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Outline

- 1 | Introduction p.1
- 2 | Financing SME innovation: why is it an issue? p.2
- 3 | Understanding financing for innovation: what extra (financial) risks are involved and why public intervention is needed p.3
- 4 | Promoting Financial Markets to Support Innovation p.3
- 5 | Non-Traditional Financing Options: Crowdfunding in Africa p.5
- 6 | Creating a Seed-Stage Capital Ecosystem – Business Angel in Africa p.6
- 7 | Conclusions p.7

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Steve Kayizzi-Mugerwa
Ag. Chief Economist & Vice President (ECON)
s.kayizzi-mugerwa@afdb.org
+216 7110 2064

Charles Leyeka Lufumpa
Director
Statistics Department (ESTA)
c.lufumpa@afdb.org
+216 7110 2175

Abebe Shimeles
Ag. Director, Development Research Department (EDRE)
a.shimeles@afdb.org
+225 2026 2420

Bernadette Kamgnia
Ag. Director, African Development Institute (EADI)
b.kamgnia@afdb.org
+225 2026 2109

Adeleke Salami
Coordinator, Development Research Department (EDRE)
a.salami@afdb.org
+225 2026 2551

Financing for innovation: what can be done for African SMEs?

Yannis Arvanitis¹

Summary

Financing SMEs is a challenge all around the globe. In Africa, this challenge is compounded by several deep-rooted issues which pertain both to the environment in which firms are working, as well as to the lack of breadth and depth of financial markets. When it comes to financing innovative firms, these issues are even more acute given the perceived risks they carry. On the firm's side, many are unable to find adequate ways of promoting and presenting their innovative projects to obtain financing. On the financial infrastructure side, more than average caution is exercised by financiers which face many uncertainties and market failures that prevent them from engaging in financing. The paper reviews the theory underpinning such issues in the context of innovative firms and puts forward novel ways to address them, including SME exchanges, crowdfunding, the role of development partners and business angels.

1 | Introduction

Amongst other things, economic growth relies on productivity enhancing innovation which transforms economic structures². For this to happen, innovation should be promoted and supported in the most effective ways. In this context, the definition of innovation is crucial. Broadly, it can be understood as the application of better or improved solutions to meet either new requirements or existing needs. It can take shape as "low" innovation, i.e. advances in transitional sectors which raise

productivity, help integrate industries and firms into higher value chains and transform economies by creating wealth. It can also be seen as "high innovation", i.e. break-through in technology and capital intensive sectors.

In the African context, whether in the low or high innovation streams, firms face many obstacles when it comes to gathering the financing they need. There are several reasons for this, which for instance include low expected returns stemming from the

¹ Principal Economist, African Development Bank, West Africa Department; E-mail: y.arvanitis@afdb.org. The author is grateful to the AfDB's former President Babacar N'Diaye for the insightful discussions, to Ralf Kruger, John Anyanwu and Maxime Weigert for their peer reviews, and Thouraya Triki and Emanuele Santi for their assistance with data/information.

² Along the lines of Schumpeterian growth theory.

inability to capture profits from an invention, or uncertainty linked to the innovation. While these hold mostly true for “high innovation” firms across the globe, the African problem is more acute it also presents bottlenecks related to inadequate structure of financial markets, scares public financing, lack of track record for firms, absence of venture capital firms, shallow equity markets and so forth.

Stylised facts about the African continent highlight the breadth and depth of the issue. According to the World Bank’s Doing Business Report 2014, challenges in African captured in the Access to credit category remain severe in spite of some recent reforms in some countries. The Banking sector does not offer adequate products as its lending is concentrated on given sectors, is characterised by high spreads, short tenure and general risk aversion. This leads to odd situations where banking systems are characterised by levels of high liquidity, but little lending to SMEs (Pougues & Bernasconi 2013). Similarly, equity financing is falling short as exemplified by the relatively low private equity penetration in Africa: in 2014, the ratio of private equity investments to GDP across sub-Saharan Africa stood at a meagre 0.12%, compared to 0.21% for South Africa, 0.81% in the UK and 1.23% in the USA (KPMG 2015).

With these facts in mind, the remainder of this paper is structured as follows: Section 2 will lay out the changing economic paradigms leading to the importance of financing innovation in Africa. Section 3 will delve into a few caveats and characteristics of finance in innovation. These are practical and theoretical underpinnings of finance in the specific context of innovative firms which differ from typical investments. Sections 4 to 6 will discuss three novel ways in which innovative firms can be supported on the continent: SME exchanges, crowdfunding and business angels. Section 7 will conclude.

