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STUDY

The Role of Small and Medium-sized Enterprises in Development

What Can be Learned from the German Experience?

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- Small and medium-sized enterprises (SMEs) play an important role for development. Of importance are Schumpeterian SMEs, which include start-ups that trigger innovation, boost productivity and bring about structural change. Normal SMEs, which only adjust to market pressure, are also important for development and employment.

- Germany is a role model for SMEs. This is due to several important factors: Germany's local banking system, which is not profit oriented (made up of *Sparkassen,* or savings banks); the dual vocational system, with its combination of practical and theoretical education; the high social capital of strong employers' associations and trade unions; government support of SME clusters and a big, government-owned development bank (the KfW).

- SMEs in developing countries typically suffer from limited access to long-term and affordable finance, insufficient institutions for developing a skilled class of entrepreneurs and workers, a low income, and poor policies to support economic and social upgrading of SMEs.

- Economic upgrading in developing countries is necessary, but it will not be successful without social upgrading. Germany – with its high social capital within the framework of a social market economy, its financial and education system, and its government support for SMEs – can stimulate debates about SMEs in developing countries.

Content

List of Abbreviations

BIBB	Bundesinstitut für Berufsbildung (Federal Institute for Vocational Education and Training)
BMWi	Bundesministerium für Wirtschaft und Energie (the Federal Ministry of Economic Affairs and Energy)
EC	European Commission
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
GVCs	Global value chains
IfM	Institut für Mittelstandsforschung (Research Institute for Small and Medium-sized Enterprises)
ILO	International Labour Organisation
KfW	Kreditanstalt für Wiederaufbau (a government-owned development bank)
NAFTA	North American Free Trade Agreement
OECD	Organisation for Economic Cooperation and Development
R&D	Research and development
ROSCAs	Rotating savings and credit associations
SMEs	Small and medium-sized enterprises
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
US	United States

1. Introduction

The category of small and medium-sized enterprises (SMEs) encompasses not only micro-enterprises with just a few employees but also successful enterprises with a large number of employees. There is no clear definition of SMEs. Germany's Federal Ministry for Economic Affairs and Energy defines SMEs as firms that have less than 500 employees or that generate up to 50 million euros in annual turnover (BMWi 2014a). According to the European Commission's definition, SMEs are firms that have less than 250 employees or that generate up to 50 million euros in annual turnover (EC 2017a). Germany's government-owned development bank, the KfW[1], defines SMEs as firms with up to 500 million euros in annual turnover (Schwartz 2016).

SMEs and employment creation are very important for countries all over the world. But SMEs are not only an important source of employment; they can also become a source of innovation and increased productivity. In this paper, we focus especially on the latter effect of SMEs because increasing the productive powers of a country is one of the key pillars for development.

In section two, we argue that not all SMEs or start-ups are of a Schumpeterian nature and go on to distinguish different types of SMEs. The interrelation of economic and social upgrading for successful long-term catching-up is discussed in section three. Section four gives a short overview of the SME sector in Germany. Section five summarises the theoretical debate about success factors of SMEs, especially their institutional embeddedness in the economy and society. The section covers the areas of access to finance, the educational system, industrial clusters, including value chains, and social capital. In each part of this section, the general debate regarding the success of SMEs will be presented before an analysis of how these factors are realised in Germany. Finally, in section six, conclusions, especially for so-called developing countries, are drawn. These are not applied to a specific country, but to a«typical developing country«.

1. The *Kreditanstalt für Wiederaufbau* (KfW) is the biggest German development bank and the third-biggest bank in Germany. The Federal Republic of Germany owns 80 per cent of it; the individual German states 20 per cent. Established to support the rebuilding of the German economy after World War II, it supports SMEs and other businesses (Detzer et al. 2017).

Our aim is to derive conclusions both from the general debate and the German model. However, we should keep in mind that institutions in general, and German institutions in particular, cannot be translated easily to other countries. However, other countries can without a doubt learn from the German experience.

2. Schumpeterian and other SMEs

According to Joseph Schumpeter (1934), a firm is innovative when it creates new combinations of production factors. These may be the introduction of new goods or existing goods with better quality, the introduction of a new method of production, the opening up of new markets, the use of new supply sources or materials, or the reorganisation of a firm. Schumpeterian firms trigger changes and in this way help develop the productive powers of a country. They change the competition in markets and force other firms to adjust or lose market shares and, finally, to exit the market. Schumpeterian firms make up only a small number of total firms. Other, i.e. normal, firms follow the lead of Schumpeterian firms and in this way also contribute to economic development. At the same time, Schumpeter also had the idea of »creative destruction«, or that creative firms led to the destruction of existing structures, including firms that cannot adjust. A Schumpeterian firm can be big or small; incumbent or a start-up.

It is obvious that not all SMEs are Schumpeterian SMEs. Especially in developing countries, many firms – if not the majority – are poverty-driven SMEs. As Hobday and Perini (2009: 487) write, »There is a major difference between starting a business of whatever form and being an entrepreneur in the sense of being a carrier of new technology, skills, and capabilities. In fact, self-employment, particularly in the informal sector, is often the mark of backwardness and not of dynamism.« SMEs can be sorted into three groups. First, there are »Schumpeterian SMEs«, which innovate and create something new. Second, there are »normal SMEs«, which are able to adapt to the challenges brought about by Schumpeterian firms; these normal SMEs mainly react to competitive pressure but do not change or innovate their businesses of their own accord. And third, there are »poverty-driven SMEs«, which are the result of lacking economic development combined with lacking employment opportunities and insufficient welfare state

benefits. Poverty-driven SMEs are usually not innovative or do not have the potential to innovate or increase productivity. They often survive on the basis of cheap labour, which, in some countries, includes child labour and other exploitative working conditions. To that end, they do not contribute to either economic or social upgrading.

It is a well-known phenomenon that the number of small enterprises increases in crisis situations, as unemployed or poor people are forced to try everything to survive. Much of the self-employment and many of the micro-enterprises in the informal sector are of this nature. During positive economic development, these types of SMEs disappear and should disappear because they provide bad working conditions, the owners exploit themselves or, compared with the national standard, they pay extremely low wages.

The KfW (2017a) differentiates between two types of start-ups in Germany: opportunity start-ups, or Schumpeterian SMEs, and »necessity start-ups«, or the remaining start-ups. A survey in Germany showed that, in 2016, the main motive of new start-ups was to realise an innovative marketable business idea (46 per cent of new start-ups). The share of new start-ups established due to lack of alternative income sources was 25 per cent. The rest of the new start-ups in the survey (29 per cent) were founded for other reasons (BMWi 2017a, based on data provided by the KfW). Other motives included self-realisation, family or private reasons, or transfer of venture (KfW 2013). The rate of Schumpeterian SME start-ups in Germany in 2016 was relatively high. However, it must be taken into consideration that economic development was relatively good that year.

The percentage of normal and poverty-driven SMEs and start-ups in developing countries is estimated to be much higher than the percentage of the same in Germany. Given the large informal sector in many of the countries from the Global South, there is a reason to fear that the large majority of SMEs are poverty-driven in many developing countries.

It is important to distinguish between different types of SMEs so the government policies can differentiate its policies towards them. For example, Schumpeterian SMEs, including Schumpeterian start-ups, have to be supported with specific policies. The environment of all SMEs has to be improved to trigger a broad development process. Poverty-driven SMEs have to be supported by anti-poverty programmes and should be regulated to avoid unacceptable working and living conditions for owners and workers.

3. Economic and social upgrading

In general, economic upgrading means that the innovative power of a country increases and the average person involved in the production process increases its value added. Living standards in developing countries only can be increased when the value added per hour in developing countries increases.[2] Drawing on Schumpeter, four different types of economic upgrading are differentiated on the firm level: product upgrading (better or new products), process upgrading (new technologies or organisations), functional upgrading (shifting or extending the position in value chains to more skilled activities), intersectoral upgrading (extending the position to new sectors by using the skills acquired in the previous sector) (for more on this subject, see Humphrey, Schmitz 2002; Pietrobelli, Rabellotti 2004; Giuliani et al. 2005; Gereffi, Lee 2016). A restaurant, for example, might upgrade in the following ways: it could produce better dishes and better surroundings (product upgrading), create the dishes with better technology and better trained staff (process upgrading), start its own online marketing (functional upgrading) or combine the restaurant business with music and theatre performances (intersectoral upgrading).

According to the *ILO Decent Work Agenda,* social upgrading has four main dimensions (ILO 2016): quality of work, social security, labour rights and social dialogue. It also encompasses the Core Labour Standards, or: the elimination of all forms of forced or compulsory labour, the effective abolition of child labour; the elimination of discrimination in respect of employment and occupation, the freedom of association and the right to collective bargaining.[3] Economic upgrading improves the conditions for social upgrading but does not automatically lead to it: a large sector with very low wages may remain in

2. During a development process, the structure of the increasing value added and its distribution are of key importance. But that is not the topic of this paper.

3. For the core labour standards, see the ILO Conventions 29, 87, 98, 100, 111, 105, 111, 138 and 182.

spite of general positive developments in technologies; child labour may not disappear in spite of higher average income; a largely informal sector may remain in spite of a country's successful exports. In many countries, especially among SMEs, working conditions, labour rights, social dialogue, etc., are not good and do not follow a general trend of improvement. Social upgrading includes all groups in society in the process of development and the creation of a space for all people to accumulate capabilities and to improve their individual freedom (see positive and negative examples in Campos, Root 1996; Herr, Sonat 2014).

Social upgrading is not a luxury, a country can afford after development has been achieved. Economic upgrading during a development process is only sustainable if combined with social upgrading. Sooner or later, the lack of social upgrading becomes an obstacle for economic upgrading. There are supply-side and demand-side arguments for this.

Supply-side factors such as bad working conditions, high social insecurity and a big low-wage sector prevent sufficient private investments in education and health. In general, the reproduction of labour power suffers when the ILO Decent Work Agenda and Core Labour Standards are not fulfilled. Insufficient working conditions and comparatively low incomes of large groups in society reduce the motivation of workers and their productivity. Last but not least, bad working conditions and high-income inequality can lead to the erosion of the coherence of a society and to political problems that are harmful for growth. Almost all negative social indicators like criminality, spending to protect private property or bad medical conditions are positively related to income inequality and unequal wealth distribution (Wilkinson, Pickett 2006). The income gap between the poor and the median incomes in a society seems to be especially harmful for sustainable growth (Cingano 2014; Berg, Ostry 2011).

