

# MIT Lab for Innovation Science and Policy

**WORKING PAPER**

## Differentiating Small Enterprises in the Innovation Economy:

**Start-ups, new SMEs & other Growth Ventures**

**Dr. Phil Budden**  
MIT Sloan School of Management

**Prof. Fiona Murray**  
MIT Sloan School of Management  
MIT Innovation Initiative

**Ogbogu Ukuku**  
Joint MBA/IDM Candidate  
MIT Sloan School of Management

**JANUARY 2021**

# Differentiating Small Enterprises in the Innovation Economy: Start-ups, new SMEs & other Growth Ventures

Dr. Phil Budden  
MIT Sloan School of Management

Prof. Fiona Murray  
MIT Sloan School of Management  
MIT Innovation Initiative

Ogbogu Ukuku  
Joint MBA/IDM Candidate<sup>1</sup>  
MIT Sloan School of Management

Working Paper

January 2021

---

<sup>1</sup> For Masters of Business Administration (MBA) and Integrated Design & Management (IDM) degrees.

## Differentiating Small Enterprises in the Innovation Economy:

### Start-ups, new SMEs & other Growth Ventures

#### Executive Summary

In today's innovation economy, small enterprises play a range of vital roles. As plans emerge to 're-build' after the COVID-19 crisis and economic lockdowns, it is important to distinguish among these different types of small enterprises, and to assess how the recession has impacted them. As we saw in the 2010s, the recovery after the 'great recession' was not evenly distributed, resulting in inequitable economic, social and healthcare outcomes. For the coming recovery, and the hope to 'build back better' this time, a fuller understanding of the range of small enterprises, their importance and needs, might help avoid some of the challenges that emerged last time.

To that end, we offer this Working Paper, both as a review of some approaches to small businesses over the last decade – especially of the focus on start-ups and on definitions of small and medium-sized enterprises (SMEs) – but also with a proposed new framework with a broader range, so that business support and ecosystem policies are optimised for the variety of small enterprises in the innovation economy of the 2020s. The precise mix of businesses will of course vary by country, region and community, but we hope this Paper will be a contribution that helps those with an interest in assessing their current mix, and in planning for a desired diversity, of such small enterprises, in the interests of 'building back' a more inclusive economic recovery.

In summary, this Paper concludes that static and binary definitions of SMEs and start-ups do not capture the diversity of small enterprises, and so will not be the best guide for policies and programmes in the recovery. In adding greater dynamism, it is important to note that the 'start-up' moment is only a short phase in the life of many businesses: after that, enterprises can go in many different directions – some stay small by design, others grow slowly (into traditional SMEs), whereas high-tech start-ups (which MIT calls 'innovation-driven enterprises', IDEs) can scale quickly and bring, for those that succeed, benefits that are both local and international.

A more dynamic framework recognizes these different business aspirations and trajectories – even at the start-up moment – and encourages different policies and programmes for the diverse enterprises. Instead of static definitions (by number of employees, or revenue growth), a more dynamic measure – such as productivity (for firms or regions) – might encourage SMEs that get beyond the 'micro' stage to develop greater aspirations for growth, even if they do not try to replicate the velocity of digitally-focused start-ups. Importantly, the latter are not the only type of high-tech IDEs: there is also a 'deep tech' variety which requires different support, but promises societal benefits across a number of important areas, from cleantech energy to biotech's vaccines.

In line with our MIT ecosystem approach to innovation, the Paper outlines the connections among start-ups, SMEs and the types of IDEs in a particular locality: as such, we draw on and build upon the work of colleagues at MIT, as referenced below. While IDEs might not directly employ as many people as all the SMEs, they can bring benefits to an innovation ecosystem, by creating demand for SME services, sometimes connecting up SMEs in that economy, and also by bringing best practices (eg digital adoption) or new talent into the local ecosystem.

As such, those with an interest in inclusive innovation will wish to make sure their local ecosystem encourages a diversity of enterprise types and entrepreneurs, so that all have a better chance of fulfilling their potential in the recovery that follows this Covid-induced recession – not least to avoid some of the inequities of the 2010s.

## INTRODUCTION

COVID-19 has created a significant global health/care emergency, and the resulting social and economic crisis has already impacted communities, businesses and employment around the world. Headlines are full of stories of companies, large and small, new and established, having to lay-off employees while governments are struggling to find the best ways to target business support. With the start of 2021 and mass vaccination, it will soon be time to review the damage caused, and to adapt policies and programmes to ‘build back better’ in the ensuing recovery. This will be true for smaller enterprises, especially in the innovation economy, whether they be new start-ups or established small and medium-sized enterprises (SMEs).

From Silicon Valley and Boston, to Tel Aviv and Singapore, it is often assumed that small and new enterprises might be better equipped and more resilient in facing the sudden change in the business landscape. And yet about 4 in 10 start-ups surveyed globally face significant capital pressures: many had only 3 months of ‘runway’ before they faced closure, according to a study by the Startup Genome.<sup>2</sup> Many companies have had to take the difficult step of laying off full-time staff, as 74% of start-ups revealed that they have had to make labor cuts: half of them cut staff by 20%. For those seeking equity capital, we have seen venture investing activity drop significantly since January 2020, with companies founded by women and minorities especially hard hit.

Looking across the globe, however, and well beyond enterprises in the iconic innovation ecosystems, we find that some of the most pressing challenges are facing traditional ‘main/high street’ enterprises; small businesses and sole proprietorships which form the backbone of so many regional economies. Negative impacts on their cashflow and operational shifts to comply with public health requirements, not to mention personal challenges, have left many owners with no choice but to close their business altogether. The millions of small businesses that have closed raise significant concerns about the long-term implications of this pandemic on the global economy and the differential burden this has placed on struggling communities and minority entrepreneurs.<sup>3</sup>

For policy makers, and those that encourage businesses locally, this raises the question of how to support the many different types of entrepreneurs to most effectively start, maintain, and grow their enterprises, not only through this challenging period, but over the long run, as we move from a time of crisis into a time of recovery and growth.

The crisis of SARS-COV-2 shone a bright light on the fragmentation of governments’ business and enterprise support (i.e. the range of policies and programmes delivered by the governments directly), as well as support from not-for-profits and other organisations, for enterprises along the spectrum of size, productivity, aspiration, potential and age. It reminds us of the pressing need to more effectively structure and deliver support in a way that accounts for the static and dynamic natures of enterprises large and small.

A key challenge for governments and other ecosystem stakeholders around the world - at a local, regional or national level – will be to determine how best to support these varied businesses and enterprises for long-term economic growth. As the recession gives way to recovery, different regions and ecosystems will find that not all pre-existing businesses survived, but hopefully some new enterprises have been (or might soon be) founded, leading to a change in the mix of enterprises in any particular locality.

---

<sup>2</sup> <https://startupgenome.com/reports/impact-covid19-global-startup-ecosystems-startup-survey>

<sup>3</sup> <https://www.nber.org/papers/w26989.pdf>, and <https://www.nytimes.com/2020/07/13/business/small-businesses-coronavirus.html>

Assessing the emerging mix, and spotting gaps in the ecosystem where new or adapted interventions might be needed to build an inclusive and sustainable diversity, policymakers must design customized solutions that account for the different types of enterprises within their economies, from the traditional small and medium-sized enterprises (SMEs) to more innovation-driven ones, and yet at the same time ensure that their offerings are not so complex as to be labyrinthine and unhelpful for the very entrepreneurs they seek to support.

Much research has been done over the last decade to identify the needs of start-up entrepreneurs and small business owners, to which MIT has contributed, while actions have already been taken to stimulate these businesses. Looking to the new decade, however, we believe that effective enterprise support in the 2020s requires a better understanding of the various types of enterprises that exist in the innovation economy and the underlying conditions, objectives, and needs of each type.

Lessons from the ‘Great Recession’ a decade ago are also proving relevant, as that was also a moment when new enterprises and entrepreneurs were critical to economic recovery, and the focus shifted to the high-tech, ‘start-up’ variety of entrepreneurship: significant lessons were learned about how to support founders of these new high-growth enterprises. The recovery after that recession also reminds us that traditional SMEs took significantly longer than the successful ‘start-ups’ or larger, corporate enterprises to recover from economic shocks, as shown by the ability of firms to return to pre-recession performance since the last significantly economic shock (if they survived at all).<sup>4</sup>

The recovery which followed in the 2010s was, in many ways, uneven and highly inequitable, with growth not being equitably distributed across sectors, communities or regions. With areas and people feeling ‘left behind’ while others benefited from the recovery, this resulted in social, economic and political disruptions. If we wish the recovery of the 2020s to be more inclusive across a diverse set of actors, then we need to adopt an approach that is consciously inclusive and allows us to build back the entrepreneurial foundations of our economies in a different, more equitable way. An effective **and** inclusive approach to enterprise support requires that we attend to corner stores and ‘main street/high street’ SME businesses, not just unicorns and high-tech start-ups. It requires an emphasis on productivity and employment, not simply revenue growth or valuation, and demands that we consider differentiation in support as well as coherence and simplification.

Today, we need an encompassing framework to structure both support and spending on enterprises and entrepreneurs. As we have noted in prior writings, and others have confirmed, not all start-ups are the same.<sup>5</sup> Understanding the distinctions among start-ups, and the resulting small and medium size enterprises (some of which are on their way to significant growth and scale), is essential as we build a framework that effectively allocates limited enterprise recovery resources for maximum impact.

