



AGING POPULATION AND ITS ECONOMIC IMPACT
+ IMMIGRATION

Fostering Prosperity – Investment and Demographic Transition

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Abstract

Are aging societies facing lower levels of economic growth and weakening prosperity as a result of a shrinking labor force, lower labor productivity and growing numbers of pensioners? Stepping up domestic investment can help increase labor market participation, labor productivity and total factor productivity, thereby counteracting a demographically induced decline in GDP per capita. In the long run, higher levels of foreign direct investment (FDI) can increase national income and capital stock in aging societies and contribute to economic and social progress in underdeveloped economies with young age structures, potentially yielding a first demographic dividend.



Challenge

Demographic aging affects long-term economic growth and therefore the material prosperity of a society. In all heavily aging developed economies, the number of persons at working age is stagnating or even falling while, simultaneously, the number of pensioners is rising. The overall employment rate – defined as the proportion of the working population in the total population – is thus on the decline. Under otherwise unchanged economic conditions, material prosperity, as measured by gross domestic product per capita, is at risk of declining. To counteract this demographically induced decline in GDP per capita, more domestic investments are needed to increase labor market participation, labor productivity and total factor productivity. A greater volume of inward FDI can help meet, in the long run, the emerging additional capital requirements of an aging society. Nevertheless, outward investments targeting development in less-developed economies featuring a young age structure could create already short- to mid-term a win-win situation for both investment-origin and investment-target countries: Whereas aging industrialized countries can benefit from the favorable population structure and higher economic growth potential found in these “younger” less-developed economies, the latter could stand to gain from the economic and social progress such investments foster. As a result, in the long term, increased foreign direct investment in developing countries could help these countries yield a first demographic dividend. In fact, the balance of FDI is leaning (too) far towards the developed economies, as many developing countries continue to lack the institutional, legal and technical infrastructures that provide investors certainty.

This policy brief first discusses the areas in which domestic investments in



aging societies are needed to increase GDP per capita and therefore promote material prosperity in these countries. We then discuss whether the different demographic and economic-development stages in aging industrial economies and in demographically young, less-developed economies can complement each other in generating long-term economic growth and prosperity for both sides. Finally, we point out which political, institutional and legal requirements must first be established in order to deliver such outcomes.

Proposal

1. Domestic investments to increase GDP per capita in an aging society

Population aging changes the macroeconomic development of a country through many mechanisms. For one, the ratio of employed persons to persons who are no longer employed because of their age falls. As a result, consumption expenditure tends to increase while, at the same time, investment opportunities in the country decline. Savings accumulation, productivity and innovative potential also tend to shrink under such conditions. Overall, the situation threatens to usher in a decline in material prosperity.

The key indicator of a society's material prosperity is the gross domestic product (GDP) per capita (GDP/pop.). The GDP per capita rate depends on the ratio of employed persons to the total population (empl./pop.) and on labor productivity, i.e. the ratio of GDP to employed persons (GDP/empl.). By definition, the following relationship applies: $(\text{GDP/pop.}) = (\text{GDP/empl.}) \cdot (\text{empl./pop.})$.

In a society affected by demographic aging, the number of persons at working age is stagnating or even falling while the number of pensioners is on the rise. As a result, the overall employment rate – defined as the proportion of the working population in the total population (empl./pop.) – is falling. Assuming labor productivity remains unchanged, there will be a decline in GDP per capita: $(\text{GDP/empl.})^{\text{unchanged}} \cdot (\text{empl./pop.})_{\downarrow} = (\text{GDP/pop.})_{\downarrow}$. For aging societies, in



order to prevent a decline in GDP per capita and thus in material prosperity, there are essentially two starting points: increasing the employment rate (empl./pop.) and increasing labor productivity (GDP/empl.).