From the demand side, high inequality and high insecurity reduce consumption demand. The main argument is that high-income groups have a lower propensity to consume than low income groups. The problem is aggravated when high insecurity stimulates generally high savings and depresses consumption demand. Without sufficient consumption demand, which is by far the biggest demand element in almost all countries, overall demand will suffer and compress investment demand. Without sufficient aggregate demand, economic dynamic is not possible. A relatively equal income distribution and the inclusion of all societal groups in economic progress become a precondition for sustainable growth.

Berg and Ostry (2011) of the International Monetary Fund have found that high income inequality does not allow for longer periods of high GDP growth. In general, income inequality is important for the demand dynamic (Hein 2014; Herr 2016). In addition, Verdoorn's law states that higher growth itself stimulates higher productivity increases (Thirlwall 2013: 43f). The dynamism of high growth is based on economies of scale, and even more on stimulating positive learning effects, economic clusters and the accumulation of knowledge.

Social upgrading that encompasses a relatively equal income distribution is crucial for SMEs and their expansion. Positive supply-side and demand-side effects stimulate SME development. SMEs need both policies that improve their supply side conditions and policies that create sufficient demand for them.

4. The German SME sector

German SMEs are considered the backbone of the German economy. Using the BMWi's definition of SMEs (see above), 99.6 per cent of all German firms were SMEs in the year 2015, creating 58.5 per cent of all jobs subject to social insurance contribution and 35.3 per cent of total sales of all firms in Germany. They constituted 54.9 per cent of net value added in Germany in 2015 (IfM Bonn 2016). Based on EC's definition of SMEs (see above), SMEs in Germany generated 47.0 per cent of gross value added in 2015 (Destatis 2017).

In 2014, of SMEs that have between 20 to 499 employees, the share of exporting SMEs was 90 per cent of the total number and SMEs earned 50.9 per cent of their turnover from direct (32.9 per cent) and indirect manufacturing exports via their customers (18 per cent). 65.5 per cent of manufacturing exports went to Europe, 8.3 per cent to the NAFTA countries and 6.9 per cent to China (Abel-Koch 2016a). While SMEs constituted only 17.5 per cent of Germany's total exports in 2014 (IfM Bonn 2016), they played a significant indirect role in German exports as suppliers to exporting firms.

Productivity of German SMEs differ, but are not comparable to productivity differentials in developing countries. In 2015, gross value added per person employed by German micro-enterprises (zero to nine employees) was 42,700 euros, while small enterprises with 10 to 19 and 20 to 49 employees had a gross value added per person of 40,800 and 46,900 euros, respectively (see Table 1). In fact, German micro-enterprises were more productive than small enterprises with 10 to 19 employees. Productivity of the average large enterprise is higher than that of the average SME. But also here productivity differentials are not comparable to the differentials in a typical developing country.

Table 1: Productivity of SMEs and large enterprises in Germany, 2015

SMEs by number of employees	Gross value added per employee in thousands of euros
From 0 to 9 employees	42.7
From 10 to 19 employees	40.8
From 20 to 49 employees	46.9
From 50 to 249 employees	57.0
Large enterprises (250 employees or more)	68.4

Source: Eurostat (2017)

Expenditures for research at German SMEs as well as their innovation frequency are among the highest in the EU. For instance, 90.5 per cent of the enterprises with 10 to 49 employees and 87.9 per cent of the enterprises with 50 to 249 employees in Germany introduced a product innovation that was new to their firms in 2014, the highest proportion in the EU (Eurostat 2017). Also, Germany had the highest proportion of innovative enterprises in terms of product, process, organisational and marketing innovations among all enterprises in the EU 27 in 2008 (79.9 per cent) (Eurostat 2012). Innovations in the manufacturing sector are more frequent than in other sectors. In the period from 2011 to 2013, 53 per cent of the SMEs with 50 to 249 employees in the manufacturing sector introduced product innovation and 53.1 per cent of the same size of companies in the manufacturing sector achieved process innovation (Abel-Koch et al. 2015). Yet functional or intersectoral innovations are not common.

Based on the KfW Competitiveness Indicator[4], which surveyed how SMEs in 10 countries saw themselves in comparison to their international counterparts, German SMEs ranked at the top of the list, which included industrialised and emerging economies such as France, UK, US, Russia, China and others (Abel-Koch 2016b). Among the sub-indicators, German SMEs' product or service quality, degree of innovation, delivery time and customer service ranked highest. German SMEs' degree of innovation and customer service were ranked highest relative to other countries, while their product or service quality lagged behind that of the US and the UK, and delivery times lagged behind that of the US and China (see Abel-Koch 2016b: Table 1). When considering all the business performance sub-indicators, Germany ranked only behind the US; however, when considering all the location performance sub-indicators, Germany was the most competitive country. German SMEs' saw their situation as relatively bureaucratic and they considered corruption, political and social instability, and lack of infrastructure in comparison to other countries to be the least challenging location performance factors (Abel-Koch 2016b: Table 2).

The foreign direct investment (FDI) or offshoring of German SMEs was mainly within in Europe. In 2014, 51.6 per cent of the total foreign production was in the EU 15 and 12.2 per cent in the newer EU member states). The main motivation was market access and cost reduction (Abel-Koch 2016a).

The SME sector in Germany produced a number of »hidden champions«, or companies that are among the top three companies in their field worldwide, with around 70 to 90 per cent of the global market share, and that have highly specialised products or services, strong innovative power and strong export performance, yet are largely unknown to the public. Based on this definition, Germany has 1,307 hidden champions, whereas the US has 366 and Japan 220 (Simon 2017). Hidden champions usually invest more in vocational training and R&D than the industry average, which is evident by their strong innovativeness (31 patents per

4. This indicator is composed of sub-indicators of business performance (price, quality, degree of innovation, awareness, delivery times, service, staff and material costs and energy efficiency) and location performance (bureaucracy, corruption, political and social instability, lack of infrastructure, taxes and duties, energy costs, skills shortages, financing constraints, environment and climate protection legislation) of countries (see Abel-Koch, 2016a: Figure 1).

1,000 employees compared to six patents per 1,000 employees of large corporations). This is also reflected in their above-average product quality and customer service as well as above-average market prices (10 to 15 per cent higher than average prices).[5] Of course, not all SMEs can be champions and successful start-ups in high-tech areas. Many SMEs in Germany are active in the traditional service sector, handicrafts, the retail sector, etc. These SMEs are also important for employment and economic development. But in Germany, these types of SMEs have a relatively high productivity (see above). Average wages in the SME sector are partly lower than among bigger enterprises, but differences are moderate compared to developing countries. For instance, in 2014, the annual average income of a skilled manual worker in the industry and construction sector was 37,995 euros, while the annual average income of a skilled manual worker in the service sector was 30,494 euros. In 2014, the average annual income of manual workers at micro-enterprises (0 to 9 employees) was 25,042 euros, while it was 28,698 euros at SMEs with 10 to 49 employees. However, the average annual earning level in medium-size enterprises (50 to 249 employees) was 37,026 euros, compared with average annual earnings of 37,385 euros in very big enterprises (1,000 employees or more) (Eurostat 2017). Overall, looking at average wages, working in medium-sized enterprises is not a disadvantage compared to big enterprises. Average wages in smaller enterprises have a lower level. But, as mentioned above, differentials are moderate compared to developing countries.

Besides, working conditions and social security in the SME sector are comparable with the situation in bigger companies. There are differences in wages and working conditions between different sectors in the German economy, but working at an SME does not mean that an employee is automatically worse off. Relatively good social and working conditions in the SME sector are part of the German social market model and essential for the success of the country's economy and society.

German SMEs are often seen as a role model for SME development in general due to their innovation performance, global competitiveness, sound balance sheet structures as well as resilience against global crises (such as the 2008/2009 crisis). In the next section, we discuss success factors for SMEs in Germany and in general.

5. Major SME success factors

5.1 Access to finance

In general

Many studies emphasise the importance of access to finance for SME development. These studies focus on the fact that SMEs have less access to formal loans than larger enterprises (Hashi, Krasniqi 2011; Nichter, Goldmark 2009; Audretch et al. 2011). The World Bank (2008), for instance, states that easier access to finance would benefit SMEs through various ways and contribute to overall growth of the economy. It would promote more start-ups and investment opportunities, and thus increase productivity and growth, more efficient asset portfolios and organisational reforms. In addition to the lack of credit, interest rates are usually high and long-term credits in many developing countries are especially difficult for SMEs to get. Financing problems are usually the more severe the less developed a country is. In a cross-country analysis by Ardıç et al. (2012), loans to SMEs as a percent of the GDP positively correlated with the country's gross national income per capita.

It is more difficult for SMEs to get affordable, adequate and long-term credit than it is for bigger firms (Beck 2007). First, refinancing costs for banks in developing countries are usually much higher than in developed countries. Due to macroeconomic and socio-political instabilities, central banks in these countries usually have to enforce higher interest rates to compensate for the low confidence in the domestic currency and to slow down capital flight. Second, capital exports reduce opportunities for credit expansion in domestic currency. Any credit expansion in domestic currency and the corresponding creation of monetary wealth leads to capital exports and a weakening of the external value of the currency, which cannot be accepted by the central bank. This leads to very strict credit rationing and a lack of credit. Third, the lack of collateral keeps interest rates especially high and credit supply low for SMEs. Fourth, sometimes credits to SMEs are too small to be attractive

5. Some examples of hidden champions are Chemetall (special metals), Winterhalter Gastronom (commercial dishwashers), 3B Scientific (anatomical teaching aids), Rosen Group (pipeline inspection) and Uhlmann (packaging machines for pharmaceutical products) (Simon 2017).

for banks. Finally, banking systems are in many cases inefficient and need high interest rate spreads.[6]

Beck and Cull (2014) found that access to finance is the most significant obstacle for SMEs in Sub-Saharan Africa. Many Sub-Saharan SMEs do not even attempt to apply for a bank loan due to high interest rates, complicated documentation, the collateral requirements, among other reasons. Also, a lack of local branches can be an obstacle for bank credits to SMEs. For some banks in Kenya, for instance, a company's geographic proximity is an important criterion for giving it credit, as a nearby location ensures the banks' ability to communicate and monitor the company (Akoten et al. 2006).

Social capital – in this case, trusting relationships – can facilitate access to finance for insiders of a social network (Portes, Landolt 2000). For example, in Kenya, it is more common for younger firms and firms with younger managers to borrow money from family and friends than it is for older firms and older managers who have access to banks (Akoten et al. 2006). This is attributed to the low social capital of younger firms and younger managers in an environment where there is a high possibility of default. Industrial clusters contribute to the build-up of social capital by young firms and improving access to bank loans.

