this brief by explaining the mechanics of such statistical methods. Needless to say, such methods can point to real world patterns undetectable in case studies.



Yet, more remains to be done. We still need to know which regulations will likely encourage (or discourage) pro-SDG FinTech development. For authors like Magnuson, FinTech represents an undeniable force, which regulators need to react to.<sup>100</sup> In this false view, regulators have to adjust to this new force, much like they had to react to the 2007-8 financial crisis.<sup>101</sup> Yet, any 'FinTech for SDGs' movement represent a chance to proactively – rather than reactively – shape FinTech law and policy.<sup>102</sup> Law can not

<sup>100</sup> William Magnuson, *Regulating Fintech*, VANDERBILT LAW REVIEW 71(4), 2018, available [online](#).

<sup>101</sup> Not to say that Arner et al. agree with the view, only that they describe such a view well. See Douglas Arner, Janos Barberis and Ross Buckley, *The Evolution of FinTech: A New Post-Crisis Paradigm*, GEORGETOWN JOURNAL OF INTERNATIONAL LAW 47, 2016, available [online](#).

<sup>102</sup> Didenko gets it. A wait and see regulatory attitude will represent a tremendous missed opportunity. See Anton Didenko, *Regulating FinTech: Lessons from Africa*, 19 San Diego International Law Journal 19, 2018, available [online](#).

outpace technology – without the empirical basis needed to draft such rulemaking.<sup>103</sup> No matter how much crowdsourcing of pro-SDG institutions one tries.<sup>104</sup>

## Conclusions

Many have exaggerated FinTech's role in helping to achieve the Sustainable Development Goals (or SDGs). FinTech will not raise trillions of dollars. But FinTech can raise more than a few paltry millions – with the right rules in place. Given current policies, FinTech could likely raise between \$50 billion to \$125 billion – contributing only about 10% to the SDG bill (plus or minus several percent). Throughout this paper, we have argued that such gains will come from four sources. First, increased savings and investment from excluded households and black market businesses will form part of FinTech's capital.<sup>105</sup> Second, FinTechs will both divert resources away from traditional financial intermediaries as well as raise their own money (through savers and through returns on investments). Third, FinTechs will reduce the transactions costs which keep resources tied-up in the financial sector – instead of working in productive parts of the economy.<sup>106</sup>

Direct contributions will come from three sources. First, FinTechs will pay the taxes that help governments finance SDG-related spending. Second, they will fund SDG-related ventures – from raising money to clean up the environment to securitizing assets or liabilities used in various SDG-related start-ups and ventures. In some cases, the line between the FinTechs and the SDGs they fund may become blurry indeed.<sup>107</sup> Third, FinTechs may support traditional funding – and indeed traditional banks, governments and even international organizations may use them to raise money for particular public-private partnerships.<sup>108</sup> Fourth, and most marginally, FinTechs may help produce innovations and business models which benefit.

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<sup>103</sup> For a longer exposition on this view, see Mark Fenwick, Wulf Kaal, and Erik Vermeulen, *Regulation Tomorrow: What Happens When Technology Is Faster than the Law?* AMERICAN UNIVERSITY BUSINESS LAW REVIEW 6(3), 2017, available [online](#).

<sup>104</sup> Namely, one can not crowdsource better institutions, which can implement the SDGs. See Maja Bott and Gregor Young, *The Role of Crowdsourcing for Better Governance in International Development*, PRAXIS THE FLETCHER JOURNAL OF HUMAN SECURITY 27, 2012, available [online](#).

<sup>105</sup> Illegal and washed money may also form part of this bounty. Yet, FinTech may also help regulators detect and prevent such money from entering the financial system. We do not address this issue in this paper. See Yen-Te Wu, *FinTech Innovation and Anti-Money Laundering Compliance*, NATIONAL TAIWANESE UNIVERSITY LAW REVIEW 12, 2017, available [online](#).

<sup>106</sup> Economists have long viewed finance like law enforcement or government – a supplementary activity in support of productive activity – but not productive in itself. For a finer point on the issue, see Giancarlo de Vivo and Aldo Barba, *An 'Unproductive Labour View' of Finance*, CAMBRIDGE JOURNAL OF ECONOMICS 36(6), 2012, available [online](#).

<sup>107</sup> Yet, at the time of this writing, work by ING, BBVA and Ecobank has focused more on signing declarations than actually developing FinTechs which promote women's rights, sustainable production or life on land. See Amber Donovan-Stevens, *Three Fintechs That Are Driving Sustainability*, FINTECH MAGAZINE NOV 13, 2019, available [online](#).

