

POLICY BRIEF

# TRANSFORMATION OF THE FINANCIAL SERVICES BY FINTECH

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**Abstract.** *The aim of this policy brief is to analyse, in a global context, the impact of disruptive technologies on financial services, identify the key technologies driving change in the sector, and discuss the implications for developing countries such as Indonesia. An overview of FinTech activities is provided, including core technologies, business models, and market impact. Deeper insights are provided into three areas of FinTech innovation, such as equity crowdfunding, P2P lending, and regulatory innovation initiatives. Finally, opportunities arising from disruptive technology-enabled financial services for countries such as Indonesia are discussed, including the opportunity for financial inclusion and the access of small and medium-sized enterprises (SMEs) to finance, insights into the emergence of equity crowdfunding, peer-to-peer (P2P) lending, and regulatory innovation.*

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## KEY POINTS

- The financial services (FS) industry is in a state of ongoing structural change, driven by new and emerging technology-enabled financial products and services – often referred to as “FinTech”.
- Four key technological advances are currently disrupting the FS sector: mobile phone and internet technology penetration, which is enabling much wider access to financial services and providing essential digital distribution channels; cloud computing, which provides access to online computing storage, servers and services over the internet for processing, accessing, and storing data; and blockchain or distributed ledger technology (DLT), which has important features for FinTech firms such as smart contracts – software programs that automatically execute complex instructions when certain conditions are met.
- Three specific areas of technology-enabled financial services are described to provide a deeper level of analysis: equity crowdfunding, digital lending, and regulatory innovation. These three areas of technology-enabled financial services are analysed regarding their potential impact on access to finance for both consumers and small and medium-sized enterprises (SMEs), as well as how the regulatory innovation initiatives may lead to the market development of innovative finance products and services.
- Equity crowdfunding, digital lending, and regulatory innovation, and their potential impacts, are also relevant to countries such as Indonesia. Opportunities for financial inclusion and access to SME finance exist in Indonesia. For example, equity crowdfunding could provide an important additional channel of capital to early-stage SME businesses. The digital lending market has been growing rapidly, which may offer numerous opportunities to expand the channels of finance available to Indonesian SMEs and consumers. In this framework, regulation is essential to enabling the responsible development of technology-enabled financial products and services.

## INTRODUCTION

The financial services (FS) industry is in a state of ongoing structural change, driven by new and emerging technology-enabled financial products and services – often referred to as “FinTech”. This FinTech transformation presents regulators and policy-makers with an array of new challenges, issues, and opportunities. This policy brief seeks to provide a helpful explanatory overview of some of these FinTech developments and highlights some key regulatory and policy considerations. This policy review will focus on the challenges emerging as a result of the developments within FinTech; however, it will not examine the broader changes within the financial services driven by international standard-setting bodies such as the Bank of International Settlements (BIS), the Financial Stability Board (FSB), the International Organisation of Securities Commissions (IOSCO), the Financial Action Task Force (FATF), or others that are essential drivers of changes to the financial services sector but which fall outside the scope of this review.

The policy brief is structured as follows:

- Overview of FinTech activities: this section provides an overview of the main types of FinTech activity, including core technologies, business models, and market impact.
- Deep dives: this section provides deeper insights into three areas of FinTech innovation, namely: (i) equity crowdfunding; (ii) P2P lending; and (iii) regulatory innovation initiatives.
- Implications for Indonesia: this explores the implications of the impact of disruptive technology-enabled financial services, with a focus on those most relevant to Indonesia.

## OVERVIEW OF FINTECH ACTIVITIES

### Key Disruptive Technologies of FinTech

Before reviewing the various technology-enabled financial innovations, it is worth considering the main technologies being adapted and applied within many FinTech businesses and their impact on the financial services industry, end-users, and consumers.

These four key technological advances are currently disrupting the FS sector:

- Mobile phone and internet technology penetration is enabling much wider access to financial services and providing essential digital distribution channels for financial products and services for FinTech firms, as well as banks and mobile network operators (MNOs). This ongoing technology trend enables more service providers to offer apps in smartphones, as well as via SMS or USSD in feature phones, especially in the context of increasing internet connectivity and availability globally. A well-known example of the application of mobile technology to the financial services comes from Kenya and the pioneering development of M-Pesa, with more than 80% of transactions now taking place via this mobile payments service provider nationally.
- Cloud computing provides access to online computing storage, servers, and services over the internet for processing, accessing, and storing data, which can be accessed online, at any time, via any internet-connected device. For FinTech firms therefore, no upfront IT investments are required, since cloud computing enables firms to build and scale up or down services in real time to meet customer demand, enabling “asset-light” business models to compete against larger financial institutions that run on expensive legacy IT systems.
- Blockchain or distributed ledger technology (DLT) provides distributed databases that are composed of a chain of cryptographically linked “blocks” containing batched transactions that generally broadcast all data to all participants in the network.<sup>48</sup> An important feature of blockchain technology for FinTech firms are smart contracts – software programmes that automatically execute complex instructions when certain conditions are met. These smart contracts are on the blockchain and have the potential to significantly lower the costs of contracting and making payments. A good example of a business successfully employing blockchain technologies is Coinbase,<sup>49</sup> which enables the secure storage, exchange, and transfer of crypto assets.
- Artificial intelligence (AI) and machine learning (ML) refer to the analysis of data to model some aspects of the world using computers and models that learn from data to respond intelligently to new data and adapt accordingly. These technology trends enable FS providers to utilize vast amounts of often-new types of data to provide their products and services more efficiently and cheaply, and even to create access to

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<sup>48</sup> M. Rauchs et al. 2017. [Global Blockchain Benchmarking Report](#). Cambridge Centre for Alternative Finance. University of Cambridge.

<sup>49</sup> [Coinbase](#).

previously unserved or underserved consumers. For example, Plum<sup>50</sup> is a smart algorithm-based chat bot that analyses and learns from an individual's spending habits and helps users save and manage their money automatically. Another example is Branch,<sup>51</sup> which has developed its credit models based on a wide variety of data inputs from users, such as location, demographic, social media, and psychometric data, which collectively inform the credit models used to lend to new and existing customers.

- Big data analytics refers to high-volume and high-velocity (real-time) data sets for enhanced decision-making. For example, Harvesting<sup>52</sup> is a FinTech firm based in India that utilizes vast volumes of satellite imagery data to inform the credit analytics methodologies used to provide agricultural loans to farmers, with risk analytics incorporating weather and crop productivity information to make better credit and insurance risk models.