In this working paper, we provide an enterprise framework for policymakers – and those interested in the range of enterprises in their local ecosystem - to use to start designing solutions that are centered on the needs and operational behaviors of each type of small business, can support their resilience, and deliver long term economic growth. Our approach will be based on a more fine-grained distinction among *different* types of small and start-up enterprises, one that moves beyond just SMEs to wider distinctions but remains sufficiently parsimonious that it is useful for decision makers.

---

<sup>4</sup> <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/us-small-business-recovery-after-the-covid-19-crisis>

<sup>5</sup> <https://innovation.mit.edu/assets/Assessing-iEcosystems-V2-Final.pdf>, p.9.

In the sections that follow, we will:

1. **Differentiate** among types of small enterprise in the innovation economy, and highlight the continued importance of innovation-driven, 'new venture' start-ups, especially in an economy's recovery phase;
2. Set out the current **static** definitions of SMEs (small and medium-sized enterprises, which usually begin as start-ups) that focus on their scale, especially in terms of assets, revenue and employment.
3. Review a new, more **dynamic** approach to 'start-up' definition that focuses on (a) different aspirations of those entrepreneurs considering new enterprises, (b) turning aspirations into early entrepreneurial action and (c) differentiating among high-growth IDEs (including the rise of 'unicorns');
4. Provide insights into the **SMEs' productivity growth** that could be expected given effective interventions (including those associated with the once-popular 'gazelle' term, rather than 'unicorns'); and
5. Combine all this into an '**enterprise framework**' that puts 'small enterprises' in the innovation economy into four broad categories by time in their *lifecycle* (e.g. aspirational entrepreneurs and their proto-ventures; early-stage start-ups; and SMEs 3 years old and beyond), and along a *continuum* by potential (for growth and productivity) from main street SMEs to deep-tech IDEs with a range of digitally-enabled SMEs and digitally-focused IDEs in the middle.

This approach, we hope, provides more nuance across the different small enterprises that grow our innovation economy but it simultaneously allows policymakers to structure their business support accordingly.

## WHY START-UPS AND SMEs MATTER TO THE INNOVATION ECONOMY

A decade ago, economies around the world were recovering from the economic dislocation that came to be known as the ‘Great Recession’. That crisis, like today’s, had seen many companies rapidly ‘downsize’ their workforce, which soon showed up in national unemployment figures. The recovery that came in the 2010s was uneven, both within different types of enterprise and (partly as a result) across regions and communities within national economies. To that end, it is important to look below the headline numbers as these concealed some important variations which are relevant to the 2020s.

First, a focus on the aggregate number of ‘net new’ jobs in national economies missed a distinction between the different types of business enterprise that were doing the job-creation and hiring (not to mention their uneven distribution across regions and communities within national economies). Even in the depths of that recession, researchers were already asking “Where Will the Jobs Come From?”<sup>6</sup> Evidence compiled by the OECD showed a stark difference between what it termed ‘young firms’ (i.e. those founded in the prior five years) and ‘old firms’ (i.e. six years or older). As the chart below reveals, the ‘net growth rate’ was only positive due to job-creation by ‘new firms’ which were founded (and created new jobs) just before, through and after the great recession.<sup>7</sup>



The positive impact of such ‘young firms’ led to a greater focus in the following decade on the importance of start-ups to the economy, and more generally on the conditions for their founding. If new enterprises were the source of so many new jobs and the cause of employment growth, even when older and more established firms were still letting employees go, then encouraging more start-up entrepreneurs to start and grow seemed a rational policy response.

<sup>6</sup> Dane Stangler and Robert E. Litan, *Where Will the Jobs Come From?* (Kansas City, MO: Ewing Marion Kauffman Foundation, 2009).

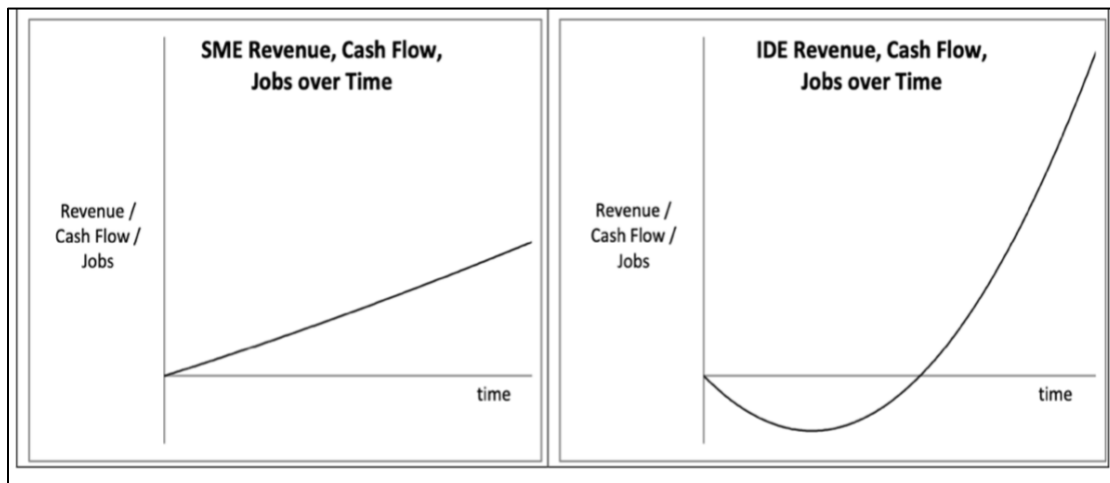
<sup>7</sup> See p.46. of Criscuolo, C., P. Gal and C. Menon (2014), “The Dynamics of Employment Growth: New Evidence from 18 Countries”, *OECD Science, Technology and Industry Policy Papers*, No. 14, OECD Publishing, Paris. <https://www.oecd-ilibrary.org/docserver/5jz417hj6hg6-en.pdf?expires=1610048939&id=id&acname=guest&checksum=6FB3237F221FDBBC42E5BEDE1DB6B83E>

## 1. DIFFERENTIATING SMALL ENTERPRISES: MIT's 'SME vs. IDE' DISTINCTION

A second essential variation below the headlines, however, was among these young start-up enterprises. As Aulet and Murray set out (2012), there were differences among the types of start-up entrepreneurship in the economy, which they explained through a 'tale of two entrepreneurs'.<sup>8</sup>

In short, the dichotomy was between start-ups likely to join the mainstream of the many small and medium-size enterprises (SMEs), which are important and serve as the life blood of 'main/high streets' and on the other hand a subset of high-growth, high-potential start-ups that use innovation as a basis for new products and services – referred to as 'innovation-driven enterprises' (IDEs). Both of the entrepreneurs in this 'tale' launched what one would recognize as start-ups, and which the OECD would classify as 'young firms', but their resulting enterprises were fundamentally different from the outset, needing different resources to thrive, and therefore requiring legislators, policy-makers and others to make a distinction between the types.<sup>9</sup>

A classic image from that 'tale of two entrepreneurs' was a contrast between the two 'ideal types': the start-up on a traditional SME trajectory was shown in its stylized graph to have a more predictable, linear path towards revenue, cash flow and jobs 'growth' over time; whereas the new venture in the IDE subset of start-ups faced initial challenges (e.g. greater investment at the start before 'revenue' turned positive, resulting in negative earnings for a period) but with the prospect of impact later, and exponential growth, further up the curve.<sup>10</sup>



This useful image captured key insights at the time, so has been widely taught since, and it has also captured imaginations and usefully helped shape responses.<sup>11</sup>

<sup>8</sup> Aulet and Murray, "A Tale of Two Entrepreneurs: Understanding Differences in the Types of Entrepreneurship in the Economy" ([https://www.kauffman.org/wp-content/uploads/2019/12/a\\_tale\\_of\\_two\\_entrepreneurs\\_report.pdf](https://www.kauffman.org/wp-content/uploads/2019/12/a_tale_of_two_entrepreneurs_report.pdf)) in 2013, building on 2012's <http://cdn.executive.mit.edu/00/000147a916d7fdabc7f9370b970000/file/auletmurrayidevsmenov262012pdf>

<sup>9</sup> "Main Street And High-Growth Start-ups: Legislators Must Make A Distinction" (2011) ([https://www.huffpost.com/entry/main-street-and-highgrowt\\_b\\_840075](https://www.huffpost.com/entry/main-street-and-highgrowt_b_840075))

<sup>10</sup> Aulet and Murray (2012).

<sup>11</sup> MIT has taught the SME:IDE distinction widely (eg in its global REAP program: <http://reap.mit.edu>) and is delighted to see the concept picked up and used elsewhere eg in Ireland (<https://scaleireland.org>).



## ‘SME-IDE’: DISTINCT BUT CONNECTED

This ‘SME-IDE’ distinction implies a duality where the two ‘ideal types’ are not connected, and yet empirically we find that their linkages are important. One way in which SMEs and IDEs are linked has been suggested by Enrico Moretti in his seminal work on the ‘new geography of jobs’ that was emerging across the US after the great recession. First, he illustrated that, while industry clusters were already central to the innovation economy, the recession had accelerated the clustering, causing a divergence between those cities, communities and regions that had more ‘innovation jobs’ (created by what MIT would call IDEs) and those without. As important was the insight that creating the local conditions for the success of such innovation-driven enterprises had a knock-on effect in the apparently-unconnected mainstream economy filled with traditional SMEs.