2 | Financing SME innovation: why is it an issue?

Up until the end of the 1990s, innovation was led by large firms which enjoyed important structural advantages compared to SMEs, such as economies of scale. As a consequence, SMEs were not seen as potentially innovative from a public policy perspective. In Africa, the proliferation of large industries in the post-colonial period with a focus on production capacity as opposed to efficiency and innovation had left SMEs to the side. For small firms, their failures and constraints were not

necessarily linked to their innovative stances, but rather to the typical causes plaguing any small firm. Their lack of management experience and functional skills makes them risk-prone and in turn leads to financing constraints.

However, technological change and increase globalisation have put an end to this approach. The Silicon Valley business model, which took off in the mid-1990s with the advent of the internet played a role in putting forth SMEs as potential innovators. More recently, new trends for social entrepreneurship have “given rise to a more entrepreneurial economy as opposed to a managed economy of the past” (OECD 2010:16).

In Africa, these changes are increasingly being felt and the demand for innovation financing has grown. By way of example, two areas in knowledge and innovation which may impact the future shape of the continent’s economy and structural transformation have helped reduce growth constraints form SMEs and opened new markets³. The first is the impressive rise in the adoption of mobile telephony in the continent. This had allowed for innovative solutions to emerge and contribute to economic growth and well-being, ranging from cashless payments, real-time price information for agricultural smallholders (thus allowing them to make better economic decisions) to up-to-date information on pre- and post-natal care services. The second is the narrowing of the digital divide through education. While there are large differences in between African countries and the rest of the world, much progress has been made. Noted improvements along these lines is only bound to boost people’s productivity, ability to innovate, and contribution to the transformation of the economy (Kayizzi-Mugerwa 2014).

Empirical research in Africa tends to suggest that SMEs are innovative and can have a contribution to growth. As the link between innovation and growth has been established⁴, it is important to note that empirically, SMEs make an important contribution. While do not seem particularly more innovative vs. large firms, they are more present in breakthrough innovation (OECD 2010). In the African continent, Booyens (2011) suggests in a study of South Africa that the innovation rate of SMEs is relatively high, with small enterprises being the most innovative. In Nigeria, Adedamola et al (2015) argue that investments in equipment increases the likelihood of product innovation. In this regard, making finance available to SMEs for investment is key, even in the case of “low” innovation set-ups.

³ These areas are developed in Steve Kayizzi-Mugerwa’s blogpost “Knowledge and Innovation for Africa’s Structural Transformation” <http://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/knowledge-and-innovation-for-africas-structural-transformation-13691/> {05/12/2014}.

⁴ In endogenous growth models knowledge (and innovation) play an important role. The spillover effects of knowledge have been put forth by Arrow (1962) and Romer (1990) amongst others.

3 | Understanding financing for innovation: what extra (financial) risks are involved and why public intervention is needed

Theory highlights the need for finance-friendly regulatory frameworks. Financing “high” innovation firms becomes difficult to the extent that the nature of the financing is subject to an important market failure: early works on the issue (Schumpeter, 1942; Arrow 1962) highlight the fact that knowledge is to a large extent considered as “non-rival”. In essence, this means that its use by a given firm does not preclude another to use it as well. The implication is that returns on an investment in a technologically innovative firm may not be deemed appropriate enough for the firm to engage in these activities in the first place. Against this background it is paramount that African countries endow themselves with strong regulatory frameworks which can guarantee a form of protection and thus returns which are commensurate with risks.

Innovative investments are characterized by more than the usual risks encountered in financing SMEs. In order to consider financing options, it is important to understand the risks at stake. Beyond the typical credit risks evaluated ahead of an investment decision, there are additional ones in the case of innovative firms. First, research shows that over 50% of a typical investment in an innovative firm (this mostly holds for “high innovation” firms) is spent on salaries and wages of scientists and engineers (Hall 2005). This implies a “key person” risks to the extent that if such scientists and engineers leave the firm, the costs of replacement are often too high. This is particularly the case in start-ups, and presents a key distinction with large firms which have better means to retain talent. Another risk is that related to uncertainty of output, or “technology risk”. Contrary to an investment with known and used technology, the application of new techniques, or the research leading to new ones, embodies risks related to the success of final output.