## How FinTech Firms Are Disruptive

Enabled by the aforementioned technologies, FinTech is disruptive for the following reasons:

- **Use of alternative data:** FinTechs often use alternative sources of data, such as e-commerce and mobile transaction histories, to complement or substitute traditional methods of client identification and credit risk analytics to aid the provision of their products and services, such as extending credit to previously unbanked consumers. A good example of this is Lenddo, which uses non-traditional data to provide credit scoring and verification to economically empower new customers globally and which provides this data to traditional and alternative financial providers.
- **Deconstruction of the value chain:** rather than offering a full suite of products and services as a traditional bank might, FinTechs typically target a specific service or product and aim to provide it in a better way by competing on price or service enhancements, thereby posing significant competition to incumbents. A good example of this are the various peer-to-peer consumer lending platforms that provide personal loans to individuals with an enhanced level of efficiency, price, and customer service, as opposed to more traditional banks that bundle consumer loans in a wide suite of other financial products and services.
- **The use of open platforms:** where traditional FS firms have tried to keep their customers within their suite of legacy products and services, many FinTech firms instead operate via open platforms, building applications, and services on top of pre-existing products, and can thereby capitalize on existing customer bases via network effects. The development of open banking within Europe is a good example of this dynamic in action, as financial service providers are strongly encouraged to enable consumers to share the data that these firms hold with other financial service providers via APIs.
- **Product customization:** FinTechs have sought to offer greater customization and personalization compared to traditional financial service providers through better data collection and analytics. Personalization and customization include human-centred product design such as intuitive user interfaces or targeted alerts and notices to consumers. A growing trend with respect to customization can be seen within new technology-enabled insurance products that tailor their products to the specific behaviours and risk profile of each individual user. A number of telematics firms, for example, provide bespoke tailored insurance products linked to how safely drivers conduct themselves on the road.

## Impact on Consumers and Users

Overall, these technological advances and disruptive approaches of FinTech firms have had three main effects on consumers, businesses, and financial services providers:

- **Improved customer experiences** – by making it easier to perform financial transactions and providing more transparency in the process.
- **Provide better access** – advances in technology allow customers and businesses to perform financial transactions at any time of the day, anywhere in the world, across different devices.
- **Lower operating costs and increased process efficiency** – new tools developed from technological innovations are transforming the way financial services firms operate by making the processes faster and more efficient, and thereby lowering the costs of operation.

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<sup>50</sup> [Plum](#).

<sup>51</sup> [Branch](#).

<sup>52</sup> [Harvesting](#).



**Table 1: Technologies Impacting Financial Services – Selected examples**

Model	Product and Description	Examples
<b>Payments</b>		
Digital Payments	<b>Mobile money or P2P transfers:</b> Secure and convenient technology enabling either direct payment (e.g. via email or mobile phone numbers) or payments via a secure third-party vendor. A mobile money consumer accesses a mobile wallet using either USSD or STK channels to carry out P2P payments. Users can perform cash-in and cash-out operations using the mobile money providers' agent network.	<b>M-Pesa,<sup>53</sup> Kenya</b>
	<b>Remittances:</b> Cross-border and local payments between consumers and businesses.	<b>Azimo,<sup>54</sup> UK</b>
	<b>P2G or G2P payments:</b> P2G payments are payments made by individuals (persons) to government agencies or public sector organizations. G2P payments include the transfer of social benefits from governments to consumers.	<b>Huduma,<sup>55</sup> Kenya BISP,<sup>56</sup> Pakistan</b>
	<b>Point-of-sale (POS) devices:</b> A point-of sale-terminal (POS device) is an electronic device used to process card payments at retail locations.	<b>Cashlez,<sup>57</sup> Indonesia Square,<sup>58</sup> USA</b>
	<b>Direct carrier or mobile billing:</b> Involves a consumer using the mobile billing option during checkout at an e-commerce site. A PIN and one-time password allow a charge to be made to the consumer's mobile billing account.	<b>Line Pay,<sup>59</sup> Japan</b>
<b>Lending</b>		
Digital Lending	<b>P2P consumer:</b> Stems from private, unrelated individuals or institutional investors who provide unsecured or secured loans to consumers. There is no need for a financial institution to get involved, except to transfer money to the borrower.	<b>Zopa,<sup>60</sup> UK</b>
	<b>P2P business:</b> Similar to peer-to peer-lending, but the loan is made to businesses. The ticket sizes of these loans would be bigger and there is often a potential for higher returns.	<b>Funding Circle,<sup>61</sup> UK</b>
	<b>Balance sheet (B/S) consumer:</b> Loans made to consumers, where the credit risk rests with the lenders' balance sheet drawn from investors' equity, debt, and retail deposits.	<b>SoFi,<sup>62</sup> USA</b>
	<b>Balance sheet (B/S) business:</b> Loans made to businesses, where the credit risk rests with the lenders' balance sheet drawn from the equity, debt, and retail deposits of investors.	<b>Iwoca,<sup>63</sup> UK</b>
	<b>Asset-backed financing:</b> Loans and advances to individuals and businesses, backed by physical and psychological collateral, including invoice discounting.	<b>MarketInvoice,<sup>64</sup> UK</b>
	<b>Real estate:</b> Includes digital lending platforms for construction and real estate owners and lenders, as well as lending for real estate purchase and construction.	<b>LendInvest,<sup>65</sup> UK</b>
<b>Markets</b>		
Market Provisioning	<b>RegTech/SupTech:</b> Enables companies to meet their regulatory and supervisory compliance requirements more efficiently through the application of various technologies.	<b>R2A,<sup>66</sup> USA</b>
	<b>Cyber security:</b> Provides cyber risk assessment and mitigation services to financial services providers to prevent cyber crimes.	<b>Darktrace,<sup>67</sup> UK</b>

<sup>53</sup> [M-Pesa.](#)

<sup>54</sup> [Azimo.](#)

<sup>55</sup> The Huduma Programme was launched by H. E Uhuru Kenyatta, President of the Republic of Kenya, on 7 November 2013 to enhance the access and delivery of government services to all Kenyans.

<https://hudumakenya.go.ke/>

<sup>56</sup> The Benazir Income Support Programme provides over 5 million women with direct government payments.

<http://bisp.gov.pk/>

<sup>57</sup> [Cashlez.](#)

<sup>58</sup> [Square.](#)

<sup>59</sup> [Line Pay.](#)

<sup>60</sup> [Zopa.](#)

<sup>61</sup> [Funding Circle.](#)

<sup>62</sup> [SoFi.](#)

<sup>63</sup> [Iwoca.](#)

<sup>64</sup> [MarketInvoice.](#)

<sup>65</sup> [LendInvest.](#)

<sup>66</sup> [R2A Accelerator.](#)

<sup>67</sup> [DarkTrace.](#)