The availability of non-bank financial sources to SMEs in developing countries varies. The most important of these sources are trade credits, factoring, leasing, overdrafts, credit from microfinance institutions and equity funds. In many cases, SMEs are forced to fall back on informal loans such as loans from family, friends, unprofessional money lenders or informal social networks (World Bank 2008; Beck, Cull 2014). Potential sources of finance for small firms are rotating savings and credit associations (ROSCAs). These associations provide informal, short-term credit, whereby the participants save a certain amount of money collectively and take turns lending the accumulated sum to one participant at a time. Firms with high social capital, e.g. such as family and friends in the same business or members of established social networks, have better access to finance from ROSCAs. But all these alternative sources are not sufficient to create an investment dynamic among SMEs.

The finance problem of SMEs in developing countries is usually not solved by the involvement of foreign banks. The opposite might be the case. Foreign banks' deficiency of information about the risks of domestic industries and firms can cause additional credit rationing to smaller local firms. Foreign banks may prefer lending to the subsidiaries of large multinational companies in the domestic economy than to smaller domestic firms. Transferring domestic deposits into known international markets such as New York, London and Frankfurt may be more attractive for foreign banks than searching for good debtors in domestic markets (Stiglitz 1993). On the other hand, the involvement of foreign banks may increase competition in the financial system and encourage local banks to focus more on SMEs (World Bank 2008).

German SMEs' access to finance

Unlike the financial system in the US or the UK, the German financial system is bank based, consisting of three types of financial institutions: private banks, public savings banks and cooperative banks[7] (Detzer et al. 2017; Audretsch, Lehmann 2016). Neither public savings banks, owned by local communities and constituting 29.4 per cent of the total German bank assets in 2012, nor cooperative banks, owned by members of the cooperative and comprising 11.8 per cent of total bank assets in 2012, are profit-oriented institutions. They give credit to local firms and private households and have a mandate to support the local economy. In 2012, private banks had 38.3 per cent of total bank assets, while the big private banks only had 25.3 per cent (Detzer et al. 2017: 57).

Public savings banks and cooperative banks in Germany are only allowed to give loans in their geographical region. They work within a system of joint liability, which means that they share responsibility for losses within the whole system. Both local public savings banks and cooperative banks founded their own central institutions that reallocate excess deposits of local banks and deliver technical help and support for the whole system. Central institutions also have the function of financing big public

6. Similar points are made by Ardıç et al. (2012: 492). SMEs have usually more difficulties getting long-term loans due to »lack of collateral, difficulties in proving creditworthiness, small cash flows, inadequate credit history, high risk premiums, underdeveloped bank-borrower relationships and high transaction costs«.

7. *Sparkassen* and *Genossenschaftsbanken*.

infrastructure projects.[8] This system makes the balance sheets of local public savings banks and cooperative banks more resilient than balance sheets of private banks, as was made evident by the global economic crisis of 2008/2009. Recently, the KfW started to finance SMEs that focus on green growth projects and introduce clean technologies (Audretch, Lehmann 2016; Detzer et al. 2017).

In addition, the KfW provides both long-term and short-term loans to SMEs for purposes such as export financing. It supports SMEs' technological advancements in particular (Audretch, Lehmann 2016). KfW credits can be given directly[9] to selected firms, but usually use regional banks as mediators, especially public savings banks and cooperative banks. This method of credit allocation exploits the knowledge of local banks and reduces the risk of corruption.

Germany is a typical example of relationship lending, with a very small role of private debt securities. This means firms, especially SMEs, have a so-called house bank, with close ties between banks and firms. Usually, there is a long credit history between banks and firms. In many cases, the bank managers know the owners of old and new firms. This system facilitates SMEs' access to long and short-term credit for low interest rates. It also helps firms to overcome temporary financial difficulties. What we have here is an example of social capital that helps SMEs' access finance. Relationship lending in Germany is an important factor for decreasing asymmetric information and reducing credit rationing, which is why smaller firms and firms with high R&D expenses, in particular, prefer to engage with public banks (Memmel et al. 2007). Lending based on trust positively influences SMEs' credit supply and reduces the interest rate premium on loans (Hirsch et al. 2016).

The German banking system, thanks especially to its network of public savings banks and cooperative banks, is a strong contributing factor of SME performance in Germany relative to SME performance in other countries. Germany also differs from other countries because of its banks' heavy involvement in companies' decision-making (Audretch, Lehman 2016). The German model is a very good example of Joseph Schumpeter's (1934) idea of the banker as the ephor or supervisor of the entrepreneur. This strong role of the bank stimulates, as a side effect, high internal financing of firms to secure their independence from banks (Venohr, Meyer 2007), which, in turn, strengthens the resilience of the enterprise sector.

5.2 The education system

In general

The skill-level of the labour force plays a significant role in economic development and for SMEs' success: it affects the level of productivity and the innovative power of enterprises. One of the key recommendations by international institutions on how to develop countries – and part of the Washington Consensus – is to increase expenditures on education and training. There is no doubt that those things are essential for economic development. This recommendation implies higher government expenditures. However, a more equal income distribution also allows poorer social classes to spend more money on education and training. Without negating the important role of education, it must be stressed that education alone does not trigger development: it must be embedded in a package of strategies. Otherwise, for example, unemployed academics will migrate to other countries (Solga 2016). Also, decisions must be made about the types of education that need more support: basic primary school, secondary school, vocational training or tertiary education.

Depending on the economic sector, SMEs require people with specific types of education. For high-tech start-ups, tertiary education is needed. Likewise, qualified, skilled workers who are continually educated and trained throughout their professional lives are needed for traditional SMEs. And, in many cases, management skills at SMEs are insufficient.

Developing countries usually lack an established and comprehensive vocational training system relative to the tertiary education system. Workers may obtain hands-on training at companies as part of their careers, but usually

8. Some of the central institutions of public saving banks, the *Landesbanken*, invested in toxic products abroad before the financial crisis in 2008/2009 and incurred heavy losses, as did a number of private banks. Both the public savings and private banks were bailed out by the government. It was a mistake and irresponsible to allow public banks to engage in this kind of risky business (Detzer et al. 2017).

9. Companies are required to apply directly to some of the KfW's loan programmes such as equity capital programmes for social enterprises (enterprises with a social aim, such as charities or self-help organisations, as described in EC 2014) or financing programmes promoting renewable energy production.

there is a lack of systematic vocational training that prepares people for their later job and teaches them specialised skills. The duration for vocational training in developing countries – if it takes place – is in many cases three to six months: compared to developed countries, this is a very short time to obtain both theoretical and practical qualifications.

This may cause a mismatched career for many qualified university graduates on the one hand and a lack of skilled workers on the other. One of the factors of such a mismatch is the high social esteem for university education in relation to vocational training. This is reflected in the high disparities of wages and working conditions between professions that necessitate a university education and professions that necessitate a vocational or no formal education. This is a good example of the fact that a lack of social upgrading creates an obstacle for economic development.

The German education system

There is not space here to discuss the German education system in detail. Only a few remarks can be made about the vocational education system that is especially important for SMEs in developing countries. It is obvious that university education is important – as is basic education in the case that a part of the population is illiterate.

The vocational education and training system is an integral part of the German economic model, since it maintains and develops highly specialised and skilled labourers for all types of companies, above all for SMEs. In 2017, 90 per cent of all apprenticeships in Germany were at SMEs. Bigger SMEs (with at least 50 employees) play a special role in the German vocational training system, as 76 per cent of them offer apprenticeships – as opposed to 50 per cent of the medium-sized enterprises (10 to 49 employees), 24 per cent of the small enterprises (5 to 9 employees) and only 5 per cent of the micro-enterprises (less than five employees) (KfW 2017b). Apprenticeships offered by SMEs can be considered an investment in the skill level of the companies' workforce, since many of the apprentices are hired by the company as regular employees after completing their vocational training. One of the defining characteristics of Germany's hidden champions is their above-average spending on vocational training (50 per cent more than an average company). Although the percentage has increased in recent years, only around 20 per cent of the workforce of Germany's hidden champions has a university education (Simon 2017). Furthermore, nearly half of start-ups (49.1 per cent in 2012) are established by entrepreneurs with vocational training in Germany (KfW 2013).

The German vocational education and training system has an occupational focus. It is a dual system, in which the participants are educated at a vocational school[10] run by the government and as an apprentice at a company at the same time. Apprenticeships usually last three years, during which time apprentices typically work half the week at their company and attend a vocational school the other half of the week. The government and the chambers of commerce are jointly responsible for the vocational education system. The certificate of apprenticeship can be earned after theoretical and practical examinations. The dual system is financed partly by companies (apprentices are paid) and partly by the state (the vocational schools are free for apprentices). Many of the apprentices stay at the company where they apprentice, some for their whole professional life.

Germany's apprenticeship system is distinct from the system in Anglo-Saxon countries, such as the US and the UK, where, for instance, factory workers are not necessarily educated or trained in advance. And if they have received training in advance, it is not necessarily integrated into an apprenticeship (Audretsch, Lehmann 2016).

While Germany's Federal Institute for Vocational Education and Training (BIBB)[11] is in charge of improving the system and adapting it to changing professions, social partners such as employers' associations and trade unions are involved in determining the wage levels of the apprentices and the apprenticeship curriculum. Chambers of commerce are also involved in the advising and supervising of the companies that offer apprenticeships (Hoeckel, Schwartz 2010).

In addition to the vocational education and training system, universities of applied sciences[12] were created in the 1970s. These universities offer bachelor and master programmes that are more practically oriented

10. *Berufsschule*
11. *Bundesinstitut für Berufsbildung*
12. *Fachhochschulen*

than those offered by traditional universities. Some of the universities of applied sciences offer dual bachelor or master programmes in conjunction with companies in the fields of, for instance, engineering or business administration.

One of the distinctive characteristics of German SMEs is the intense human capital investment by companies that includes but goes beyond apprenticeships. German companies, including SMEs, invest in the education and training of their skilled labourers throughout their entire professional life (Audretsch, Lehmann 2016). For example, Germany's hidden champions with a highly skilled labour force, low labour turnover and low sickness rates invest 50 per cent more in vocational training than the industry average (Simon 2017).

The German vocational education and training system has one additional positive side effect. It contributes to the lowest youth unemployment rates (relative to the unemployment of older age groups) of most other advanced industrialised and emerging economies (see OECD 2010: Figure 1 for data on 2008). In the years when insufficient apprenticeships are offered, the government works with the chambers of commerce, employers' associations and trade unions to try to solve the problem and to guarantee all graduates an apprenticeship.