As Moretti put it:

*“Innovative industries bring “good jobs” and high salaries to the communities where they cluster, and their impact on the local economy is much deeper than their direct effect. Attracting a scientist or a software engineer to a city triggers a multiplier effect, increasing employment and salaries for those who provide local services. In essence, from the point of view of a city, a high-tech job is more than a job. Indeed, my research shows that for each new high-tech job in a city, five additional jobs are ultimately created outside of the high-tech sector in that city, both in skilled occupations (lawyers, teachers, nurses) and in unskilled ones (waiters, hairdressers, carpenters).”<sup>12</sup>*

While Moretti’s research was focused on the US, the ‘multiplier’ effect seems to be applicable elsewhere, and we see anecdotal evidence of similar knock-on effects around the world through our work with a wide range of regions.<sup>13</sup> If something like this five-to-one (5:1) ‘Moretti multiplier’ holds true elsewhere – with five SME-like jobs in the wider local economy being supported by the demand from one new employee in an IDE-like firm – it provides good reasons to focus public attention on IDEs, even though they are only ever a small sub-set of SMEs. More specifically, as Moretti put it, “while innovation will never be responsible for the majority of jobs in the United States, it has a disproportionate effect on the economy of American communities.”<sup>14</sup>

Beyond Moretti’s multiplier, we also see other ways in which IDEs can add value to a local community or global markets, including to the mainstream SMEs. A good example from recent Covid-19 experience has been the IDEs which created digital solutions for restaurants (most of which are a form of SME), eg creating a software platform for them to provide online ‘point of sale’ (POS) services (without having to master this themselves): the cloud-based restaurant software company Toast Inc is a US example. Elsewhere, IDEs focused on the back-end organization of food-delivery – such as Deliveroo, Just Eat and GrubHub – and provided a similar service to SME restaurants, even though it was the IDEs’ self-employed couriers who were their most visible expression.

---

<sup>12</sup> Enrico Moretti (2012), *The New Geography of Jobs* (New York: Houghton Mifflin Harcourt, 2012): our underlining. Reviewed by MIT Sloan in 2012 (<https://sloanreview.mit.edu/article/the-multiplier-effect-of-innovation-jobs/>).

<sup>13</sup> Through MIT’s global ‘Regional Entrepreneurship Acceleration Program’ (REAP: <https://reap.mit.edu>), we have worked with regions from around the world, seeing the value of both the SME-IDE distinction, but increasingly also of the connection between the two (as in Moretti’s multiplier). This has proved especially true with the REAP-UK pilot, which has run during the pandemic and has a focus on Local Enterprise Partnerships (LEPs) across England (<https://reap.mit.edu/reap-uk/>).

<sup>14</sup> Moretti (2012), *New Geography of Jobs*.

With the impending recovery, there is scope for new IDEs – founded to help ‘build back better’ - to find ways to create revenue in bringing their high-tech solutions to market, in support of SMEs that use their platform (but which are not themselves best-placed to develop high tech, IDE-like solutions to their sectors’ challenges).

As policy-makers seek to support new enterprises across the economy, they therefore face a challenge: what are the specific needs (and as importantly the potential) of each start-up enterprise to grow and create jobs (and tax-able revenue) directly and indirectly? To put it a different way, a fifty-person SME will need different support from a five-person SME. But as important, a fast-growing five-person IDE will need different support from, and has the potential to grow much more than, a stable five-person SME.

Given these different starting points and potential (and indeed aspirations), knowing which trajectory a start-up enterprise is likely to be on is of importance, both to the entrepreneurs involved but also to those with an interest in the job- and value-creation that may result.

In what follows, we lay out an approach to differentiating SMEs according first to a static perspective on their current size and then to a more dynamic one that highlights their potential (e.g. for productivity). We complete this by exploring the different possible trajectories that these enterprises are likely to follow after the ‘start-up’ phase and where interventions (such as business support) may enhance such growth trajectories.

## 2. SMEs: A STATIC PERSPECTIVE AND DEFINITION

Given the importance of SMEs to both the ‘SME-IDE’ distinction and Moretti’s 5:1 synergy, it is important to reflect further on what is meant by an ‘SME-type’ of enterprise. The SME in most settings is going to remain the most prevalent form of enterprise in the formal economy, so it is important to clarify terms before adding an overlay. Indeed, small businesses around the world share many similar characteristics and challenges.

Traditionally, SMEs are compared to their larger, corporate counterparts, not only in size but also in economic contribution via measures such as job creation, gross domestic product (GDP) and export value. (More subtly, they also stand in contrast to unincorporated actors in both the informal, “grey” economy (including subsistence households) and the illegal ‘black market’ or ‘dark web’ (including criminal enterprises).)

SMEs are typically the ballast of local economies and often responsible for a sizeable portion of employment and local value creation. According to the World Bank, SMEs represent roughly 90% of the formal businesses globally and more than 50% of employment worldwide.<sup>15</sup> In terms of GDP, SMEs contribute up to 40% of the GDP in emerging economies, while this figure rises to 50-60% on average in more developed economies like those of OECD member states.<sup>16</sup> This level of significance underscores the importance of adequately supporting and enabling such SME firms.

Many small business owners and entrepreneurs, from Bangkok to Bangor, and Lagos to London, cite significant revenue declines and capital pressures as the two biggest challenges they currently face, and the reasons for the drastic measures that they have taken in response.<sup>17</sup> For example, in a study of over 85,000 US small business owners and entrepreneurs in May 2020 at the start of the pandemic, conducted by Facebook and the Small Business Roundtable, almost 50% of respondents cited access to capital and significant shifts in customer behavior as obstacles that they must overcome over the next couple of months.<sup>18</sup>

Across the globe, economic agencies define SMEs with the purpose of identifying and then supporting these businesses, as distinct from larger enterprises. To start building our enterprise framework, it is therefore useful to review current SME definitions.<sup>19</sup> Historically, this has been done by classifying enterprises based on a combination of three axes of metrics: the number of employees, total value of their assets, and annual turnover (i.e. revenue).

What constitutes membership of a specific category - be it a traditional ‘small’ or ‘medium’ sized SME, the even smaller ‘micro-SME’ or those larger than SMEs and therefore beyond the scope - is usually whether enterprises satisfy at least two of three boundary conditions from the three traditional metrics of asset value, revenue and number of employees. This approach has limitations for firms in today’s economy.

Turning first to ‘asset value’ as the differentiator, we find that this is a more problematic metric in the innovation economy. There are cases where the total value of a firm’s assets is used as a proxy for employee count or annual revenue, but this raises the issue of appropriate asset measurement. In the current waves of technological innovation, the asset dimension can be especially challenging, because intangibles (such as intellectual property, software, customer data, goodwill, etc) are often a key component of high-potential start-

<sup>15</sup> <https://www.worldbank.org/en/topic/sme/finance>

<sup>16</sup> <http://www.oecd.org/industry/smes/SME-Outlook-Highlights-FINAL.pdf>

<sup>17</sup> <https://www.mckinsey.com/featured-insights/americas/which-small-businesses-are-most-vulnerable-to-covid-19-and-when>

<sup>18</sup> <https://about.fb.com/news/2020/05/state-of-small-business-report/>

<sup>19</sup> [https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/SME\\_Synthesis.pdf](https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/SME_Synthesis.pdf)

ups, and yet are not always as easy to value as traditionally hard assets. Moreover, many start-ups and SMEs increasingly endeavor to be ‘asset-light’, for example by renting server or computing capacity from cloud providers, rather than buying and maintaining their own server assets.

Second, there is a focus on annual revenue (i.e. turnover, or top-level income). Ranges of revenue, while not as prone to variation as total assets, do vary from sector to sector (eg manufacturing vs services), and can be prone to the different growth dynamics that could exist between firms within the same sector (which we will discuss further below). Such sectoral variations can prove a challenge within one national market, even before allowing for revenues being reported in different (and fluctuating) currencies. For high-growth start-ups, top-line ‘revenue’ is also problematic as it misses the need for the initial spending to develop the new capability: in the graphic (above) for MIT’s “IDE” category, it is clear that net earnings first go negative (as spending outstrips any initial revenue) before delivering greater returns – which is missed in a static model. Using top-line revenue as the baseline SME classifier can therefore pose problems in the design of policy and support for such firms.

Instead, we find that the most common and useful metric to differentiate enterprises is employee count: while there are no globally-agreed criteria for the boundaries, the emerging heuristic of three bands organized by the number of employees seems to allow for the greatest inter-regional and inter-national comparison, at least to a first approximation, as follows:-

- At one end are the ‘micro-SME’ enterprises which are the smallest (such as sole proprietorships or small partnerships), and have the lowest number of employees (effectively in single digits, ie 1-9 employees).
- Then there are the ‘small’ SME enterprises which commonly range in size from 10 to 50 employees.
- Lastly, there are ‘medium-sized’ enterprises from 50 employees up to the large ‘corporate enterprise’ band, with the cut-off usually at about 250 employees.

As set out in the table of our Annex, there are clearly variations in different national jurisdictions. In a synthesis report by the World Bank, it is noted that SME classification criteria vary widely across jurisdictions.<sup>20</sup>

In our view, the number of employees as the main differentiator for enterprise size is the most effective baseline consistent with an approach that is currently favored by organizations like the OECD, and so is what we leverage in our framework.<sup>21</sup>

That being said, using the number of employees as a general catch-all metric for categorizing SMEs provides an important snap shot of their “as is state” but one that is still rather static. It is more useful for firms that are in steady-state in their growth phase, where the next set of challenges might be to focus on growth potential building on realizing advantage or capturing productivity gains. We therefore build on this to understand the dynamic potential of these different SMEs based on some of their key intrinsic characteristics.