Model	Product and Description	Examples
	<b>Trading:</b> A platform that considers a user's personal circumstances, financial goals, and risk tolerance to automatically put together a recommended investment portfolio, using a unique risk profiling and portfolio algorithm.	<b>Nutmeg,<sup>68</sup> UK</b>
<b>Investment and Savings</b>		
Investments and Crowdfunding	<b>Equity:</b> Individuals or institutional funders purchase equity issued by a company via online platforms.	<b>Crowdcube,<sup>69</sup> UK</b>
	<b>Donations:</b> Facilitates donations from individuals or institutions for a cause.	<b>JustGiving,<sup>70</sup> UK</b>
	<b>Rewards:</b> Facilitates donations from individuals or institutions towards a specific project in exchange for a tangible but non-financial reward once the funding has been secured.	<b>Kickstarter,<sup>71</sup> USA</b>
WealthTech and Savings	<b>Robo-advisory:</b> Portfolio management systems that provide algorithm-based and automated investment advice, and sometimes also make investment decisions. Robo-advisory algorithms are based on passive investing and diversification strategies, incorporating the investor's risk tolerance and preferred duration of the investment.	<b>Plum,<sup>72</sup> UK</b>
	<b>Social trading:</b> A form of investment in which investors can observe, discuss, and copy the investment strategies or portfolios of other members of a social network. Individual investors are supposed to benefit from the collective wisdom of a large number of traders.	<b>eToro,<sup>73</sup> UK</b>
	<b>Personal financial management:</b> Provides services to users to record transactions, aggregate transactions across various heads, analyse information, compare against a budget, and help plan financial goals.	<b>Money Dashboard,<sup>74</sup> UK</b>
	<b>Micro-savings:</b> Enables a lump sum to be built up by a user by prompting them to make small deposits on a frequent basis.	<b>MoneyBox,<sup>75</sup> UK</b>
<b>Insurance</b>		
InsureTech	<b>Micro-insurance:</b> Provides micro-insurance services characterized by individually tailored policies and the use of alternative data to determine the price of the premium.	<b>MicroEnsure,<sup>76</sup> USA</b>
	<b>Telematics:</b> Using a combination of telecommunications and informatics to design and deliver insurance products that price the premium based on customer behaviour.	<b>Accuscore,<sup>77</sup> USA</b>
	<b>P2P insurance:</b> Allows individual users to pool their premiums to insure one another against a risk, creating a social risk-sharing network.	<b>Friendsurance,<sup>78</sup> Germany</b>

## CASE STUDIES: EQUITY CROWDFUNDING, DIGITAL LENDING, AND REGULATORY INNOVATION

The core of this policy brief focuses on three specific areas of technology-enabled financial services to provide a deeper level of analysis. These three areas have been selected on the basis of their potential impact on access to finance for both consumers and SMEs in Indonesia, as well as how the regulatory innovation initiatives may lead to the market development of innovative finance products and services in the country. In addition to reviewing relevant industry activity and business models, this will be complemented by regulatory and policy responses to the growth of these disruptive financial products and services. A range of case studies will be used to exemplify and demonstrate the mechanics, business models, and impact of each area reviewed.

<sup>68</sup> [Nutmeg.](#)

<sup>69</sup> [Crowdcube.](#)

<sup>70</sup> [Just Giving.](#)

<sup>71</sup> [Kickstarter.](#)

<sup>72</sup> [Plum.](#)

<sup>73</sup> [eToro.](#)

<sup>74</sup> [Money Dashboard.](#)

<sup>75</sup> [MoneyBox.](#)

<sup>76</sup> [MicroEnsure.](#)

<sup>77</sup> [Accuscore.](#)

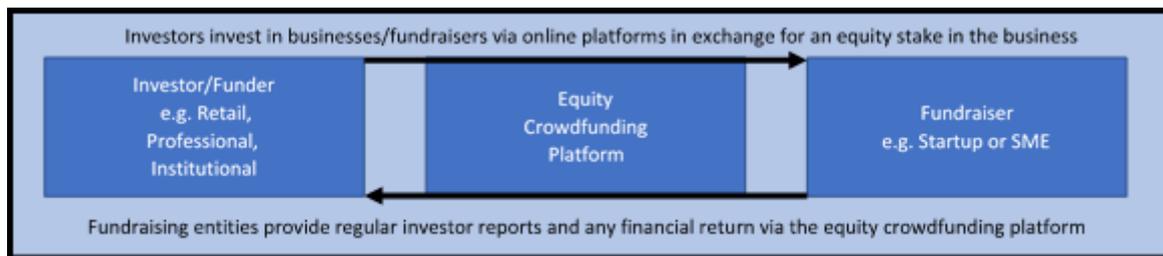
<sup>78</sup> [Friendsurance.](#)

## EQUITY-BASED CROWDFUNDING DEEP DIVE

*Equity-based or investment crowdfunding* refers to the sale of registered securities, mostly by early-stage businesses, to sophisticated, institutional, and retail investors. Typically, start-up and early-stage companies have used equity-based crowdfunding platforms, but increasingly also larger, faster-growing companies, as well as commercial and residential property development ventures.

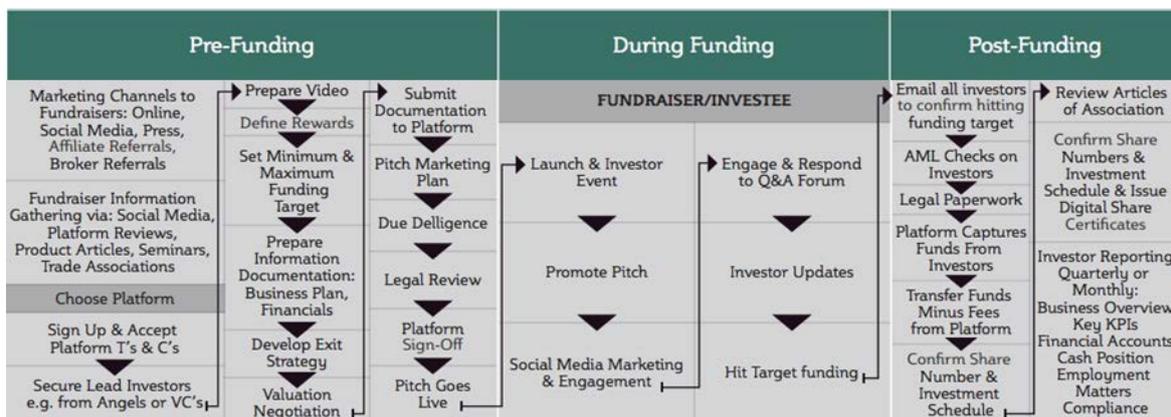
### Equity Crowdfunding Mechanics

To help explain how equity-based crowdfunding platforms typically work, the following diagrams illustrate the process that i) a fundraising business/entity and ii) investor/funder go through to raise capital. The diagram depicts the process i) before funding, ii) during funding, and iii) post-funding.



### Equity Crowdfunding Process for Fundraising Businesses and Entities

The following diagram explains the typical journey of an entity using equity crowdfunding to raise funding. The diagram explains the process, starting from before the funding begins, through to the actual funding process, and then after the funding has been completed.<sup>79</sup>



*Pre-funding* – In the pre-funding phase, a business must identify the platform on which it will be presenting its offering and prepare a number of components, including information documentation such as business plans and financials, as well as marketing and promotional materials.