5.3 Industrial clusters and global value chains

Clusters and value chains are interrelated in many cases. However, it is useful to discuss them one after the other.

The general debate about clusters

Firms benefit from industrial clusters mainly due to external economies of scale and scope. These are based on factors like proximity to suppliers, labour pooling, more specialised labour supply, joint use of certain sources, knowledge spill-overs, cheaper access to inputs, easier market access as well as joint actions for common purposes. External economies of scale and scope develop as the size of the industry grows. Clusters also offer better infrastructure to firms, especially in developing countries. The literature on such clusters goes back to Marshall (1920) and is stressed by many authors (see World Bank 2009; Pietrobelli, Rabellotti 2004; Fujita et al. 2001; Henderson et al. 2001; Krugman 1997; Nadvi 1995; Porter 1990, 1998). Of key importance for clusters is their governance structures: the mode of inter-firm relations within the cluster, the type of industrial relations, firms' relations with employers' or business associations and public or public-private institutions in the industry. All these factors affect a firm's ability to upgrade and its national and international competitiveness (Humphrey, Schmitz 2002).

Here are a few examples: in Indonesia, many SMEs hired employees from other SMEs, which spread inter-firm knowledge and caused a diffusion of technology (Berry et al. 2002). In Brazil, firms' exchange of machinery in the Sinos Valley footwear cluster contributed to know-how spill-overs within the cluster (Schmitz 1995). In Taiwan, clusters helped the PC sector in the late 1980s via accumulation of knowledge, which triggered higher value-added operations; skill transfer was also an important contributor in the Taiwanese PC sector, as employees shifted from foreign manufacturing companies to local companies (Kishimoto 2003).

Firms in successful clusters built horizontal ties, for instance, via business associations or clubs which created a platform for achieving shared goals. Such horizontal ties seem to be an important success factor of SMEs, particularly in developing countries (Nichter, Goldmark 2009; Berry et al. 2002; Schmitz 1995; Nadvi 1995).

Clusters must have a certain character to reap their benefits and, in many cases, need government aid to develop. For example, collaborations between firms and research institutes create collective benefits. Governments can facilitate collaborations by funding projects with specific aims such as product, process, functional or even intersectoral upgrading of companies. Research institutes also benefit from such cooperations, as they can easily test their findings on the market. The Chilean salmon cluster, for example, experienced an upgrade thanks to collaborations of publicly owned firms, private firms, universities and research institutes. The creation of INTESAL, a public-private institute for technological advancement in the industry, brought about product and process upgrading. The cluster also achieved functional and intersectoral upgrading thanks to collaborations between private firms (Salmocorp and ProChile) and public-private initiatives (SalmoFood). These collaborations brought about new marketing strategies and opened up new markets abroad such as the US. Furthermore, the Chilean salmon cluster is one

of the few examples of intersectoral upgrading. The R&D investments of private firms in biotechnology and genetics in collaboration with research institutes and universities led to the development of vaccines, which then benefited the whole cluster, including big and small firms (Pietrobelli, Rabellotti 2004). For more examples of upgrading in clusters, see Appendix 1.

There are conditions that make it difficult to exploit the positive effects of clusters. Hostile competition or strictly hierarchical supply chain structures between companies prevent positive external effects. Mexico's Chipilo furniture cluster and Torreón blue jeans cluster are two such examples. The lack of positive cluster effects in these cases was based on strong vertical ties between a leading firm in the cluster and its subcontractors, which did not allow joint actions with other firms and the development of external economies of scale and scope (Giuliani et al. 2005; Pietrobelli, Rabellotti 2004). In other words, a leading firm's dominant control over a national or global value chain restricts its subcontractors from interacting with the rest of the cluster firms, blocking external economies of scale and scope. SMEs that are tightly integrated into (global) value chains with little of their own entrepreneurial incentive do not provide a model of economic upgrading (see below).

In the production of complex products (e.g. automobiles, computers, aircrafts), lead firms tend to prevent the diffusion of knowledge to suppliers that take over standardised tasks in the value chain. In these cases, collaboration between cluster firms is found to be weak and unsupportive for product, process or functional upgrading (Giuliani et al. 2005).[13] In the specialised suppliers sector (e.g. specified software for the needs of a firm), it was found that functional upgrading is more frequent. This is understandable because tasks designed to meet the needs of the customers can only be delivered by firms with a high standard of knowledge (Pietrobelli, Rabellotti 2004).

To summarise: the cluster debate shows that many critical ingredients are needed for development. First, a combination of competition and cooperation is required. Cut-throat competition suppresses synergy effects, whereas a lack of competition leads to rent-seeking and a lack of dynamism. »Cooperative competition« is needed (Schmitz 1995; Cimoli et al. 2009a and 2009b). Second, cooperative competition does not develop without a whole set of institutions such as strong chambers of commerce. Third, cooperative competition does not develop endogenously in markets and the private sector cannot create it on its own. Government support and management in the fields of knowledge transfer, support, control of rent-seeking or the establishment of social standards and wage levels applicable for all firms are necessary.

German SMEs in industrial clusters

Based on the available survey data of the year 2002, Sternberg and Litzenberg (2004) identified 115 clusters in a total of 10 manufacturing industries and 87 clusters in a total of 10 service industries.[14] Some of Germany's industrial clusters date back to the seventeenth century (Economist 2012). The European Cluster Observatory assigns »cluster stars« based on the following criteria: size (number of employees), level of specialisation, and presence of related industries close to the cluster. According to this estimation, Germany had by far the highest amount of regions (314) in Europe with at least one cluster star in 2009 (Center for Strategy and Competitiveness 2011). Industrial clusters in Germany are platforms »which bring together technology producers and users, accelerating the joint exploration of innovative solutions« (BMWi 2015:55). German clusters give rise to a wide variety of innovative capabilities. This is also supported by the Regional Innovation Scoreboard of the EU, which shows that the majority of Germany's regions are strong innovators (second-highest level) and some Southern German regions are innovation leaders (top level) (EC 2017b).

According to the BMWi (2014b), 60 per cent of the companies in the surveyed industrial clusters declared themselves in a better or significantly better economic situation than the industry average. Firms in industrial clusters of Germany benefit from the highly developed infrastructure as well as the collaborations with universities and research institutes. Germany has a high number of university and non-university research institutes, such as the Max Planck Society, the Fraunhofer Society, the Leibnitz Society and the Helmholtz Association,

13. An exception is the metalworking cluster in Espírito Santo, Brazil. Here, cluster-level institutions facilitated the collaboration between the lead firm in the cluster and SMEs in the field of product and process upgrading (Pietrobelli, Rabellotti 2004).

14. The estimation of the number of clusters in Germany by Sternberg and Litzenberg (2004) is based on their cluster index. This index is composed of indicators such as the number of persons employed, number of firms, size of the area and number of inhabitants of the region.

all of which accumulate knowledge and develop the knowledge and experience level of the work force (Audretsch, Lehmann 2016). The primary function of these institutions differs slightly. While, for instance, the institutes of the Fraunhofer Society (there are over 80) focus on applied research, the institutes of Max Planck Society (there are over 80 as well) more focus on basic research. Joint projects between SMEs, large corporations and university and non-university research institutes are encouraged by government funding programmes. For instance, the partnerships between the Fraunhofer Society and companies make it possible to test research findings in the industry itself.

In Germany, some clusters have a management platform that organises cluster activities. The executive board members of these platforms are associated with scientific research institutes and are usually elected by members of the cluster (see Clusterplattform Deutschland 2017). In a survey of 50 German clusters by the BMWi (2014b), a significant number of players (firms and scientific communities) are categorised as active players in terms of collaborating with clusters to establish R&D partnerships or international cooperations. Along with government programmes, these collaborations support the innovative power of both SMEs and bigger firms.

The general debate on global value chains

Not all SMEs are part of global value chains (GVCs). SMEs in the areas of gastronomy, retail sales or property management usually produce for the local market. Especially in manufacturing, but also in some services, SMEs are integrated into GVCs and have the potential for technological upgrading and improving the export performance of a country.

Firms in GVCs are connected via backward and forward linkages. These firms do not produce a complete product. Instead, the production process is split into different tasks and different firms take over certain tasks. A lead firm is supervising and managing the integration of the different tasks. In horizontal GVCs, lead firms transfer high value-added tasks to other firms due to their skill-intensive expertise. In vertical GVCs, lead firms transfer tasks mainly for the sake of cost cutting (Herr et al. 2016). Typically, a portion of SMEs in developing countries is integrated into vertical national or GVCs as suppliers of certain tasks.

Different governance structures of GVCs have different potentials for upgrading. Humphrey and Schmitz (2002) distinguish the following governance structures of GVCs: arm's length market relations (standard market-based buyer-supplier relations), networks (balanced and cooperative buyer-supplier relations due to equally advanced competences), quasi-hierarchies (buyer's dominance over the supplier in defining the product via subcontracting) and hierarchies (buyer's dominance over the supplier via ownership in the local firm). Quasi-hierarchical GVCs with bigger suppliers have become increasingly common, although global buyers have control over the value chain in terms of design, marketing and logistics processes.

Schmitz and Knorringa (2000) argue that when the concentration of buyers in GVCs is low and buyers prefer indirect purchases via an agent, producers' space for their own design and marketing activities is relatively high. Yet the transfer of technology and know-how is less likely in this case. A less hierarchical value chain, such as a market-based governance structure, obviously allows for more comprehensive upgrading. One example is the above-mentioned Sinos Valley in Brazil.

There are several channels via which buyers from SMEs can help upgrading. Global buyers or local export agents can create higher demand for products of SMEs which otherwise would not exist. This allows for economies of scale and scope and learning effects. Buyers from GVCs will, in many cases, enforce higher quality standards and can assist in the upgrading local firms by providing feedback, consulting, training and, in some cases, R&D collaboration (Altenburg 2000; UNCTAD 2001; Schmitz 2007).

This brings us to the question of which types of upgrading are more common in which sectors. In developing countries, traditional manufacturing sectors (e.g. textiles, footwear) and natural resource-based sectors (e.g. copper, fruit) are often characterised as quasi-hierarchical or hierarchical. In this case, local firms usually benefit from GVCs in terms of product and process upgrading, as these firms are forced to comply with overseas market standards, either because of consumer preferences or because of formally set international quality standards. Such upgrading is in the interest of lead firms which, in many cases, support the upgrading. First-tier local firms are the first to benefit, but second or third-tier firms may

stand to benefit as well. Functional upgrading is rare in the traditional manufacturing and natural resource-based sectors because the governance structure is often quasi-hierarchical, and the global buyers at the top of the GVCs tend to keep private the know-how of their skill-intensive operations, such as design, top research and marketing. Global buyers in GVCs tend to divide their innovation activities between strategic ones (with the highest value added), performed in nearby or neighbouring regional locations, and non-strategic ones outsourced to various locations in developing countries (Humphrey, Schmitz, 2002; Pietrobelli, Rabellotti 2004; Giuliani et al. 2005; Schmitz 2007).