1.1 Increasing employment through investment

The employment rate in an aging society can be increased if the share of the labor force in the total population grows. There are various measures that can be applied for this purpose. Depending on a given country's existing labor force potential, these measures can be combined with each other:

- i. **Extend working life** by linking retirement age to the average life expectancy as it increases. This can be done by limiting the general duration of pension entitlements as is the case in Denmark or by introducing a two-to-one rule as discussed in Germany (cf. Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung 2011). Alternatives include introducing more flexible retirement schemes such as that observed in some Scandinavian countries and providing financial incentives for delayed retirement. Although within the OECD, 85 percent of the increased life expectancy at birth are healthy years of life (cf. OECD 2017), it is important to keep the following in mind: Any reforms must be accompanied by policies and strategies designed to ensure that older people can actually work in regular employment until they reach retirement age. Alternatively, should these persons not be able to work due to health reasons, social security protections and the mechanisms that enable them must be in place. This involves making the investments needed to establish the appropriate infrastructure for **continuous vocational training** throughout the entire course of a working life-cycle. In addition, it involves ensuring that such infrastructure operates properly and that incentives to take advantage of such training are provided.
- ii. **Increase labor market participation among people in working age who reside in the domestic economy.** This includes in particular women and mothers, family members providing care, persons with low educational attainment and immigrants. Public investments targeting the **education system**, in



particular **early childhood development and care** (cf. Elango, García et al. 2015), and expanded **professional care services** for family members requiring nursing care can provide the frameworks needed to improve work-life balance, equal education opportunities and stronger integration into the labor market. However, in order to provide more professional and high-quality care services, pay and working conditions in these professions must also be improved. Public investments must also aim to achieve these aspects.

- iii. **Increase the influx of skilled workers from abroad** with an Immigration Act that creates rational procedures for the recruitment and integration of immigrants and is anchored in a “triple win” concept of migration involving the interests of migrants as well as target and source countries alike (“Triple Win Approach” cf. Bertelsmann Stiftung 2015, 2017).

1.2 Increasing labor productivity through investment

GDP per capita can be increased in an aging society if the productivity per worker increases to such an extent that the decline in the employment rate is overcompensated. This increase in productivity can be achieved by **enhancing labor productivity**:

- iv. In order to increase skill sets and thus **human capital** over entire life cycles, public investment is needed to improve the **education system**, in particular the infrastructure for early childhood development. Tax incentives are also needed to promote **continuing vocational training within companies** (cf. Cuaresma, Lutz et al. 2014).
- v. Increasing the **productivity of the labor force** in an aging society requires higher levels of **capital investment**. This implies **more public and private investments**. Public investment, particularly in digital infrastructure, reduces companies’ transport costs and increases their productivity (see section 1.3). Private investments can, for example, be promoted by better tax deductibility, for example by increasing the number of tax deductible items within the sector.



- vi. Investments in **technological advancement** increase the degree of automation in an economy, total factor productivity (TFP) and thus per capita GDP growth. Acemoglu and Restrepo (2017, 2018) show that a **higher degree of automation** in aging societies is a decisive factor for **economic growth**. This requires, for example, the expansion of government-funded basic research and application-oriented research in new technologies as well as better tax deductibility of research and development expenditure in private companies (i.e. expanding the catalogue of tax deductible items).
- vii. Finally, **productivity per worker** can be enhanced by increasing the **working time per worker**. Untapped resources for this purpose lie above all in the female workforce, which is employed more frequently than average on a part-time basis (cf. OECD 2018). Leveraging this potential will involve, however, investments in the expansion of child and nursing care (see ii).

1.3 Positive effects of public investment in education, housing and (digital) infrastructure

Investments that increase both labor market participation and labor productivity are particularly efficient. For Germany, Krebs and Scheffel (2017) have found that **increased public investment in education, housing and (digital) infrastructure** can stimulate the labor market in several ways and contribute to an increase in **productivity**.

Public investment in these three areas generates a **significant increase in aggregate output** as well as **employment** and makes a significant contribution to the **sustainability of public finances**. However, **investments in education** that promote the expansion of high-quality all-day schools and, by additional deployment, significantly improve the quality of education and care in day-care centers and schools have the most significant effects.¹ These investments

¹ Krebs and Scheffel's simulation yielded calculations showing that in Germany, investments in daycare centers and all-day schools with a fiscal return of around 12 percent achieve significantly higher returns than investments in transport infrastructure and digital infrastructure (around 8%) and investments in housing (around 7%) (cf. Krebs, Scheffel 2017, p. 48).



