



# FinTech for micro, small and medium sized enterprises

Creating jobs at the bottom of the pyramid through financial and digital innovation

(1/2)

# Executive Summary

The role of financial technology (FinTech) is centre-stage in the discussion on how to financially include poor people in developing economies. But the benefits for micro, small and medium enterprises (**MSMEs**) have gained less attention so far. This report shifts the focus on to MSMEs as they are important job creators at the bottom of the pyramid. But is FinTech the game changer for the traditional bricks and mortar bank model that excludes so many enterprises? How can FinTech improve access to MSME finance and lower its cost? And what technologies look most promising? Our ten main insights:

## Jobs for the poor

1. Microfinance advocates commonly believed and hoped that all poor people could successfully run a micro-enterprise and climb out of poverty. We now know that most people are better off with jobs instead of self employment. As a result more than a billion new jobs for the poor are needed.
2. The number of MSMEs in the developing world has to grow by a third to provide these jobs, from 400 million enterprises currently towards 537 million. Half of the required jobs are needed in Asia, followed by Africa (45%).
3. Financial constraints are the largest obstacle for MSMEs to grow and thus provide jobs for the poor. The loan portfolio to MSMEs has to grow by 80% from \$6.9 trillion to \$12.4 trillion to finance the creation of so many jobs.

This huge credit gap will not be closed through the traditional relationship banking model since physical branches are costly to operate, especially in remote rural areas.

## FinTech as a game changer

4. FinTech has the potential to impact the whole financial value chain and thus improve financial access for MSMEs. Identification technologies allow for better 'know your customer procedures'. Alternative credit scoring methods give better insights into which enterprises to finance. And once you know who is who, and if the entrepreneur is creditworthy, loan disbursement can be improved by mobile & internet banking, crowd lending and the use of virtual currencies. The loan portfolio can be better monitored if clients use cloud computing and business monitoring apps.
5. FinTech can also lower the cost of MSME finance, especially for micro and smaller enterprises hiring up to 50 people. The table on the next slide summarises the mid and longer term impact of these FinTech technologies.
6. Identification technologies are the basic prerequisites for FinTech-led financial inclusion to work. India's Aadhaar project is a good example as it includes the total Indian population and makes use of photos, iris scans and

fingerprints. This provide a great starting point for the financial sector to develop services that make use of this vital information.

7. We believe alternative credit scoring methods are most promising for financial institutions that lend to MSMEs. Credit scores could be calculated for every enterprise, even if financial data is lacking. And if these technologies have matured they can reduce operating costs as fewer loan and risk officers are needed.
8. A FinTech case study at ING Turkey with relatively simple FinTech solutions, such as SMS and web based loan applications, shows that FinTech is very effective at serving micro-enterprises compared with larger ones. As companies become bigger, they need more advisory services that are not yet provided through robo advice, so the bank branch remains their most important interaction point.

It is striking to see that the micro entrepreneurs making use of the FinTech channels are less educated than those interacting through branches.

(2/2)

# Executive Summary

In this particular case study, financial inclusion for poorly educated micro-entrepreneurs works better through FinTech channels. It could well be that the traditional relationship banking model through branches poses implicit barriers for uneducated entrepreneurs that are less apparent in the FinTech channels. Knowing that a loan has already been digitally pre-approved seems to provide an incentive to finalise the process at the local branch.









## Policy recommendations

9. While basic cell phones facilitate simple FinTech solutions such as digital payments, smartphones are the way forward in the FinTech world. However, for many micro-entrepreneurs these are still too expensive. This reports argues that smartphones are not solely a luxury good, but a necessity for financial inclusion. Governments should take this into account in their policies. Taxing smartphones

as necessity goods or providing government subsidies might be crucial elements in policies to achieve long term financial inclusion for micro entrepreneurs.

10. FinTech brings financial inclusion to the next level. As such, financial inclusion policies can no longer go without sound policies to digitally include MSMEs and the people they hire.

### Main short term and longer term impact of FinTech technologies

	<b>Identification technology</b>	More efficient and effective Know Your Customer procedures. Operational costs decrease across the financial sector.	Higher security through social media identification checks.
	<b>Alternative credit scoring</b>	Psychometric testing and mobile analytics decrease portfolio risk and increase pool of borrowers.	Inclusion of e-commerce, app, web and social media data becomes the new standard.
	<b>Mobile and internet banking</b>	Society shifts to cashless economy. MSMEs ability to manage cash flows improves. Operational costs decrease across the financial sector.	Lean branches allow for reductions in operating expenses.
	<b>Crowd and P2P lending</b>	The scale of lendable funds increases. International investment lowers funding costs. Operational costs decrease across the financial sector.	Hedging costs are eliminated as lending becomes local for local.
	<b>Virtual currencies</b>	Hedging costs are reduced for international payments. International payments to and from developing countries are settled in minutes, rather than days. International investment lowers funding costs.	The use of virtual currency becomes more common globally (usable in many countries).
	<b>Cloud computing</b>	Up to date information reduces operating costs. Cash flow management becomes more accurate.	Digital archives increase accuracy and timeliness of bookkeeping. More accessible and reliable accounting activities allow for smarter business decisions.
	<b>Business monitoring apps</b>	Still in development phase.	Early warning signals might reduce loan losses. Robe advice enables bank to provide customer-tailored automated advisory services.
	<b>Blockchain</b>	Still in development phase for most applications. Most progress expected in virtual currencies.	Storing documents on the blockchain improves trade finance. Enabling of smart contracts with conditional payments <sup>1</sup> . Asset registers become more transparent.

1 Think of sending remittances that can only be spent by the receiver on school fees.

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- Alternative credit scoring
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- Crowd and P2P lending
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- Cloud computing
- Business monitoring apps & robo advice
- Blockchain technology

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We need micro, small and medium sized enterprises...  
...and a game changer in the way they are financed



# Introduction

## The shift from microfinance to job creation... ...and the need for a game changer

### Microfinance is not the silver bullet to alleviate poverty

We need a game changer that transforms the traditional banking model. Financial technology, or FinTech holds the key. That's why this edition of A Billion to Gain is all about the opportunities FinTech can bring to Micro, Small and Medium Enterprises (MSMEs).

Our report in 2014 focused on the impact of microfinance on clients in India and Ghana. It concluded the overall impact was positive, but results differed substantially between the two countries. A follow-up report a year later further revealed that not every client benefitted to the same degree. In fact some people win and some lose. As such, microfinance is not 'the silver bullet' to alleviate poverty that most of us once believed, or hoped, it would be. One of the reasons lies in the optimistic assumption that every microfinance client is a true entrepreneur whereas in practice that is obviously not true as few microfinance businesses prosper.

### Most people desire the stability of jobs

In reality, the majority of poor people start a business out of necessity rather than ambition. Research indicates that up to 70% of micro entrepreneurs lack the ability, motivation and competitive attitude that characterize true entrepreneurs. Around the world, when researchers asked poorer people the question: "What are your ambitions for your children?", a common response was that they wanted them to become government workers. According to Banerjee and Duflo (2011)

"This suggests a desire for stability as in developing countries these jobs tend to be very secure. Stability of employment appears to be the one thing that distinguishes the middle classes from the poor."

### So the poor need jobs as well...

The vast majority of clients seem to be better off with stable jobs instead of the uncertainties that come with a microenterprise. Providing jobs for the poor is a related benefit microfinance can offer and job creation is centre-stage in terms of financial inclusion.

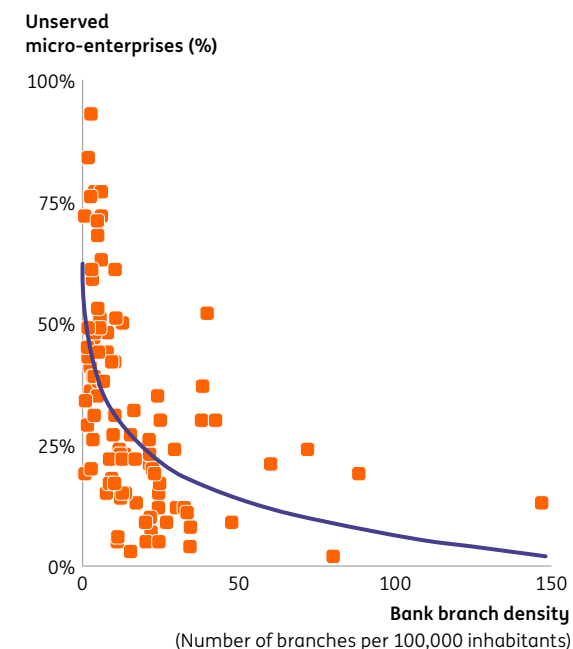
### ...which are provided by MSMEs

Obviously, not all the poor can work as civil servants. In fact, MSMEs are a major driver of economies and a major force in job creation. However, especially in developing countries they lack access to finance; they're too big for microfinance and yet too small for the banking sector. They are the 'missing middle'.

### In need of a game changer

The traditional relationship banking model prevails in developing countries, as services are offered through bank branches. Unfortunately this model is costly to operate. Financial inclusion of MSMEs, via the setting up of a dense network of bank branches in developing countries, is unlikely to happen. So, as FinTech is not dependent on physical bank branches, it could be a game changer for millions of people.

### Traditional relationship banking model through branches leaves many unserved



Source: ING Economics Department based on IFC data. Unserved refer to enterprises that do not have a loan or overdraft but are in need for one.

## Definitions

# What we mean by FinTech and micro-enterprises

### FinTech as Financial Technology...

This report defines FinTech as financial technology. As such, it focuses on the innovative power these technologies bring to financial services. With this definition in mind, FinTech becomes relevant for many players in the financial supply chain. So, think of banks, 'non-bank' financial institutions, microfinance institutions (MFIs), investors and the companies that develop the technology.

### ...as opposed to a startup company

FinTech has also become a synonym for small and innovative start up companies that develop Financial Technology and related products. These are called FinTechs. This definition is useful in describing the dynamic world of start-up companies in the FinTech sector. However, it easily creates a picture in which the start-up becomes the main focal point, as opposed to the technology itself. In practice Financial Technology is not the exclusive domain of the FinTechs as the more traditional banks, MFIs and developmental organisations make use of it as well. These financial institutions are important actors in scaling up FinTech solutions. And scale is important, both financially and digitally, to include the vast amount of people and companies at the bottom of the pyramid.

Since this report defines FinTech as a technology rather than a specific type of company, it is less concerned about which companies are actually implementing the technology.

### Microfinance versus MSME finance

This report argues that the poorest in society are perhaps not as instinctively entrepreneurial that many hoped they would be. The majority of people – just like in the developed world – would be better off with a permanent job instead of being self-employed. And micro-enterprises are major job creators, especially in developing countries (see next page).