---

<sup>20</sup> [https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/SME\\_Synthesis.pdf](https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/SME_Synthesis.pdf)

<sup>21</sup> <https://stats.oecd.org/glossary/detail.asp?ID=3123>

### 3. 'SME vs. IDE' GROWTH AND 'ENTERPRISE POTENTIAL': A DYNAMIC VIEW

Given the importance of start-ups and 'young firms' to job-creation (especially after a recession), it is important to determine whether it is possible to identify high-potential firms such as 'IDEs' at their founding, in near real-time and in advance (i.e. *ex ante*) of their ultimate success, rather than having to wait until after (i.e. *ex post*) they have achieved certain desirable outcomes (such as growth in net positive free cash flow or job-creation).

This is not easy to determine, as the usual statistics (eg number of employees) might not differentiate between a 'lifestyle' micro-SME that the founder does not intend to grow, and the small founding team of an IDE with great growth prospects. Moreover, IDEs, as observed in the stylized graphic above, clearly have a time delay between founding and their positive outcomes, so it may take the usual statistics some time to be able to differentiate them. As a result, it would be useful to know in near real-time whether entrepreneurs are on the path to creating such outcomes or whether some policy or program needs adopting or adapting to encourage this.

#### 3a. ENTREPRENEURIAL ASPIRATIONS

When we consider such 'enterprise growth potential', we find it useful to first consider differences in the goals and aspirations set by the founders, owners, or managers of the business (as well as later consider the firm's productivity at any given stage in its lifecycle) as a way to examine what might be possible from its 'as-is' state.

Taking the initial conditions of an enterprise first, and recognizing that starting aspirations are not destiny, we believe they do shape both future strategy and operational behavior that are likely to drive future pathways. In the "Tale of Two Entrepreneurs," Murray and Aulet laid out an important distinction between two different types of enterprises in the economy, distinguishing them in large part by the initial aspiration of the entrepreneurs for their longer-term steady-state outcomes:

- SME start-up enterprise founders whose aspirations tend to be smaller and more local from the start, with a focus largely on serving local markets, and with no particular comparative or competitive advantage.
- IDE start-up enterprise founders who begin with a strong aspiration to grow, with a focus on regional and global markets, and on identifying potential sources of competitive advantage, usually grounded in innovation. Ultimately, IDEs are enterprises that have the ambition to scale and also the ability to do so, while traditionally having an eye towards a meaningful growth outcome such as an initial public offering (IPO) or a high-valued 'exit'.<sup>22</sup>

These distinctions in aspiration obviously hide what is likely to be a continuum of growth aspirations, with an increasing number of would-be start-up founders (and those running existing SMEs) all seeking to build digitally-enabled enterprises that can utilize the growing number of digital platforms (from web-based distribution to online marketing) to enable growth beyond local markets. And thus, in our framework, we seek to provide an expanded typology that goes beyond just SMEs and IDEs, and also add variations within the key categories.

---

<sup>22</sup> <https://thestartupgarage.com/define-small-business-vs-high-growth-startup/#:~:text=A%20startup%20company%2C%20also%20referred,to%20be%20repeatable%20and%20scalable;https://static1.squarespace.com/static/5963ccedebbd1a0ffdb5ae00/t/5e2f3c40a8a1855a711b224a/1580153925401/SCP+PIN+Paper+COMPLETE.pdf>

Aspiration is an important characteristic that can be used to classify and differentiate enterprises prior to or at the time of founding, as it plays a critical role in the behavior of an entrepreneur, the type of support that they might be willing to have, and the type of support that their start-up needs. The larger the aspiration, the larger the amount of risk: as a result, the needs of a firm looking to manage and succeed in spite of such risk are radically different compared to a business which seeks to only serve a local market. Indeed, studies have highlighted that small business creation does not always lead to significant job creation with the short life span of many SMEs being a negative influence on job creation, and growth being limited by founder aspirations.<sup>23</sup>

Such aspiration is typically expressed through the operational decisions of the owners or managers of the enterprise – from what resources are gathered at the start, to how resources are used, and the approach taken in strategy and planning, as well as the market(s) the enterprise chooses to compete in. Given that this characteristic can fundamentally change the nature of an enterprise, the aspiration at founding, as expressed in initial assets and choices, is the foundational characteristic of our enterprise classification framework.

While IDEs are typically characterized by their *potential* scalability, this is hard to capture in advance and instead there are characteristics that their founders typically express at the early formation of the enterprise that signal the firms' growth potential.<sup>24</sup> In contrast, SMEs are often established by those with more bounded aspirations such as a vision of a business that can support self-employment, a lifestyle or limited local employment.

Importantly, from the perspective of policy-makers and others in the not-for-profit sector who aim to support entrepreneurs, such aspirations are malleable and are often endogenous to one's surroundings, role models, education and other factors, which suggests opportunities for intervention to raise the aspirations of potential founders and entrepreneurs. One such example of an intervention is the "Be the Spark" programme developed in Wales to increase the ambition of local entrepreneurs to focus on becoming more IDE-like rather than just SME founders, providing role models to change perceptions of the opportunities inherent in entrepreneurship.<sup>25</sup>

Based on this recognition that entrepreneurs have different starting aspirations for entrepreneurship and enterprise-building (including some being introduced to the concept of entrepreneurship as a new path for opportunity), our framework recognizes the need to consider (programmes in support of) entrepreneurs and their aspirations at or prior to founding especially as they create "proto-ventures" that they hope to initiate and scale for growth and impact.

### 3b. TURNING ASPIRATION INTO EARLY ACTION

While aspiration suggests the moment prior to founding (when the enterprise is still but a 'proto-venture'), entrepreneurs also provide signals of their intent and of their start-up's potential in the earliest days of their enterprise development. Going beyond pure aspiration, it is possible to identify early actions that 'signal' entrepreneurial potential. Based on their 2014 work on 'Measuring Entrepreneurial Businesses: Current Knowledge and Challenges', Stern and Guzman developed an index to identify signals of such *ex ante* 'entrepreneurial quality' or *growth potential* based on the enterprises' subsequent (*ex post*) performance.<sup>26</sup>

---

<sup>23</sup> <https://thereader.mitpress.mit.edu/small-business-job-creation-myth/>

<sup>24</sup> [https://www.iicie.com/uploads/White-Paper/1466815388High\\_Growth\\_-\\_Appster.pdf](https://www.iicie.com/uploads/White-Paper/1466815388High_Growth_-_Appster.pdf)

<sup>25</sup> <https://bethespark.wales/>

<sup>26</sup> Guzman and Stern, "NOWCASTING AND PLACECASTING: ENTREPRENEURIAL QUALITY AND PERFORMANCE" (2015), subsequently published by the NBER (<https://www.nber.org/chapters/c13493.pdf>).

In their Entrepreneurial Quality Index (EQI), Guzman and Stern highlight the different characteristics of the early formation of new high-growth/high-potential ventures (like IDEs), from traditional SMEs, founded with lower aspirations which ultimately exhibit lower ‘quality’ outcomes e.g. lower employment, value creation or scaling up. They frame the entrepreneurial ‘quality’ of ventures based on their likelihood of achieving a ‘meaningful growth outcome’ – eg a highly valued acquisition by a larger firm or an initial public offering within a 6-year time period. Using predictive analytics, the work of Stern and co-authors illustrates the high correlation among early founding signals, the likelihood of a meaningful growth outcome, and the long-term growth with most ventures. Their EQ Index (EQI) incorporates critical enterprise ‘signals’ from the first year of founding that are highly predictive of later outcomes.

In their research, enterprises lower on the EQI scale are typically registered locally, take eponymous names such as ‘Phil’s Pizza’, seek little outside capital (with any being more from collateralized debt, e.g. a bank loan, rather than equity) and have little if any intellectual property (IP) in the form of trademarks, patents, etc.

At the other end of the outcome potential distribution come ventures with more complex names (often with only limited meaning e.g. “Phylion”), that are more formally registered (e.g. in the US in Delaware, a state with entrepreneur-friendly regulations) and have some IP for which they have sought protection through filing for patents, trademarks or copyrights. All these extra steps demonstrate the founders’ significant sophistication with regards to business formation, signaled through incorporation, comparative advantage and necessary filings (both for tax and IP protection) and assets (such as IP). More than anything, these signals suggest both aspirations and potential for growth based on the creation of potential advantage (especially but not only in the form of patents).