increase the **educational performance** of children and thereby the **number of gainfully employed persons** with a completed vocational or university degree. This, in turn, has a positive impact on **labor productivity** and on the **number of hours worked** by future generations (vii), as better-qualified workers are generally more productive, enjoy full-time employment more often and are less frequently unemployed than are low-skilled workers. At the same time, an **improved skills structure** in the labor force can also have a positive impact on the **innovation potential** and thus on **technological progress** and **TFP**(vi). The relationship between educational attainment and **health status** is largely undisputed in the scientific community. People with lower educational attainment have more health problems than better-qualified people (cf. OECD 2017). Accordingly, it can be assumed that an improved skills structure in the labor force will also have a positive impact on the health status of the labor force and lead to **more consistent** or **longer working lives** (i, ii). In addition, the expansion of all-day schools helps parents take care of their children and enables, in particular, mothers who are not gainfully employed or who are marginally employed to **take up** or **expand gainful employment** and thus increase their hourly earnings (ii). According to Scheffel and Krebs, investments in education will finally generate a **significant increase in aggregate output**, as the additional hours worked and the productivity gains from more full-time jobs increase **annual GDP**. At the same time, the **at-risk-of-poverty rate** will fall under these conditions.

Investments in **public housing development**, which increase the affordability of housing in attractive business locations and facilitate **access** for low- and medium-skilled workers **to a labor market with abundant jobs** (ii, vii), increase labor productivity gradually. Over time, these investments generate direct output gains and increase annual GDP.

Public investment in **transport infrastructure** and **digital infrastructure** reduces transport costs for companies and increases **business productivity**. As a result, this kind of investment expands individual companies' leeway for **private investment** (v, vi). The increase in overall economic production is largely driven by the **increase in TFP** (vi).

Through all three areas of investment, spending on social benefits generally falls, while the employment effects and productivity gains **increase public**



revenues from taxes and social insurance contributions. This in itself would expand the fiscal space needed. Nevertheless, the fiscal burden of aging will require both prudence as well as measures to stabilize the tax base in the long run.

The results show that an aging society can successfully establish the conditions for a **second demographic dividend** by investing in education and (digital) infrastructure. Such investments in human and physical capital as well as the benefit of the (healthy) years of life gained can increase the **productivity** of the working population, **GDP** and thereby **material prosperity** – even in an aging society (cf. Mason, Lee et al. 2017). At the same time, however, the given **pension scheme** must also be taken into account and be reformed accordingly.

2. Foreign direct investment: Cultivating a win-win solution for aging societies and "young" developing countries?

The age structure of a population affects key macroeconomic variables such as the labor supply, savings and consumption ratios or current account balances (cf. e.g., Lührmann 2003, Bertelsmann Stiftung 2010, Yoon, Kim et al. 2014, Aksoy, Basso et al. 2019, cf. Fig. 1). In the following, we discuss whether the different demographic and economic-development stages in aging industrial countries and in demographically young, less-developed economies can complement each other in generating long-term economic growth and prosperity for both sides.