Since we focus on job creation, a micro-enterprise in this report is meant as a business that is actually hiring people. As such, it should not be confused with the popular notion of a micro-enterprise from the microfinance sector.

While FinTech could be beneficial to micro, small, medium and even large sized companies, we're particularly looking at the micro-level in this report. As such it bridges the gap between the large majority of microfinance clients who are potentially better off with a job and the minority of microfinance clients who are able to grow their businesses and start hiring employees.

#### Microfinance-client enterprise

- Owner is entrepreneur by necessity.
- One-person business, no employees.
- Business often is a means to ensure survival rather than business growth.
- Owner is often a woman who combines business and household management.
- Business initially financed through group lending or individual micro-loans.

#### Micro-enterprise (part of MSMEs)

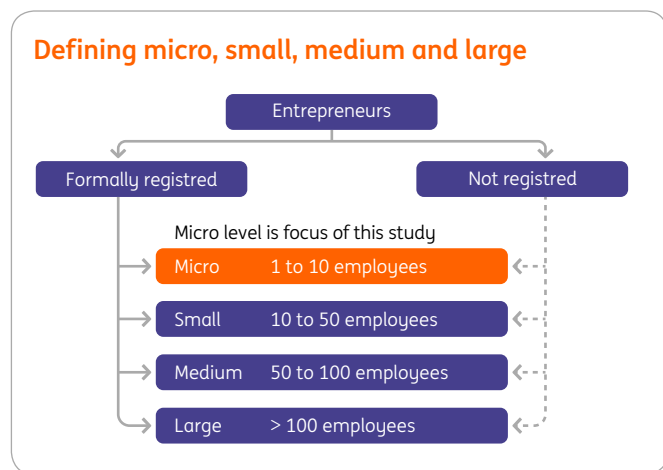
- Small business with up to 10 employees.
- Owner is a dedicated entrepreneur who looks for business opportunities.
- Often willing to scale up and hire employees to enable business growth.
- Geared both towards men and women.
- Finance needs cannot be met by group lending or individual microloans.

# Micro-enterprises: job creators at the bottom of the pyramid

## MSMEs profile differs globally

MSMEs are commonly defined by the number of employees. Countries, however, use a wide range of thresholds to define whether a business is micro, small or medium sized. In developed countries, the MSME sector includes those companies hiring up to 250 employees, while in developing countries this number goes down to 100 on average.

The focus of this study tends to be on the micro-enterprises with a maximum of 10 employees (see graph) as they are important job creators at the bottom of the pyramid.



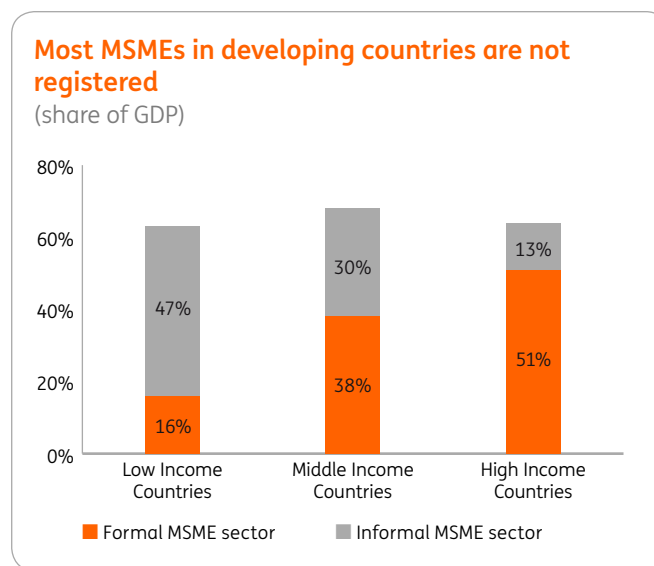
Source: ING Economics Department based on IFC data and World Bank MSME Country Indicators.

Note that threshold employee levels vary per country. These are the most commonly used, especially in developing countries.

## Shadow economies are big business in developing countries

Statistics tend to capture only those MSMEs that are formally registered, since data on shadow economies is hard to measure. This is a pity, since in developing countries the majority of MSMEs are not registered. In low income countries, for example, almost half of the GDP is related to enterprises that avoid government regulation, taxation or observation.

Obviously, being in the informal sector does not infer illegality. Rather, it's a direct reflection of the business climate in these countries.

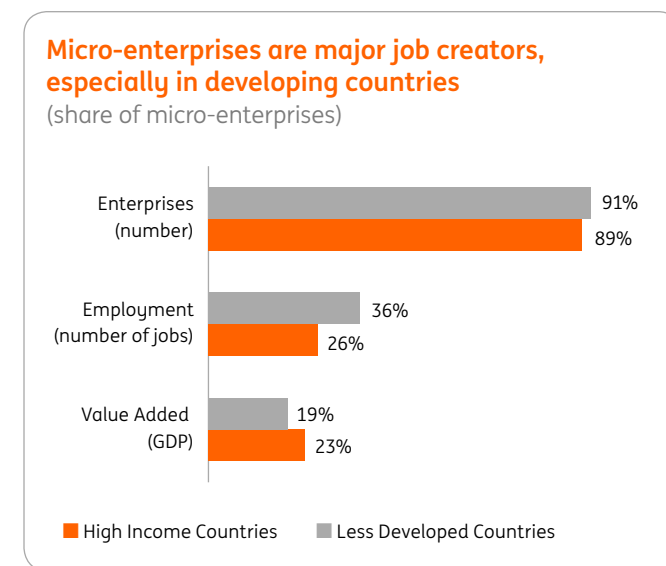


Source: World Bank and IFC.

Since banks are generally unable to lend to the informal sector, this limits the ability of these firms to grow and provide extra jobs.

## Small in value added, big in terms of jobs

Around 90% of all (formally registered) enterprises in both developed and developing countries are micro enterprises and operate with fewer than 10 employees. While their contribution to GDP is quite small (one fifth) their role in job creation is much bigger (one third). The poor need jobs and micro-enterprises are important job creators.



Source: IFC.



# The MSME sector has to grow by a third to provide the 1.1 billion jobs the poor so urgently need

## The poor are mostly self employed...

According to the new World Bank thresholds, around 2 billion people in the developing world live in poverty as they have to survive with less than \$3,10 a day. Of those, 750 million live on less than \$1,90 a day<sup>1</sup>.

In these families, on average 60% of household members (1.2 billion people) contribute to household income, almost always through self employment or casual labour.

## ...but the majority need a job...

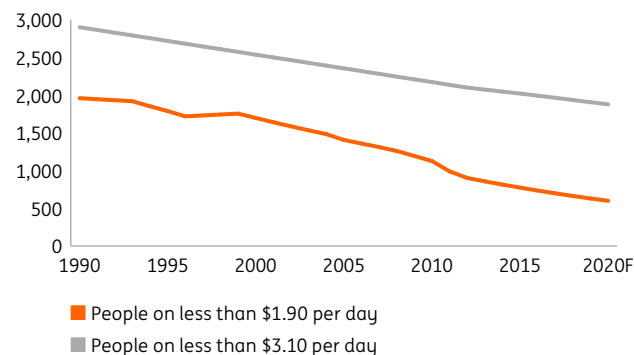
Microfinance advocates commonly believed and hoped that all these people could run a micro-enterprise successfully and climb out of poverty. We now know that up to 90% of the poor, through no fault of their own, often lack the ability, motivation and competitive attitude that characterise true entrepreneurs who create jobs. These people (around 1,080 million) are better off with jobs instead of self employment. At most, 120 million people (10%) instead of 1.2 billion can really thrive as entrepreneurs.

## ...which requires the MSME sector to grow by 34%

Large enterprises are, of course, a major force in job creation but the vast majority of jobs are created within the MSME sector. In order to create the 1.1 billion jobs for the poor the sector has to grow by around 137 million enterprises globally. This represents a 34% increase from the current 400 million MSMEs. This creates around 800 million jobs for the poor, while nearly 300 million need to be created by large enterprises.

### Extreme poverty is decreasing but still a major problem for 2 billion people

(million people)

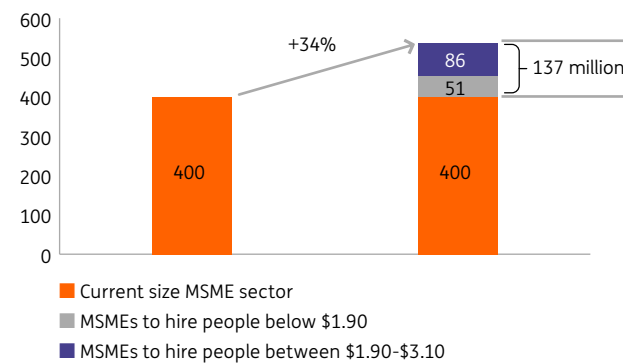


Source: World Bank.

1 The World Bank revised the poverty thresholds. \$3.10 corresponds with the old \$2 level and \$1.90 with the well known \$1.25.

### MSME sector in developing countries needs to grow by 34%

(million enterprises)



Source: ING calculations based on IFC data.

### Job creation by 137 mln MSMEs:

- 434 million (40%) jobs by micro-enterprises
  - 238 million (22%) jobs by small enterprises
  - 143 million (13%) jobs by medium enterprises
  - 265 million (25%) jobs by large enterprises
- 1,080 million jobs for the poor**

# Job creation for the poor highest in Asia and Africa

## Half the required jobs are needed in Asia...

Asia and Africa house the vast majority of the poorest people in the world. To get people out of what many see as the trap of self employment, because of a lack of opportunities, and into jobs that provide more stable incomes, 49% of the 1.1 billion jobs need to be created in Asia. India and Bangladesh contribute strongly to this number in South Asia, while China and Indonesia in East Asia.