GVCs with complex products (e.g. automobiles, computers, aircrafts) which integrate developing countries are quasi-hierarchical or hierarchical. Global upgrading is not guaranteed in these cases. In fact, collaboration between global buyers and suppliers in developing countries tended to have a neutral or only indirectly positive influence on product and process upgrading, while it tended to have a neutral or even negative influence on functional upgrading (Giuliani et al. 2005; Pietrobelli, Rabellotti 2004). An indirect positive upgrading effect can come from the high competitive pressure that confronts suppliers in developing countries. The automotive industry in Thailand in the late 1980s is a good example of that. Global automakers pushed car part assemblers and suppliers in Thailand to upgrade in order to stay competitive, yet the automakers usually did not give direct support such as training or technical information to achieve this. On the other hand, the Thai government implemented infant industry protection for the domestic automotive industry by imposing quotas and tariffs on finished automobile imports and local content requirements on the domestic automobile assemblers from the mid-1970s until the early 1990s (Kohpaiboon, Jongwanich 2013).

In all cases, lead firms in GVCs only wanted a limited transfer of technology and skills to workers and management. In vertical GVCs, lead firms transfer low-tech and labour-intensive production to cut costs. If certain technological standards and qualities are reached, they have no incentive to further develop the quality of suppliers. GVCs create power asymmetries with negative effects, especially for SMEs, which have a low market power (Azarhoushang et al. 2015). Monopsonistic structures dominate.[15] A monopsonist has the market power to reduce prices of suppliers to a minimum. Suppliers are pushed to almost profitless production whereas the lion's share of the profits along the total value chain is gained by the lead firm. Examples of such constellations are the lower levels of GVCs in the garment or electronic industry, where it is not just different suppliers competing with each other in one country but many suppliers from different countries.

It is obviously negative for developing countries when most of the value created in GVCs goes to lead firms in foreign countries. This reduces domestic consumption because workers and company owners have lower incomes and because domestic investment is stifled by a lack of funding.

Companies, especially SMEs in GVCs under competitive pressure, will try to cut costs by reducing wages, employing workers under precarious conditions or avoiding compliance with safety and environmental standards. In addition, they have to accept high volatility in orders. This leads to volatility of production and periods of excessive overtime among suppliers in developing countries. As some developing countries have governments that do not push sufficiently to realise the ILO Core Labour Standards and other rules or that lack the institutions to enforce such rules, monopsonistic pressure in GVCs often leads to unacceptable wages and working conditions.[16] This shows that, even when limited upgrading within GVCs takes place, social upgrading is not a guarantee.

This is in line with the finding that multinational firms do not seem to be the driver of substantial upgrading in developing countries. Foreign firms in developing countries are satisfied when they have established low-cost and qualitatively good suppliers in a country, be it in the form of FDI or subcontracting. Domestic firms, including parts of the SME sector, have much higher incentives to upgrade on all levels, from product and process upgrading to functional upgrading and intersectoral upgrading. Foreign capital goods suppliers are important channels of technology transfer for these

15. A monopsony describes the constellation of one or only a few demanders of inputs and many suppliers.

16. For such effects on SMEs, see the case studies of the apparel and garment industry in different countries by Anner (2015), and Khan and Wichterich (2015).

firms, as the former are happy to train workers and engineers to run the machines. A dominance of foreign-owned firms in a country – which have taken over marketing, design and sales, research and other high value-adding activities – may discourage local firms from upgrading (Pietrobelli, Rabellotti 2004; Amsden 2009).

Finally, a market-driven international distribution of labour based on comparative advantages forces developing countries into labour-intensive low-skilled production. In manufacturing or services, they tend especially to take on low value-adding tasks in a small number of industries such as the garment or electronics industry. A certain amount of technological upgrading is triggered by markets, but it is limited. Catching-up tasks have to be taken over – not stimulated – by global value chains, and industries that have been completely neglected by global value chains must be developed. As a matter of fact, in spite of globalisation, catching-up in recent decades was only achieved by a very small number of countries, and »divergence and heterogeneity have been and continue to be the dominant tendencies in the world economy (…) and relatively, notwithstanding the hype, there seems to be a lot of globalisation of (short-term) finance, but relatively little, if any, in terms of technological capabilities. In fact it could well be that under conditions of dynamic increasing returns, more international openness of capital and trade flows might well ›naturally‹ induce divergence across regions and countries« (Cimoli et al. 2009a: 12). If this is the case, and our analysis supports this, domestic SME development supported by institutions and the government can become a corner stone for a national development projects in developing countries.

German SMEs in value chains

The perspective of German SMEs in GVCs is much different from a developing country's perspective. In some cases, German SMEs have taken over the role as the lead firms in vertical GVCs; in many cases, they are in horizontal GVCs. They contribute substantially to German exports (see above). We will concentrate here on the role of SMEs as lead firms.

The most successful of the German SMEs in the global economy, the hidden champions, are characterised by a »deep value chain strategy«, or specialisation in a narrow market segment by producing one main product for one main customer segment. In addition, these companies usually provide complementary products or comprehensive customer services to increase customer satisfaction. Two good examples are Winterhalter Gastronom, which makes commercial dishwashers for customers all over the world, and Schmidt AG, which manufactures snowploughs for airports worldwide (Simon 1996). Hidden champions clearly follow the strategy of keeping core competencies within the firm, while outsourcing only non-core competences, such as legal or accounting services (Simon 2017).

One of the key success factors of Germany's hidden champions is related to the way they integrate themselves into value chains. They tend to control of every step of the value chain and have close, long-lasting and collaborative ties with their suppliers and clients (Audretsch, Lehmann 2016). They tend to keep manufacturing and R&D operations, as has been mentioned, within the company, while establishing subsidiaries rather than subcontracting abroad. In other words, they closely control a large share of their value chain, rather than delegating high-tech or high value-adding production to other firms. As a result, they can maintain their product and customer service quality and reduce the risk of losing their firm-specific assets (Venohr, Meyer 2009; Venohr et al. 2015; Simon 1996, 2017).

5.4 Social capital

In general

Social capital can be defined as a reciprocity network whose members have formally or informally established relationships. It is considered productive in the sense that it enables »the achievement of certain ends that in its absence would not be possible« (Coleman 1988: 98). Portes and Landolt (2000: 532) define social capital as the »ability to secure resources by virtue of membership in social networks or larger social structures«, in which these networks are based on the principle of reciprocity generated in various ways. In this sense, social capital is established though formal and informal societal ties.

Social capital is considered a significant complementary factor of a firm's physical and human capital and is frequently associated with trust between the members of a group (see Coleman 1988; Fukuyama 1995; Spence et al. 2003; Akçomak, Ter Weel 2009). It is particularly important for SMEs in the sense that it brings about

trust, insurance and knowledge in a simpler, less costly way than through formal means (e.g. legal contracts, official documentation) or individual efforts (e.g. a firm's own R&D or consulting). In other words, social capital decreases transaction costs, which is more important for smaller firms than large ones. For instance, in the credit market, social capital was stressed as a factor for reducing asymmetric information (the »lemons problem«), a phenomenon that prevents existing SMEs and start-ups from gaining access to loans (Audretsch et al. 2011).

Social capital is also considered as an important factor for promoting innovation, since research and development investment is costly and risky, and characterised by economies of scale and scope. It requires trust between the researchers and investors, which is positively correlated with historically advanced universities, functioning institutions, a stable political environment, literacy and the ability to cooperate (Akcomak, Ter Weel 2009; Doh, Acs 2010).

Social capital is frequently quoted as a factor that promotes SME growth (Nichter, Goldmark 2009). Schmitz (1995) cites the exchange of machinery in Brazil's Sinos Valley footwear cluster to stress the role of reciprocity between firms. In this cluster, the exchange of machines was one of the success factors for firms and was based on common cultural heritage (mostly descendants of German peasants who migrated from Germany's poorer regions). Chinese communities in Indonesia, Malaysia, Philippines, Thailand or Singapore are another such example (Hobday, Perini 2009).

While social capital can be beneficial to insiders, it also has various downsides. Portes and Landolt (2000) identify four downsides of social capital: exclusion of outsiders from the network, excessive reciprocity demands between insiders, pressure on individual freedom and downward levelling of norms. Portes (2014) stresses that jobs are usually exclusive for insiders of the social network. Durlauf and Fafchamps (2005) argue that rule of law or distribution of public goods do not function well in formal institutions in developing countries, whereas clubs and networks favour economic development. In developed countries, clubs and networks become less important and can even have a negative impact.

Social capital can also be embodied in formal institutions. Employers' associations, industry federations, chambers of commerce and trade unions can be strong promoters of social capital, since they can make significant contributions to collective efficiency by establishing an environment of cooperation and competition. Strong employers' associations and industry federations can play a significant role in SMEs' success (Soskice 1990). They may care for the common interest of enterprises, including SMEs, and, for example, develop common standards and implement technological innovations. They are also helpful because they can organise joint marketing activities that open up new export channels. Another huge area of joint activities of employers' associations is the training of unskilled staff to be qualified workers and managers. Members of employers' associations can also have easier access to advice. Owners of new SMEs may require extra training in the fields of bookkeeping, tax obligations or labour and safety laws. Informal rules such as not hiring qualified employees from competitors and sharing knowledge can play a role. Last but not least, employers' associations and industry federations are important voices for SMEs in negotiations with the government or other organisations like trade unions. To fulfil all these important functions, especially for SMEs, employers' associations or industry federations must have sufficient funds. Austria is good model, as all firms are required to become members of employers' associations and pay the relevant membership fees.

Labour market institutions and the interaction between workers and employers are also important elements of social capital. Workers are important stakeholders in enterprises. Trade unions give them a voice and can help to find compromises between firm owners and workers to benefit both sides. Trade unions, which are in place to avoid competition among workers and to organise a rational dialogue and interactions with employers, function best when they are not politically divided and organise workers on a sectoral level. Trade unions and employers' associations can, for instance, negotiate wages and working conditions in an industry. Such negotiations help to create decent working conditions and strengthen core labour standards. Such conditions can substantially increase the productivity in companies, as workers become more motivated, labour turnover decreases and workers identify themselves more with the company.