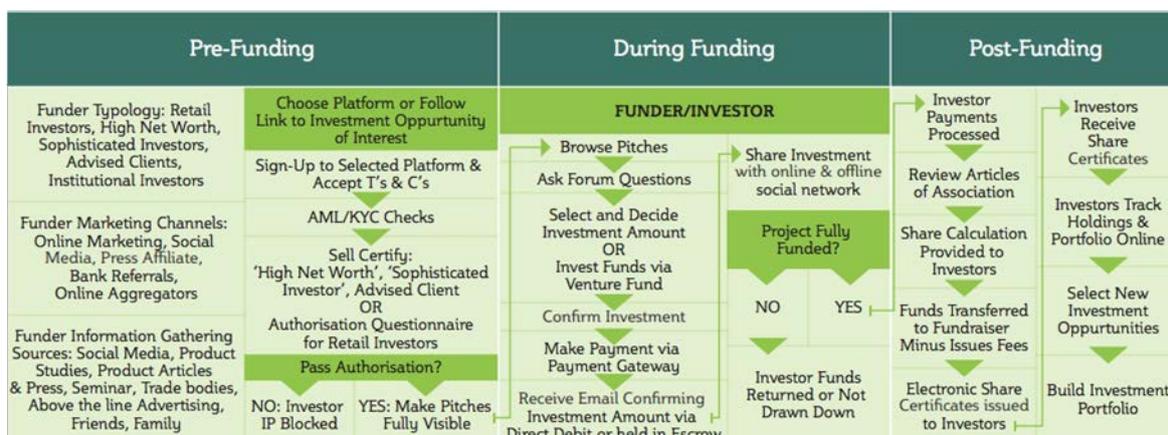
*During funding* – Once the business has listed on the equity crowdfunding platform, there are many activities that the business will need to do to engage potential investors and elicit investment from them.

*Post-funding* – After funding has been received, the business will need to conduct several activities to draw down the funds secured, as well as ensuring ongoing reporting to its new investors.

<sup>79</sup> Garvey et al. 2017. [Crowdfunding in East Africa: Regulation & Policy or Market Development](#). Cambridge Centre for Alternative Finance. University of Cambridge.

## Equity Crowdfunding Process for Investors/funders

Similar to those entities raising capital via equity crowdfunding, investors will go through a different process before, during, and after fundraising takes place via equity crowdfunding.<sup>80</sup>



*Pre-funding* – Different types of investor will be able to access investment opportunities via online equity crowdfunding platforms. To access these websites individual investors will typically need to register and go through a number of identification and authentication checks prior to being able to view investment opportunities and invest in them.

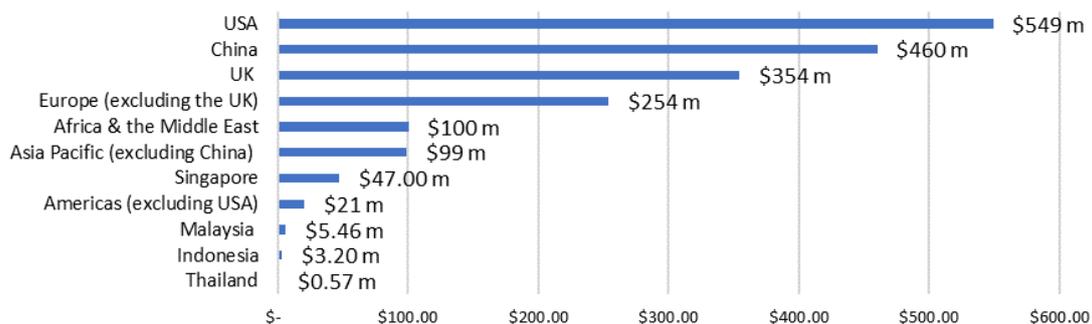
*During funding* – Equity crowdfunding platforms typically enable investors to interact with those businesses raising capital and ask them questions or critique their business models. Investors can then decide whether to invest in the business often for relatively low minimum thresholds.

*Post-funding* – Once a business reaches its target amount of funding, investors are taken through a legal process to review the terms and funds transferred, and have shares allocated to them.

## Equity Crowdfunding Global Market Data

To put this FinTech activity within a global perspective, in 2016 a total of \$1,839,840,000 was raised globally via equity-based crowdfunding.<sup>81</sup> The largest markets were the USA and China, followed by the UK, Europe and Africa and the Middle East, and then Latin America and the Caribbean. In Southeast Asia, Indonesia was the third largest market for equity-based crowdfunding in 2016, behind Singapore and Malaysia. Based on current market trajectories, it is likely that equity-based crowdfunding will have grown over 2017 in Indonesia.

Figure 4: Total Volume for Equity-Based Crowdfunding, 2016 (\$ million)



Source: Based on aggregated data from the Cambridge Centre for Alternative's [Global Benchmarking Reports](#) in the Americas, Asia Pacific, Europe, the UK and Africa and the Middle East.

<sup>80</sup> Ibid.

<sup>81</sup> Based on aggregated data from the Cambridge Centre for Alternative's [Global Benchmarking Reports](#) in the Americas, Asia Pacific, Europe, the UK and Africa and the Middle East.

## Key Benefits of Equity-Based Crowdfunding

Equity-based crowdfunding offers start-ups and SMEs, as well as investors, a number of benefits that make this FinTech activity an important area of disruption.

- For regulators and policy-makers, this FinTech activity can promote competition in the provision of (especially early-stage) finance to SMEs that have traditionally been poorly catered for. Furthermore, equity crowdfunding may also provide access to capital for businesses within industries that traditional financial services do not typically serve.
- For businesses, equity-based crowdfunding can help to widen the pool of available capital to fundraisers of all kinds. In addition, it can help to lower the cost and speed of deployment of capital through the use of efficient online channels.
- For investors, equity crowdfunding offers the potential for higher, risk-adjusted returns than via mainstream banks. It can also offer investors an opportunity to diversify their portfolio with a new and additional financial instrument.