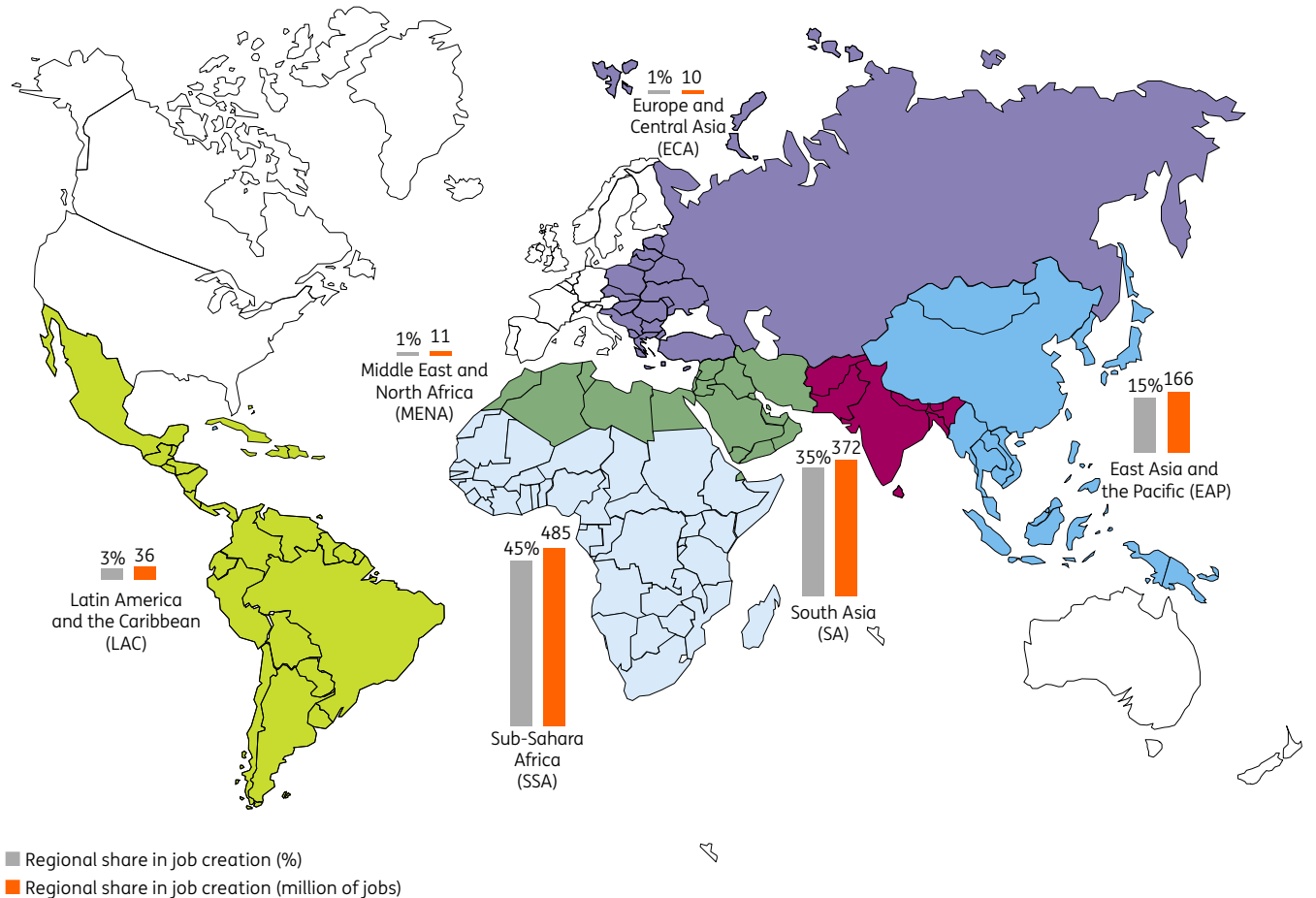
## ...and Africa follows with 45%

45% of the 1.1 billion jobs need to be created in Africa, notably in Burundi, Congo, Mozambique and Malawi because of the extreme poverty. Let's not forget that Africa and Asia have the biggest population growth. And when you break down those figures, the problem is stark: just over 60% of Africa's population is less than 24 years old. That compares with 35% in Europe. Africa and Asia need a lot of jobs in order to make these young people thrive.

Numbers for Latin America, Europe and Central Asia are much lower as extreme poverty and related self employment are generally much lower.

## Regional job creation at the bottom of the pyramid

(regional share in job creation (%) and million of jobs)

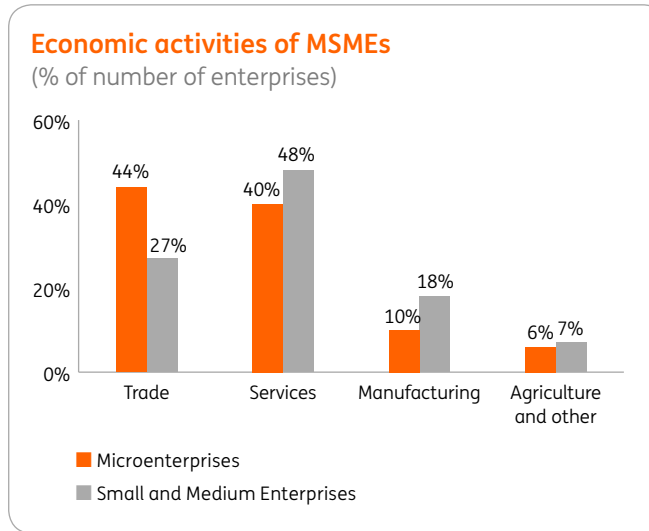


# Micro-enterprises are most active in trade... ...small and medium enterprises in services

## Trade and services are important economic sectors for MSMEs

Micro-enterprises with up to 10 employees are mostly active in the trade sector. That could be anything, from small scale retail trade in the local community to importing and exporting companies in the global market, for example in the production of traditional handicrafts. Many companies are also active in the service sectors, such as food services, hotels and restaurants, repair services, tailoring and so on. These are important business activities for micro-enterprises.

Small and medium sized enterprises are, in comparison to micro-enterprises, more active in the service sector and in manufacturing. Manufacturing in particular tends to be more capital intensive and require some scale to operate efficiently.



Source: World Bank, IFC.

**Note:** Data on the sector structure is available for a limited number of economies, especially with regard to the trade sector. The following countries are included because of data availability: Argentina, American Samoa, Brazil, Botswana, Colombia, Dominican Republic, Ecuador, Jamaica, Jordan, Moldova, Pakistan, Philippines, Rwanda, El Salvador, Tajikistan, Tunisia, West Bank and Gaza, South Africa.

# Lack of credit prevents job creation: 80% growth in loan portfolio to MSMEs needed

## Finance is a major barrier

Getting access to finance is one of the biggest challenges for MSMEs. In fact it's even a greater barrier than corruption and crime, a stable electricity network or an inadequately educated workforce.

## Current credit gap equals \$2.3 trillion for MSMEs...

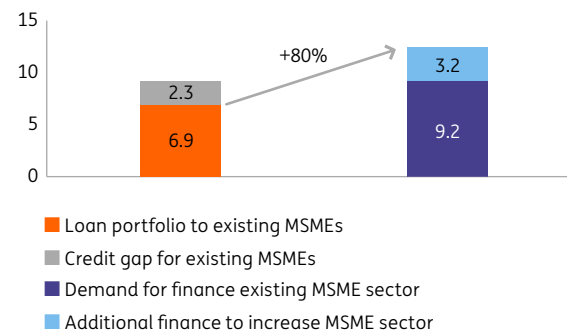
Currently the total loan portfolio to MSMEs in developing countries stands at \$6.9 trillion. However, according to the World Bank, these 400 million businesses need \$9.2 trillion of finance to thrive, creating a credit gap of \$2.3 trillion. This credit gap stems from the fact that many MSMEs do not have a loan or overdraft but they're in need of one (the unserved), or do have a loan or overdraft but still find access to finance a business constraint (the underserved).

## ...but another \$3.2 trillion is needed to increase the MSME sector to provide the jobs the poor need

While this credit gap is large and well known, it doesn't account for the required growth of the sector that's needed to provide the jobs for the world's poorest people. The previous slide indicated the MSME sector has to grow by about a third, to 137 million enterprises globally to provide these jobs. Assuming these new enterprises get the same amount of credit as those currently (average loan size of \$17,250 per enterprise) and face a similar credit gap (\$5,750

### Show me the money: 80% rise in MSME lending needed

(\$ trillion)

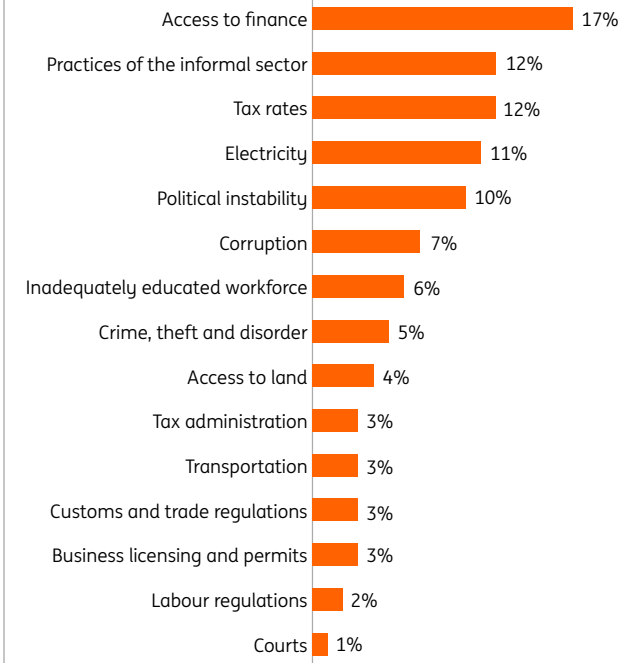


Source: ING calculation based on IFC and McKinsey data.

per enterprise), the total credit demand by MSMEs would increase by 34% to \$12.4 trillion (\$9.2 trillion credit demand from current MSMEs and \$3.2 trillion from new ones). So, the loan portfolio to the sector in developing countries has to grow by 80% from \$6.9 trillion to \$12.4 trillion to close both the credit gap for current MSMEs and to finance the growth for new ones. Only then can the MSME sector provide the jobs for the poor at the bottom of the pyramid.

## Obstacles for micro and small businesses

(% of firms identifying the item as the biggest obstacle)



Source: World Bank Enterprise Surveys.