While external finance is crucial, its provision may be expensive in the light of market failures which are exacerbated by technology risks. There generally tends to be a pricing gap between the provision of external finance and internal finance (e.g. under the form of retained earnings) (Hall, 2005 and 1992; Himmelberg and Petersen, 1994). Such differences can be explained by an asymmetry of information between the investor and the innovator, simply because the latter has better information about the potential success of the project than the former. As investors may have issues in distinguishing

the “bad” from the “good” projects, they will apply a conservative pricing all across (Hall 2010).

Financing in innovative firms has a case for public intervention. Innovation per se has both a private and a public benefit. With regards to the former, firms can get a return as they commercialise innovation. With regards to the latter, technological advances get diffused at wide and even in the case where innovations are not ground breaking (i.e. in the case of “low” innovations), successful firms not only contribute to the economy, but also have positive demonstration effects. Consequently, the positive externalities deriving from innovation can form the basis of public intervention. Beyond the public aspects of innovation, the African market and financial infrastructure as it stands is plagued by market failures which call for some sort of government intervention: first mover externalities for firms as previously mentioned, information asymmetries and moral hazard to name a few. Ultimately, in financing innovation there is a risk that someone has to internalise: the question of whom tends to point towards public institutions as well as Development Finance Institutions (DFIs).

Public intervention should however not only be about fixing market failures: recent thinking on the issue suggests that governments should also create markets (Mazzucato 2013). In spite of corporate mythologies surrounding innovative breakthroughs, it is often the case that high innovating firms directly benefit from the spill overs of publicly funded R&D⁵. In the African context, considering the difficult budget trade-offs that governments have to make, launching large-scale public R&D programmes becomes difficult. However, engaging into what is essentially a partnership between the public and the private sector by supporting innovation funding for local firms appears as a way to spur economic growth while at the same time betting on innovation. This is all the more important to the extent that governments can have longer financing horizons, while innovative entrepreneurs are bound to make quick returns to keep the business alive.

4 | Promoting Financial Markets to Support Innovation

Strong financial markets are a prerequisite for innovation on the continent. However, while from a firms’ perspective Banks offer inadequate products (with high spreads, large collateral requirements, short tenors etc.), equity markets remain

⁵ As argued by Mazzucato (2013), high technology items such as smartphones are an assemblage of technologies developed by government sponsored R&D programmes.

underdeveloped with only a low number of investors. Stock markets are limited in size and liquidity which can largely be explained by the lack of market culture, high listing costs, and ineffective investor protection.

SME exchanges have had a mixed performance – raising fears of control and transparency on the demand side and unattractive valuations on the supply side. When it comes to SMEs, some attempts have been made to establish dedicated exchanges in the hope to stimulate access to finance. In South Africa, the Altex exchange has been set-up, while Egypt launched the Nilex. Initially, such endeavours met some resistance as it was believed that they would divert liquidity from the main market, as well as offer opportunities for price manipulation given the small tickets involved. Yet, even as these fears faded, fears of control and transparency on the demand side and unattractive valuations on the supply side took over (box 1) (Beck et al. 2011).

For innovation-gearred firms, the downside of SME exchanges is that benefits may take time to materialise, in particular as listing procedures may be lengthy. For firms in need of seed capital, or at least a critical mass of funding in order to develop innovative projects, they are not suitable. The upside however is that to the extent that the firm's innovative undertakings may appear profitable, they offer a gateway to potentially large sources of capital to deepen R&D. This can be particularly important for firms with initially low capital requirements (e.g. for the development of a mobile phone application), but whose valuation may increase depending on initial success.

Box 1 SME Exchange in Egypt: the case of Nilex

Nilex is an exchange launched by the Egyptian government in 2007 to offer funding to SMEs. Nilex was initiated in order to attract promising and innovative firms that cannot comply with the strict listing rules of the main exchange, by offering relaxed listing rules with some conditions.

Within 6 months of trading, 16 companies were listed on the market and 4 were close to IPOs. On average, the listing process takes 2 months.

In spite of relaxed listing rules and shorter preparation periods, companies have not been very keen to list for several reasons: first, potential firms tended to fear a loss of control and subsequently having to comply with enhanced disclosure requirements. Second, they tend to lack understanding of listing benefits and the need to pay any listing fees.