The pursuit of different types of external financing is an especially important signal that can be used to estimate a firm’s position on a dynamic growth potential scale, as this signals that the entrepreneur has assessed the start-up’s financing needs, presented them in a way that is convincing to outsiders, and then persuaded an outside party (beyond ‘friends and family’, such as an angel investor) to take an equity stake in the future of the business. This is a major differentiator: funding sources such as institutional venture capital (VC), a common source for aspiring IDEs in the US, actually represents only 0.6% of all outside equity-based funding.<sup>27</sup> As important, less than 0.1% of start-up enterprise ever raise formal VC funds, though many more take equity funding through business angels (either individually or as syndicates). A willingness to consider and then successfully raise venture funding, either angel or VC, signals growth potential: a fifth of current public US companies raised venture capital at some point in their early history.<sup>28</sup>

Overlaying geography over their analysis of EQI in their Startup Cartography Project (SCP), Stern and co-authors illustrate that, while some areas have a higher concentration of high growth potential enterprises – notably innovation ecosystems such as Boston and Silicon Valley - every region supports firms along the entire growth potential (EQ) continuum.<sup>29</sup> This implies that there is a spectrum of start-up types, not just a binary SME:IDE distinction: in the ‘middle’ of this range of start-ups are those that are taking advantage of digital capabilities, ranging from those close to the traditional SME end of the spectrum using existing ‘off the shelf’ digital tools to

---

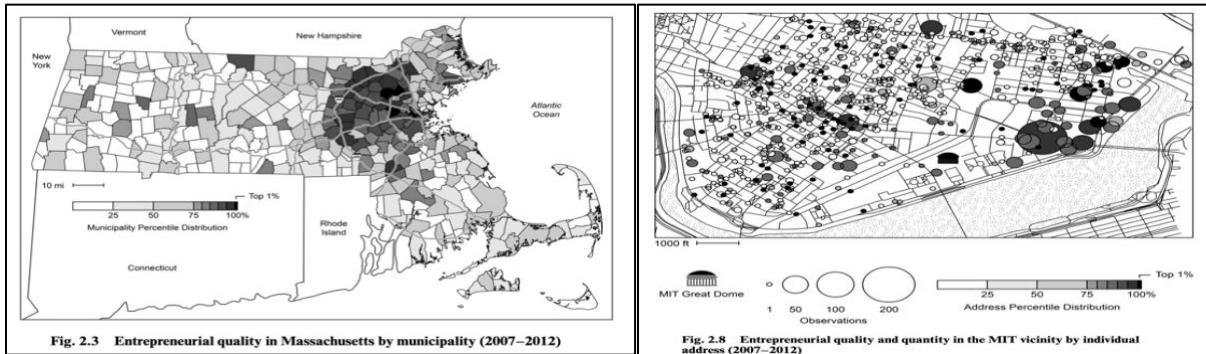
<sup>27</sup> <https://www.kauffman.org/entrepreneurship/reports/startup-financing-trends-by-race-how-access-to-capital-impacts-profitability/>

<sup>28</sup> <https://www.gsb.stanford.edu/insights/how-much-does-venture-capital-drive-us-economy>

<sup>29</sup> <https://www.startupcartography.com>, with research at <https://www.startupcartography.com/research#:~:text=%20The%20Startup%20cartography%20project%20%201%20Overview,American%20entrepreneurship%20requires%20not%20simply%20counting...%20More%20>

allow for 10% growth and scale, to those building at the forefront of digital technology to build new digitally-focused IDEs, with more of a focus on 10x transformational growth.

The first image below reveals classic clustering in Massachusetts around the ‘innovation hub’ of greater Boston, especially Cambridge: the second image is of start-ups registered in the part of Cambridge around MIT and its Great Dome). Both images include a ‘distribution’ range that demonstrates the spectrum of firms, from SMEs with lower entrepreneurial ‘quality’ (or potential) through the middle range of those that try to harness some digital capabilities, to highly-innovative IDE-like firms with growth potential at the very top of the scale.<sup>30</sup>



Graphics from “Nowcasting and Placecasting Entrepreneurial Quality and Performance” pp.90 and 94.

This underlying continuum of enterprises serves as the basis for identifying dynamic potential.<sup>31</sup> It also suggests that each region consider its enterprise support in a way that is somewhat differentiated. This approach is well illustrated in the way in which banks including e.g. NatWest and Barclays differentiate their support of start-ups. Barclays Eagle Labs have regional hubs throughout the UK to support entrepreneurs with medium-growth potential aspirations in classic ‘digitally-enabled’ activities: in contrast, its RISE accelerator (in London) is focused on very high growth potential ‘digitally-focused’ IDEs (with a fintech focus). NatWest offers ‘Business Builder’ support to many SMEs while its Accelerator is for the high growth potential IDEs. Likewise, the Entrepreneurial Spark (eSpark) programme (formerly supported by NatWest) differentiates more SME-like support with its “Crucible Programme” from its more intensive, growth oriented “Accelerator Programme”.<sup>32</sup>

Based on this analysis of growth potential at founding, our framework considers the range of start-ups across the spectrum from traditional SMEs through a middle range to the IDE end of the spectrum, recognizing the importance of SMEs enabled by digital tools and approaches beyond traditional small and micro-SMEs. We also emphasize the importance of these early founding years (e.g. years 0-3) as a time when critical decisions are made that shape future growth activities and advantages.

<sup>30</sup> “Nowcasting and Placecasting Entrepreneurial Quality and Performance” in <https://www.nber.org/chapters/c13493.pdf>

<sup>31</sup> <https://static1.squarespace.com/static/5963ccedebbd1a0ffdb5ae00/t/5e2f3c40a8a1855a711b224a/1580153925401/SCP+PIN+Paper+COMPLETE.pdf>, p.32.

<sup>32</sup> <https://www.entrepreneurial-spark.com/index.php/entrepreneurs/>



### 3c. DIFFERENTIATING AMONG IDEs: UNICORNS AND OTHER ANIMALS

In Silicon Valley over the past decade, aspirations and expectations for growth expanded beyond simple IDEs. Since 2013, this has been characterized as reaching ‘unicorn’ status, i.e. an enterprise valuation by private capital of \$1 billion (through a suitably high multiple of its underlying revenue).<sup>33</sup> This naming convention caught on elsewhere (as countries celebrate their own start-ups that reach ‘unicorn’ status). Thankfully neither the terms ‘decacorn’ (\$10bn) nor ‘hectocorn’ (\$100bn) in the ‘bestiary’ seem to have made it out of the Valley.

In a popular blog post by start-up accelerator “Y Combinator” founder, Paul Graham argues that start-ups are designed to grow fast for the purpose of capturing as much of the large market they are in as possible.<sup>34</sup> Growth, both in Graham’s post and more broadly, comes with the expectation of a rapid increase in customers, visitors or other metrics that signal the value of the enterprise. In the same post, Graham noted that 5% growth *per week* is expected for these types of high-growth business in its early stages, with 10% growth per week being considered exceptional. In a study done by Institutional Venture Partners in 2013 where they looked at the growth rates of successful start-ups that became large enterprises in the years prior to their public offering, a median growth rate of 130% year on year was observed at the early stage, with even the lower quartile of firms exhibiting 80% growth year on year.<sup>35</sup>

At the early stages of enterprise building (i.e. in the first 1-3 years) - where a lot of start-up enterprises still satisfy current SME definitions (e.g. a small number of employees) – a number of start-up firms will have both the aspiration to grow and the starting assets and advantages to grow at an exponential rate, to capture the market as fast as possible, and to achieve ‘escape velocity’ from the competition, thus suggesting they sit within our definition of IDEs.<sup>36</sup> Interestingly, many of the most famous unicorns (and other high-growth IDEs) are based on new applications of, and approaches to, digital capabilities, with venture founders using these capabilities to build transformative ‘10x’ changes in solutions and opportunities.

It should be noted that this ‘hyper’ growth, digitally-focused IDE category is extremely rare (even in expectation) and, as noted, is dominated mainly by those enterprises with a focus on software-based businesses whose scaling can be financed by impatient, returns-oriented venture capital, and without any significant ‘deep tech’ risks. For that reason, digitally-focused opportunities are at the heart of the many IDEs funded by venture capital and others. Thus, within our framework, support for such firms (potential unicorns?!) would be provided in the early years (1-3 years after founding) for a narrow sub-set of entrepreneurs and enterprises with both aspiration and advantage typically focused on building new and digitally-focused capabilities to meet new needs.

Aiming for ‘unicorn’ status is clearly a signal of aspiration but may overshadow important IDEs whose underlying technology (solution) and market (problem) require significant amounts of capital, longer development phases and more complex sales efforts – ie ‘deep-tech’ IDEs. This subset of IDEs stands in contrast to those that are more purely digitally-focused and therefore do not entail the costs of those based on more ‘deep tech’ solutions. The latter type of deep-tech IDEs whom we might refer to as ‘dolphins’ (in recognition of their ability to dive deep and remain submerged for long periods before emerging above the surface) can include fields such as quantum (contrasted to eg conventional computing), fusion (rather than traditional fission) for cleantech, and

<sup>33</sup> Aileen Lee first used the ‘unicorn’ phrase in 2013 for “billion dollar exits”, though such start-ups need only reach that dollar amount through private valuations: <https://techcrunch.com/2013/11/02/welcome-to-the-unicorn-club/>

<sup>34</sup> <http://www.paulgraham.com/growth.html>

<sup>35</sup> <https://techcrunch.com/2013/08/24/how-fast-should-you-be-growing/?guccounter=1>

<sup>36</sup> <https://mastersofscale.com/peter-thiel-escape-the-competition/>

life sciences research underpinning the biotech sector. They can make outsize contributions to society because of their focus on taking deep tech ideas to impact, emphasizing critical missions from healthcare and agriculture, to climate change and national security.

This focus on mission is aptly illustrated at the current time by at least two of the biotech enterprises which have developed vaccines: Moderna in Cambridge MA and BioNTech in Germany. Both were founded in 2012, shortly after the last recession, with patient risk capital used to overcome significant scientific and technical risks (eg in RNAi), but neither achieved 'unicorn' status prior to their development of a SARS-COV-2 vaccine in 2020. As such, they would have failed Graham's "5% growth *per week*" test, which can probably only be achieved by primarily digital start-ups.