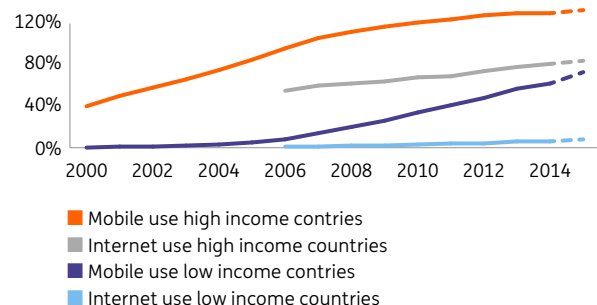
FinTech as a game changer  
FinTech can improve access to as well as  
lower the cost of MSME finance



# FinTech enabling trends

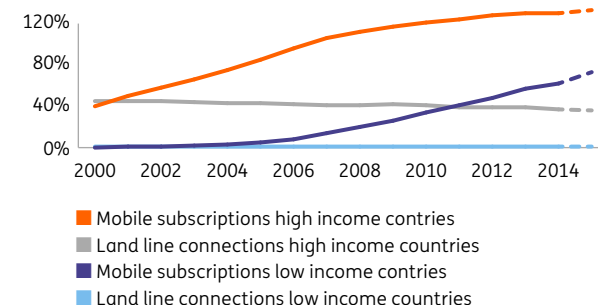
## Mobile use is picking up rapidly and leading the way in developing countries

(% of population \*)



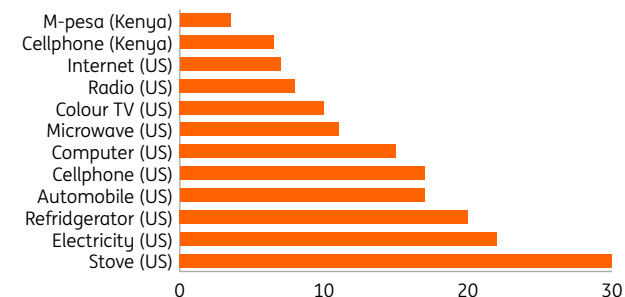
## Leapfrogging: developing countries skip the landline phase

(% of population \*)



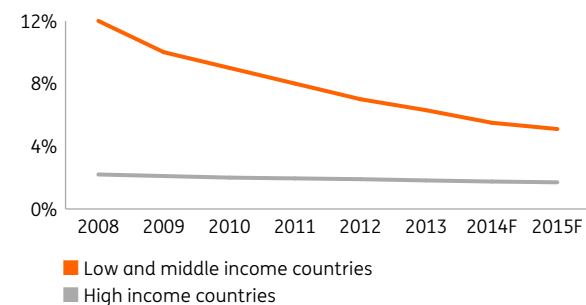
## Mobile banking service are adapted at great speed

(adaptation by 50% of households in years)



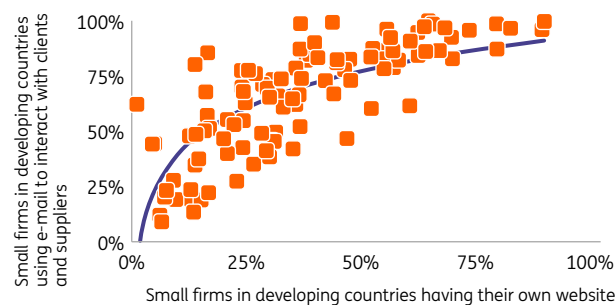
## Still substantial, costs are coming down quickly too

(monthly cellphone costs, % of GNI)



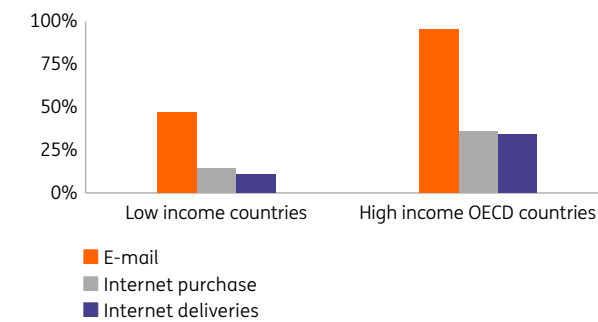
## Communication gets digital as firms start using the internet...

(% firms in low and middle income countries)



## ...followed by a digital way of doing business

(% of total firms)

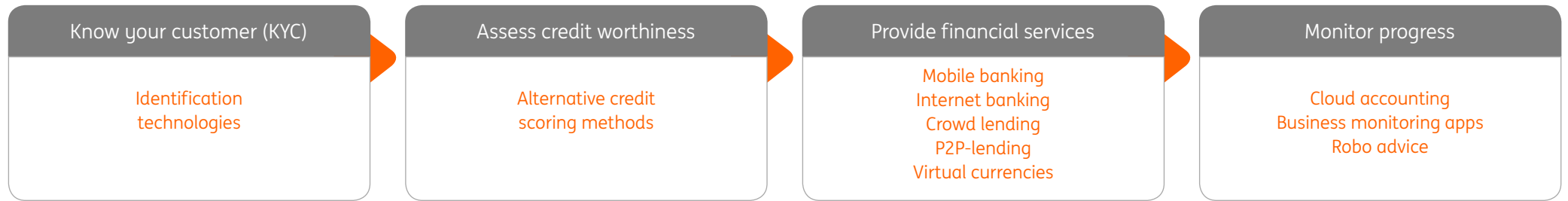


Source: OECD, World Bank, IFC, Harvard Business Review.

\* A value higher than 100% indicates that some people have multiple mobile subscriptions.

# The game changer

## 1. FinTech can improve access to bank lending for MSMEs



### Origination

MSME lending can simply be described as providing money to a micro-entrepreneur now based on their commitment to repay at a later date. In the meantime, many things can happen and as a result trust is a major element in banking.

In order to build trust it is important to know your customer well. This 'KYC' principle is especially relevant in developing countries, where it is quite common that birth registers are missing or unreliable, houses or stores have no addresses, millions of people can have the same surname (think of China and India) and so on. Identification technologies such as finger- and iris scans can greatly improve the process of reliably identifying clients.

Even if the micro-entrepreneur and the Ultimate Beneficial Owner (UBO) of the micro-enterprise are identified, the question remains whether they are creditworthy. Traditionally a credit score is calculated based on financial data but this is often not possible for start-ups and small businesses that operate in the informal sector. Alternative credit scoring methods based on psychometric tests or information from social networks and smartphone use provide promising and easy ways to assess creditworthiness.

### Disbursement

Traditionally, loans are disbursed at bank offices or through loan officers in the field. However, this banking model is costly and leaves many unserved or underserved.

New technologies such as mobile and internet banking as well as crowd and P2P-lending provide low cost alternatives based on the promise of 'anywhere, anytime, easy and effortless' banking services. In the future loans could even be disbursed in or converted into virtual currencies that eliminate exchange rate risk and minimise fraud risks.

### Credit and portfolio monitoring

The client potentially benefits from better budgeting tools that effectively manage day to day accounts receivable and payable as well as longer term cash flows.

FinTech can also increase customer interaction with the bank and enhance better and tailored advice through data analytics, automatically generated notifications and robo-advice.

FinTech creates much more financial information for banks. It also provides opportunities to analyse a whole range of non financial data, for example if clients give permission to share data on their cell phone with banks.

# The game changer

## 2. FinTech can lower MSME lending costs, especially for micro-enterprises

Getting a grip on the cost of MSME lending is difficult because of a persistent lack of data. Interest rates on MSME loans in developing countries are generally higher than in developed countries due to:

- Higher inflation rates.
- Higher overall interest rates. For example, the government of Ghana borrows at 25%, whereas interest rates on Dutch government bonds are practically zero.
- Laborious banking processes, especially in remote areas.
- Smaller loan sizes resulting in high operating costs per loan.
- Significant costs to hedge currency risk and to work with local partners for foreign funders.

While we know that interest rates on microfinance loans are on average 30% globally, there are no reliable sources for the cost of MSME finance. However, MSME lending costs critically depend on:

- Loan sizes, since operational expenses are relatively large for smaller loans. As a result financing costs for micro-enterprises are generally higher than for small and medium sized enterprises;
- Loan collaterals, which are more easily provided by medium sized enterprises as they tend to have longer balance sheets.

Next to providing better access to finance, FinTech also holds the promise of lowering the cost of credit, particularly by lowering operating expenses for lenders. Since these are highest for relatively smaller loan amounts, the benefits of FinTech are particularly large for micro-enterprises.

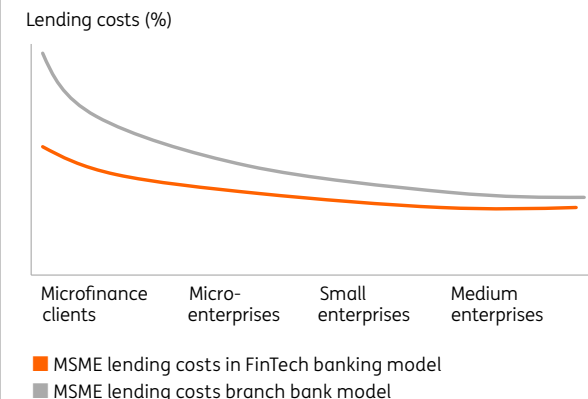
The next pages describe through which channels FinTech can lower MSME lending costs in the mid and longer term.

### Cost reduction highest for micro-enterprises

Cost category	Components relationship banking model	Microfinance clients	Micro, small and medium sized enterprises
Operating expenses	Staff, IT systems, legal accounting & reporting, housing	15%	6-8%
Financial expenses	Cost of funds, inflation, hedging (currency & tenor)	8%	4-5%
Loan losses	Provisioning, write-off, restructuring	4%	3-4%
Proffit	Margin, taxes	3%	2-3%
<b>Lending cost</b>	<b>Interest rate</b>	<b>30%</b>	<b>15-20%</b>

Source: CGAP for microfinance data and expert opinions on the cost of MSME finance.

### Cost reduction highest for micro-enterprises



**Note:** The graph shows a theoretical reduction in lending costs which is, due to a lack of data availability, not based on a quantitative assessment.



## Scenario analyses (1/4)

# How FinTech can lower MSME lending costs in the mid- and longterm

### Know your customer (KYC)

### Assess credit worthiness

### Provide financial services

### Monitor progress



#### Identification technology

##### Midterm scenario

- Less adverse selection reduces the risk of selection of 'bad' clients resulting in lower loan losses.
- Better KYC procedures lower due diligence costs and operating expenses.
- Loan officers can efficiently identify and serve more lenders resulting in lower operating expenses.

##### Longterm scenario

- Benefits are strengthened as technology is widely applied and accepted by citizens.
- Incorporation of social media identification checks and balances further improves KYC benefits.

### Know your customer (KYC)

### Assess credit worthiness

### Provide financial services

### Monitor progress



#### Alternative credit scoring

##### Midterm scenario

- Limited to psychometric testing and possibly mobile use if financial institutions work with telcos.
- Less adverse selection reduces the risk of selection of 'bad' clients resulting in lower loan losses.
- Staff reduction and increased organisational efficiency lower operational expenses.
- Reduced knowledge pool from loan officers may increase loan losses initially.
- Learning costs with new technology increase loan losses initially.

##### Longterm scenario

- Reduction in operating expenses as the process of credit scoring is fully automated.
- A broader range of sources, such as psychometric, mobile and social media data are combined which increases the accuracy of credit scores thereby lowering finance costs.
- Reduction in loan losses as the reliability and efficiency of credit scores is greatly improved.

## Scenario analyses (2/4)

# How FinTech can lower MSME lending costs in the mid- and longterm

Know your customer (KYC)

Assess credit worthiness

Provide financial services

Monitor progress



### Mobile & internet banking

#### Midterm scenario

- Shift to 'cashless' society leads to better cashflow management as transactions become visible in MSME accounts.
- Increased transparency makes loan officers more effective and efficient (lower operating expenses).