## Key Risks and Regulatory Considerations for Equity-Based Crowdfunding

While equity crowdfunding offers a range of potential benefits to the market, businesses, and investors, there are also a number of important risks that must be carefully considered. For instance:

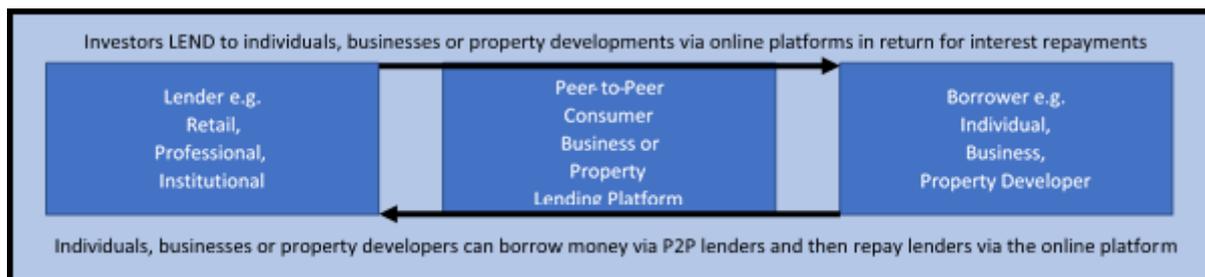
- Disclosure is usually less intensive for crowdfunded companies than for publicly listed firms, especially when there is a lack of specific disclosure requirements mandated by regulation.
- A lack of regulatory clarity can create issues that both hinder market development and potentially damage consumer trust in this early-stage industry.
- Given the lack of historical data for crowdfunding asset performance, there is a risk of a disproportionate number of business defaults and failures that can harm consumers.
- Equity crowdfunding investments typically lack liquidity because of the absence of secondary markets or issuer exit strategies, which may not be appropriate for some retail investors.
- The potential for information asymmetry where investors may not have access to sufficient disclosure and are therefore harmed by adverse selection when fundraisers promote the benefits of their investment opportunity but underplay the substantial risks.
- Equity crowdfunding enables potentially inexperienced retail investors to participate in investment in early-stage companies and SMEs who may lack experience and may not be fully aware of the high risks involved in equity investment and be able to withstand losses.

## PEER-TO-PEER LENDING DEEP DIVE

Peer-to-peer lending has emerged as a rapidly growing area of FinTech activity and refers to online platforms that enable individuals or institutions to lend money to other individuals, businesses, or property developers. In the USA, peer-to-peer lending is referred to as marketplace lending, as the market is dominated by institutional investors rather than the individual retail investor participation that characterizes every other peer-to-peer lending market globally.<sup>82</sup>

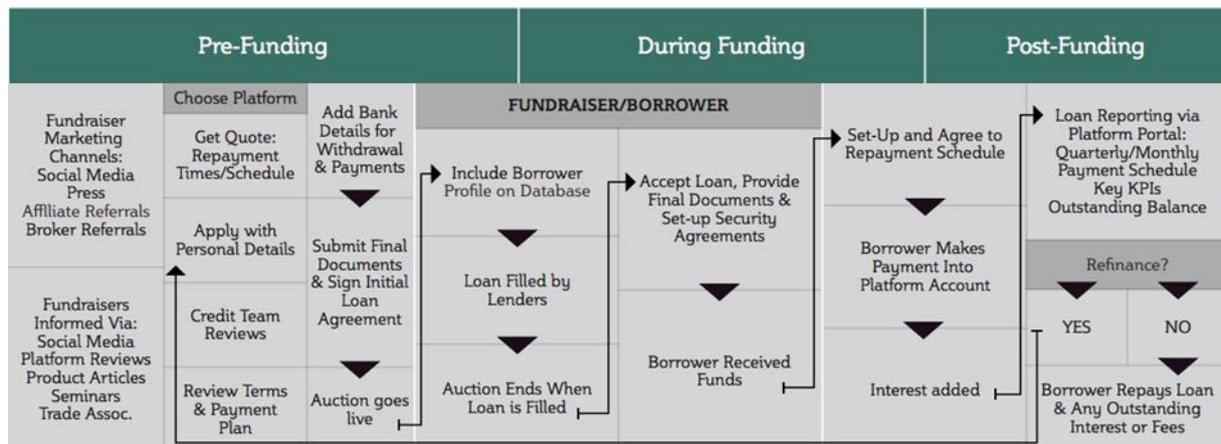
### Peer-to-Peer Lending Mechanics

While there are thousands of online peer-to-peer lending platforms globally, with many different models, most have several similar components and attributes, which are depicted in the illustrations below. As with equity-based crowdfunding, there are entities that receive (borrow) funding and those that provide (lend) funding. These dynamics between the borrowers, lenders, and the P2P lending platforms are illustrated i) before funding, ii) during funding, and iii) post-funding.



<sup>82</sup> Cambridge Centre for Alternative Finance. 2017. [Hitting Stride: The 2 Americas Alternative Finance Industry Report](#). University of Cambridge.

## Peer-to-Peer Lending Process for Borrowers (Individuals, Businesses, or Property Developers)

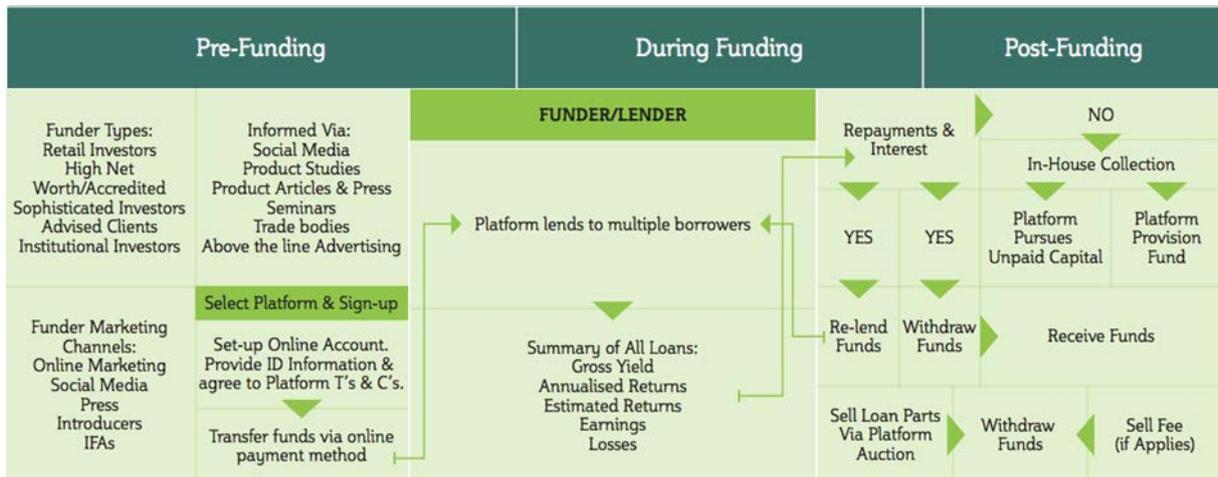


Peer-to-peer lending enables a wide range of borrowers to access credit via new, often non-bank, online intermediaries. The diagram above explains the process that a borrower goes through in order to access credit before receiving funding, during the process of receiving funding, and after the funds have been transferred to the borrower.<sup>83</sup>

<sup>83</sup> Garvey et al. 2017. [Crowdfunding in East Africa: Regulation & Policy for Market Development](#), Cambridge Centre for Alternative Finance. University of Cambridge.