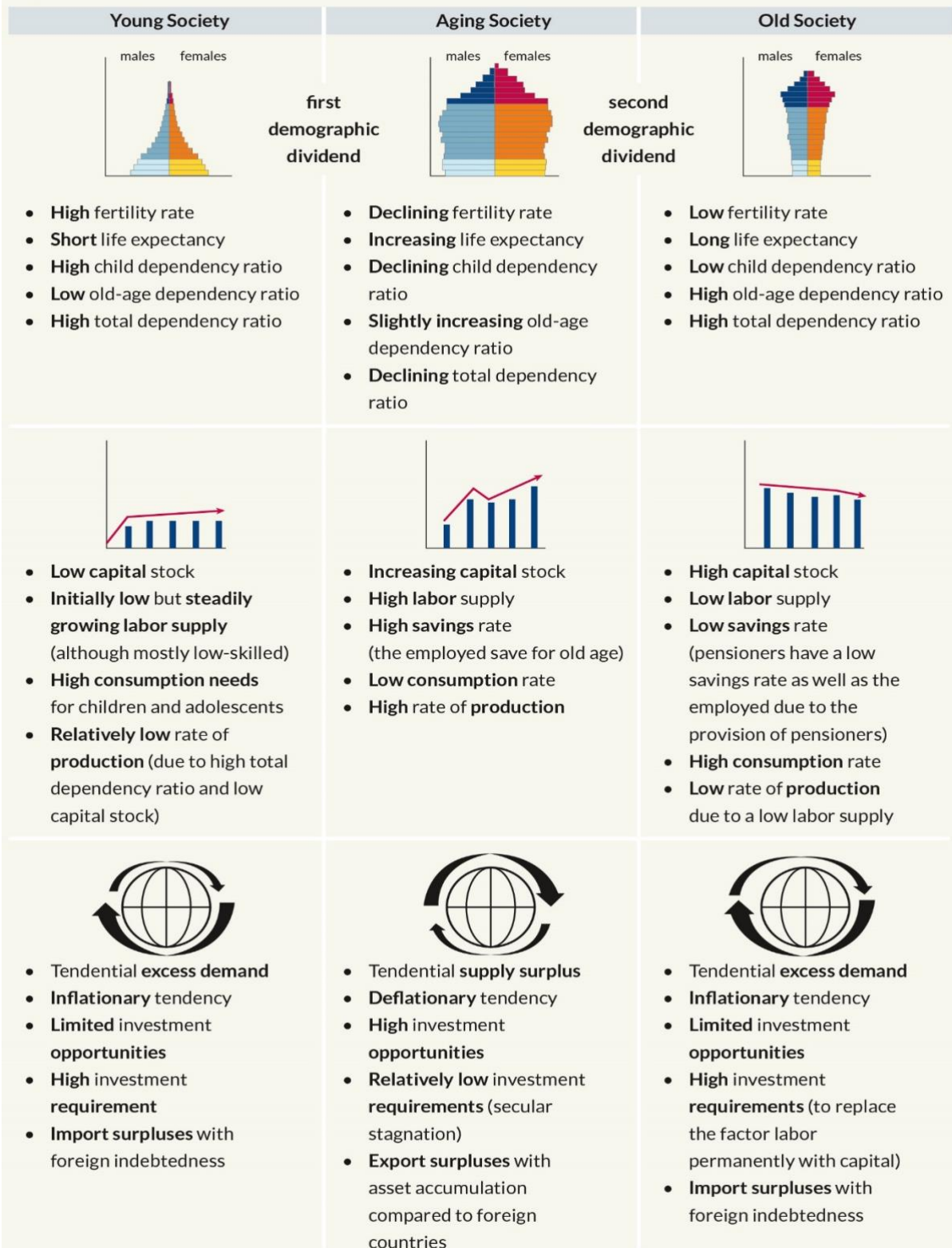
Aging societies can improve the conditions for a second demographic dividend by increasing **national income** through **FDIs**. If the demographically “older” country generates **export or current account surpluses** in a demographically favorable stage, the associated **income surpluses** can be invested in the rest of the world. Foreign direct investments result in **capital income** that increases the aggregate social income of an old population and thereby the quantity of goods available to that society. However, a return of the capital income or even of the capital invested abroad can only be expected in the **long term**. As long as the capital-poor developing countries generate a higher return than the capital-rich industrialized countries, the capital remains in the developing countries.



By investing its income surpluses in **developing** and **emerging economies** with a **young age structure**, a **growing** or **large labor force** and **higher economic growth potential**, an aging society can benefit from the population structure and the economic-development potential. At the same time, these FDIs can help cover the **investment needs** of young, underdeveloped economies and promote their **economic and social development** through investments in education, infrastructure, technology or the labor market (see also Lührmann 2003). If coordinated properly and, favourably, supported by effective measures to support private investment (e.g. export credit guarantees, investor-state-dispute settlement provisions etc.), this could create a **win-win situation** for industrialized and developing countries alike.

Most developing countries will also undergo a gradual demographic aging process in the coming decades. However, since over a certain period of time, the child dependency ratio will decline faster than the old-age dependency ratio increases, the total dependency ratio will decline in these countries, and the working population will continue to rise. This opens up a **“window of opportunity”** for a **first demographic dividend** (cf. Fig. 2). In this context, **strategic development investments** from aging economies can help ensure that these countries have a broader base of (highly) qualified workers in the future. In addition to job creation, foreign direct investments by private companies enable the **transfer of technology** and **knowledge** and open up access to **international markets** (cf. UNCTAD 1996). This can promote the modernization and expansion of economic activity in developing and less developed countries (cf. Görg 2019), thereby expand the customer base for products from developed economies and help, in the long run, reduce economically motivated mass migration toward industrialized countries. Aging societies could, on the other hand, recruit well-trained workers from developing countries to better satisfy their **demand for skilled labor** without draining these economies of a large part of their skilled labor force. Skilled immigrants would, in turn, be presented with genuine access to jobs and/or a career and social inclusion in the industrialized countries. These immigrants can also positively influence the social and economic progress of their origin countries by transferring part of their foreign-earned income back to these countries and by contributing their know-how to local environments upon their return.