<sup>108</sup> The development of cryptocurrencies and token-style payments represents a typical area considered ripe for public-private partnerships. See Dong He, Ross Leckow, Vikram Haksar, Tommaso Mancini-Griffoli, Nigel Jenkinson, Mikari Kashima, Tanai Khiaonarong, Céline Rochon, and Hervé Tourpe, *Fintech and*

Regulations could help channel FinTech funds into SDGs in several ways. First, and most importantly, they can support reforming bad laws. Many countries lag so far behind on the SDG indicators because they have laws which discourage saving, the public provision of electricity, medical care, education and other basic services.<sup>109</sup> Second, they can provide incentives to FinTech ventures which fund or engage in SDG-related activities – though identifying these activities could represent a huge problem in itself.<sup>110</sup> Many point to European support for socially responsible investment (SRI) and ‘impact investing’ in mobilizing almost \$100 billion in resources for SDG-like goals.<sup>111</sup> Third, they can help avoid many of the restrictions on raising money from the public – and encourage the financial control and oversight required of any kind of aid project.<sup>112</sup>

If policymakers wanted to really raise the \$1 trillion or required, in an environment conducive to such spending, they could mainstream SDG spending/investing as part of mainstream policymaking. Namely, if financial regulators took the same ‘horizontal policies’ approach to financial regulation that they do with other policymaking like public procurement – pro-SDG FinTech laws could increase the \$100-\$150 billion FinTech will likely raise under the status quo. Perhaps doubling it? Until we have a scalable set of FinTech platforms lending/investing billions into activities which affect the aspects of sustainable development measured by the UN, we can not know for sure. And until we have studies quantifying these likely gains, responsible policymakers and investors will widely steer clear of costly FinTech4SDG forays.

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*Financial Services: Initial Considerations*, IMF STAFF DISCUSSION NOTE SDN/17/05, 2017, available [online](#).

<sup>109</sup> A group of policy briefs shows just how much benefit countries could obtain from legal reform – even before considering to fund SDG activities of any kind. See Minoru Takada, Bo Fu, Isabel Raya, Nadine Salame, Taylor Smith and Ivan Vera, *Policy Briefs In Support of the First SDG7 Review of the UN High-Level Political Forum 2018*, UN POLICY BRIEF, 2018, available [online](#).

<sup>110</sup> Indeed, a recent ‘best practice’ piece admonishes businesses in the most vague terms, spouting principles, but mentioning a lot of concrete actions. See Namit Agarwal, Uwe Gneiting and Ruth Mhlanga, *Raising the Bar: Rethinking the role of business in the Sustainable Development Goals*, OXFAM DISCUSSION PAPER, 2017, available [online](#).

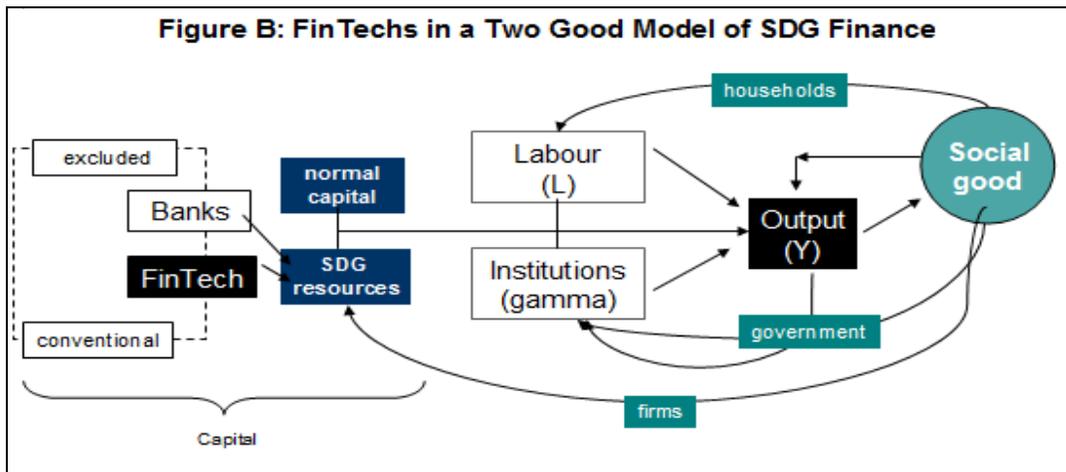
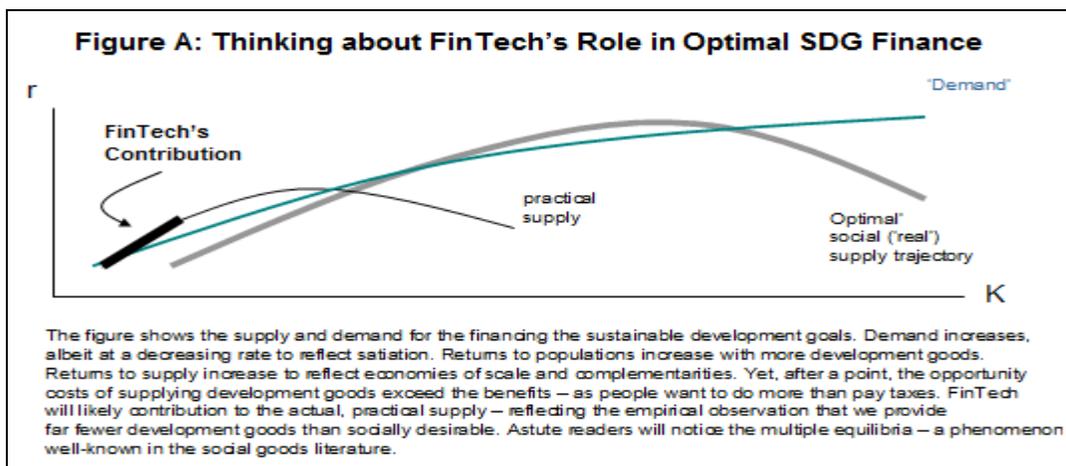
<sup>111</sup> The same document points to \$23 trillion in SRI investment – yet even with such optimistic counting, no one thinks that these funds could fund activities in the types of places which need them the most, namely where government hope such investment will substitute for government spending directly. See Eurosif, *SDGs for SRI investors*, available [online](#).