Source: Beck et al. 2011; AfDB.

Against this background, public entities, and in particular DFIs have a role to play: first, by assisting with the provision of technical assistance to back the restructuring of firms and help them comply with listing rules. In North Africa, the EBRD is deploying a donor funding-programme known as the Business Advisory Service (BAS) programme to assist firms in enhancing their profile (EBRD website).

Using such schemes at the margins of SME exchanges to help them list could provide positive demonstration effects. Second, DFIs could develop networks of private equity funds and venture capitalists which can use such exchanges as exit strategies. Finally, they can provide schemes to sponsor listing fees.

For innovative firms, private equity and venture capitalist funds can provide an important source of funding. Empirical research suggests that private equity accelerate the development of research-based technologies (Link et al. 2012), and that, in contrast to the idea that private equity funds may see short-term profits at the expense of investment opportunities with longer-term pay-offs (thus in line with R&D and innovation activities), private equity investments have a positive impact (Amess et al. 2015). In Africa, the interest of private equity funds has been documented as mapping that of a new emerging generation of innovative entrepreneurs (Pougues and Bernasconi 2013).

The development of private equity funds is challenged by a number of regulatory and behavioural issues. In the first place, the involvement of private equity funds in the continent is to some extent a function of their youth: most are first time funds with no institutional track record, and which tend to be very much tied to perceptions of high political risk⁶. In addition and as explored in Beck et al. (2011), there are other Africa specific issues to be considered such as domestic regulatory constraints: in some countries in the continent (e.g. Morocco), insurance companies are not allowed to use their regulated reserves to invest in private equity or venture capital funds. In a similar vein, in Tunisia, private equity firms do not have full choice of investment destination as at least 50% of their investments must be in priority sectors or specific geographic zones. In other countries, such as Algeria, limitations on foreign investments do not allow non-African funds to contribute. Lastly, the issue of illiquid stock exchanges limits the range of exit options (Beck et al. 2011).

The engineering of financial markets must be seen as a whole and changes should not follow a piecemeal approach as evidence on the ground suggests that all aspects of financial markets are inter-related. Financial market infrastructure reforms

⁶ Surveys from EMPEA highlight political risk as one of the main factors deterring funds from investing in Africa.

Box 2 Opportunities, pitfalls and constraints with venture capital

The core advantage of venture capital (VC) is that it provides equity rather than a loan, meaning that no interest payments have to be made and no collateral is needed in the first place. They however require financial literacy and patience. As VC investors share the risks, the contracts they tend to enforce are drafted to ensure payoff, or at least some sort of security. They thus tend to be hybrid, tending to look like loans when the company performs poorly (as the VC can take control of the firm), and more like equity when the company performs well (leaving owners in place and deriving return from capital gains). Considering that R&D does not deliver instantly, it takes patience not to fall into the first case. One issue with VC is that it is difficult for them to properly appraise innovation projects. Going further, VCs are also constrained by the relative underdevelopment of exchanges which could offer a viable exit strategy. Last but not least, they also face constraints on the financing side as pension funds, which tend to be their biggest backers, are either not large enough or too regulated to support the industry to their fullest potential.

Source: Wolf 2007.

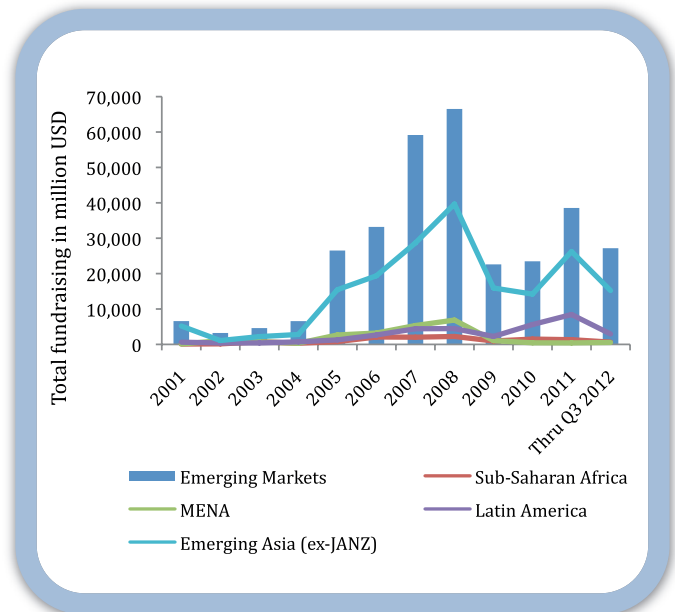
should not only look at how to the firm closer to capital providers has hinted upon in the previous section. It should also look at how it can be ensured that investors into firms are able to find the right incentives (e.g. through exits) to create value and growth. Indeed, evidence suggests that for instance venture capital finance works best when stock exchanges are active and efficient so as to allow for exits (Black and Gilson 1998; Rajan and Zingales 2001).