Instead, support of deep-tech enterprises with such longer-term, R&D/-S&T-enabled IDE growth potential must come with understanding for the challenges of complex science and technology, often in highly regulated markets, with sophisticated supply-chains.

The distinction within early-stage IDEs of those with digitally-focused versus deep tech approaches (unicorns versus dolphins) is critical as we consider modes of intervention because they each require specialized sector dependent support, financing and infrastructure. The first category includes the software-based, consumer-oriented platforms with Valley-like expectations of early 'hyper-growth' in revenue, that are typically supported by for-profit accelerators such as Y-Combinator and TechStars, with intense mentoring and resources for rapid experimentation. In contrast, deep tech IDEs, often spun out of university or government laboratories, are focused on de-risking frontier science and may require much more patient capital, innovation infrastructure (of the type found in Catapults and elsewhere) and government partnerships.

Societies facing a number of challenges will benefit from encouraging the conditions for both sorts of IDEs, especially those with more of a 'mission focus' and requiring greater early-stage support.

## 4. TRADITIONAL SMEs, PRODUCTIVITY GROWTH AND A SPECTRUM

Having added a more dynamic aspect to the static start-up classifications – one that emphasizes potential for different growth paths in the early phases of the enterprise lifecycle – it is worth examining another measure that allows us to characterize SMEs at a later stage in their lifecycle, but with significant implications for their long-term dynamics – namely their ‘added value’ or productivity (per employee). With this measure of current productivity comes the dynamic potential for productivity increases along that spectrum. Including productivity as another (dynamic) classifier necessitates that we look at enterprises (beyond the start-up phase) as a range of firms on a continuum from low- to high-productivity, with much room anywhere in-between.

### 4a. PRODUCTIVITY & POTENTIAL

One common measure of such productivity is based on ‘Gross Value Added’ (GVA).<sup>37</sup> While this GVA can be calculated for a country (and is sometime more useful than GDP as a macro-economic measure), we focus on GVA at the enterprise level and - following the work of the Bank of England - understand the distribution of firms in a given country to lie across a national productivity spectrum.

From the perspective of government intervention and programmatic support, we find it useful to consider a firm’s dynamic productivity potential, ie the distance a firm might travel to reach the mean or the maximum productivity in its region or sector. To do so, we must compare firms of a given (employee) size across a productivity distribution to benchmark their performance with peers. At a fine-grained level of analysis, one can analyze within segments by comparing all the small SMEs within a sector and age group. It is also possible to compare an enterprise to its sector- and age-specific peers within a region to understand where a single firm or group of firms lies on a distribution, and to find relevant peers which might serve as role models or benchmarks.

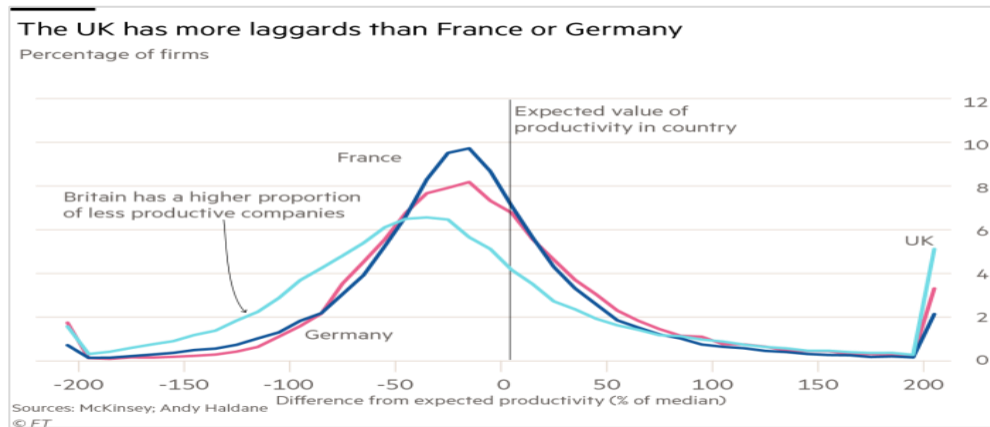
Concretely, just as one can place enterprises on a continuum based on the number of employees (at any stage of its life), or growth (EQ) potential (at the earliest stage of the lifecycle), one can also array firms which are reaching “steady state” (e.g. after 3 or more years) along a GVA continuum, from low or even negative GVA up to the very highest end of productivity. This continuum, and indeed the significant variance, is a particularly important ‘productivity puzzle’ in some countries. In the United Kingdom, for example, some enterprises are among the most productive in the world - comparable with new high-growth ventures in the United States - while those in the lowest percentiles of GVA in the UK have some of the lowest productivity per venture throughout Europe.

Andy Haldane, Chief Economist at the Bank of England (BoE), has recently emphasized the importance of productivity as a measure of the contribution of a country’s enterprises (no matter their size) to the national economy (as better than other single metrics e.g. jobs, revenue or assets) and in comparison to that of peer

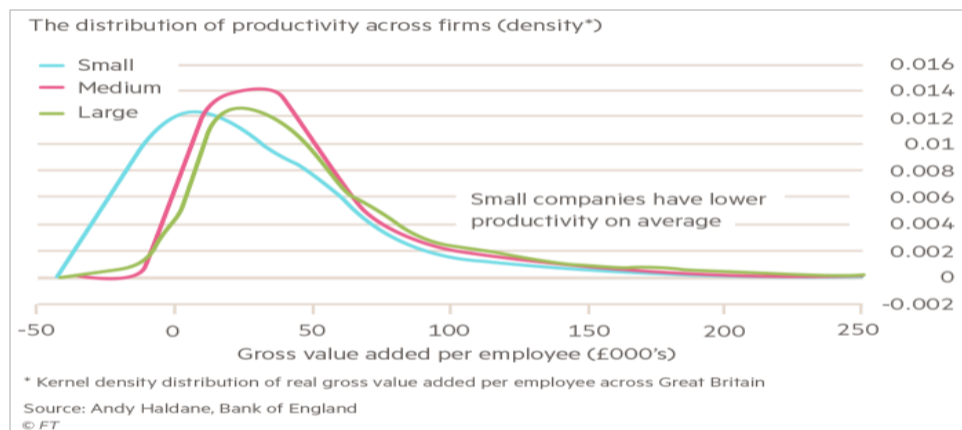
---

<sup>37</sup> An enterprise’s GVA is a measure of its ‘output’ (i.e. gross revenue or income) minus the intermediate consumption ‘input’ costs to produce said output. As an enterprise’s GVA can then be divided by the number of its paid employees, this produces a useful further measure of productivity, ie ‘GVA per employee’.

countries, revealing where the strengths and weaknesses are. For example, in the Bank of England (BoE) graphic below, it is possible to see what is sometimes called the ‘long tail’ of lower-productivity firms in the UK, here compared to France and Germany. While addressing the country-level “Productivity Problem” of the UK since the great recession, the graphic reveals that the UK has a higher proportion of ‘less productive’ firms, ie ones which are not achieving their full potential in terms of their productivity, but also some high-productivity ones.<sup>38</sup>



In the BoE graphic below, Haldane digs into the variation in productivity in the different strata of enterprises (organized by size, i.e. number of employees): the productivity (measured by GVA per employee) of small, medium, and large British enterprises shows that there is some correlation between enterprise size and GVA, especially in the ‘fat tail’ to the left of the curve’s peak. This tail illustrates a correlation between small size and negligible (and even some negative) contributions to ‘gross value added’ to the economy.<sup>39</sup> Again, this reveals a category of small firms not fulfilling their potential compared to their peers, and to enterprises at other scales.



<sup>38</sup> <https://www.bankofengland.co.uk/-/media/boe/files/speech/2018/the-uks-productivity-problem-hub-no-spokes-speech-by-andy-haldane>. Distribution of firms of various sizes (small, medium, and large) and their level of productivity measured by GVA per employee. From a static perspective, small enterprises can be classified as firms with low productivity levels on average and an increase in productivity signals growth in firm size. But the very fact that GVA among enterprises of all sizes is a distribution, with firms of all sizes exhibiting low and high GVA to a certain degree, signals an opportunity to classify firms through a more dynamic lens, even within size.

<sup>39</sup> <https://www.ft.com/content/f5e074ae-9734-11e8-b67b-b8205561c3fe>

Building up our MIT framework to include this productivity potential, we can examine the relative productivity of SMEs once they have reached some steady state e.g. after 3 years. For example, we can identify SMEs with below average productivity (which might benefit from a programme of simple productivity-enhancing steps) compared to higher productivity enterprises that may have taken such steps already.

A great example of such a programme is “Be The Business” in the UK (<https://www.bethebusiness.com>) which aims simply to “make your business more productive”. This often means providing simple tools for operational effectiveness or financial management. For firms with higher levels of productivity, perhaps at a larger-scale, interventions may emphasize using effective digital tools to move from average to high levels of productivity.

In simple terms, for firms reaching a steady-state, e.g. after 3 years, productivity comparisons can serve as an indicator of productivity potential and thus provide a way to triage different interventions. Indeed, adding productivity into the mix as a cross-sectional measure (especially for small enterprises) provides a particularly useful way of identifying very low productivity firms and to structure interventions accordingly.