<sup>112</sup> China provides a best-and-worst practice for the practice of letting netizens ‘adopt’ a development project, provide small amounts of funding, and follow it over the course of its life. For a discussion, see Chuan-man You, *Recent Development of FinTech Regulation in China: A Focus on the New Regulatory Regime for the P2P Lending (Loan-based Crowdfunding) Market*, CAPITAL MARKETS LAW JOURNAL 13(1), 2018.

## Appendix A: Methodological Notes

### *A Model of FinTech Funding the SDGs*

How can we think about financing the SDGs? Figure A provides the reader with the same mind-set we used when writing this brief. Following the social goods literature, investment in the SDGs involves opportunity costs.<sup>113</sup> Figure B shows the trade-off between dedicating resources to social goods like SDG activities/programmes and ‘regular’ output – like potato chips, iPads, and shovels. The model shows two major ‘pivots’ – the way FinTech rules encourage the mobilization of ‘SDG resources’ in the first part. The second part consists of the way these resources help promote the SDGs – labelled as ‘social goods.’



<sup>113</sup> From an analytical perspective, investment in social goods like the SDGs possesses similarities with investment in R&D. Both are under-provided, both have increasing returns to a point, and both involve a sector which potentially draw resources away from better uses. See Charles Jones and John Williams Too Much of a Good Thing? The Economics of Investment in R&D, NBER Working Paper 7283, 1999, available [online](#).

How can FinTech help mobilize resources for use by the government and/or private sector? Equation (1) provides a simple model of the capital accumulation process. More financial inclusion means getting a fraction  $\beta$  more capital from the excluded sector ( $K_{EX}$ ). Naturally, FinTechs do not turn around and pass back out all this capital. Thus, as such capital scales up, the amount increases less than proportionally ( $\rho < 1$ ).<sup>114</sup> FinTechs get capital in competition with (and as a substitute for) capital from the mainstream sector ( $K_{EX}$ ). The factor  $\kappa$  represents the proportion of capital they can ‘steal’ (work in cooperation with – however you want to call it). We describe the other parameters and variables in our model in Figure A. Equation (2) gives a specific functional form to output.

*The rest will be available shortly...*

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<sup>114</sup> Indeed, if FinTechs reinvest these funds,  $\rho$  might even take on negative values. We exclude such a possibility to make the model simple.



						micr ofin		(P2P )									
<b>Singapore</b>	x	x	x	x		x		x	x		x		x	x	x	x	
<b>Switz</b>	x	x		x		x	x	x				x	x				
<b>South Africa %</b>			x	x bitcoin		x	x	x	/							indu stry over sight	CB
<b>Taiwan</b>								R(P 2P)	x R				/				Sp eci al la w
<b>Turkey</b>						x		x	x				x	x	x	x	
<b>Ukraine</b>			x		x			x R /	R	/	R	/	x y	x	x	x	CB

Compiled from section 3.1 and 3.2 of [ICGL.com](http://ICGL.com). The table excludes money laundering and crime-related rulemaking, as well as data protection and (generally) consumer protection.

y = cryptocurrencies

% Companies Law and Consumer Protection Act

/ = planned at the time of comparison. R=regulation. x = law/legislation.

† develops in spite of regulations inhibiting the sector