Figure 1: Age structure and macroeconomic variables

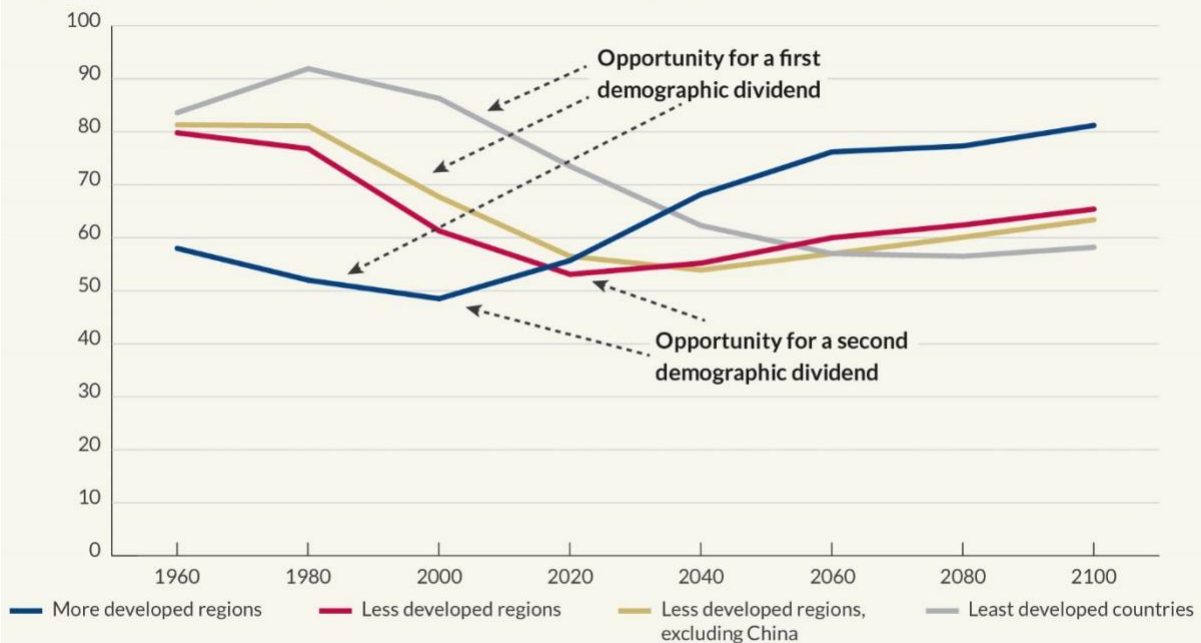


Source: Own illustration (Population Pyramids cf. <https://population.un.org/wpp/Graphs/DemographicProfiles/>) | BertelsmannStiftung



To date, experience has shown that foreign direct investments can have these expected positive effects on less-developed countries (for the following remarks cf. OECD 2002, Nunnenkamp 2006). Indeed, **total productivity** and **national income** increase in the target country because of the higher capital stock and the associated technology transfer. The rising national income is reflected in a higher GDP per capita. The increase in productivity is at its highest in the target country when the **technological gap** between the target and the source country of direct investments is small enough to support the application of state-of-the-art technologies. The positive effects for the target country outlined above therefore presuppose a minimum level of development, particularly with regard to education and a qualified labor force, infrastructure (transport, energy, legal security, etc.) and technological progress. Already in the 1990s, the United Nations Conference on Trade and Development (UNCTAD) and the International Organization for Migration (IOM) published a study finding that FDIs contribute directly to a reduction of migration through job creation in foreign affiliates and in host economies as a whole (cf. UNCTAD 1996).

Figure 2: Total dependency ratios and demographic dividends



Source: Own illustration. United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

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Nevertheless, it can also be shown that certain sectors and groups in the target country **can lose out** as a result of foreign direct investments. In general, it can be observed that in less-developed economies in particular, the inflow of investments from abroad exacerbates **income inequality**. This is mainly due to the fact that these investments generally involve **high technology**, which boosts the demand for well-skilled workers. As a consequence, the income gap between highly skilled and low-skilled workers grows (cf. Asteriou, Dimelis et al. 2014).