Employers' associations are needed for sectoral wage negotiations. In an ideal situation, sectoral wage

negotiations or other mechanisms would guarantee the same wage for the same work in all firms in an industry in a certain region. In many cases, employers prefer firm-based wage negotiations. However, such negotiations lead to higher wage dispersion within an industry and society. They tend to take into account only firm-based productivity developments and firm-based profitability so that *good* firms pay higher wages while *bad* firms pay lower wages. A bad company that pays comparatively lower wages reduces the motivation of workers and their effort to work efficiently. Even more importantly, firm-specific wage negotiations may support poorly performing companies via relatively low wages and reduce profits in firms that perform well. This reduces the innovative power of economies and the expansion of innovative firms. The minimal positive employment effect of saving less productive firms and the resulting reduced level of macroeconomic productivity development by firm-based wage negotiations does not justify firm-specific wage developments.

Firm-level wage negotiations do not automatically lead to a functional macroeconomic wage development; nor are they automatically good for SMEs. From a macroeconomic point of view, the nominal wage level should increase according to the trend productivity development of the total economy plus the target inflation rate of the central bank.[17] Firm-level wage negotiations can lead to perverse microeconomic processes. It is possible that workers in low-productivity firms in an industry use wage increases in high-productivity firms in the same industry as a standard for their own wage demands. In such a case, workers in high-productivity firms may ask for even higher wages. The outcome can be overly high nominal wage increases, which leads to a cost-push inflation. Nominal wage increases that are too low are also possible when, in a crisis situation, workers are willing to cut firm-level wages to out-compete other firms and to save their own jobs. In Japan, for example, after a long period of low GDP growth that started in the early 1990s, nominal unit-labour costs started to fall as firm-level unions accepted or even supported nominal wage cuts. If all firms follow such a strategy, the outcome is deflation (Herr, Kazandziska 2011).

17. If the nominal wage level follows this norm, nominal unit-labor costs increase based on the desired inflation rate. Then, nominal wages become a nominal anchor for the desired (low) inflation rate and deflationary and inflationary processes are prevented – at least the ones that are based on nominal wage development. For a debate on this point, see Keynes (1930); Herr (2009); Herr, Kazandziska (2011); Herr, Horn (2012).

For good macroeconomic development, a horizontal coordination of wage development is also desirable. For example, pattern bargaining can lead to horizontal wage coordination when one sector in the economy takes the lead in the wage round and all other sectors more or less follow the outcome of wage bargaining in the leading sector. In countries with weak unions, the development of statutory minimum wages can lead to wage coordination. This is the case in some Western countries; in developing countries it is very common (Caju et al. 2008).

Formal institutions that embody social capital in developing countries are often underdeveloped. Employers' associations are usually weak, and do not have enough members and/or financial means. Competition among firms is more pronounced than cooperation. In such an environment, employers' associations cannot fulfil their main functions or firm-level wage bargaining systems dominate. Minimum wages may exist, but they are only enforced in a small part of the economy. In the informal sector, which is usually large in developing countries, formal labour market institutions are completely absent.

The German social market economy

The German social market economy, pushed after World War II by conservative political forces and taken over by important social groups, pursues the idea of an inclusive society with limited income inequality and dialogue among social groups. It must be considered as part of social capital in Germany and is based on a class compromise between capital and labour, and the conviction that dialogue and finding compromises are important for creating and defending an economically, socially and politically coherent society and economic success. The social market economy includes a dense network of companies and a financial system that is mainly bank based. Firms, and especially SMEs, traditionally have close ties with banks (see above). Another part of the social market economy is the dialogue between strong trade unions and strong employers' organisations; companies have a codetermination model that gives workers a voice and certain rights in management decisions. Since the 1990s, the model of the social market economy has experienced some erosion: there is moderately higher inequality in disposable income distribution and a sector of low-wage and precarious jobs has developed (for more on the developments of the social market economy, see Spicka 2007, Streeck

2010). In spite of these developments, the core of the system is still in place. In the following, two dimensions of the social market economy will be discussed, namely the organisations of employers and the wage-bargaining system.

German society is characterised by a dense network of non-profit associations.[18] Their number reached around 620,000 by the end of 2014 (bdvv 2017). German SMEs are usually family-owned businesses, and the owners are usually strongly involved in such organisations, which is considered a source of networking and social capital (Audretsch, Lehmann 2016). Fukuyama (1995) argues that, due to a historically large variety of associations, such as guilds, social capital (trust) has been stronger in the business communities of Germany, the US and Japan than, for example, in France or Italy.

Spence et al. (2003) identified various forms of social capital in the German SME sector, namely formal engagement (participating in formal business organisations), intrasectoral networking (collaborations between firms in the same industry), intersectoral networking (collaborations between geographically close firms in various industries), volunteering and charity. Intrasectoral networking was found to be particularly important in terms of information and equipment exchange, advice and subcontracting. Besides these informal networks, German SMEs are organised in a chamber of commerce, with compulsory membership.

Germany has very powerful employers' associations and federations, which also play a role for SMEs. Some examples are the Association of German Chambers of Commerce and Industry[19], the Federation of German Industries[20], the Confederation of German Employers' Associations[21]. In addition, there are sectoral-level employers' associations. These institutions support R&D cooperation, vocational education and training. They also function as representatives for firms in dialogue with regional and national-level governments and various societal groups. In addition, SMEs have their own industry associations such as the German Association for Small and Medium-sized Enterprises[22] and the German Association for Small and Medium-sized Businesses[23].

The different associations and federations play an important role for SMEs. For instance, the Federation of German Industries and other organisations are dialogue partners between firms and politicians to develop policy programmes that help meet companies' needs. Industry associations and federations are informal meeting platforms for big and small companies. SMEs benefit from the experience, capabilities and knowledge of bigger companies as well as from one other. This shows that Germany is a good example of the »cooperative competition« model, as it combines competition with cooperation between firms. This combination boosts the companies' innovation, productivity and competitiveness. The organisations also have the function of informing their members about legal changes, macroeconomic conditions, and future economic and technological trends.

Let us come to the wage-bargaining system. The German trade unions movement is united in the sense that there is only one relevant trade union per sector and one trade union federation, the German Trade Union Confederation.[24] Political divisions in the German trade unions movement are minor. Germany has an industry-level wage-bargaining system. Wage bargaining in the annual wage round almost always starts in the metal industry. Historically, the outcome of the negotiations in this industry used to be an indicator of the path the negotiations of all the other industries in Germany would take. In the framework of pattern bargaining, even sectors with low union density and firms that did not belong to negotiating employers' associations would more or less pay the wage increases negotiated in the metal industry before the 1990s. Vertical and horizontal wage coordination in Germany used to be high. In the key industrial sectors, this old model still works. But German unification and labour market reforms in the early 2000s led to a partial erosion of the old German cooperative model, with some adjustments towards a market-based model. Collective bargaining coverage went down to around two-thirds of employees. To stop the falling wages in the growing low-wage sector, in

18. *Vereine*
19. Deutsche Industrie-und Handelskammer (DIHK)
20. Bundesverband der Deutschen Industrie (BDI)
21. Bundesvereinigung der Deutschen Arbeitgeberverbände (BDA)
22. Deutscher Mittelstands-Bund (DMB)
23. Bundesverband mittelständische Wirtschaft (BVMW)
24. *Deutscher Gewerkschaftsbund* (DGB)

early 2015, a statutory minimum wage was introduced in Germany for the first time. At its introduction, the minimum wage had a level of 57 per cent of median wages and 49 per cent of average wages (Bruttel et al. 2017). Compared with developing countries, wage dispersion in Germany is relatively low, an informal sector does not exist and minimum wages are widely enforced.

6. Support of the SME sector in developing countries

Three different types of SMEs in developing countries have been distinguished above: normal SMEs, Schumpeterian SMEs and poverty-driven SMEs. Each of these groups needs specific types of support based on their respective situation and problems. We will discuss one after the other.

6.1 Policies to support normal SMEs

Normal SMEs are firms that can upgrade in an overall positive economic environment. For these SMEs, general policies that improve the situation for SMEs are suitable. The elements of such a policy are discussed in the following paragraphs.

Access to finance

Without finance, SMEs cannot be economically dynamic. The development of a whole country cannot be achieved without a functional financial system. It is very difficult for SMEs in developing countries to get long-term credit for investments at reasonable interest rates. Traditional microfinance is not a solution. Microfinance only targets micro-enterprises with the aim of poverty reduction. But the poor are not necessarily the best entrepreneurs. In many cases, micro-credits become part of the household cash-flow management of the poor and help consumption smoothing and/or take over insurance purposes (Martínez 2011). Microfinance has one specific purpose, is usually short-term and is sometimes associated with obscenely high interest rates. This is not what the SME sector needs. Foreign credit or credit in foreign currency is also not suitable for SMEs. Such credits would create a risky currency mismatch with negative effects for the economy as a whole.

Germany's public savings banks and collectively owned banks, with their strong regional presence, could be a good role model (see above). In many of the successful Southeast Asian countries, the state-owned postal banking system took on the important responsibility of financing companies, including SMEs (Stiglitz, Uy 1996). And government development banks can have a big impact. Even in Germany, the KfW still plays a big role as a development bank. State development banks could give credit to SMEs that have already been successful in all economic sectors, and such development banks could get privileged funding from the central bank. Interest rates could be relatively low and credit long enough for sound investments. The KfW could also make a good role model for a development bank. In addition to assigning direct credits, it could co-finance or guarantee bank credits to SMEs. It is obvious that credits given to SMEs by any bank should be »hard« credits and unsusceptible to corruption.

Vocational training

Education is an important element of any economic development. SMEs in developing countries usually have a lack of skilled labour, including management skills. While university education is important for some SMEs, the vast majority of SMEs in developing countries need vocational training in particular. The German vocational education system, with its two-pronged approach of apprenticing at firms and attending public schools could be an exemplary model. Of course, there could be other models of vocational education and apprenticeships could be shorter, but increasing the professional level of the workforce, including management skills, is one of the pillars for development.

Other types of education are important as well. Employers' organisations could take over training functions (see below), trade union academies could qualify union members to understand the role of wage bargaining, public night schools could offer language courses, etc.

To improve the quality of skilled workers, it should not only be university-educated workers who earn a high status and high wages: skilled and experienced craftsmen should also be able to earn decent wages and have decent working conditions.