## Peer-to-Peer Lending Process for Lenders (Individuals, Businesses, or Property Developers)

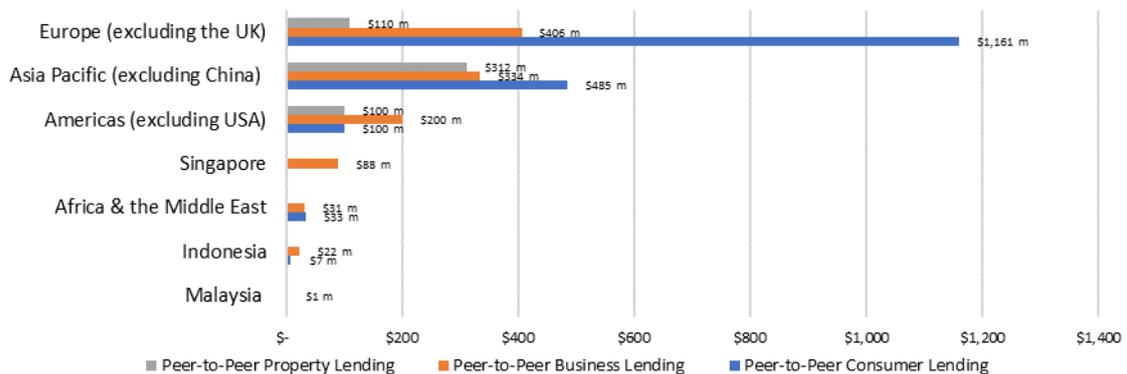
The following diagram outlines the process that a lender will go through via an online peer-to-peer lending platform to provide credit to individuals, businesses, or property developers.



## Peer-to-Peer Lending Global Market Data

In 2016 the total global peer-to-peer lending market for consumer, business, and property lending exceeded \$232 billion. This sizable figure was dominated by China, which accounted for 87% of the global total, with over \$200 billion in 2016 for all three types of peer-to-peer lending. The USA had around 10% of this total global market, with over \$23 billion in 2016, and the UK raised over \$3.5 billion via consumer, business, and property peer-to-peer lending combined. Outside these three market leaders, Europe (excluding the UK) had the largest market, with \$1.7 billion in 2016; and the Asia Pacific region, excluding China, had over \$1.3 billion.

**Figure 5: Total Volume for Peer-to-Peer Consumer, Business and Property Lending, 2016 (\$ million)**



Source: Based on aggregated data from the Cambridge Centre for Alternative's Global Benchmarking Reports in the Americas, Asia Pacific, Europe, the UK and Africa and the Middle East.

In Indonesia over \$22 million was raised for peer-to-peer business lending in 2016, followed by peer-to-peer consumer lending, with over \$7 million, and around \$300,000 was raised via peer-to-peer property lending, which had just started to emerge in 2016. These activities grew rapidly in 2017 following the OJK's introduction of regulations on Information Technology-Based Lending Services (LPMUBTI).<sup>84</sup> As a result of this proactive

<sup>84</sup> OJK. 2017. [Press Release: OJK Issues Regulation on IT-Based Lending Services.](#)

approach to regulating this area of FinTech, Indonesia is likely to emerge as the leading P2P lending market in Southeast Asia.

### Key Benefits of Peer-to-Peer Lending

Alternative lending through peer-to-peer networks has the potential to drive financial inclusion, by providing loans to the unbanked, underbanked, and micro- and SMEs, which banks have traditionally under-served. Research undertaken by the Cambridge Centre for Alternative Finance<sup>85</sup> suggests that peer-to-peer lending can enable superior customer service to traditional lenders, through much easier user systems, as well as having more transparent services.

### Key Risks of Peer-to-Peer Lending

- High interest rates on digital loans – the interest rates for many P2P digital loans tend to be fairly high, ranging from 20% to more than 500%. The rates are similar to those of informal payday lenders and behave in a similar manner; if the loan is not paid off on time, the loan is rolled over and the nominal interest rate is applied to the full balance, thereby increasing APR.
- Lack of visibility of multiple digital loans for each borrower – currently, there is no way to track how many digital loans an individual has outstanding, which can lead to over-indebtedness.
- Temptation and “push” loan tactics – since loans are easier to access, there is a temptation by individuals to take out a loan, even if they do not really need it. To exacerbate this issue, “push” loan tactics from digital lenders, such as unsolicited messages, lead to unnecessary borrowing.
- Unclear disclosures – often the disclosures regarding interest rates, fees, and other terms are not clearly stated, resulting in customers not understanding what they are agreeing to.
- Difficulty for investors comparing platforms or assets with other P2P lenders or asset classes.
- Complex firm structures can introduce operational risks and conflicts of interest, harming consumers.
- Firms may not have sufficiently robust wind-down plans in the event of their failure to successfully run off their loan books to maturity, leading to consumer detriment and loss of trust.

## REGULATORY INNOVATION INITIATIVES DEEP DIVE

In response to the rapid growth of various FinTech activities, regulators and policy-makers have developed several approaches to responding to technology-enabled financial innovation. However, regulators face a number of significant difficulties, including the following:

- Regulators are not usually technology experts, and thus it is challenging to assess new innovations.
- Many innovators may not neatly fit into traditional regulatory frameworks.
- Regulators are traditionally risk-averse and conservative, valuing stability over innovation.
- Regulators are typically resource-constrained; innovation adds additional responsibilities.

Despite these challenges, a number of regulators, including the OJK in Indonesia, have developed innovative responses to financial innovation emerging in their jurisdictions. This is resulting in a change in the mindsets of some regulators who have traditionally focused on trying to stop bad things happening, with a shift towards enabling good things. Three of these regulatory innovation initiatives will now be explored in more detail, including:

1. **Regulatory sandboxes** – programmes to enable market participants to test new products, services, or business models, with live customers, subject to certain safeguards and oversight;
2. **RegTech/SupTech** – the application of innovative technologies to increase the efficiency or efficacy of the supervision, regulatory, and policy-making process; and
3. **Regulatory and Policy reform** – in response to financial innovation, the review and revision of existing regulations, or devising new ones, to ensure regulatory regimes remain fit for purpose.