#### 4b. SMEs, POTENTIAL PRODUCTIVITY & ‘GAZELLES’

A focus on productivity highlights the “fat tail” of low productivity SMEs with opportunities to grow based on simple interventions and enhanced managerial methods. In the middle of the distribution lies a range of other small enterprises with good growth rates (both in revenue and employees): while they have recently been overshadowed both by those chasing ‘unicorn’ status at the highest end of growth and the low productivity fat tail, ironically, it was through an initial effort to understand the small business contributions to job creation and prosperity that these so-called medium-growth ‘gazelles’ were labelled.

In his original 1979 study, MIT Researcher David Birch said that small businesses (which he described as ‘mice’) are responsible for most of the job creation in the US, upwards of 80% in fact, compared to large corporate enterprises (which he described as ‘elephants’).<sup>40</sup> As well as starting the fad of using animal types to describe enterprises, it was this study that popularized the focus on smaller businesses and on developing better ways to support them to improve employment and create prosperity.

Birch revisited his original study to clarify that it was a subset (rather than all) of the small businesses that were mainly responsible for sustainable job creation.<sup>41</sup> This subset of small but growth-oriented enterprises is what he called ‘gazelles’, which he defined as businesses that grow their revenue at least 20% a year over at least four (which implies a doubling of revenue over that period) from a base of at least \$100,000 revenue per year (once they had survived the ‘start-up’ phase and were in a steadier state).<sup>42</sup> Further study by Birch and co-authors has shown that ‘gazelles’ are a small percentage (2-5%) of firms, tend to be older (signaling the importance of firms being able to thrive for some time), and can be found in a diverse range of sectors – from retail and wholesale, through services to technology.<sup>43</sup>

When it comes to determining what characteristics signaled a firm ultimately achieving ‘gazelle’ status, most relate to internal capability versus correlation with past business performance (suggesting that these potential

---

<sup>40</sup> David Birch, *The Job Generation Process* (1979). University of Illinois at Urbana-Champaign’s Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship

<sup>41</sup> “The Gazelle Theory: are some small companies more equal than others?” in *Inc.* (2001), building up “Birch’s Bestiary” of animal descriptions: (<https://www.inc.com/magazine/20010515/22613.html>)

<sup>42</sup> Birch, D. L., & Medoff, J. 1994. “Gazelles.” In *Labor markets, employment policy and job creation*, ed. L. C. Solmon & A. R. Levenson. Boulder, CO: Westview.

<sup>43</sup> “High Impact Firms – Gazelles Revisited” (Zolton Acs et. al, 2008)

gazelles might be anywhere on the mid to low part of the productivity distribution). In fact, in the study of the characteristics of gazelles in the time period prior to their growth, Professor Zolton Acs and co-authors found that these firms showed either mixed signals (revenue growth or employee count) or no signal at all to their subsequent potential, and there was no way to identify firms beforehand on these metrics alone. Later studies showed that what enabled these firms to become gazelles was their capability to innovate within their sector, their high degree of market orientation, the high sense of ownership within the firm, and their access to business networks and resources.<sup>44</sup>

More recent studies suggest that it is now access to digital capabilities – both in terms of internal capacity-building as well as external digital capabilities, eg that support online sales and marketing as well as supply chains – that enables gazelle-like growth. Taken together, this suggests that programmes and digital support for mid-productivity enterprises with aspirations to use digital tools and become more digitally-enabled, with willing and motivated teams, are an important part of a wider portfolio of support, consistent with a framework that considers older SMEs along the productivity continuum.

To put it another way, established SMEs may not be able to go back to their founding, and change their spots to become an IDE (with exponential growth aspirations for ‘unicorn’ status), but later in life they may go for ‘gazelle-like’ growth in their revenue, which would boost their GVA (so long as they control costs), allowing them to boost their productivity, hire more employees and/or a blend of the two. In family-owned SME businesses, this shift can come with new generations (or outside managers) seeking a new approach. Without becoming a start-up again, these mature SMEs can launch such new ventures internally (as a business improvement process or innovation project), or as a new semi-independent business unit that can be integrated later. Likewise, they can also adopt a range of digital tools and approaches to drive their productivity. Such a growth plan may result in the enterprise growing in terms of employment, perhaps even with an upgrade from being a small (i.e. 10-50 employee) SME to a medium-sized one (ie with over 50 employees).

Importantly, given the abundance of SMEs globally, it may be a net benefit to an economy (or a region) for a larger number of its SME firms to aspire to more realistic ‘gazelle-like’ growth, rather than all of an ecosystem’s resources be focused on the even smaller handful of IDEs that might aspire to arbitrary ‘unicorn’ status. There is no magic to either the ‘gazelle’ name or the ‘20%’ growth rate (for year-on-year revenue), so different countries or regions may wish to go for different names (beyond Birch’s ‘bestiary’) for their own SME growth enterprises, perhaps with different target levels of growth. Even 10% year-on-year growth – which may sound more manageable – results in a doubling in revenue in just over seven years.

---

<sup>44</sup> Zvonko, B et. al. “Importance and Role of Fast Growing Companies – Gazelles in Modern Economies”. 2015.

## 5. BRINGING IT TOGETHER – A NEW ‘SMALL ENTERPRISE’ FRAMEWORK

The productivity puzzle - along with evidence of an entrepreneurial continuum in aspiration, in growth potential (or entrepreneurial quality) and in productivity potential - suggests the need to build a framework for enterprise support along two dimensions: The first is the lifecycle of enterprises from early aspirations of entrepreneurs, through early growth phases, and then to later opportunities for productivity and scaling: the second dimension is a continuum, moving away from a simple ‘SME to IDE’ dichotomy.

Taking the first dimension, we propose that support considers three lifecycle phases:

- Early aspiration (for would be entrepreneurs): the phase prior to enterprise founding, as captured in eg Global Entrepreneurship Monitor (GEM) studies identifying individuals with entrepreneurial intentions (within the next three years), or those who have established enterprises in the past and are in the pre-founding or ‘proto-venture’ phase.
- Early founding action (for early stage starts-ups): the phase from formal founding and incorporation out to e.g. 3 years old, when early assets and advantage are developed, funds are raised and other critical founding decisions are made that signal and shape future trajectory and growth.
- Later acceleration of scale (for start-ups typically over 3 years old, considering growth, scaling and productivity increases): the phase when some businesses reach steady-state or a growth inflection point that could serve as a platform for additional growth or an opportunity to improve productivity.

Our second dimension focuses on dynamic potential along a continuum of enterprises. For this, we propose that support structures be designed to support new start-up enterprises along a continuum, rather than separating them into just two distinctive categories (eg SMEs versus IDEs). Such an approach aims to balance the needs of policy-makers (eg requiring some categorization of enterprises) with recognition of the reality of a distribution over a continuum. Thus we suggest the need to categorize ‘start-up’ enterprises into different types which exist along a continuum:-

- **SME-like start-up enterprises** whose founders have lower growth aspirations, where the formation of the enterprise may be due to necessity or lifestyle factors, and whose business sophistication is lower: these are likely to become micro-SMEs (with employees in the single digits) or possibly the smallest of small SMEs. The focus is on serving the most local market, taking on a little debt to get started but there is typically little or no application of digital productivity-enhancing tools, not always because of limited information alone, but also possibly due to a lack of an ability or plan to deploy such methods. For some of these enterprises, the founders may aspire to some level of regional growth and therefore make limited use of some simple digital tools including accounting methods, inventory management and some online presence. These enterprises likely have potential for some modest but still useful productivity upgrading with the appropriate support and incentives.
- **Digitally-enabled SME-like start-up ventures**, which might start out looking like traditional SME-like start-ups but they have greater aspirations, either shortly after founding or later in life. These plans might still be modest (compared to IDE-like start-ups below) but they are often enabled by digital tools which may be widespread in the market but can be used to amplify their business impact and productivity. Instead of trying to create wholly *new* digital applications, these digitally-enabled SMEs

aim for modest '10%' innovation and use others' platforms such as Toast (in the café and restaurant space), Etsy (for designers), or WordPress (for an online presence). With further digital expertise, these enterprises have significant potential for GVA and productivity growth.

- **Digitally-focused IDE start-ups** have significant plans for growth (at the transformational '10x' end of the digital spectrum): they are likely born digital and build new tools and approaches with high levels of sophistication in fields as diverse as fintech, cyber and ad tech. Good examples of the latter are Google and Facebook which were digitally-focused (on 'search' and 'social media' respectively) from the outset, but both of which found that revenue from placing online advertising was the more lucrative aspect. As such, they focused their digital tech prowess on optimising advertising (ad tech), especially in the 2010s, in which they have secured a duopoly. Today, digital IDE start-ups coming out of dorms have to ensure they have some new sources of competitive advantage (through AI or ML) in areas outside of ad tech: they must seek out new opportunities for swift, exponential growth (e.g. with 'unicorn' aspirations), often focused on national or even international (rather than just local) markets.
- **Deep-tech IDE start-up ventures** (focused on 'deep tech' beyond digitally-focused enterprises), whose founding is grounded in understanding potential needs for, and sources of, a deeper scientific or technological (S&T) comparative advantage. These new ventures differ from other IDEs given that their timeline and need for patient capital are much greater than more digitally-focused ventures: they are often based either upon novel intellectual property (perhaps resulting from R&D efforts, eg biotech), or the creation of new hardware capabilities (eg quantum). As a result, they are often a 'spin-out' venture from a University or a large Corporate lab, which means they can start with critical technical capabilities or industry-specific knowledge. For such 'deep tech' IDEs, it is essential for them to access considerable amounts of external capital in order to build solutions, grow, and focus on product/market fit.