Employers' associations

While it is good for individuals to improve their skills and knowledge, it is equally as important for organisations to always be adapting to new situations (Cimoli et al. 2009b). The strengthening of employers' organisations or special organisations for SMEs is one way of doing so. Such organisations can help create a market model that strikes a balance between cooperation and competition. South Korea and Taiwan are two successful examples of this sort of adaptation (see Stiglitz 1996). Such organisations can coordinate training for the management and workers of SMEs and advise the management of SMEs in many fields, such as bookkeeping and new technological developments. They can also organise cooperation among SMEs in the same sector and region (e.g. joint training activities, joint marketing, joint use of scarce resources, joint introduction of new technologies, joint negotiations with lead firms, joint buying of intermediate goods, exchanging their experiences). Employers' associations give a voice to SMEs to negotiate with governments, trade unions and other social groups.

The best option seems to be having one employers' association that organises *all* firms in the sector, big and small. Employers' associations should be so important that the mandatory membership to them is justified. Firms should be required to pay a fee to enter the association and be allowed to elect the leadership. This would follow the Austrian model which requires that firms be members of an employers' association. It should also follow the German model, with mandatory membership to a chamber of commerce. Subcommittees for SMEs could be established within employers' associations.

Wages and working conditions

No economist would think to ask for systematically different prices for petrol or other production inputs based on the type of company. However, that practice is common in the case of labour. Systematically low wages and bad working conditions in part of the SME sector distort competition and are bad for economic development. Wage developments can play an important role in economic upgrading. Establishing the same wage level in one sector would not allow some SMEs to compete on the basis of cheap labour rather than innovation. This would promote investment in physical capital and skills and thus increase productivity. Furthermore, the same wage level in one sector would be an important factor of workers' motivation, which would likewise contribute to productivity. This would not only promote economic but also social upgrading. SMEs surviving on the basis of exploitative working conditions would be eliminated from market. Furthermore, a statutory minimum wage should be implemented to prevent wages from dipping below a certain threshold, which is crucial for social reasons and macroeconomic reasons, such as a stable consumption demand and the prevention of deflationary tendencies.

One way to guarantee the same negotiated wage in all enterprises is to establish sectoral wage negotiations between trade unions and employers' associations. When all firms are members of employers' associations, as in Austria, negotiations are automatically binding for all firms. In other countries, extension mechanisms are used to guarantee the same wage for a certain skill level in a sector, as in France. In many developing countries, statutory minimum wages substitute wage negotiations. If unions are weak, such a system can function. But in such a case, the wage structure should be adjusted to make being a skilled worker more attractive.

Of paramount importance is the enforcement of minimum wages and other rules. This also implies the enforcement of rules in the informal sector which, in the end, is only a radically liberalised market sector with myriad market failures.

From this perspective, if certain economic zones do not guarantee the same type of labour market institutions and ecological standards, they have to be judged negatively.

Providing public goods

There is wide range of public goods that are necessary for development – not just education. Economic and social upgrading are only possible if investments are made in a country's infrastructure, such as transportation and communication networks, and if there is a sufficient and stable electricity supply and the delivery of other public utilities. These goods are essential to everyone, not just SMEs, and hence will not be discussed here.

Macroeconomic framework

Demand drives the expansion of SMEs, as it does with all companies. If there is insufficient demand, even the best supply-side conditions and support for SMEs cannot prevent stagnation. Good macroeconomic management is needed to ensure sufficient demand,

including for SMEs. There is no space here to discuss such management, though a few remarks can be made (for more on this subject, see Dullien et al. 2011; Herr, Kazandziska 2011). Investment demand should be supported and stimulated by government policies. High income inequality, paired with high wage dispersion and a large informal sector, not only has many negative supply side effects, but also prevents a sufficient demand dynamic for high and sustainable development. Curbing high wage dispersion is part of an income policy and a precondition for prosperity. Government redistribution policies can reduce inequality as part of a development project. The exchange rate as is important a global protection instrument, especially for the SME sector. The exchange rate should be at a level that makes domestic manufacturing competitive. For reasons related to competition and demand, developing countries should not accept current account deficits and should instead follow an export-oriented development strategy.

6.2 Policies to support Schumpeterian SMEs

This paper has made clear that the SME sector is an important part of the economy as regards employment, innovation, export promotion, and the general economic and social development of a society. General policies to support the SME sector have been discussed above. In this section, we discuss specific policies for SMEs that innovate, increase productivity, and restructure the economy. Only in exceptional cases will Schumpeterian SMEs or start-ups in developing countries jump to the global frontier of new technologies or new products and services. As a rule, it is already a huge achievement if domestic firms successfully adopt technologies from the developed world, which are new for their country.

Specific industrial policy is needed to support Schumpeterian SMEs. Industrial policy can be defined broadly as a set of »policies that stimulate specific economic activities and promote structural change« (Rodrik 2008: 3) or a set of policies aimed at »*particular industries* (and firms as their components) to achieve the outcomes that are *perceived by the state to be efficient for the economy as a whole*« (Chang 1994: 60; italics used from source text).

There are two fundamental coordination failures the private sector is not able to solve (Rodrik 2004). First, there are »information externalities«. The manufacturing of new products, new technologies or similar innovations involves a process of discovery or entrepreneurship. New things are fundamentally risky and can fail, which makes it difficult for private investors alone to invest in new activities. To make matters worse, if a firm is successful in an innovation, follower firms can often easily imitate the successful firm. The social rate of return of a discovery process is much higher than the private return. This shows that governments need to support new activities.

Second, there are »coordination externalities«. Most innovations need a high level of investment. In many cases, economies of scale and scope prevent innovative firms from starting on a very small scale. Even more importantly, a whole bundle of investments that goes far beyond a single firm is often needed. A new product or technology may require new infrastructure – from transportation possibilities to new communication technologies – which a single firm cannot handle; employees may need specific skills; firms producing complementary goods or inputs may be necessary, etc. In each of these cases, an innovative firm cannot coordinate all these activities. Without government intervention, an innovation never takes place. FDI can take over such functions, but, in such a case, FDI must flow into the right areas, build its own infrastructure, train workers, and build up backward and/or forward linkages. It must be considered an absolute exception. The main objective of FDI firms is not the development of a country; their main objective is to make money for a foreign owner living in a foreign country.

Industrial policy should be carefully designed to support an entrepreneurial spirit, not give rise to rent-seeking (Meyer-Stamer 2009). Of key importance are the flow of information between the government and the enterprise sector and the creation of a process that selects policies in a rational way and checks mistakes.[25] Institutions that are meant to define, develop and revise the industrial policy have to be created with the government and employers' associations at their centre, while also including trade unions and civil society.

25. »The right model for industrial policy is not that of an autonomous government applying Pigovian taxes or subsidies, but of strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles for restructuring lie und what type of interventions are most likely to remove them. Correspondingly the analysis of industrial policy needs to focus not on the policy outcomes – which are inherently unknowable ex ante – but on getting the policy process right.« Rodrik (2004: 3).

Rodrik (2004) lists the following ten principles for industrial policy, which also can serve a guideline for an SME-oriented industrial policy:

1. Incentives should be given only for new activities, or activities that increase the productive power of the country. There should be no discrimination. Private and state-owned companies, big or small, should qualify if they deliver something new.

2. There should be clear benchmarks for success or failure. These criteria have to be checked.

3. There should be built-in sunset clauses. After an appropriate period of time, support must be reduced and phased out.

4. Governments should support activities, not whole sectors: to support the tourism or electronics industry is not sufficient. Specific activities that support innovation and productivity have to be selected.

5. Activities that are supported should have spill-overs and demonstration effects. They should crowd in additional investment and productivity gains.

6. The authority implementing industrial policy should be able to demonstrate that it is qualified and not corrupt.

7. Implementing authorities should be closely monitored by a political authority of the highest level. A cabinet minister or even a president or prime minister should be in charge of supervising and controlling industrial policy and its implementation.

8. The agency tasked with implementing industrial policy should have direct and close information channels with the enterprise sector.

9. It is inevitable that mistakes concerning industrial policy will be made. The private sector also makes mistakes in its investment decisions. The most important thing is to detect mistakes early and minimise their costs.

10. Industrial policy is a process. Implementation agencies should be on a path of permanent learning from mistakes and successes.

This is not the place to select certain industries or part of industries for industrial policy. For each country, specific knowledge is needed. It is possible, however, to give some general guidelines:

Industrial policy should explicitly support industrial clusters. Such clusters can but do not necessarily need to be part of GVCs. The creation of backward and forward linkages, linkages between SMEs in the cluster, and linkages between SMEs and big firms is of paramount importance. Such a strategy creates the productive combination of cooperation and competition, and exploits external economies of scale and scope. Big firms in a cluster – whether government-owned or private, foreign or domestic – should be forced to build up linkages. FDI has to be linked to a certain amount of local content and its increase. The auto industry in China, for instance, developed with this instrument.

Usually, GVCs in developing countries are characterised by strict hierarchical or quasi-hierarchical and monopsonistic structures with foreign lead firms following their rent-seeking strategy and domestic firms with low value creation, especially SMEs, and low freedom for their own upgrading. Such GVCs bring only limited advantages to developing countries. Government policies have to support all activities that create a more equal power balance between lead firms and domestic producers. Support must be given to policies that increase the ability of domestic firms to upgrade.

The exports of many developing countries are too concentrated in a small number of industries. If exports are integrated into GVCs, upgrading, especially functional upgrading, within the GVC is difficult. Developing countries need a broad range of industries for their development. According to mainstream thinking in the tradition of David Ricardo or Eli Heckscher and Bertil Ohlin, international trade and the resulting international distribution of labour should cause countries to become specialised according to their comparative advantages. However, this recommendation does not fit with real-world developments. Imbs and Wacziarg (2003: 64) found in a broad empirical analysis that successful countries »diversify most of their development path«. Obviously, a broad spectrum of industries is able to create synergies between different industries and increase the likelihood of and opportunities for entrepreneurship. Development has a lot to do with random self-discovery,

which cannot be explained by comparative advantage (Rodrik 2004). Industrial policy can help to find and support new successful industries and clusters. In a similar direction, Cimoli, Dosi and Stiglitz argue, »Emulation (…) is the purposeful effort of imitation of ›frontier‹ technologies and production activities irrespectively of the incumbent profile of ›comparative advantages‹. It often involves explicit public policies aimed at ›doing what rich countries are doing‹ in terms of production profile or the economy« (Cimoli et al. 2009a: 544). For more on the current industrial policy for SMEs in Germany, see Appendix 2.

The East Asian countries – Hong Kong, Indonesia, Japan, the Republic of Korea, Malaysia, Singapore, China, Taiwan (China) and Thailand – are considered success cases for industrial policy during their development process. They more or less followed the logic of industrial policy outlined above (see Stiglitz 1996; Stiglitz, Uy; 1996; Amsden 2001, and others).