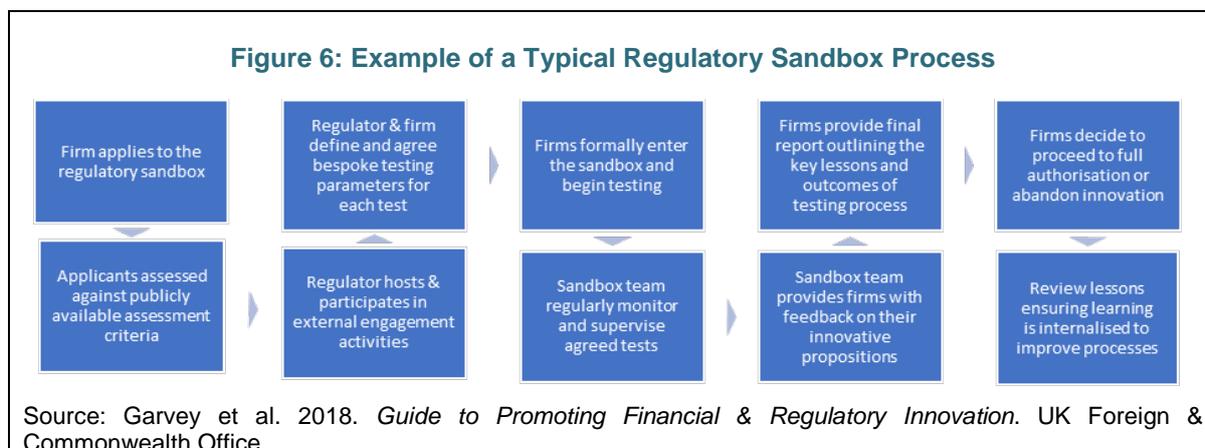
### Regulatory Sandboxes

Regulatory sandboxes are formal regulatory programmes for market participants to test new products, services, or business models, with live customers, subject to certain safeguards and oversight. The concept was initially developed by the UK FCA for financial services in 2014 and has since been replicated in more than thirty-eight countries globally.<sup>86</sup> Sandboxes are a potentially important tool for enabling more dynamic, evidence-based regulatory environments that learn from, and evolve with, emerging technology-enabled

<sup>85</sup> Zhang et al. 2014. [Understanding alternative finance](#). Cambridge Centre for Alternative Finance, University of Cambridge.

<sup>86</sup> Garvey et al. 2018. [Guide to Promoting Financial & Regulatory Innovation](#). UK Foreign & Commonwealth Office.

financial innovation. Regulators use regulatory sandboxes not only to encourage financial innovation and support FinTech market development, but also to achieve regulatory policy objectives such as; signalling a pro-innovation regulatory stance, facilitating innovator–regulator engagement, encouraging competition and evaluating existing rules, and testing emerging business models.



### Key Risks and Benefits of Regulatory Sandboxes

The following table summarizes the main potential risks and benefits associated with regulatory sandboxes.

**Table 2: Risks and Benefits of Regulatory Sandboxes**

Potential Benefits	Potential Risks
Remove unnecessary barriers to innovation	Anti-competition issues benefitting certain firms
Reduce time/cost of bringing innovation to market	May lead to regulatory arbitrage; race to the bottom
Ensure safeguards are built into products and services	Challenge identifying genuine innovation
Stimulate market development, e.g. FinTech	May increase unnecessary consumer risks; harm
Set public standard for dealing with innovation	May not attract sufficient market interest
Promote competition in the interest of consumers	Potentially very resource-intensive
Opportunity to learn from market developments	Potential reputational risk should major failure occur

Source: Author’s elaboration

### RegTech and SupTech

RegTech is an umbrella term used to describe technology-enabled solutions that can help authorities regulate and supervise marketplaces effectively and efficiently. The term SupTech is emerging to help differentiate between RegTech innovations that serve regulators and government and those that serve regulated firms. RegTech and SupTech allow regulators to utilize data as a foundation for supervisory activities, to experiment with new technologies to improve supervision, to reimagine the relationship between regulators and supervised institutions and consumers, and to rebuild the underlying digital infrastructure and standards. Regulators are experimenting with RegTech for three primary reasons:

- As FinTech business models get faster and more sophisticated at scale, regulators need to utilize more advanced technologies to respond swiftly and supervise effectively.
- RegTech can help regulators achieve a wide range of regulatory policy objectives, reducing information asymmetries, streamlining processes, and enacting risk-based supervision.
- Third, RegTech can support regulatory transformation, enabling regulators to upgrade from pre-mobile-phone banking tools to the 21<sup>st</sup> century.

The RegTech for Regulators Accelerator (R2A) provides a good illustration of how innovative technologies can be developed by, with, and for regulators.<sup>87</sup> For example, the Central Bank of the Philippines was inundated

<sup>87</sup> [RegTech for Regulatory Accelerator](#).

with customer requests and complaints and therefore developed a RegTech chatbot system to help categorize and respond to the thousands of issues in a much more efficient way that helped to improve customer service. Another example is the securities regulator in Mexico (CNBV), which used a RegTech AML solution to enable risk-based supervision.<sup>88</sup>

## Regulatory and Policy Reform

Technology-enabled financial innovations can propel regulators to review and revise existing policies and regulations, or devise new ones, to ensure that regulatory regimes remain fit for purpose, balanced, appropriate, and proportionate. There have been a number of different approaches to conducting regulatory and policy revision, which will now be briefly reviewed:

1. *Proactive regulation* – targets innovation before it becomes too disruptive and reaches critical mass. Abu Dhabi's pre-emptive guidance on ICOs and crypto assets<sup>89</sup> or the Reserve Bank of India's directives in relation to peer-to-peer lending<sup>90</sup> are good examples of regulators pre-empting the rapid market growth of new innovations. By proactively providing guidance and direction, this can help the transition into a fully fledged regulatory regime and avoid creating a regulatory vacuum, which may stifle innovation or enable it to develop unchecked, possibly leading to consumer harm and detriment, as with China's P2P lending market.<sup>91</sup>
2. *Scheduled reviews* – are a planned means to assess the impact of implemented reforms and to introduce evidence-based changes or amendments based on findings. The UK's recent post-implementation crowdfunding review<sup>92</sup> of the FCA's 2014 crowdfunding regulations is a good example of scheduled reviews. Two years after implementation of the crowdfunding regulations, various concerns and issues were identified in the crowdfunding industry, which were subsequently addressed.<sup>93</sup> While new or bespoke regulatory regimes should be given time to develop, regulators need to ensure that change can be made if issues or challenges emerge.
3. *Consolidation and future proofing* – where regulators take the opportunity to learn from the experiences of other regulators to consolidate learning in the hope of designing a regulatory framework that can remain relevant well into the future. Mexico's recent FinTech Law<sup>94</sup> is a good example of this type of approach to regulatory revision, where the regulatory authorities carefully examined FinTech laws and regulatory frameworks from other countries such as the UK, Hong Kong, and Singapore, in order to see how they could take the main lessons learned from others and adapt them to the local context in Mexico. Overall, the FinTech Law in Mexico represents an innovative approach to regulating the FinTech sector, but it is still very early to see the effectiveness of such a comprehensive legislation.

## IMPLICATIONS FOR DEVELOPING COUNTRIES

Having provided an overview of a number of technology-enabled financial innovations, as well as deeper insights into equity crowdfunding, P2P lending, and regulatory innovation initiatives, it is important to consider how this is relevant to the context of Indonesia.

### Key Statistics on Indonesia's Innovative Technology Penetration: Mobile, Social, and Internet

As discussed, a vital prerequisite to the development of technology-enabled financial innovation is the penetration of gateway technologies that can facilitate the provision of new financial products and services – particularly the internet, mobiles, and social media. The following statistics highlight the current state of these technologies in Indonesia based on data compiled by WeAreSocial's 2018 report on the penetration of social technologies globally and in Southeast Asia.