### 👥 Crowd and P2P lending

#### Midterm scenario

- Highly automated online lending process reduces operating expenses.
- Automation of fund procurement reduces operating expenses.
- Lower financial expenses as (international impact) investors require lower rate of return.
- Tapping into a larger pool of investors. Crowdfunding gives access to the global investment community and enables smaller investors - through cheap aggregators - to finance MSMEs.



### Virtual currencies

#### Midterm scenario

- Reduces hedging costs and currency risks.
- Improves cash flow management as international payments are settled within minutes.
- Reduces financial expenses as international investors often have lower funding costs than local investors.

#### Longterm scenario

- Digital lending services allow for lean branches with lower operating expenses.

#### Longterm scenario

- Elimination of hedging costs as the market becomes more 'local for local' where local investors fund local entrepreneurs.
- In case of international P2P-lending the increased use of virtual currencies lower hedging costs further.

#### Longterm scenario

- Virtual currencies can be used in every country, improving the gains in hedging and funding costs.

## Scenario analyses (3/4)

# How FinTech can lower MSME lending costs in the mid- and longterm

Know your customer (KYC)

Assess credit worthiness

Provide financial services

Monitor progress

### Cloud computing

#### Midterm scenario

- Lower operating costs due to up to date information as loan officers synchronize data daily.
- Shift to 'cashless' society leads to better cashflow management as transactions become visible in MSME-accounts.

### Business monitoring apps & robo advice

#### Midterm scenario

- Few mid term gains as this technology is still very much in development.

#### Longterm scenario

- MSMEs can perform time consuming administrative tasks such as bookkeeping more efficiently.
- Cultural shift: bookkeeping is far more common among MSMEs in developing countries.

#### Longterm scenario

- Lower loan losses as up to date business information provides early warning systems if the business deteriorates.
- Business monitoring apps are widely used and reduce the risk of moral hazard.
- Integrating business information allows for customer oriented advisory services that can increase sales volume and market share.

## Scenario analyses (4/4)

# How FinTech can lower MSME lending costs in the mid- and longterm

Know your customer (KYC)

Assess credit worthiness

Provide financial services

Monitor progress

### Blockchain

#### Midterm scenario

- Blockchain technology is still in its early stage. In the midterm most development will come from virtual currencies (see previous section). In the longterm blockchain technology can have profound benefits in other business aspects as well (see long term scenario).

#### Longterm scenario

- Trade finance becomes more accessible and cheaper as banks, MSMEs and their counterparties have up to date information on trade documents.
- Smart contracts incorporate conditional payments where for example bills are automatically paid if goods have gone through customs in the receiving country.
- Through the decentralized ledgers the reliability and coverage of identity and asset registries, such as land cadastres is enhanced.
- Higher availability of collateral as land deeds are formalized and confirmed by the blockchain.
- As such the blockchain technology has great long term potential to reduce operating and financial expenses as well as loan losses.

### Conclusion

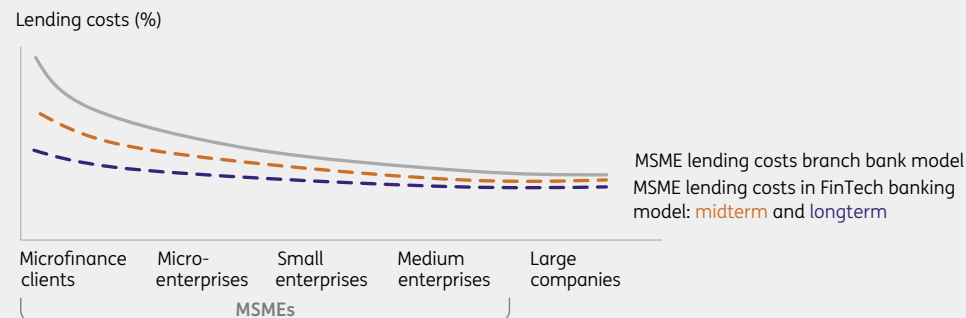
#### Midterm scenario

- Strong cost saving potential can increase operating margins making investments in FinTech technologies appealing to MSME lenders.
- First mover advantage could reduce competition and increase profit margins for the large and successful FinTechs.
- Largest reduction in cost of funding for micro-enterprises as these loans are currently very labour intensive.

#### Longterm scenario

- Large reduction in operating expenses for the financial industry as lending becomes more efficient.
- Regulators might introduce legislation to increase competition and reduce margins.
- Further reduction in MSME lending rates possible as FinTech matures and is applied at a large scale.

### FinTech will bring down the cost of MSME lending most for micro- and small enterprises



# From vicious to virtuous economic policies: Investing in FinTech brings macro economic benefits

## From micro to macro benefits

The previous section argues that FinTech can have significant micro-economic benefits for the MSME sector. This section will look at the macro economic impact and present several channels through which FinTech can increase long term economic growth. As such FinTech should be included in the toolbox of governments who want to stimulate economic development.

## 1<sup>st</sup> order impact: FinTech spurs investment and trade

FinTech loosens the credit constraint for MSMEs, producing a spur of investments and GDP as a result. Specifically, there are two channels through which FinTech could increase private investment: increased accumulation of capital since firms can finance their investments more easily and improved allocation of capital as investments are directed to productive activities.

Since micro-enterprises would become more active in the trade sector there are potential effects for net exports as well. Companies might increase exports of handicrafts, natural resources or agricultural products to international buyers. Foreign products may be required to sustain local production. The impact on net exports and GDP depends on the relative weights to which exports and imports increase.

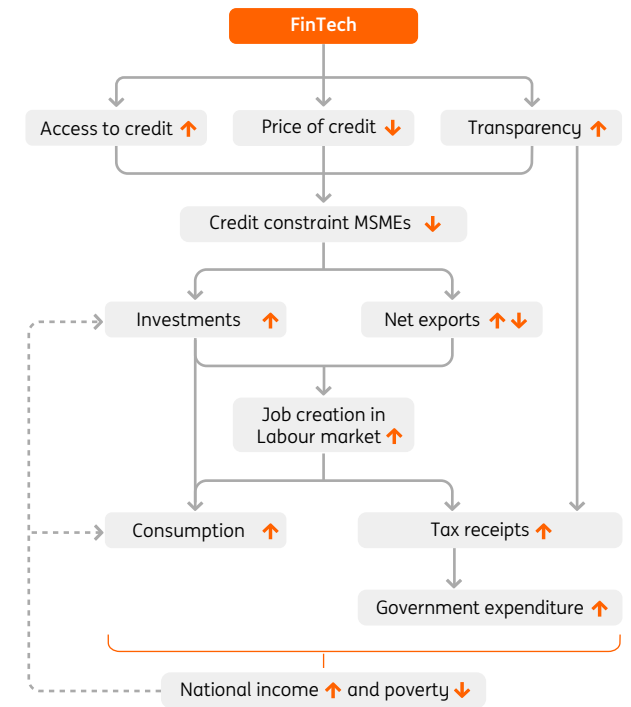
## 2<sup>nd</sup> order impact: FinTech improves the labour market, increases consumption and improves the government budget

Higher investments and increased trading activities can improve the labour market as MSMEs grow their business. The poor at the bottom of the pyramid initially can benefit from an increase in demand for unskilled labour. A job, whether it is a seasonal job or a job with a more permanent character, can provide the income stability needed by poor households. Consumption would increase as a result. It would also help them to acquire skills and improve their longer term income potential.

The government could benefit in several ways. First, FinTech increases transparency as financial inclusion reduces the need for cash and more payments are made through digital means that can be better monitored. Secondly, the rise in economic activity could reduce the size of the informal sector if governments stimulate and facilitate businesses to formalize. Thirdly, increased business activities and an improved labour market increase the Government's tax base to increase expenditure.

These FinTech induced increases in national income could raise producer and consumer confidence which will trigger new rounds of investment and consumption. If the institutional environment is supportive, FinTech could start a truly virtuous cycle of economic development.

## Main macro economic channels by which FinTech can raise national income and reduce poverty



Source: ING Economics Department.

# Quantifying macro economic impact: Potential benefits may be large but hard to realise

## 6% cumulative growth by 2025...

In a recent publication McKinsey made a first attempt to quantify the macro economic impact of FinTech led financial inclusion at the bottom of the pyramid for individuals, MSMEs and the government. Their main results point at the following:

- As more people obtain access to accounts and shift their savings from informal to formal mechanisms, as much as \$4.2 trillion in new deposits could flow into the financial system.
- These deposits can unlock an additional \$2.1 trillion of loans to individuals and MSMEs. Although is not specified how much goes to MSMEs alone, this is likely to have a sizable impact on the current MSME credit gap of \$2.3 trillion and the projected \$5.5 trillion needed for MSMEs to provide 1.1 billion jobs to the poor (see first chapter in this report).
- Digital financial inclusion could boost GDP of emerging economies by 6% in 2025 against baseline growth. This corresponds to \$3.7 trillion in GDP of which one third comes from increased investment and nearly two thirds from increased productivity of individuals, MSMEs and the government.
- 6% additional economic growth corresponds to about 95 million new jobs across sectors, capturing around 10% of the 1.1 billion jobs the poor need (see previous chapters).
- Governments in emerging economies could collectively save at least \$110 billion annually as digital payments reduce leakage in public expenditure and increase tax revenues as the informal sector decreases and more individuals and enterprises pay taxes.

## ...might be too optimistic...

We believe this estimate is on the upper range, as it is based on two ambitious and broad assumptions.

First, all developing countries would need to increase digital payments over the next ten years at the same rate top countries in the developed world did in the past. This means that digital payments would grow to between 25 and 50 percent of total transactions in volume. Clearly this does not hold for many countries as the institutional settings are quite different and not always supportive for FinTech implementation. It worked for example in Kenya with the impressive adaptation of M-Pesa, but it is striking to see that its success has not been replicated in the same scale in other countries. In many cases FinTech implementation has proven more difficult than initially expected.

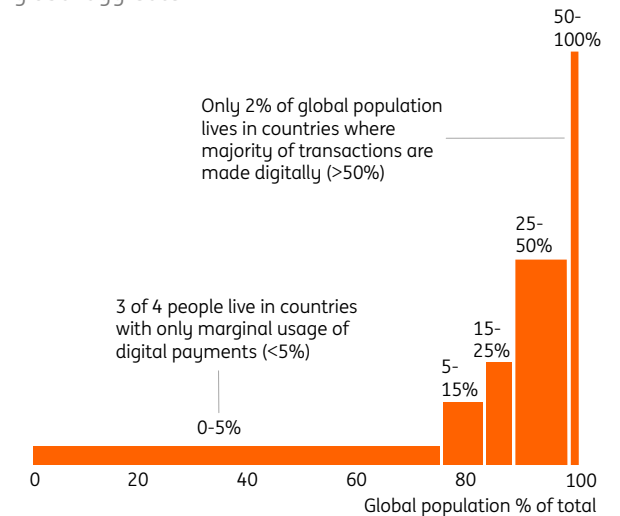
Secondly, it is assumed that at least 91% of adults will gain access to financial services by 2025, which is also the average of high income countries.