Moving from a simple 'SME:IDE' start-up dichotomy, this expanded continuum of enterprises provides an enriched but still clear categorization of ventures, and a framework within which to consider some of the specific policy challenges and ways in which policy-makers may support different enterprises during the economic recovery and then to longer-term economic growth. Likewise, considering firms at different stages in their lifecycle (from aspiring founders with proto-ventures; through venture builders with ventures that are 0-3 years old; to ventures over three years old) allows us to build communities of entrepreneurs, and programs of support that are more tailored and effective.



## CLOSING THOUGHTS

With this new enterprise framework established, we want to close with both a summary of the main takeaways from this paper and thoughts that look ahead to how this framework could be used.

Again, current methods to classify small and medium-sized enterprises (SME) just by their size do not allow the nuance needed to develop appropriate policy and properly support the various enterprises that exhibit different operational needs and tendencies, despite all satisfying a formal firm size requirement. Instead, we advise that firms be judged upon four axes: their underlying aspiration, their early signals of growth potential, then realized growth in productivity, and economic contribution measured by jobs and taxable revenue.

Based on these four axes, we propose an enterprise framework that classifies four general types of enterprises, from the traditional, hyper-local small SME, through new IDE start-ups whose combination of aspiration, growth potential and productivity begets a set of unique needs for support (distinguishing between those with an asset-light, digitally-focused approach, and those ‘deep tech’ IDEs which have different needs, eg for patient capital), and finally those existing SMEs that aspire to grow at a ‘gazelle’-like pace, usually enabled by standard digital technologies, perhaps to become medium-sized SMEs.

Each type of enterprise has its own unique contribution to the economic prosperity of a region and, depending on the characteristics of the ecosystem in question, the enterprise mix can vary. Ultimately, because each type is playing a role in the national economy and each has its own set of needs, we hope that this framework can help with designing support based on these axes and yield the impact that is desperately needed in our current context amid planning for a recovery from COVID-19’s lockdowns.

One point that we do want to stress in addition to this is that, while we have identified four different types of new enterprises, the framework is not a rigid one and it is possible for some enterprises to move from one category to another depending on the operational actions taken by the firm. In fact, we encourage policy makers to take advantage of this fluidity given the potential benefits that increasing the number of ‘gazelle’ SMEs in an ecosystem can have.

When using productivity measured by GVA per employee as the basis to distinguish types of enterprises from one another (rather than just growth in revenue), discussions are often framed around how to help enterprises improve their productivity, signaling that the continuum is not static. Whether it involves enterprises reducing time spent on non- or low-value-adding activities, producing more higher valued goods, or reducing intermediate consumption costs, it is clear that past research and discussions imply that an enterprise’s place in the continuum can shift based on operational decisions.

For example, there is currently work done by the OECD to identify and promote productivity levers such as talent improvement, promoting digitalization and technology upgrades, as well as facilitating the growth of business networks.<sup>45</sup> Meanwhile, organizations like ‘Be The Business’ in the UK help enterprises identify where they sit relative to others in their particular industry, with respect to GVA per employee, and helps managers learn what actions they can take to move further up the continuum.<sup>46</sup>

---

<sup>45</sup><https://www.oecd.org/cfe/smes/smeproductivity.htm#:~:text=Productivity%20is%20a%20key%20driver%20of%20long%2Dterm%20economic%20growth.&text=At%20the%20firm%20level%2C%20key,networks%20and%20to%20financial%20resources.>

<sup>46</sup> <https://www.bethebusiness.com/benchmark-your-business/>

These actions enable hyper-local firms in the first category of our framework to become more 'gazelle'-like without having to ape firms in the IDE categories: they are examples of how the fluid nature of the framework can be an advantage. As noted above, there is no magic to the 'gazelle' name or the '20%' growth rate, so regional variations in both naming and target rates are possible, especially in emerging markets.

With this enterprise framework established, not only do we see this as the beginning of getting the right level of support to the various types of enterprises that they need in consideration of their operational behavior, we also hope to see this used as the basis for more programs designed to help firms which are on the lower end of the economic spectrum to thrive, and therefore benefit all stakeholders and the broader ecosystem.

## Annex: global definitions of SMEs

The SME definitions below are from several jurisdictions and organisations around the world.

COUNTRY/ ENTITY	MICRO-			SMALL			MEDIUM		
	Emps	Assets	Revenue	Emps	Assets	Revenue	Emps	Assets	Revenue
EUROPEAN UNION <sup>i</sup>	10	2,260	2,260	50	11,300	11,300	250	48,590	56,500
IFC / WORLD BANK <sup>ii</sup>	10	100	100	50	3,000	3,000	300	15,000	15,000
UNITED KINGDOM <sup>iii</sup>	10	-	-	50	4,226	8,426	250	16,200	32,401
MEXICO <sup>iv</sup>	10	-	176	50	-	4,400	250	-	11,000
NIGERIA <sup>v</sup>	10	13	52	50	260	260	200	1,300	1,300
SAUDI ARABIA <sup>vi</sup>	6	-	810	50	-	10,800	250	-	54,000
CANADA <sup>vii</sup>	5	-	-	100	-	-	500	-	-
BRAZIL <sup>viii</sup>	20	456	-	100	3,040	-	500	17,100	-
RWANDA <sup>ix</sup>	5	0.550	0.330	30	16.5	13.2	100	82.5	55
GHANA <sup>x</sup>	5	10	-	30	100	-	100	1,000	-
KENYA <sup>xi</sup>	10	-	0.415	50	-	4.15	100	-	664
EGYPT <sup>xii</sup>	10	-	62	200	-	3,100	200	-	12,400
LEBANON <sup>xiii</sup>	10	-	330	50	-	3,300	100	-	16,500
UNITED STATES <sup>xiv</sup>	500	-	-	500	-	-	500	-	-
CHINA <sup>xv</sup>	20	-	443	300	-	2,953	1000	-	59,000
JAPAN <sup>xvi</sup>	-	-	-	-	-	-	300	2,820	-

**Figure:** Upper limit of each axis is shown (eg number of Employees): both Assets and Revenue are given in thousands of US dollars (for easier comparison). that which exists within SME definitions on an industry sector basis. Businesses in different industries have different characteristics and therefore differ in the number of employees, revenues, and assets: regulators in several countries have made the effort to go beyond a one-size-fits-all approach and have built criteria by industry. In Japan, SME criteria (using number of employees with total asset value) vary depending whether the enterprise in question is in the wholesale, retail, service, or another sector. In the US, small business classification via annual revenue or number of employees varies on both an industry sector and sub-sector basis, with differences existing based on specific product type.<sup>47</sup>

<sup>47</sup> For Japan: [https://www.chusho.meti.go.jp/sme\\_english/outline/08/01\\_01.html](https://www.chusho.meti.go.jp/sme_english/outline/08/01_01.html) For the US: [https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=7780ee089107f59ef3f78b938e2282b7&r=PART&n=13y1.0.1.1.17#se13.1.121\\_1201](https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=7780ee089107f59ef3f78b938e2282b7&r=PART&n=13y1.0.1.1.17#se13.1.121_1201) For example, the upper limit for employees at a bottled water manufacturing firm is 1000, while for a brewery it is 1250 – despite both being the same subsector.

Endnotes from chart.

- 
- i [https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition\\_en](https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en)
- ii [https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/SME\\_Synthesis.pdf](https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/SME_Synthesis.pdf)
- iii <https://www.ucl.ac.uk/procurement/suppliers/smes#:~:text=Definition,not%20more%20than%2050%20employees>
- iv <https://www.logicbus.com.mx/caracteristicas-pymes-tecnologicas.php>
- v <https://www.boi.ng/smedefinition/>
- vi <https://www.monshaat.gov.sa/#page1>
- vii [https://www.ic.gc.ca/eic/site/cis-sic.nsf/eng/h\\_00005.html#employment\\_size\\_category](https://www.ic.gc.ca/eic/site/cis-sic.nsf/eng/h_00005.html#employment_size_category)
- viii <https://thebrazilbusiness.com/article/company-classification-in-brazil>
- ix [http://www.minicom.gov.rw/fileadmin/minicom\\_publications/policies/SME\\_Devt\\_policy\\_V180610.pdf](http://www.minicom.gov.rw/fileadmin/minicom_publications/policies/SME_Devt_policy_V180610.pdf)
- x Ghana Industrial Census. Ghana Statistical Service (1987)
- xi Kenyan Micro and Small Enterprise Act (2012)
- xii <https://www.oecd-ilibrary.org/sites/9789264304161-11-en/index.html?itemId=/content/component/9789264304161-11-en>
- xiii [https://www.economy.gov.lb/public/uploads/files/6833\\_5879\\_4642.pdf](https://www.economy.gov.lb/public/uploads/files/6833_5879_4642.pdf)
- xiv <https://www.sba.gov/document/support--table-size-standards>
- xv People's Republic of China Government Classification Document
- xvi [https://www.chusho.meti.go.jp/sme\\_english/outline/08/01\\_01.html](https://www.chusho.meti.go.jp/sme_english/outline/08/01_01.html)