5 | Non-Traditional Financing Options: Crowdfunding in Africa

Crowdfunding, or the collecting pulling of small resources (usually online) to finance projects, is emerging as a financing model for innovative firms worldwide but Africa lags behind. Between 2011 and 2012, the crowdfunding model saw an 91% growth worldwide to reach USD 2.8 billion (Econsultancy 2012). There are by-and-large two approaches to the model: Equity and lending-based crowdfunding where returns are expected as per typical investments, and donation and reward-based crowdfunding which are mostly used for cause-based campaigns. Africa however only hosts less than 1% of total crowdsourcing platforms, and about 0.5% of total crowdfunding campaigns worldwide (Econsultancy 2012).

The model can draw on idle funding present on the continent. Similar to pension funds having cash and not being able to invest it in private equity, individuals in Africa (and the diaspora) may have funds which could be tapped through

Figure 1 Total private equity fund fundraising 2001-2012



Source: EMPEA statistics.

crowdfunding. The first step in doing so has to do with access to crowdfunding and information. Schemes could be put in place to increase information on the model. Pioneer TV programmes in the US are shown to educate startup firms on how to go about successful crowdfunding and build vertical business-to-business crowdfunding platforms. Adopting a similar approach in Africa using funding from relevant public agencies can also be used to inform potential investors and teach them how to invest in crowdfunding equity investment opportunities. Other structures can be elaborated, including for instance the creation of economic development centres around communities where pooled funding can be harnessed. The underlying rationale of such a scheme is that investing as a crowd will make it easier to scrutinize deals for the social good of the community. Matching schemes with public funds can also be envisaged in order to accompany growth in the sector.

Crowdfunding is particularly attractive for innovation-g geared firms. The first reason lies in the motivation of funders to invest into projects: decisions pertain to a large extent to the social interactions realized through the involvement, which include potential constructive feedback on projects for investees, and the closeness of investors to a community sharing similar aspirations and interests (Gerber et al. 2012). Secondly, according to the World Bank (2013), crowdfunding rests up other innovations which helped shape enterprises in the developed world. In this manner, innovative initiatives “leapfrogged the developed world – that is, they installed a newer or better model than existed in the developed world.” (World Bank 2013:32).

However, the model's growth should first target current potential investors and be accompanied with adequate oversight. While it is true that low internet connectivity as well as the share of people with credit facilities (bank accounts and credit cards) are constraints to the sector's growth, it should be born in mind that, (i) not everyone is an investor and (ii) not everyone should invest in enterprises as a household's saving levels would rather justify immediate investments in education for instance. The question is more about how to reach those that can invest already but are not educated to do so in the first place. Unlocking the current untapped potential should be the first step as it can have demonstration effects. What is more, regulators should ensure to have oversight over the sector to accompany it through a safe growth.

Beyond crowdfunding, there are also other promising initiatives involving public-private partnerships. Just as crowdfunding can benefit from matching public grants as proposed above, there are other initiatives which are being tested on the continent, such as the AfDB's "souk-at-tanmia" initiative in Tunisia (box 3). The idea of using public money to overcome some market failures as described in section 3 to this note has taken hold and is being used in order to leverage on existing

Box 3 The AfDB's "Souk-at-tanmia" initiative in Tunisia

In the aftermath of Tunisia's revolution, the African Development Bank, created Souk At-Tanmia ("a market for development"), a unique initiative mobilizing over 20 international and national partners, (including civil society, local banks, international and local private sector, UN agencies and bilateral donors) to support youth and social entrepreneurship and innovation.