## ...but a good indication that overall impact is positive

While these assumptions might turn out to be overly optimistic, this quantification clearly shows that FinTech can have major macro economic benefits. As said before, FinTech holds great promise for policies to stimulate economic development.

## Share of digital payments

global aggregate



Source: McKinsey; Digital finance for all, powering inclusive growth in emerging economies.



## FinTech examples

It is already happening and we ain't seen nothing yet

## Examples of FinTech in developing countries

# The world's largest identification project: taking biometrics from 1.2 billion people in India

Know your customer (KYC)

Assess credit worthiness

Provide financial services

Monitor progress



### Identification technology: Aadhaar in India

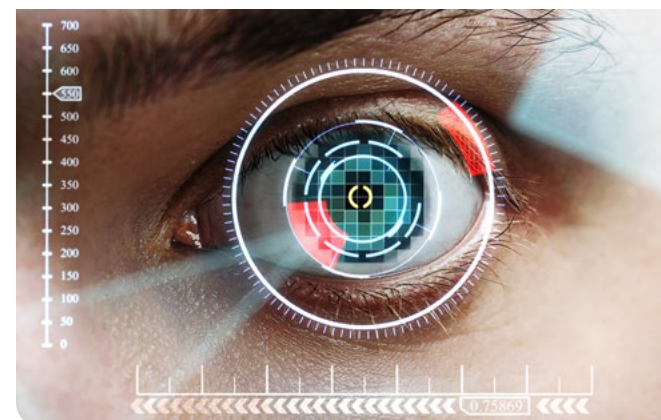
Besides challenges of access to clients in remote rural areas and the fact that

micro-payments are costly to handle, establishing the identity of clients is a third limitation of providing banking services to the poor. India, for example, struggled with cases where people had multiple Indian passports with different personal information, an issue which was attributed to the lack of computerization between the passport agencies. In 2009 the Unique Identification Authority of India (UIDAI) was set up in order to give every citizen a unique identification number.

The Unique Identification number (Aadhaar) identifies individuals solely on the basis of their demographic and biometrics information (photo, fingerprints and Iris). This will give individuals the means to clearly establish their identity to public and private agencies across the country. It will also create an opportunity to address the existing limitations that limit financial inclusion given that Aadhaar can help poor residents easily establish their identity to financial institutions. As of May 2016 over 1 billion citizens (over 80% of the total population) have been registered on Aadhaar.

### India got the basics for success right from the beginning

- The project covers the entire Indian population, including the bottom of the pyramid.
- The initial identification process, which includes biometric recognition through fingerprints, photo and iris allows for future interoperability with other systems where identification is required.
- The personal 12 digit number avoids the issue of relying on names and addresses given that in several countries millions of people have the same surname and entire areas lack street names.
- Aadhaar is more than a mere identification database. It has been linked for example to the payment of several public subsidies and unemployment benefits. Public agencies are now using Aadhaar to cut down on long bureaucratic procedures, such as issuing national passports. Similar benefits are also visible in the private sector where consumers can buy and activate a new SIM card instantly using Aadhaar. In short, it is in the best interest of the individual citizen to be registered in the database.





# Examples of FinTech in developing countries

## Assessing credit worthiness is becoming more personal and behavioural

Know your customer (KYC)

Assess credit worthiness

Provide financial services

Monitor progress

### Assessing a client credit worthiness

Lending has always been about information and knowledge, as financial institutions lend to businesses and entrepreneurs they know and trust. The lack of information on businesses and their inability to provide good collateral makes it very hard for lenders to distinguish good from bad borrowers. Assessing a credit score based on the credit history of small businesses is often difficult and expensive.

Shifting the focus on the credit history of entrepreneurs does not help as credit bureau coverage in developing countries is limited. Even when these entrepreneurs do have a track record, this is in the informal rather than formal credit market. FinTech provides a solution to this problem by using an array of alternative data to predict repayment behaviour.



### Psychometric testing

Psychometric tests assess the entrepreneur's personality, drive, motivation, creativity, persistence and integrity as these characteristics tend to be correlated with the success of their business. Using simple 20-30 minute-long online or tablet based questionnaires, a reliable credit score can be assessed. Biometrics is incorporated to detect identity fraud and the algorithm behind the model accounts for the tendency to give socially desirable answers.



### Social media and app usage

The use of social media is rising steadily in the developing world. Social networks such as Facebook or LinkedIn provide a good indication of the depth and quality of an entrepreneur's social network. This data can also help identify entrepreneurs by comparing it with their ID information. The world of smartphones enables the possibility to gather information by analysing app usage. One's online shopping history, the types of news sites and articles read, chat conversations about money issues, etc. are some examples. The local context determines the most valuable apps to maximize predictive power and minimize default risk. WeLab is a FinTech that provides lending based on credit scores from smartphone analytics<sup>1</sup>.

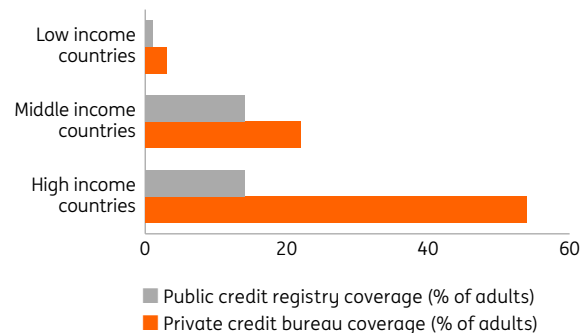


### Mobile usage

Mobile money is increasingly used in developing countries. Mobile money data includes a wealth of user information that can shed light on entrepreneur's repayment behaviours: from assessing the regularity of revenue streams, to proxies for personal wealth, such as temple donations. For example, a client who tops up his pre-paid balance every Friday gives very different information than a user who tops up very little after weeks sitting at a zero balance.

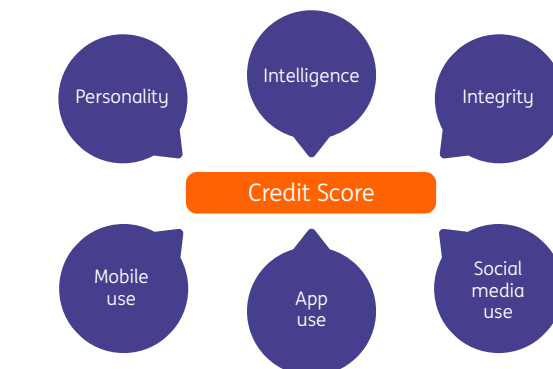
Clients granting permission to analyse their mobile data (directly or through their telecom operator) reduce the information asymmetry in lending and greatly improve their chances of being included in the financial system. Safaricom, Kenya's largest telco, has launched M-Shwari, which allows clients to take a loan based on the credit score derived from M-Pesa usage history.

### Hardly any financial data available to assess reliable credit scores



Source: The World Bank.

### Alternative credit scoring methods



<sup>1</sup> Disclosure: Since January 2016 ING holds an equity stake in WeLab.

# Examples of FinTech in developing countries

## Disintermediation led by virtual currencies and P2P lending

Know your customer (KYC)

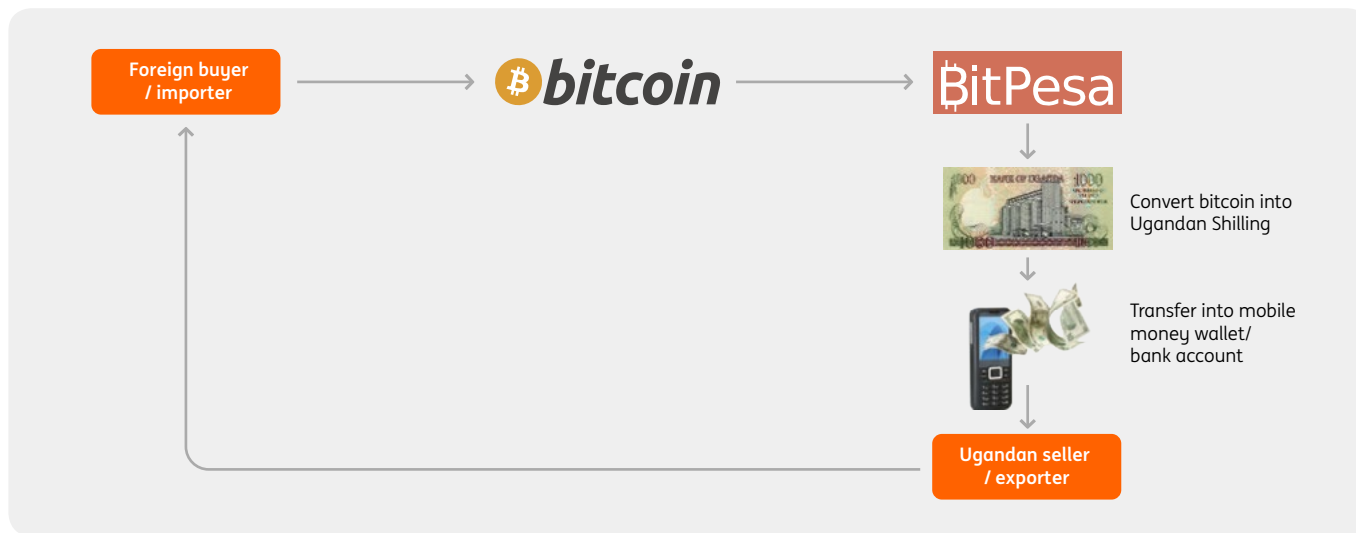
Assess credit worthiness

Provide financial services

Monitor progress

**BitPesa**

BitPesa is a digital payments platform that enables businesses to make payments to, from, and within Africa. It provides an easy, fast and cheap alternative to expensive bank transfers, which can take 5 to 8 working days to settle and involve substantial foreign exchange risk. Alternatives such as Western Union, Moneygram, and World Remit often charge 5 to 10% in fees. BitPesa on the other hand charges a 1-3% fee and settlements takes only a few minutes for mobile money payments and a few hours for bank deposits. BitPesa holds most of the foreign exchange risk as they hold local currency reserves. The trading counterparties run the risk of changes in the Bitcoin value, however since the transfer of Bitcoin usually takes minutes, this risk is minimal. In the future it may well be possible to exchange bitcoins into any currency.