2.1 A possible scenario

Insofar as the **foreign direct investments** of aging societies contribute to the economic development of today's demographically young economies, these recipient economies could then, at a later stage in their demographic and economic development, invest their **income surpluses** resulting from their **current account surpluses** in the "old" societies that once invested in them. This is an attractive prospect for recipient economies as they age because old economies, which are characterized by a higher demand for capital and reduction in national savings, will feature **rising interest rates** (cf. Bertelsmann Stiftung 2010, Yoon, Kim 2014, Lührmann 2003), higher returns and capital income. For old economies, this **import surplus** would, in turn, mean they do not have to reduce their **own capital stock** and could instead expand it even further through **net investments**. The capital intensity of production would thus increase with a positive impact on the **average productivity of the old economy's labor force** and on **GDP per capita**. However, investors' entitlement to income payments (interest or capital income) could nevertheless reduce the per capita disposable income in an old society and thereby the material prosperity per inhabitant.

3. What do we need to create a win-win situation?

According to economic theory, capital should flow from rich, developed economies to less-developed countries, as there should be a higher return on capital in developing than in industrial countries. Theoretically, this is due to



production technology and basic **market economy** functions². In fact, however, substantial and growing foreign direct investments have been flowing into developed economies for decades (cf. Lucas 1990). Although inward flows in developing countries have increased significantly in recent decades (cf. UNCTAD 2018), just 2.5 percent of all direct investments worldwide go to Africa (cf. Görg 2019). Of the approximately €112 billion invested abroad by German companies in 2017, just 0.5 percent went to Africa, mainly South Africa (cf. Görg 2019). There are rational explanations for this. One explanation, for example, could be that developing countries have in reality no higher marginal productivity of capital because they work with obsolete **technologies** or do not have the necessary **human capital**. Another explanation is that the often unstable **legal** and **political conditions** in developing countries create uncertainty among investors who cannot be assured that their capital invested or the capital income generated abroad will be transferred back to their home country. In addition, a weak rule of law in these countries is often accompanied by weak property protections which diminish expectations regarding the return of foreign direct investments (cf. also Alfaro, Kalemli-Ozcan et al. 2003).

In order to increase international capital flows from highly developed economies into less-developed economies – which is desirable from a global economic point of view – developing countries must leverage **two** major **mechanisms** at their disposal: increasing aggregate economic productivity and strengthening protections against impending capital losses.

1. Boosting labor productivity by improving skills and motivation among the labor force while effectively coordinating education and training with the needs of the economy is an essential first step toward **higher productivity**. Improving transport, telecommunications, water and energy supply infrastructures (among others) is also helpful in increasing productivity.
2. Stabilizing the rule of law and clearly defining enforceable property rights is essential to **protecting against capital losses**. Establishing legal certainty of this nature involves ensuring actionable legal regulations and transparent

² Because of the relatively low capital stock in developing countries, the marginal productivity of the capital factor is higher than in industrialized countries. Due to the relative scarcity of capital in developing countries, the market price for the capital factor is higher than in industrialized countries.



jurisdiction. Economic and social policies that target macroeconomic stability are also needed to prevent social unrest.

If developing countries succeed in creating these necessary conditions, we can expect international capital flows to align with the theoretical considerations. However, the developed industrial countries also have a duty to contribute to these efforts. The "Compact with Africa" initiative launched under the German G20 Presidency is one example of such an effort. With this initiative, the G20 countries, in cooperation with international organizations such as the World Bank Group, IMF, African Development Bank, are pursuing the goal of supporting African partner countries in creating the macroeconomic, politico-economic and financial conditions to attract private investment (including in infrastructure) to Africa. For this purpose, country-specific reform programs and measures to promote private investments (Compacts) are being developed. However, such initiatives must not have the effect that – for example because of high interest rate guarantees – the least-developed countries are left out in the long term. In order to achieve a sustainable impact or development – also in the sense of the Sustainable Development Goals – infrastructure investments in particular must be coordinated with local economic needs, build on local conditions and thus promote local entrepreneurship. In the end, the point is that investments "from outside" contribute to an economic dynamic "from within." This also includes, for example, foreign companies training local workers, as this is the only way to effect a real transfer of knowledge and to ensure that the local economy benefits substantially from the investments. In order to expand local markets and thus make them more attractive for investors, the G20 countries could support developing countries in establishing free trade areas. In the shorter term, an extension of government risk-hedging instruments may encourage smaller or "medium-sized" companies to invest in less-developed countries. However, a sustainable willingness to invest can only be achieved if the educational level of the population increases and (government) institutions demonstrate stability. Accordingly, public development aid should primarily benefit those projects that facilitate these objectives. Ultimately, if stable institutions sustainably reduce the risks for investors, companies will invest in these countries even without state protection (cf. Görg 2019).



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