A good example of this type of industrial policy for SMEs is the orchid industry in Taiwan (Rodrik 2004: 8; Wei et al. 2010). Traditionally, Taiwan had been an exporter of sugar. Due to international competition, this industry came under pressure in the late 1990s/early 2000s. In response, there was a decision to grow orchids. The government paid for a genetic laboratory for orchids, a mandatory quarantine site, shipping and packing areas, new roads, water and electrical hook-ups, and an exposition hall. Private farmers built their greenhouses financed with subsidised credits. In 2001, the Taiwan Orchid Growers Association, a non-profit association, was founded with the aim of promoting the development of the Taiwan orchid industry. Taiwan's orchid industry became one of the best in the world.[26]

6.3 Policies to support poverty-driven SMEs

Since poverty-driven SMEs are the result of underdevelopment and/or crisis situations, policies should prevent the proliferation of such SMEs and instead aim at generating alternative sources of income for the people at such SMEs. First of all, stable and high GDP growth rates are crucial for decreasing unemployment and creating employment opportunities in the formal sector. Second, there is whole range of policies to reduce poverty, including policies to improve public healthcare, education and infrastructure, and to provide a basic welfare system. Microfinance can play a certain role in poverty reduction, but it should not be an instrument for triggering technological development and change. With low interest rates, useful microfinance can fulfil its original purpose as non-profit oriented.

7. Conclusions

The SME sector plays an important role for employment and economic development in every country in the world. However, the SME sector is very heterogeneous. First, there are Schumpeterian SMEs, which include start-ups that bring about innovations, productivity increases and structural changes. Second, there are normal SMEs, which adjust to market pressure but do not innovate much of their own accord. Finally, there are poverty-driven SMEs, which reflect excess labour and a lack of social protection and entrepreneurship. Policies for this last group fall under the rubric of poverty reduction strategies, which are not the focus of this paper.

Developing countries must support SMEs as an important part of their development strategy. The first key task is for a government to create a vision together with society as a whole: one that determines the direction of development, including economic and social upgrading. Only such a vision can allow the concerted action of societal forces to implement new developments. All changes in society, including positive ones, produce losers. Part of policy is to compensate the losers and facilitate a relatively smooth structural change. If losers are not compensated, they may block structural change (Ha-Joon Chang 1994). A coalition for development is not self-evident. In many Latin American countries, for example, agricultural and backward-looking elites had no desire to industrialise, as did, for example, the elites in South East Asian countries.

FDI can help countries develop. However, technical and skill spill-overs resulting from it are limited as a rule, especially if companies, including SMEs, are part of hierarchical or quasi-hierarchical global value chains. In any case, without active domestic policies to support

26. Other examples are the computer cluster in Taiwan (Kishimoto 2003); the Indian computer software and information technology cluster in Bangalore and the knitwear industry in Tiruppur (Nadvi 1995); the Chilean salmon cluster (Pietrobelli. Rabellotti 2004) and the Sinos Valley footwear cluster in Brazil (Schmitz 1995) (see also Appendix 1).

economic and social upgrading, a country cannot develop.

There are a number of general policies for SMEs that do not apply to poverty-driven SMEs, since the latter must be handled within the framework of poverty reduction. For economic and social upgrading, infrastructure investment is needed. An urgent problem of SMEs is access to sufficient, long-term finance with low interest rates. Germany's local banking system and development bank provide a model for delivering finance to SMEs. SMEs need a qualified workforce. Aside from providing a university education, the German vocational apprentice system can shed light on how to upgrade the workforce. Employers' associations, with their many positive functions for SMEs, have to be strengthened and trained. The same is the case for trade unions, which should also upgrade their theoretical understanding of their role. Sectoral wage-bargaining systems guarantee fair competition among firms, increase productivity and stimulate progress. Last but not least, SMEs need an environment of high demand to prosper. Macroeconomic policy has to be geared towards improving supply and demand conditions.

In addition to the general support of SMEs, the government must make more selective interventions to overcome information and coordination externalities. Policies – and particularly industrial policies – should be designed to promote Schumpeterian SMEs. Selective industrial policy is essential for economic development, examples of which have been seen in the East Asian »miracle« economies. A rational process for selecting the areas of intervention and preventing rent-seeking are crucial. There needs to be a steady flow of information between the private sector and the government and non-corrupt institutions must implement industrial policy.

Cluster building and positive integration into GVCs are especially important for SMEs. An environment of cooperation and competition has to be created to exploit the potential synergies of clusters. First of all, domestic companies should be supported by industrial policy, as they have more motivation and potential to upgrade in different areas. Another key element for cluster building is overcoming the production structure of the country given by market forces as the market reinforces the concentration of a small number of industries with relatively little innovation and value creation potential compared with industries concentrated in the developed world.

Overall, SMEs provide a huge opportunity for developing countries to upgrade economically and socially. However, the market alone does not allow for the exploitation of this potential. A package of policies is needed that creates institutions to support SMEs (e.g. employers' associations), improve the general environment for SMEs (e.g. infrastructure, finance, education), enforce social upgrading (e.g. sectoral wage bargaining, good working conditions) and support existing Schumpeterian SMEs and start-ups in a selective way (e.g. development banks, subsidies for specific clusters or SMEs and start-ups).

Appendices

Appendix 1: Upgrading examples in global value chains

Product and process upgrading

- Taiwanese computer producers selling to US and Japan by the end of 1990s (Kishimoto 2003; Schmitz 2007)
- Automotive industry in Thailand (Kohpaiboon, Jongwanich 2013)
- Software industries in Mexico and Brazil (Giuliani et al. 2005)
- Footwear industries in Mexico and Brazil (Giuliani et al. 2005)
- Apparel industry in Torreón, Mexico (Bair, Gereffi 2001); textile industries in East Asian countries (South Korea, Taiwan, Japan, China) (Gereffi 1999)
- Fresh fruit cluster in Brazil (Gomes 2003)
- Nicaragua diary and milk cluster (Artola, Parrilli 2003 in Giuliani et al. 2005)
- Furniture and garments industries in Indonesia (Berry et al. 2002)

Functional upgrading

- Footwear industries in Brazil and Mexico (some firms sell to local or regional buyers) (Giuliani et al. 2005)
- Textile industry in East Asian countries (South Korea, Taiwan, Japan, China) (Gereffi 1999)
- Some East Asian electronics firms (Schmitz 2007)
- Chinese electronics producers (Jean 2014)
- Taiwanese computer manufacturers (Kishimoto 2003)

Intersectoral upgrading

- Electronics industry in Taiwan (some TV manufacturers shifted to the computer sector) (Humphrey, Schmitz 2002).
- Salmon cluster in Chile (some firms extended their activities to biotechnology and genetics sectors, for instance, to develop vaccines) (Pietrobelli, Rabellotti 2004)

Appendix 2: German industrial policy and support for German SMEs

The contemporary industrial policies in advanced industrialised countries not only include the manufacturing and agricultural sector but also increasingly the service sector. At least in theory, industrial policy is designed by a network of actors rather than by the government in a top-down manner (Meyer-Stamer 2009). In Germany, industrial policy is designed in a bottom-up manner and inclusive in that it allows all stakeholders, including government agencies, research institutes, private industry actors, trade unions and occasionally consumer representatives, to voice their opinions before designing an industrial policy strategy (Erber 2016). The newest vision of German industrial policy is Germany's High-Tech Strategy 2020, or Industry 4.0[27], with the aim of digitising production processes. The focus is on automation, such as smart factories, where manufacturing is performed by robots; machines that can communicate between long distances; and self-driving trucks to transport goods. Additionally, this strategy aims individualising product design to meet the individual needs of consumers, such as sneakers, while charging prices comparable to those of a mass-produced product. The German government supports this strategy with large funding programmes as well as collaborations between various stakeholders, including industry, academia, politics and society. It facilitates SMEs' adoption of high-tech applications by providing advice, training, and platforms for research centres, i.e. testbeds (BMWi 2017b).

A second big industrial policy project is the reform of the energy sector. After the nuclear catastrophe in Fukushima in 2011, the German government decided it would shut down the country's last nuclear power station by 2022. Even before that, the German government had subsidised solar and wind energy for years. Thousands of small electricity producers with the right to sell their surplus electricity to the big electricity producers were created. The infrastructure has been built to bring electric power from big, off-shore wind parks in northern Germany to industrial centres in southern Germany. A compromise with coal mines was reached to phase out coal power plants over a longer period.

27. The term »Industry 4.0« comes from the »fourth industrial revolution«, referring to cyber-physical systems in production, following the three previous revolutions in industry: namely, the inventions of the steam engine, the conveyer belt and computers (BMWi 2017b).

The German government's funding of SMEs takes several forms. First, SMEs apply for technology-specific funding within the framework of specific government programmes, for instance bioengineering or energy supply technology. SMEs can thus establish collaborations with research institutes and be quickly updated about the most recent research findings. Second, there is funding to SMEs with a larger scope in terms of technological advancement areas and the form of supported projects. Collaborative projects, individual projects with research institutes and investment loans for innovations are funded. Third, funding is given to research centres for collaborative projects with SMEs. Moreover, in addition to these government funds, the German development bank, the KfW, is in charge of giving low interest rate loans to SMEs (as well as larger firms) via local banks for innovation projects (Belitz et al. 2013).

The German government considers industrial clusters key to the country's innovation performance and global competitiveness (BMBF 2015). At present, industrial policy is primarily funding high-tech sectors and renewable energy. Particularly, collaborative projects of various actors, including SMEs, large corporations, universities and non-university research institutes, are supported.[28] The German government's cluster policy is not only about funding but also about guiding cluster management by providing consulting, training and networking opportunities. An example is the »go-cluster« programme, in which the Federal Ministry for Economic Affairs and Energy supports the innovative clusters in Germany, providing cluster services or guidance for cluster management, in order to advance the international competitive role of cluster firms. Similarly, Baden-Wüttenberg's ClusterAgentur BW programme aims at guiding and training cluster managers to promote cluster development. The Federal Ministry for Economic Affairs and Energy also supports SMEs' exports by helping them enter into or develop new foreign markets in fields such as energy or environmental technologies. The ministry provides guarantees, export credit subsidies and assists German companies in foreign market activities.

28. For instance, Germany's Leading-Edge Cluster Competition is a funding programme launched by the Federal Ministry of Education and Research directed towards the most innovative German clusters with the aim of advancing their international R&D cooperation.

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