**lendahand**

Lendahand is a Dutch based debt crowdfunding platform that facilitates the funding of MSMEs in emerging countries through local financial institutions ("local partners") by crowd investors. The MSMEs apply their funding request to the local partner. After screening (KYC and credit scoring), the local partner will disburse the loan, after which the business case is advertised on the Lendahand platform. Once featured online, the project can be funded by socially engaged investors seeking more than just an attractive financial return, which is a fixed

3-6% annual return. The social impact created by lending to such MSME's as they are able to grow their business and create jobs as a result, is deemed equally important. The investors are exposed to potential losses due to default by the borrower, which is the local partner and not the MSMEs.

The local partner also takes on currency risks as the loans are disbursed and paid back in hard currency. In the near future, Lendahand hopes to be able to provide local currency loans as well.

In general crowdfunding can lower the cost of MSME finance. Lendahand runs an online platform, allowing for global money flows with less friction as it is not hindered by legacy systems, large teams and relatively large fixed costs. Such a platform is well-positioned to benefit from innovations in areas such as distributed ledgers and big data. Eventually crowdfunding is expected to become local for local where locals, instead of international investors, fund MSMEs. This can reduce lending costs further as no currency risks are involved.

## Examples of FinTech in developing countries

# Cloud computing provides up to date information and digital client interface

[Know your customer \(KYC\)](#)[Assess credit worthiness](#)[Provide financial services](#)[Monitor progress](#)

Musoni is a cloud-based, core banking system specifically aimed at microfinance institutions. Traditional core banking systems can be inflexible, complex and expensive, and have often failed to keep up to date with the latest technology emerging across Africa. Consequently, many microfinance institutions are stuck with systems that are too expensive and not suited to their needs.

By contrast, Musoni is specifically designed for microfinance. Aside from the core banking functionality, Musoni has pioneered the use of new technology in microfinance, and as such is integrated with multiple mobile money transfer services, includes an SMS module for the sending of automated payment reminders, a tablet app that loan officers can use for offline data capture, a mobile banking app for clients and credit scoring to improve lending decisions. Musoni therefore helps financial organisations to leverage the latest technology sweeping across Africa, but at a fraction of the cost associated with traditional banking systems. It also helps organisations to extend outreach into

the rural areas where the majority of the unbanked live:

- As Musoni is cloud based, all data is available in real time to users across all branches.
- The system provides up to date and detailed management, portfolio and financial reports, as well as a custom report builder if an organisation requires custom reports.
- Musoni has been integrated with multiple mobile money services such as M-Pesa, Ecocash and Airtel, enabling clients to send and receive loans and savings on their phones. This works on simple feature phones as most of the clients are not able to buy expensive smartphones.
- The system sends automated and personalised SMS messages to clients based on the business rules configured by the user. Almost 10,000 messages are sent each day and SMS reminders have been shown to improve portfolio quality by up to 50%.
- Musoni provides a tablet application for loan officers to capture data in the field, which improves their productivity up to 70%.
- The software allows MSME lenders to upload credit bureau information by sending the phone number or national ID number to the local agency.

## A long term vision

# Financial inclusion through the blockchain enhances the MSME business environment

[Know your customer \(KYC\)](#)[Assess credit worthiness](#)[Provide financial services](#)[Monitor progress](#)

### The blockchain, a distributed ledger

One particularly promising FinTech development that can potentially impact all the lending steps so far presented is that of the blockchain, or distributed ledgers<sup>1</sup>.

### Enabling efficient business payments

Currently we already see the use of the blockchain via cryptocurrencies for international payments. MSME's are paying the price of the current disaggregation of global financial systems. For example, a Sub-Saharan based MSME is looking at an average transaction cost of 10% for an international transfer within Africa, a huge burden in terms of profitability and competitiveness.

Moreover, because these payments usually take weeks to clear, managing working capital becomes a difficult and expensive process which takes time and energy from the core activities of businesses. The previous example of BitPesa clearly shows how transacting on blockchain can serve to tackle these issues and level the playing field for these MSMEs.

### Overcoming identification and collateral obstacles

Although blockchain has been long associated with virtual currencies, this is only one application. Some of the most exciting features of this technology promise to bring about a revolution in how information registries are created and maintained.

Lack of reliable information continues to be a huge barrier for many developing countries. We have already seen how

identification loopholes can make a basic KYC procedure impossible. Land registries are another well known example. For example, most land in Sub-Saharan Africa is not formally registered, making it too risky to be used as a collateral for banks. If well implemented, registering land on the blockchain can provide undisputable evidence of land ownership and avoid land grabbing by corrupt officials.

### Further solutions to run a business...

Using the blockchain for international payments could be extended to include trade finance, given the large unmet demand for this type of finance in developing countries because of costs and perceived risks. Distributed ledger technology could reduce these risks and costs by providing a reliable system to exchange trade information (e.g. invoice, shipment, transfer of ownership data) giving all parties involved insight in the trade transaction. This would also increase speed, efficiency and security in financing. Risks like documentary fraud would be mitigated.

### Land meets blockchain

BitLand is a land registration project currently piloting in Ghana, where roughly 75% of land is unregistered. Given the numerous episodes of land appropriation by corrupt officials and the difficulty of creating a consolidated registration system, blockchain holds the promise to bring much needed transparency to this process. Although the project is still at its pilot phase it is estimated that the benefits of formalizing these records are in the order of billions of dollars.



### Relevant characteristics of distributed ledgers (the blockchain)

- It creates an overview of ownership of any kind of value (money, diamonds, financial products).
- It ensures that this overview cannot be tampered with or changed using cryptography.
- It ensures that everyone connected to the network can always see what the latest status is and who owns what.
- It removes the need for a third (central) party to confirm or clear transactions, i.e. transactions can be sent directly between two parties thereby speeding up processes.

<sup>1</sup> The technology underpinning the blockchain, i.e. a list of transactions that is shared among a number of computers, rather than being stored on a central server.



# FINANCIAL TECHNOLOGY

## ING FinTech business case

Providing MSME finance through SMS  
and web applications in Turkey

## FinTech example at ING Turkey (1/3)

# FinTech enables financial inclusion through SMS and web technology

### FinTech at ING Turkey

Three years ago, in 2013, ING Bank Turkey set upon itself the task to financially include unbankable small entrepreneurs. Within six months a business plan was developed and implemented in which FinTech played a crucial role. It allowed ING to implement new product channels through which clients can open a bank account or apply for a loan.

Since its inception in 2013 over 42,000 MSME clients have been issued for a total portfolio value of € 1,5 billion. Today the pace of loan disbursement has accelerated to an average of 100 loans a day.

### FinTech in which clients take the initiative

Entrepreneurs can – apart from the traditional bank branch channel - apply for financial products through:

- **SMS:** prospects or existing clients without a credit line send an SMS to ING number 2205 by typing SME followed by a space and their tax number. Using the tax number ING collects credit bureau data about the entrepreneur. Based on this information the application is rejected or further processed and a preapproved loan amount is calculated instantly. Within a few minutes the client is informed about the amount of the preapproved loan together with info on the required documents that should be taken to the bank to get the loan approved.

- **Web application:** entrepreneurs apply for a loan online by filling in a short form<sup>1</sup>. The banking process is the same as for the SMS channel. The client is informed about the pre-approved loan by email and/or SMS. Through the website they can choose and schedule a meeting at the bank branch to finalise the loan application.

### FinTech in which ING takes the initiative

FinTech also enables ING to proactively approach clients through:

- **Robo advice:** in this automatic process data from the front office and risk management is combined to actively approach new and existing clients to offer loans. Based on the tax number, credit bureau data and internal data, ING makes a proposal that includes a preapproved loan (overdraft or instalment loan), payments account, cheque book and/or credit card. It also suggests a bank branch to meet the entrepreneur for final approval and disbursement.
- **Tablet solution:** a mobile relationship manager (RM) visits entrepreneurs on location with a tablet app that uploads client data and documents on the spot. Within minutes the loan is approved or rejected. The RM can also give instant debit cards, open an account and collect a POS application.



<sup>1</sup> Web application form on

<https://www.ingbank.com.tr/tr/isiniz-icin/web-kobi-kredi-basvuru-formu>

## FinTech example at ING Turkey (2/3)

# FinTech channels are valued by new clients for their simplicity and speed

Up to date ING has served over 30,000 clients from micro-enterprises and over 12,000 SME clients. Typical loan sizes are around €11,750 for microenterprises and €146,000 for SME's. From analysing the loan portfolio, the following results stand out:

- The bank branch channel remains the dominant channel: 48% of loans to micro-enterprises and 97% to SMEs were initiated at a branch (left graph).
- The FinTech channels Robo advice and SMS are popular, especially among micro-enterprises.
- The Web and Tablet channels in contrast are hardly used in practice, both by micro-enterprises and SMEs. Although the Web was introduced only after the SMS

channel, we do not see a shift in client preference for the former. It seems that the interaction through a simple mobile device is highly valued by micro entrepreneurs. The streamlined nature of the SMS process was also at centre stage of the initial marketing campaign, which is a main reason why this remains the preferred digital channel. The tablet solution is still at its infant stage, so more time is needed to see how it will be received.

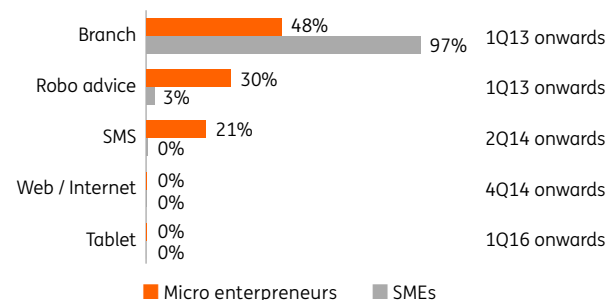
- Micro-enterprises are more open to use FinTech channels as 30% of their loans were issued through Robo advice and 21% through SMS. In contrast, 97% of SME loans are still issued at the branch. Currently the SMS and Robo advice FinTech channels have a credit line limit that is lower than

the one provided for customers interacting through the branch.

- While the different channels have the same pricing strategy on paper, in practice the FinTech channels are actively promoted by marketing campaigns which include special rates for limited periods of time. Given these promotions, we see that interest rates on the portfolio level differ. The Robo advice and SMS channel are promoted the most, causing interest rates on a portfolio level to be substantially lower. This is another reason why the SMS and Robo advice channel are the most popular FinTech channels.
- Almost all loans through FinTech channels are issued to new clients. Currently, there are about 2 million microenterprises of which 10% are currently served by ING Turkey. Given the high competition in the banking sector, FinTech is specifically geared towards attracting new clients and increasing market share. The promotion actions for the FinTech channels explicitly take into account this competitive banking environment.