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<sup>88</sup> [R2A Trials Data Warehouse For Mexico's CNBV to Boost the Fight Against Money Laundering.](#)

<sup>89</sup> Abu Dhabi Global Markets. [Regulation of Initial Coin/Token Offerings and Crypto Assets under the Financial Services and Markets Regulations.](#)

<sup>90</sup> Reserve Bank of India, Master Directions. 2018. [Non-Banking Financial Company – Peer to Peer Lending Platform.](#)

<sup>91</sup> CNN. 2018. [China has an online lending crisis and people are furious about it.](#)

<sup>92</sup> UK Financial Conduct Authority. 2016. [Call for input to the post-implementation review of the FCA's crowdfunding rules.](#)

<sup>93</sup> UK Financial Conduct Authority. 2018. [Loan-based \('peer-to-peer'\) and investment-based crowdfunding platforms: Feedback on our post-implementation review and proposed changes to the regulatory framework.](#)

<sup>94</sup> Mexico's FinTech Law, 2018.

**Table 3: Indonesia – Key Statistics on Technology Penetration**

Description	% Population (2018)	Explanatory Note
Bank Account Penetration in Indonesia	36% (2014, World Bank Findex; likely higher by 2018)	While technology-enabled financial services do not necessarily require a bank account, just over a third of people having access to a traditional bank account demonstrates that there is a great opportunity for FinTech services to increase financial access to Indonesian citizens.
Mobile Banking Penetration	27%	While 36% of Indonesians had a bank account in 2014, the vast majority of these were via mobile. However, there is still an incredible opportunity for growth in this area for the rest of the population.
Mobile Payments Penetration	0.4%	While some countries, such as Kenya, have rolled out mobile payments extensively, it seems that mobile payments are still at a very early stage of development in Indonesia but could grow rapidly in the near future.
Internet Penetration in Indonesia	50% (132.7m people)	As internet penetration continues to increase in Indonesia, more people will be able to access FinTech services. Currently, half of the population has access to the internet.
Mobile Penetration in Indonesia	141%	There are over 1.4 mobile devices per person in Indonesia; however, not every individual has access to a mobile device, which is essential to accessing many FinTech services.
Unique Mobile Users	67% (177.9m people)	Two-thirds of the population in Indonesia have access to mobile phones, who could then access technology-enabled financial products and services; however, a third of the population still lacks an individual mobile account.
Access to a Mobile Device	90%	While two-thirds of the population have a mobile account, almost 90% of the population have access to a mobile device.
Use of Smartphone	60%	Many FinTech firms offer their services via smartphone services rather than USSD feature phones. As more Indonesian citizens have access to smartphones, more FinTech firms will be able to serve such users.
Social Media Penetration in Indonesia	55%	Many FinTech services gather alternative sources of data to inform the services and products they provide to users. As social media penetration increases in Indonesia, FinTech firms can build a customer profile of users.
Social Media <i>Mobile</i> Users in Indonesia	45% (120m people)	Most social media users in Indonesia access these services via mobiles as the primary channel.

Source: WeAreSocial. 2018. Digital in Southeast Asia.

### Opportunity for Financial Inclusion and Access to SME Finance in Indonesia

In 2016 the McKinsey Global Institute highlighted that technology-enabled digital finance has the potential to provide access to financial services for 1.6 billion people in emerging economies by 2025, with more than half of them being women.<sup>95</sup> The report also highlights that widespread use could boost the annual GDP of all emerging economies by \$3.7 trillion. Indonesia, as a rapidly developing emerging market, stands to benefit from these global trends by increasing access to financial products and services to its population and creating vast economic opportunity.

As discussed, FinTech innovations can drive efficiencies in new products and services that can reach individuals who may not be served by traditional FS providers. With growing mobile and internet penetration, coupled with the increasing number of FinTech firms operating in Indonesia, there is likely to be an increasing level of FinTech market activity over the coming years.

Given the potential benefits in terms of financial inclusion, Indonesian regulators need to ensure that technology-enabled financial innovation is regulated effectively in order to reap the potential benefits on offer, while avoiding some of the pitfalls that may lead to financial exclusion. The experiences of other financial regulators offer a great learning opportunity for financial regulators in Indonesia in terms of designing, implementing, and reviewing regulatory innovations through policy transfer and peer-to-peer learning within Southeast Asia and further afield in developing and emerging economies such as Mexico and Kenya.

<sup>95</sup> McKinsey Global Institute. 2016. [Digital Finance for All: Powering Inclusive Growth in Emerging Economies](#).

## **Key Insights for Indonesia: Equity Crowdfunding**

In Indonesia, as in many markets, SMEs lack access to sufficient capital. Equity crowdfunding could provide an important additional channel of capital to early-stage businesses, which can complement early-stage angel investors and venture capital and open up investment into small and fast-growing companies to a much broader array of individuals given the low thresholds for participation. However, regulation of this activity in Indonesia must focus on consumer protection to ensure that the risks are properly communicated to retail investors and that investors know their capital is at risk.

## **Key Insights for Indonesia: P2P Lending**

The P2P lending market has grown rapidly in Indonesia since 2017 with the introduction of regulation for this sector by OJK.<sup>96</sup> Wimboh Santoso, the head of OJK, said in January 2018 that over a quarter of a million people had taken out loans via these FinTech firms, with around thirty P2P firms lending \$193.8 million as of January 2018, and with many new P2P lending platforms currently entering the market.<sup>97</sup> This offers numerous opportunities to expand the channels of finance available to Indonesian SMEs and consumers. However, while it is impressive to see the rapid development of this type of FinTech, as the sector gains momentum, there is potential for increasing the risk of consumer detriment, which must be carefully monitored. The recently introduced regulations must be reviewed in the near future to ensure the sector is not creating unnecessary risks and consumer harm.

## **Key Insights for Indonesia: Regulatory Innovation Initiatives**

Regulation is essential to enabling the responsible development of technology-enabled financial products and services. In August 2018 OJK introduced regulations relating to its new regulatory sandbox.<sup>98</sup> This will create an opportunity for the financial regulator to increasingly engage with the domestic FinTech sector and identify areas within the existing regulatory framework that can be improved. This will enhance opportunities for the development of technology-enabled financial innovations, while creating a safe space to test new business models and technology applications to financial products and services, which will hopefully result in a wider array of financial products and services being available to Indonesian businesses and consumers.

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<sup>96</sup> OJK. 2017. [Issues Regulation On It-Based Lending Services.](#)

<sup>97</sup> Reuters. 2018. [Indonesia's FinTech lending boom exploits shortfall in bank loans.](#)

<sup>98</sup> Columbia Business School. 2018. POJK 13/POJK.02/2018 [Digital Financial Innovation in the Financial Services Sector.](#)