Launched in mid-2012, the scheme identified and started supporting 71 ventures selected on the basis of a set of criteria amongst which: (i) estimated number of jobs created, (ii) feasibility, (iii) sustainability, (iv) innovation, (v) geographic distribution and (vi) reproducibility. The initiative is supporting them by providing start up-capital grants and facilitating access to additional funding through local banks through the use of seed grants as leverage for additional funding from the banking sector. In addition, it provides a complete mentoring and training program including personalized coaching provided by the partners based on their respective sectorial expertise.

Starting with EUR 1 million raised by the Bank through donations from partners, it enabled the beneficiaries to triple their investment by raising additional funding. Though the initiative, the Bank acts as a powerful catalyst of additional resources and a convener of all key players of the country's so-called "entrepreneurship eco-system", encouraging a complementarity between private and public sector in support of innovation. It is also empowering youth and their ideas and promoting a new culture of entrepreneurship.

Source: Santi and Ricaldi (2012).

private sector tools. This is particularly interesting for innovative firms to the extent that (i) competition for funding fosters innovation, and (ii) grants ultimately internalise part of the innovation-related risks.

6 | Creating a Seed-Stage Capital Ecosystem – Business Angel in Africa

Debunking the negative bias against investments in SMEs required education and information. In a typical set-up, a financier would shy away from SMEs to the extent that he/she does not necessarily have the right amount of information to assess the investment. In Niger, with the help of EU funding, the SAHFI/TANYO partnership was created to tackle that issue. While SAHFI (Société Sahélienne de Financement) provides consulting services to ensure that SME business have business models which are informative enough for an investment decision, TANYO provides a 50% guarantee on loans to bridge the collateral gap that start-ups may face (Sahfi website). The bottom line is that on the demand side, firms need to be better educated about how to present information, while on the supply side investors and banks need to be able to take informed risks. This is particularly important for innovative firms (especially in "high" innovation streams) as technology risks are involved and may not be well understood by all parties.

Schemes such as the SAHFI/TANYO or others such as the AngelAfricaList platform may be different in their set-up, but their success can lead to the creation of a bold entrepreneurship culture. Recently, ECOWAS has been looking closer at the SAHFI/TANYO set-up to explore opportunities for replication. The diffusion of these models is essential for seed finance to take hold.

Out-of-Africa experiences have shown that pooled financing can be a way forward for initial equity investments. In many countries, funds have been set-up in order to provide initial equity investments in SMEs alongside syndicates of business angels. In the UK for instance, the "Business Angel Co-Investment Fund" has been designed and established by a consortium of private and public bodies with expertise in business angel investment. Africa's angels and patrons could look towards similar partnerships going forward. Similarly, DFIs could engage in the same route, by taking for instance initiatives such as the "Souk-at-tanmia" (box 3) into partnerships with syndicates of business angels. The creation of such Seed-Stage capital schemes could be made easier in SME/industry clusters. This can be particularly beneficial as geographical and industry clusters are conducive to the creation of start-ups, and tend to diffuse innovation faster (Baptista 2000).

7 | Conclusions

Financing innovative small and medium sized firms all around the globe is a challenge. In Africa, this challenge becomes increasingly pressing as demand by innovative SMEs is on the rise. Yet for African SMEs, financing challenges are compounded by several issues that have both supply and demand roots. On the demand side, many firms are unable to find adequate ways to promote their projects and obtain financing. On the supply side, beyond the generalised lack of breadth and depth of financial markets, financiers face many uncertainties and market failures that prevent them from engaging in financing. With this in mind, some ways forward can be recommended:

- **Financing innovation requires public intervention.** The present paper highlighted that SME financing in Africa suffers from many market failures. The first take-way is therefore that there is a case for public intervention. Such intervention can be in the form of subsidies or innovation-friendly regulation.
- **Financing innovation requires leveraging on new initiatives.** Whether it is crowdfunding, business angels or public-private partnerships, every new initiative that garners momentum should be carefully evaluated and leveraged. In this respect, development finance institutions can have a role to play, whether as financiers or knowledge brokers.
- **Financing innovation requires thinking along the financing chain.** One should not focus only on seed capital, but make sure that the accompanying structures are built to carry the firms throughout its growth: seed capital is needed to kick start, venture capital to grow, exchanges to take-off. These cannot be seen in isolation from a policy perspective.
- **Financing innovation does not necessarily mean putting all resources into high-tech firms.** Issues laid out in this note are valid both for “low” and “high” innovation firms, with the former accounting for the bulk of SMEs on the continent. Both are crucial in the economic transformation of Africa.

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