### Micro-enterprises use more FinTech solutions instead of going to branch

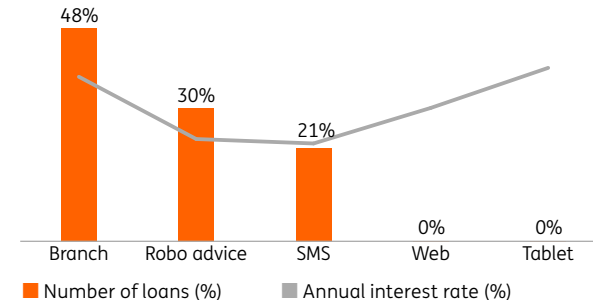
(% of loans offered through a channel)



Source: ING Bank Turkey. Micro-enterprises have yearly turnover of up to €700K. SMEs have yearly turnover ranging from €700K to €7 million. Numbers might not add up to 100 due to rounding.

### Marketing plays a role in average interest rates for FinTech channels

(micro-enterprises only)



Advertisement of the SMS channel on the website of ING Bank Turkey. Source: ING Bank Turkey.

## FinTech example at ING Turkey (3/3)

# FinTech channels attract less educated micro-entrepreneurs in comparison to branch channels

- Micro-entrepreneurs in general are less educated than SME-entrepreneurs. For example, 69% of micro-entrepreneurs have had no formal education in comparison to 27% for entrepreneurs in the SME-segment.
- Within the micro-segment there seems to be a clear difference in education level between clients that are served through the branch and FinTech channel as entrepreneurs that make use of FinTech are less educated than the ones that go to the branch. It seems that financial inclusion for poorly educated micro-entrepreneurs works better through FinTech channels in comparison to branch channels.

It could well be that the relationship banking model through bank branches poses implicit barriers for uneducated entrepreneurs that are less apparent in the FinTech channels. Knowing that a loan has already been digitally preapproved seems to provide an incentive to finalize the process at the local branch. It is also striking to see that the education level is not a barrier for the use of FinTech. On the one hand uneducated people are at least very well capable in using FinTech applications. At least in Turkey, a lack of education does not seem to create a digital divide. The fact that the procedure only requires a tax number and the word SME may be a reason for this and goes to show that digital processes need to be kept simple and streamlined.

On the other hand economic literature points to the fact that education is an important factor for making sound financial decisions. According to a survey from GFLEC, financial literacy scores in Turkey are lower than the global average. This could potentially be problematic in terms of risk management. Since we have no data on year to year profitability we cannot assess the impact on business performance.

However, FinTech is mainly employed for onboarding new clients at the preapproved loan stage. The final screening, approval and subsequent monitoring processes are still largely driven by the relationship banking model. Indeed, from the portfolio level non-performing loans and write offs

do not seem to differ substantially between the different channels.

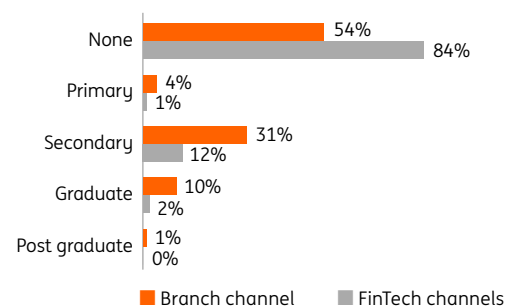
- Although we have not found a digital divide, the data clearly shows that a gender gap exists, as only 15% of microloans and 8% SME loans finance women-owned businesses. This points to a lack of empowerment for female entrepreneurs. As an indication, women only represent 32% of the working force in Turkey, according to the Turkish Labour Force Statics (TUIK). It is then not surprising that most finance requests come from male owned businesses.
- In order to support MSMEs owned by women ING Turkey is actively organizing education programs, such as the one held in Soma in cooperation with Kagider & Vodafone Turkey Foundation. This is the first ING sponsored education program to offer financial literacy skills to female entrepreneurs.

There is no difference in the use of FinTech channels in urban and rural areas. The same applies to the loan use as both loans issued at the branch or through FinTech channels are mainly used for working capital reasons (hardly any investment loans across the channels).

To conclude, despite the fact that these FinTech channels are relatively new and their full effect is not yet visible, this analysis suggests that FinTech definitely has its unique characteristics and that these can be quite different from the traditional banking channels.

### Clients through FinTech channels are less educated than clients from the branches

(% of clients among micro-enterprises)



Source: ING Bank Turkey.

Numbers might not add up to 100 due to rounding.





# FinTech challenges

Time for some realism in the current FinTech debate

## Challenges

# FinTech has most potential through the internet, but internet coverage is not likely to pick up fast...

### Introduction

While this report clearly lays out the micro and macro economic benefits that FinTech can bring to MSMEs, in practice there are a great deal of challenges that can prevent its implementation. This section of the report examines these challenges. We feel this is needed, as FinTech discussions so easily tend to get hype characteristics. Addressing these key elements should get high priority, since the success of financial inclusion through FinTech largely depends on overcoming these challenges.

### Mobile coverage and feature phones...

Of the 6.2 billion people living in developing countries, already 88% have mobile network coverage. Over half of the people have a mobile phone subscription (57% or 3.5 billion). One must not forget that these mobile phones are in fact feature phones that do not come close to supporting smartphone enabled FinTech solutions such as those we are used to in developed countries. The real potential from FinTech comes from internet and app based solutions. Unfortunately internet coverage and usage is still very low among the poor. In the end it is internet rather than mobile communications that opens up the full FinTech potential.

### ...won't bring the poor the full FinTech potential

Unfortunately, poor internet infrastructure is not likely to improve soon, especially not in rural and remote areas. There are some potential disruptive technologies being developed such as balloon-powered internet. With this technology a network of balloons designed to extend internet connectivity

to people in rural and remote areas worldwide travel on the edge of space. Aside from the technical challenge, ICT infrastructure is not likely to increase swiftly in countries ridden by violence, conflict and political instability. Building a supportive FinTech infrastructure requires long-term investment policies and close cooperation between governments, electricity providers and telco's.

The list with examples from developing countries where this have been difficult or impossible is, unfortunately, rather long.

### Will this be a reality soon in all remote areas?



Source: Project Loon supported by Google aims to bring internet connectivity to remote places.

## Challenges

# ...and smartphones are still very expensive

### Smart phones may hold the key to financial inclusion, however they are too expensive for many...

While the common feature phones used by most people in developing countries are usually sufficient to support basic mobile wallets and digital payment solutions, smartphones are the way forward in the FinTech world.

Smartphones open up a whole range of new FinTech applications such as identification, app based credit scoring and business monitoring. While the price of smartphones has come down in the developing world as cheaper alternatives come on the market, they are still way too expensive for most at the bottom of the pyramid. For example, in developing countries the costs of an average smartphone are in the range of 5% to 10% of an average yearly income. For many this is simply too expensive. In comparison, it takes 'only' around 1% of an average income to buy a smartphone in developed countries.

### ...which provides the rationale for government support

This report clearly shows that FinTech provides many micro and macro economic benefits and holds great potential for financial and digital inclusion. As such smart phones are not solely a luxury good for the poor. They are a necessity as well.

Just as we all need food, energy, shelter and clothes to survive, poorer people need smartphones to reap the benefits of full digital financial inclusion. Governments should take this into account in their policies. For example by not taxing smartphones as a luxury good, but at reduced



tax rates as for many necessity goods. One could also think of large scale programs for MSMEs to roll out smartphone use coupled with financial inclusion. These could be backed by governments, telco's, development banks and impact investors that want to facilitate the implementation of FinTech among MSMEs.

## Challenges

# Don't be surprised if competition laws and consumer protection will determine the course of FinTech

### Will privacy concerns limit FinTech led financial inclusion?

A country's regulatory framework and consumer protection regulation will ultimately influence how FinTech driven financial inclusion will develop. Despite the potential benefits from and optimism with alternative credit scoring models that use social media data, Facebook has recently announced the shutdown of its pilot on credit scoring. This was a direct response following concerns from consumers and legislators in the US about data privacy.

While this certainly is a major setback for the implementation of this technology, it does not necessarily mark the end of social media credit scoring. Whereas people in more developed countries might be most concerned with privacy issues, this technology is likely to be welcomed in countries where financial inclusion is a far more pressing issue. Millions of people might be happy to have their social media use analysed if this can give them access to basic financial services. This is potentially an advantage for regulators operating in countries where credit scoring systems are not developed, or provide poor credit data.

### Or concerns about (a lack of) competition?

A country's FinTech market will likely to be dominated by a few large players in the long run. We have seen this happen with other technology companies like Microsoft, Google, Apple, Nokia, Samsung, iDEAL, PayPal, Ebay et cetera. M-Pesa in Kenya provides a point in case for FinTech in developing countries.

From an economic point of view, the appearance of natural monopolies make sense as network synergies and economies of scale can be realized. However, once these natural monopolies are in place they might limit competition and earn economic rents at the cost of the consumer. Regulators are likely to step in sooner or later.

# Colophon

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## Literature overview

African Development Bank: Credit Bureaus and Registries and Access to Finance: New Evidence from 42 African Countries, 2012.  
 CGAP: Microcredit interest rates and their determinants 2004-2011, 2013.  
 Chishti & Barberis: The FinTechBook, 2016.  
 Harvard Business Review: The pace of technology adoption is speeding up, 2013,  
 ING: A Billion to Gain? Social impact of microfinance in India and Ghana, 2014.  
 ING: A Billion to Gain? Microfinance clients are not cut from the same cloth, 2015.  
 International Finance Corporation (IFC/World Bank): Closing the credit gap for formal and informal MSMEs, 2013.  
 International Finance Corporation (IFC/World Bank): MSME Country Indicators - Towards a Better Understanding of Micro, Small, and Medium Enterprises, 2014.  
 McKinsey: MSMEs in emerging markets, how banks can grasp a \$350 billion opportunity, 2012.  
 McKinsey: Digital Finance for all: powering inclusive growth in emerging countries, 2016.  
 KPCB: Internet trends report, 2016.  
 WTO: Trade finance and SMEs, Bridging the gaps in provision, 2016.  
 World Bank: Digital dividend, World Development Report, 2016.  
 World Economic Forum: The Future of FinTech, a paradigm shift in small business finance, 2015.  
 World Bank: Psychometrics as a tool to improve screening and access to credit, 2015.  
 World Bank/World Economic Forum: Innovation in Electronic Payment Adoption - the case of small retailers, 2016.  
 World Bank: Shadow economies all over the world, 2010.

## Experts interviewed

EFL	Alan Martinez
	Jarad Miller
Lendahand	Peter Heijen
	Tobias Grinwis
Musoni	Cameron Goldie-Scot
ING	Erik Tak
	Benoît Legrand
	Andreas Winters
	Alessio Tagini
MicroSave	Manoj Sharma
Oikocredit	Vincent van Dugteren
BitPesa	Charlene Chen
Dutch Ministry of Domestic Affairs	Jasper Mutsaers

## Abbreviations

MSMEs	Micro, small and medium sized enterprises
FinTech	Financial Technology

## Photography

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